NORTH DISTRICT DEVELOPMENT PLAN

PROJECT # 958080

Revised
Draft Environmental Impact Report

SCH # 2018061044

The following Environmental Impact Report has been prepared in compliance with CEQA.

Prepared for:

University of California, Riverside
Campus Planning
Office of the Campus Architect
Planning, Design, and Construction
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February 2019

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1.0 INTRODUCTION

This Revised Draft Environmental Impact Report (RDEIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines to provide an assessment of the environmental effects of the proposed North District Development Plan project (hereinafter the NDD Plan or proposed project). As required by CEQA, this Revised Draft EIR (1) assesses the significant environmental effects of the proposed project, including cumulative effects; (2) identifies feasible means of avoiding or substantially lessening significant adverse impacts; and (3) evaluates a range of reasonable alternatives to the proposed project, including the No Project Alternative. The University of California (the University) is the "lead agency" for the project evaluated in this Revised Draft EIR. The Board of Regents of the University of California (The Regents) has the principal responsibility for approving this project.

In December 2018, the University published the North District Development Plan Draft EIR, which was circulated for agency and public comment for an initial period of 45 days that ended on February 1, 2019. During the time that the Draft EIR was circulating the University has advanced the design of the project. Other changes to the project include modifications to the proposed emergency evacuation plan for the site, slight changes to the numbers of beds planned for each phase, and changes to the sustainability and energy use narrative. Also during the Draft EIR circulation period, the University received numerous comments requesting, among other things, additional analysis and clarification regarding the noise impacts; potential impacts to local recreational facilities; clarification regarding the project's traffic impacts; and the evaluation of additional alternatives to the proposed project. In view of the project description changes and comments received, especially related to energy use, noise, traffic, recreation, and utilities, the University has determined that it will publish a Revised Draft EIR for the revised project for agency and public review. This Revised Draft EIR replaces in full the previously published Draft EIR.

1.1 PURPOSE OF THE EIR

The University of California, Riverside (UCR) has prepared this EIR for the proposed project for the following purposes:

- To satisfy the requirements of CEQA (Public Resources Code, Sections 21000–21178), the *CEQA Guidelines* (California Code of Regulations, Title 4, Chapter 14, Sections 15000–15387;
- To inform the general public; the local community; and responsible, trustee, and other public agencies of the nature of the proposed project, its potentially significant environmental effects, feasible measures to mitigate those effects, and its reasonable and feasible alternatives;

- To enable The Regents to consider the environmental consequences of approving the proposed project; and
- For consideration by responsible agencies in issuing permits and approvals for the proposed project.

Under CEQA, public agencies are charged with the duty to avoid or substantially lessen significant environmental effects, where feasible. In discharging 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 Revised Draft 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 significantly 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 any significant adverse environmental effects or reduce the impacts to a less than significant level.

The lead agency is required to consider the information in the EIR, along with any other relevant information, in making its decisions regarding the proposed project. The Regents must certify the Final EIR prior to taking any action approving the proposed project.

1.2 SUMMARY OF THE PROPOSED PROJECT

UCR proposes to provide up to 5,200 student beds on the East Campus on an approximately 51-acre site located in the northeastern portion of the campus. The NDD Plan includes Phase 1, which involves the construction of about 1,500 student beds and associated facilities by 2021 and a future phase(s), which involves the construction of up to 3,700 student beds and associated facilities after 2022, as feasible and needed. The project site is developed with Canyon Crest Family Student Housing that was occupied by student families until 2017 and is currently vacant. The site is designated for *Family, Apartment Housing and Related Support*, *Residence Hall and Related Support*, *Athletics and Recrea*tion, and *Parking* in the UC Riverside 2005 Long Range Development Plan, as amended. Furthermore, as a student housing project, the proposed project would support current and LRDP-projected enrollment on the campus. However, development and occupancy of the entire NDD Plan is expected to occur beyond the planning horizon used in the 2005 LRDP and analyzed in the 2005 LRDP EIR. Therefore, the University has determined that it will not tier the environmental review of this project from the 2005 LRDP EIR and the 2011 LRDP Amendment 2 EIR, but will instead prepare a stand-alone EIR that evaluates and disclose the potential environmental impacts of the proposed NDD Plan.

Although the NDD Plan CEQA analysis is not tiered from the 2005 LRDP EIR, as amended, UC Riverside has determined that the 2005 LRDP Planning Strategies (PS), Planning Principles (PP) and Mitigation

Measures (MM) that have been incorporated into projects proposed under the 2005 LRDP are important to the Campus and so they will also be incorporated into all development under the NDD Plan. The analysis in this Revised Draft EIR references applicable Planning Strategies, Planning Principles, and Mitigation Measures as relevant.[1]

At this time, project-level details are available only for Phase 1 development. With respect to the future phase(s) of development, the NDD Plan provides a development program and a land use diagram, but does not have details with respect to specific buildings. Given this level of detail, the RDEIR for the NDD Plan will provide a program-level analysis for the entire plan and a project-level analysis of the potential environmental impacts from the implementation of Phase 1. Future phases will undergo additional environmental review once further details with respect to specific buildings and construction timelines are known.

1.3 ENVIRONMENTAL REVIEW PROCESS

A Notice of Preparation (NOP), including an Initial Study, was initially prepared and distributed to the State Clearinghouse, trustee agencies, responsible agencies, and other interested parties on June 18, 2018. Distribution of the Initial Study/NOP established a 30-day scoping period for the public and agencies to identify environmental issues that should be addressed in the Draft EIR. The Initial Study/NOP and comments on the NOP are included as **Appendix 1.0** of this EIR. Issues that were raised during the NOP review period by the public and agencies are summarized in the subsections of **Chapter 4: Environmental Impact Analysis,** and are addressed in the analysis in each subsection.

An EIR scoping meeting was held at University Village, Campus Planning – Capital Asset Strategies, Suite 210, located at 1223 University Avenue, in Riverside California on July 3, 2018. The purpose of this meeting was to inform the public, campus community, and interested agencies of the proposed project, solicit comments, and identify areas of concern.

As stated above, in December 2018, the University published the North District Development Plan Draft EIR, which was circulated for agency and public comment for an initial period of 45 days that ended on February 1, 2019; a public comment meeting was held on January 22, 2019. All pertinent comments received during the circulation of the Draft EIR were taken into account in the preparation of this Revised Draft EIR. Note that CEQA does not require a lead agency to respond to comments received on a Draft EIR when the previously published Draft EIR is replaced by a Revised Draft EIR. Therefore the University will not prepare responses to comments on the December 2018 Draft EIR.

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1 A listing of the 2005 LRDP and Planning Strategies (PS) and Planning Principles (PP) and Mitigation Measures (MM) and a table indicating their relevance to the proposed project are included in Appendix 1.0 to this Revised Draft EIR.

This Revised Draft EIR is being circulated for review and comment to the public and other interested parties, agencies, and organizations for a 45-day review period as required by California law. During the review period, copies of this EIR and reference materials used in the preparation of this Revised Draft EIR will be available for review during normal business hours at the UCR Office of Planning, Design & Construction, 1223 University Avenue, Suite 240, Riverside, and online at:

http://cpp.ucr.edu/environmental/ceqadocs.html.

As this Revised Draft EIR replaces in full the previously published Draft EIR, reviewers are requested to submit new comments on this Revised Draft EIR.

In reviewing this Revised 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 project might be avoided or mitigated. To ensure inclusion in the Final EIR and full consideration by the lead agency, comments on the Revised Draft EIR must be received during the public review period, which ends at 5:00 p.m. on April 15, 2019. Written comments on the EIR may be emailed to CEQA@ucr.edu or sent to:

University of California, Riverside
Office of Planning, Design & Construction
1223 University Avenue, Suite 240
Riverside, California 92507

Attn: Tricia D. Thrasher, ASLA, LEED AP

Upon certification of the Final EIR, The Regents will consider whether to approve the proposed Project. As part of their consideration for project approval, The Regents must adopt Findings of Fact, and a Mitigation Monitoring and Reporting Program (MMRP) to ensure implementation of mitigation measures that have been incorporated into the project to reduce or avoid significant effects during project construction and/or implementation.

If the proposed project would have significant and unavoidable impacts, The Regents will be required to identify the specific reasons for approving the project, based on the Final EIR and any other information in the public record. This "Statement of Overriding Considerations" is adopted when the Final EIR is certified, and would provide the specific reasons why the benefits of the proposed project outweigh the unavoidable environmental effects that would result from development of the project.

1.4 SCOPE OF THIS EIR

UCR completed a preliminary review of the project, as described in Section 15060 of the *State CEQA Guidelines,* and determined that an environmental review was required. UCR prepared an Initial Study in June 2018 and determined that an EIR was necessary. Based on the Initial Study and the comments received at the scoping meeting and in response to the NOP, it was determined that the EIR would evaluate the following environmental topics in further detail:

- Aesthetics
- Air Quality
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

1.5 REPORT ORGANIZATION

This Revised Draft EIR is organized into the following sections:

Section 1.0, Introduction, provides an introduction and overview describing the purpose and scope of topics addressed in this EIR and the environmental review process.

Section 2.0, Executive Summary, summarizes environmental consequences that would result from the proposed project, provides a summary table that denotes anticipated significant environmental impacts, describes identified mitigation measures, and indicates the level of significance of impacts before and after mitigation.

Section 3.0, Project Description, describes the proposed project.

Section 4.0, Environmental Impact Analysis, describes the environmental setting, including applicable plans and policies; provides an analysis of the potential environmental impacts of the proposed project; and identifies mitigation measures to reduce their significance. It also includes an evaluation of the project's cumulative impacts.

Section 5.0, Other CEQA Considerations, provides a discussion of the project's significant and unavoidable impacts, the potential for growth inducement from the project, and a brief description of the environmental effects that were found not to be significant and, therefore, not evaluated in further detail.

Section 6.0, Alternatives, summarizes alternatives to the project and the comparative environmental consequences of each alternative. This section includes an analysis of the No Project Alternative, among others, as required by CEQA.

Section 7.0, List of Preparers, provides a list of the individuals involved in the preparation of this Revised Draft EIR.

2.0 EXECUTIVE SUMMARY

2.1 PURPOSE

California State Law requires each campus of the University of California to prepare a Long Range Development Plan (LRDP) that sets forth concepts, principles, and plans to guide the future growth of the campus. Pursuant to this obligation, UC Riverside prepared the 2005 LRDP and, as lead agency under CEQA, prepared the supporting Final Environmental Impact Report (Final EIR) for the UC Riverside campus (State Clearinghouse No. 2005041164). In November 2005, The Board of Regents of the University of California (The Regents) certified the Final EIR and approved the 2005 LRDP. In 2006, UC Riverside amended the 2005 LRDP to allow a 3.25-acre deed restriction in the Agricultural Operations fields south of MLK (2005 LRDP Amendment 1). In 2011, UC Riverside approved a major amendment (Amendment 2) to the 2005 LRDP, based on an evaluation of its environmental impacts in a Final EIR (State Clearinghouse No. 2010111034). The LRDP Amendment 2 EIR supplemented the 2005 LRDP EIR, focusing on the incremental environmental effects of LRDP Amendment 2. In 2013, the 2005 LRDP was amended (Amendment 3) to provide an overlay to the land use designation of one 10-acre site on the West Campus for the siting of a solar array project.

The 2005 LRDP, as amended by Amendments 1, 2, and 3, is the land use planning document used by UC Riverside to guide the development of the campus to accommodate a projected student body of 25,000 full time equivalent (FTE) students which was estimated to be reached by 2020. The 2005 LRDP EIR, as augmented and updated by the 2011 LRDP Amendment 2 EIR, is the environmental document that provides a full evaluation of the environmental effects of campus development anticipated under the 2005 LRDP and is used by the Campus to conduct tiered environmental review of specific development projects proposed on the campus, pursuant to *CEQA Guidelines* Section 15152.

This Revised Draft Environmental Impact Report (RDEIR) evaluates the potential for significant environmental impacts from the approval and implementation of the proposed North District Development Plan (NDD Plan) put forth by the University of California, Riverside (UCR) to provide up to 5,200 student beds on the East Campus on an approximately 51-acre site located in the northeastern portion of the campus. The NDD Plan is comprised of Phase 1 which involves the construction of about 1,500 student beds and associated facilities beginning in 2019 and completion in 2021 and future phases which involve the construction of up to 3,700 student beds and associated facilities after 2022, as feasible and needed. The project site is developed with Canyon Crest Family Student Housing that was occupied by student families until 2017 and is currently vacant. The site is currently designated for *Family, Apartment Housing and Related Support*, *Residence Hall and Related Support*, *Athletics and Recreation*, and *Parking* in the 2005 LRDP. The proposed project would support current and the LRDP-projected enrollment on the campus. However, development and occupancy of the entire NDD Plan is expected to

occur beyond the planning horizon used in the 2005 LRDP and analyzed in the 2005 LRDP EIR. Therefore, the University has determined that it will not tier the environmental review of this project from the 2005 LRDP EIR and the 2011 LRDP Amendment 2 EIR, but will instead prepare a stand-alone EIR that evaluates and disclose the potential environmental impacts of the proposed NDD Plan.

Although the NDD Plan CEQA analysis is not tiered from the 2005 LRDP EIR, as amended, UC Riverside has determined that the 2005 LRDP Planning Strategies (PS), Planning Principles (PP) and Mitigation Measures (MM) that have been incorporated into projects proposed under the 2005 LRDP are important to the Campus and so they will also be incorporated into all development under the NDD Plan. The analysis in this Revised Draft EIR references applicable Planning Strategies, Planning Principles, and Mitigation Measures as relevant.[1]

At this time, project-level details are available only for Phase 1 development. With respect to the future phase(s) of development, the NDD Plan provides a development program and a land use diagram, but does not have details with respect to specific buildings. Given this level of detail, the RDEIR for the NDD Plan will provide a program-level analysis for the entire plan and a project-level analysis of the potential environmental impacts from the implementation of Phase 1. Future phases will undergo additional environmental review once further details with respect to specific buildings and construction timelines are known.

Anticipated Project Approvals

Necessary project approvals are anticipated to include, but are not limited to, consideration of the following by The University of California Board of Regents (anticipated in May 2019):

- Certification of the North District Development Plan EIR,
- Approval of the North District Development Plan,
- Approval and adoption of the proposed 2005 LRDP Amendment 5, and
- Approval of the design of the first phase of the North District Development Plan.

It is the intent of this Executive Summary to provide the decision makers and the public with a clear, simple, and concise description of the proposed and related projects and their potential significant environmental impacts. Section 15123 of the *California Environmental Quality Act (CEQA) Guidelines* requires that the summary identify each significant effect, recommended mitigation measure(s), and

[1] A listing of the 2005 LRDP and Planning Strategies (PS) and Planning Principles (PP) and Mitigation Measures (MM) and a table indicating their relevance to the proposed project are included in Appendix 1.0 to this Revised Draft EIR.

alternatives that would minimize or avoid potential significant impacts. The summary is also required to identify areas of controversy known to the lead agency, including issues raised by agencies and the public and issues to be resolved. These issues include the choice among alternatives and whether or how to mitigate significant effects. This summary focuses on the major areas of importance in the environmental analysis for the proposed projects and uses non-technical language to promote understanding.

2.2 PROJECT LOCATION

The UCR campus is located in the City of Riverside (refer to **Figure 2.0-1, Local Setting**), 1.5 miles east of downtown Riverside and just west of the Box Springs Mountains. The City of Riverside is located within the County of Riverside, in a larger geographic area known as the Inland Empire, which is comprised of western Riverside and San Bernardino counties. The campus is generally bounded by Blaine Street, University Avenue and Everton Place and its extension west on the north, Watkins Drive and Valencia Hill Drive and its extension south on the east, a line extending east from Le Conte Drive on the south, and Chicago Avenue on the west. The campus is bisected diagonally by the I-215/SR-60 freeway. The campus area to the east of the freeway is called the East Campus and the area to the west is called the West Campus.

The proposed NDD Plan area is an approximately 51-acre site located in the northeastern portion of East Campus (refer to **Figure 2.0-2, Project Location**). The Plan area consists of the existing vacant Canyon Crest Family Student Housing Complex which includes single-family dwellings, most of which are vacant although some are now used as storage and maintenance facilities, including permanent structures and modular units in the northwestern portion of the site. A park with a playground is located in the western portion of the Plan area, south of Cherry Street. There are nine asphalt-paved residential streets within the Plan area in addition to several gravel roads. The project site is bounded by Blaine Street and a small shopping plaza to the north, Canyon Crest Drive and the Falkirk Apartments to the west, Linden Street including the Police Facility, the UCR track facility, the Student Recreation Center, and the Aberdeen-Inverness (A-I) Residence Halls to the south, and the UC Riverside Child Development Centers, and the Campus Corporation Yard, to the east.

2.3 PROJECT DESCRIPTION

Proposed Land Use Map Changes

The proposed NDD Plan involves changes in the 2005 LRDP Land Use Designations of the approximately 51-acre project site located at the in the northeastern portion of East Campus. The site is currently designated for *Family, Apartment Housing and Related Support, Residence Hall and Related Support, Athletics*

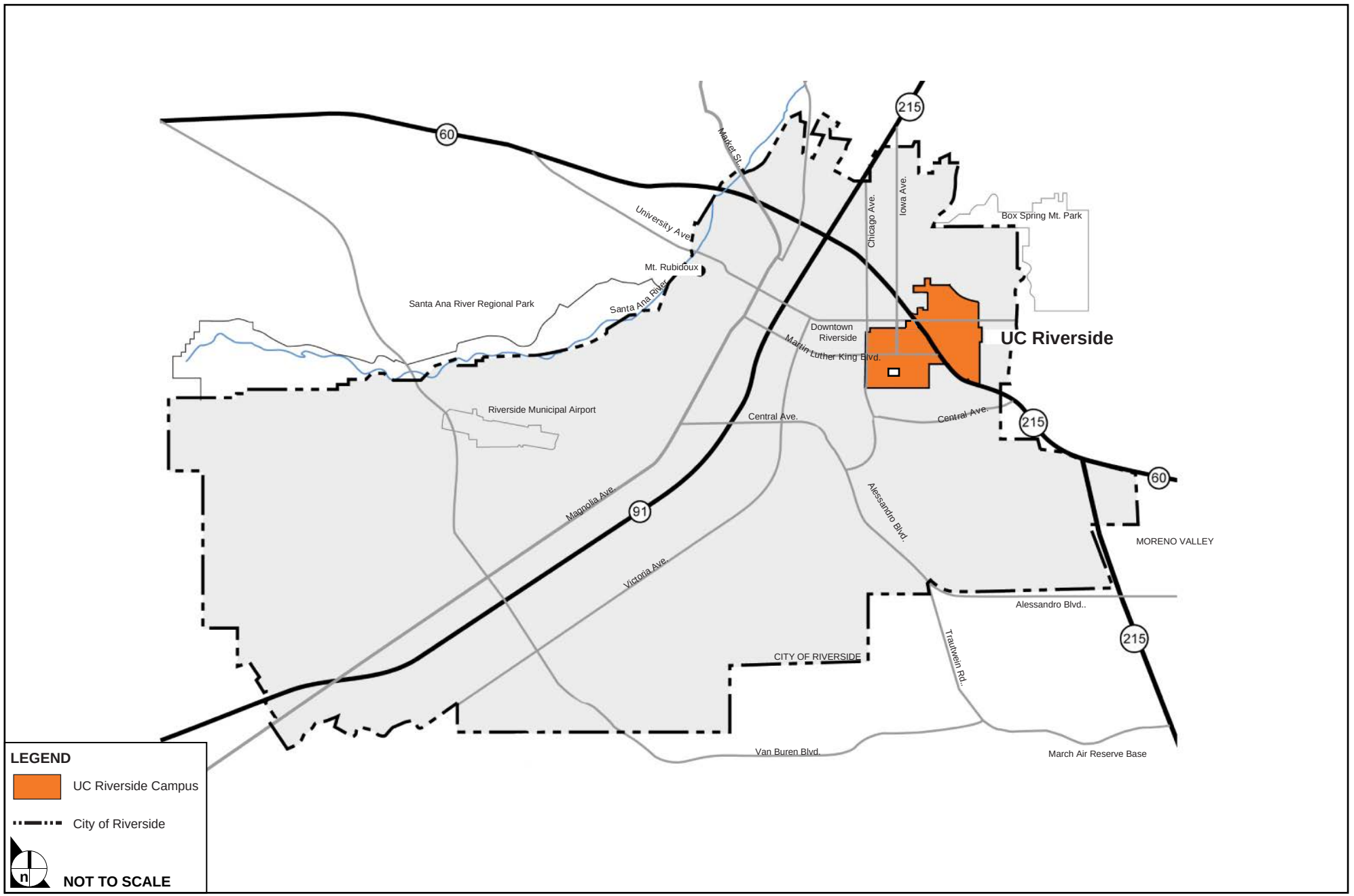
and Recreation, and *Parking* in the 2005 LRDP. The changes contemplated under the NDD Plan would not make substantial changes in the amount of area currently designated to each land use, but would rather readjust the land use areas within the project site to allow more efficient use of the site for the uses contemplated in the NDD Plan.

Land Use Plan: Table 2.0-1 below presents the acres assigned to each land use designation/district and the types and intensity of land uses planned for each land use district.

Table 2.0-1
North District Development Plan
Proposed Land Use Designations and Districts

Land Use	Acres	Bed/Spaces/Seats/Mixed Use
Student Residential and Mixed Uses District 1	4.25	700-1,000 Beds 10,000-15,000 sf Mixed Use
Student Residential and Mixed Uses District 2	6.15	800-1300 Beds 13,000-22,000 sf Mixed Use 600 Seat Dining Facility
Student Residential and Mixed Uses District 3	5.45	700-1,400 Beds 30,000-50,000 sf Mixed Use
Student Residential and Mixed Uses District 4	8.40	1,400-2,600 Beds 50,000-70,000 sf Mixed Use
Student Residential and Mixed Uses District 5	3.40	700-1,000 Beds
Athletics Event Center	5.70	3,000-5,000 Seats
Parking 1	2.15	Less than or equal to 1,200 Spaces
Parking 2	4.05	Less than or equal to 1,200 Spaces
Open Space	11.60	--
Total Acres	***51.15***	

Source: University of California, Riverside, February 2019



SOURCE: UCR LRDP 2005

FIGURE **2.0-1**

Local Setting

IMPACT SCIENCES

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SOURCE: Google Maps, 2018

FIGURE **2.0-2**

Project Location

IMPACT SCIENCES

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North District Development Plan – Phase 1

The NDD Plan provides for the phased development of apartments, mixed-use residential, resident life amenity spaces, living and learning spaces, resident life support spaces, dining facilities, athletics facilities, and parking areas. **Table 2.0-2** below sets forth the number of student beds and other amenities that would be developed in Phase 1 of the Plan and the additional beds and facilities that would be built in the future phase(s).

The NDD Plan sets forth details regarding the facilities that would be built in Phase 1 and includes a land use diagram to guide the development of the future phase(s). The Plan, however, establishes building heights, noting that heights would range from 5 to 6 stories for the apartment buildings, 5 to 6 stories for residence halls, 1 to 2 stories for mixed use buildings, a 2-story dining facility, and parking structures would be 7 levels.

Table 2.0-2
North District Development Plan
Phased Development Program

Unit Mix	Phase 1	Future Phase(s)	NDD Plan Total
Apartments	1,500 beds	2,500 beds	4,000 beds
	390,000 sq. ft.	1,000,000 sq. ft.	1,390,000 sq. ft.
Residence Halls	--	1,200 beds	1,200 beds
		245,000 sq. ft.	245,000 sq. ft.
Residential Floor Amenity / Support Spaces	5,600 sq. ft.	TBD	TBD
Circulation, Mechanical, & Structure	116,000 sq. ft.	TBD	TBD
Living, Learning, Community & Administration	15,800 sq. ft.	TBD	TBD
Seminar Rooms	1,700 sq. ft.		
Food Lab	2,900 sq. ft.		
Support & Maintenance	13,000 sq. ft.	TBD	TBD
Dining Facilities	--	33,400 sq. ft.	33,400 sq. ft.
Field House	--	22,000 sq. ft.	22,000 sq. ft.
Competition Field	--	5,000 seats	5,000 seats
Surface Parking	695	--	--
Structured Garage Parking	--	2,100 spaces	2,100 spaces

Note: all numbers are approximate and subject to minor modifications
Source: University of California, Riverside, February 2019

The NDD Plan provides for the construction of an athletic facility, dedicating approximately 5.7 acres for the construction and operation of an Athletics Event Center with a capacity of between 3,000 and

5,000 seats. The Athletics Event Center is anticipated to include a competition field, and an approximately 22,000 square foot Field House in addition to the stadium seating.

Open Space and Landscaping: The NDD Plan proposes a large open space area in the eastern portion of the Plan area. The site material palette for the NDD Plan would include hardscape and softscape materials that are derived from the existing campus aesthetic. Key intersections and open spaces, such as the primary plaza, main building entries, and courtyard patios, would include specialty paving that highlights the importance of those spaces. Planting materials would include native and adaptive species that are drought tolerant, reflect the native landscape of the region, and highlight UC Riverside's commitment to sustainability and water use reduction. Incorporation of trees throughout the site would provide shade and respite from the heat while creating pleasant places to rest and relax throughout the Plan area.

2.4 PROJECT OBJECTIVES

The objectives of the NDD Plan are to:

- Support the Campus goal to house up to 50 percent of enrolled students on-campus and to guarantee on-campus housing to all freshman and transfer students;
- Enhance the student experience by integrating the principles of residential and academic life;
- Promote environmental and sustainability goals by reducing vehicular trips to and from the campus;
- Provide affordable on-campus student housing;
- Develop and operate, through phased development, approximately 4,000 to 5,200 beds of student housing for first year, second year, transfer, upper division undergraduate students and graduate students, along with adequate support spaces, multi-functional spaces, amenities and associated infrastructure while maximizing the building height and density of the entire project site;
- Provide an approximately 600-seat dining facility by delivery of a Future Phase of the project;
- Complete and open the student housing component of the first phase of approximately 1,500 beds by 2021;
- Complete and open the Athletics Event Center as soon as feasible;
- Establish a new iconic gateway to the Campus on the northwest corner of the project site; and
- Provide adequate parking to support all phases of development through delivery of the Future Phase(s).

2.5 SCOPE OF THE EIR

To determine which environmental topics should be addressed in this EIR, UCR prepared an Initial Study and circulated it along with a Notice of Preparation (NOP) in order to receive input on the scope of the EIR from interested public agencies and private parties. Copies of the NOP and Initial Study are presented in **Appendix 1.0** of this EIR. Based on both the Initial Study and the NOP comments, this EIR addresses the following environmental topics in depth:

- Aesthetics
- Air Quality
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

2.6 IMPACT SUMMARY

A detailed discussion regarding potential impacts is provided in **Section 4.0, Environmental Impact Analysis**. In accordance with the *State CEQA Guidelines*, a summary of the project's impacts is provided in **Table 2.0-3, Summary of Impacts and Mitigation Measures**, presented at the end of this section. Approval and adoption of the proposed project could result in potentially significant environmental impacts related to air quality (operational), greenhouse gas emissions (operational), noise (construction vibration and cumulative), traffic (operational), and utilities (wastewater - operational). Some significant impacts would be reduced to less than significant levels through incorporation of mitigation measures. However, the project would have residual significant impacts with regard to air quality, noise, and traffic.

2.7 ALTERNATIVES TO THE PROPOSED PROJECTS

The alternatives evaluated in this RDEIR focus on avoiding or further reducing potentially significant project-level and cumulative impacts. Project alternatives evaluated in this RDEIR include the following:

Alternative 1: No Project.

Under the No Project Alternative, the proposed NDD Plan would not be developed. However, the Campus would still be able to complete the buildout of the LRDP; given the land use designation of *Family, Apartment Housing and Related Support, Residence Hall and Related Support, Athletics and Recreation*

and *Parking*, for the proposed project site, development of the project site with other uses could still occur, which could result in impacts generally similar to those from the proposed project.

Alternative 2: West Campus Site.

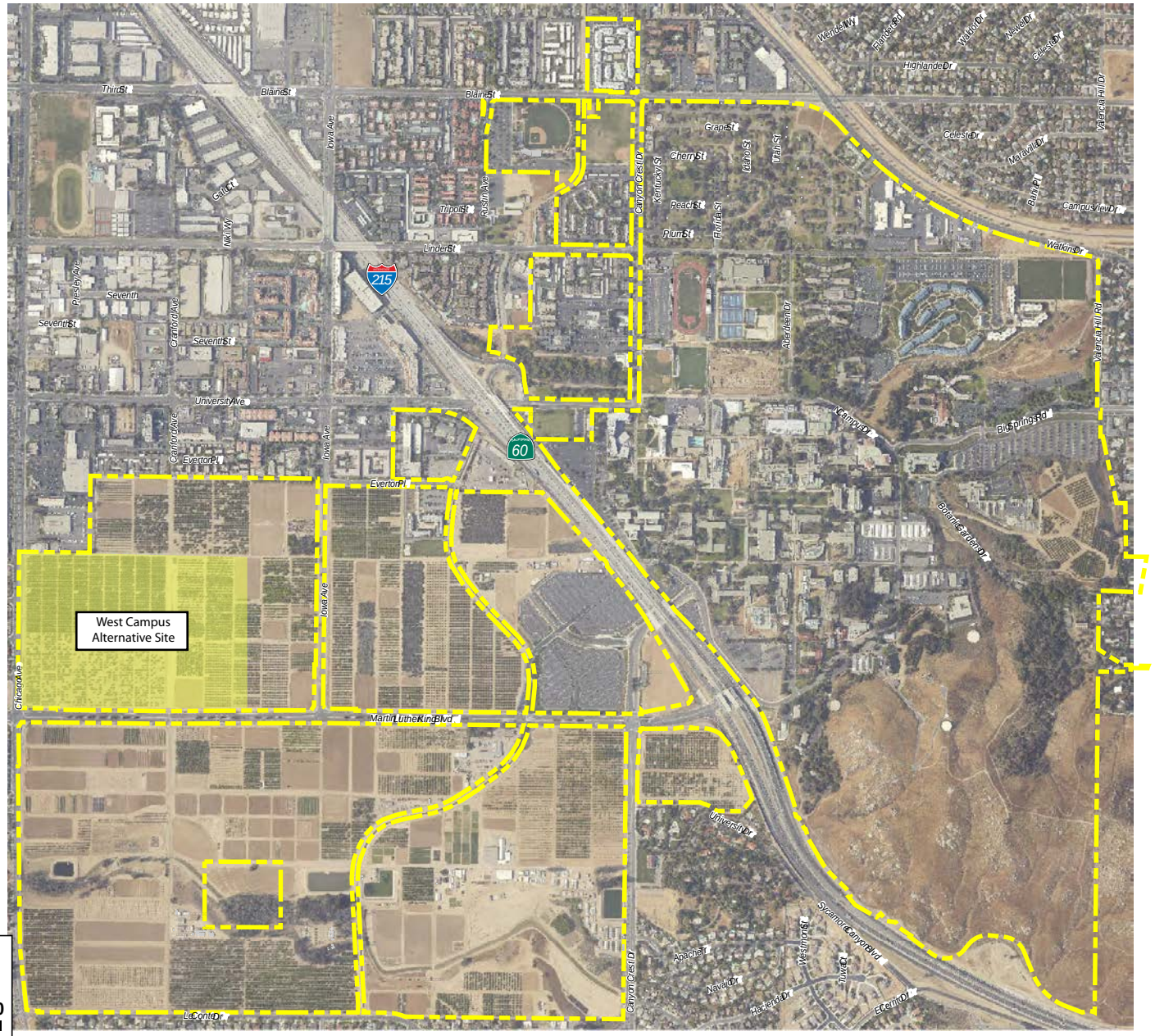
Under this alternative, the proposed NDD Plan would be developed on approximately 55 acres of campus land east of Chicago Avenue, west of Iowa Avenue, and north of Martin Luther King (MLK) Boulevard on the West Campus. As such, the Alternative 2 site would fully accommodate a development similar in size and density to the NDD Plan. The site is currently designated in the 2005 LRDP (as amended) for *Family, Apartment Housing and Related Support (including Child Care), Athletics and Recreation,* and *Open Space.*

The Alternative 2 site consists of the eastern portion of a site that is currently in use as agricultural teaching and research fields, used primarily by the College of Natural and Agricultural Sciences. The site is bordered by commercial development, campus-owned land in use as agricultural teaching and research fields, and a 19-acre parcel of land transferred to the California Air Resources Board for a research and testing facility that is also the Board's Southern California headquarters to the north, commercial uses, including a plant nursery, an assisted living facility (Grandview Manor), and vacant land to the west (across Chicago Avenue), and campus-owned land in use as agricultural teaching and research fields to the south (across MLK Boulevard) and east. Refer to **Figure 2.0-3, West Campus Alternative Site**.

Alternative 3: Reduced Project.

Under the Reduced Project Alternative, Phase 1 would develop the initial 1,500 beds. The future phases would develop 25 percent fewer beds, reducing the number of student beds from the proposed approximately 3,700 beds to approximately 2,775 student beds under this alternative. Therefore, this alternative would provide a total of approximately 4,275 student beds. No change would be made to the proposed mixed-use, competition field or the parking structure components of the future phase.

The site plan for this alternative would continue to provide buildings along the northern edge of campus, however, the heights would be reduced, ranging from 4 to 5 stories for the apartment buildings, 4- to 5-stories for residence halls, 1- to 2-stories for mixed use buildings, a 2-story dining facility, and parking structures would be up to 7-levels.



Legend:

Campus Boundary

950 475 0 950

APPROX. SCALE IN FEET

SOURCE: UCR – 2010, Impact Sciences, Inc – January 2011

FIGURE **2.0-3**

West Campus Alternative Site

IMPACT SCIENCES

1031-004•11/18

In addition to the alternatives outlined above, UCR considered but rejected the possibility of purchasing sufficient residential property off-campus to meet the need for approximately 1,500 additional apartment-style beds as an impractical given the local real estate market and the number of units that would be required. Due to UCR having an abundant amount of land adjacent to the core of campus, pursuing opportunities to purchase properties in proximity to the core of campus is not considered a financially prudent option, since the campus would have to pay the full improvement value (plus land) for any asset purchased in the market. At this time, there are no known opportunities to secure existing developments or potential redevelopment sites that would be large enough to satisfy the campus demand for housing. Most of the available apartment inventory adjacent to the campus was constructed more than 30 years ago, was developed to low-density zoning standards in the City of Riverside, and is already mostly populated by UCR students.

Detailed descriptions of the three alternatives evaluated in detail and their comparative merits are presented in **Section 6.0, Alternatives** of this EIR. **Table 2.0-4, Summary Comparison of Project Alternatives**, which follows **Table 2.0-3 Summary of Impacts and Mitigation Measures**, presents a comparison of the environmental impacts of each alternative to those that are expected to result from the proposed projects.

Alternative 2 (the West Campus Alternative) would slightly reduce the proposed projects' significant impacts related to vibration. However, it would have significant and unavoidable impacts on agricultural resources that would be greater than that of the NDD Plan and Alternative 3. For this reason, and because Alternative 3 would meet most of the NDD Plan's objectives, it would be the environmentally superior alternative (see **Section 6.0, Alternatives** of this EIR).

2.8 ISSUES TO BE RESOLVED/AREAS OF CONTROVERSY

This EIR addresses environmental issues associated with the proposed projects that are known to the lead agency or were raised by other public agencies or interested parties during the EIR scoping process. During the scoping period, a public meeting was held on July 3, 2018, to solicit comments on the scope of the EIR from interested agencies, individuals, and organizations. The meeting was held at University Village Room 210-16 located at 1223 University Avenue adjacent to the UCR campus; there were no attendees. Written comments were received from two state agencies, two regional agencies, and one local jurisdiction, no comments were received from the general public; copies of these letters are included in **Appendix 1.0**. More comprehensive descriptions of issues raised during the scoping process are presented in the appropriate environmental analysis sections of this RDEIR. Following is a list of issues raised in the scoping comments received by UCR:

- The City of Riverside Traffic Engineering Division requested the opportunity to review the Scoped Traffic Impact Analysis (TIA) for the Draft EIR, and requested that the analysis follow the City's TIA Guidelines.

- The City of Riverside requested that sewer capacity study be prepared to appropriately analyze project impacts to the City sewer system, and identify mitigation for potentially significant impacts related to wastewater impacts.

- The City of Riverside requested that a Water Supply Assessment be completed in conjunction with the Draft EIR.

The City of Riverside requested that the project's impact on the City's Water Transmission and Distribution system be fully analyzed in the EIR as noted on the Initial Study checklist.

Table 2.0-3
Summary of Impacts and Mitigation Measures

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
4.1 Aesthetics				
Impact 4.1-1				
Implementation of the proposed project would not have a substantial adverse effect on a scenic vista. With implementation of the relevant 2005 LRDP Planning Strategies and Programs & Practices, this impact would be less than significant.	Less than significant	None identified	No mitigation is required	Less than significant
Impact 4.1-2				
Implementation of proposed project would not substantially degrade the visual character or quality of the project site and its immediate surroundings. With implementation of the relevant 2005 LRDP Planning Strategies and Programs & Practices, this impact would be less than significant.	Less than significant	PS Campus & Community 1 PP 4.1-1 PP 4.1-2(a)	No mitigation is required	Less than significant
Impact 4.1-3				
Implementation of proposed project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area substantially degrade the visual character or quality of the project site and its immediate surroundings. With implementation of the relevant 2005 LRDP Planning Strategies, Programs & Practices, and Mitigation Measures this impact would be less than significant.	Less than significant	PP 4.1-1 PP 4.1-2(a) PP 4.1-2(b) MM 4.1-3(a) MM 4.1-3(b) MM 4.1-3(c)	No mitigation is required	Less than significant

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
Impact 4.1-4				
Cumulative development, including the proposed project and related projects, would not substantially degrade the visual character or quality of the campus and the immediate surrounding area. The contribution of the proposed project to this cumulative impact would not be cumulatively considerable.	Less than significant	None identified	No mitigation is required	Less than significant
4.2 Air Quality				
Impact 4.2-1				
The project would not conflict with or obstruct implementation of the applicable air quality plan.	Less than significant	None identified	No mitigation is required	Less than significant
Impact 4.2-2				
Construction and operation of the proposed project could result in emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation.	Significant	MM 4.3-1b MM 4.3-1c	**MM AIR-1**: When re-applying architectural coatings (e.g., paint), the campus shall use coatings that have no greater than a rating of 50 grams per liter of VOC. **MM AIR-2:** The cleaning supplies used in common areas of campus facilities shall be designated as low-VOC products.	Significant and unavoidable
Impact 4.2-3				
Implementation of the proposed project would expose sensitive receptors to substantial pollutant concentrations.	Less than significant	None identified	No mitigation is required	Less than significant
Impact 4.2-4				
Implementation of the proposed project would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard.	Significant	None identified	No additional mitigation feasible	Significant and unavoidable

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
4.3 Greenhouse Gas Emissions				
Impact 4.3-1				
Construction and operation of the proposed project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Significant	MM 4.3-1	**MM GHG-1:** By May 1, 2026, UC Riverside shall purchase carbon offsets and/or renewable energy certificates to achieve campus-wide carbon neutrality in Scope 1 and 2 emissions by 2025, consistent with the UC Policy on Sustainable Practices.	Less than significant
Impact 4.3-2				
The proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Less than significant	None identified	No mitigation is required	Less than significant
4.4 Hazards and Hazardous Materials				
Impact 4.4-1				
Implementation of the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. With implementation of the relevant 2005 LRDP Planning Strategies and Programs & Practices, this impact would be less than significant.	Less than significant	PP 4.7-1	No mitigation is required	Less than significant
Impact 4.4-2				
Implementation of the proposed project would not 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. With implementation of the relevant 2005 LRDP Planning Strategies and Programs & Practices, this impact would be less than significant.	Less than significant	PP 4.7-2 PP 4.7-3	No mitigation is required	Less than significant

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
Impact 4.4-3				
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. With implementation of the relevant 2005 LRDP Planning Strategies and Programs & Practices, this impact would be less than significant.	Less than significant	PP 4.7-1	No mitigation is required	Less than significant
Impact 4.4-4				
Implementation of the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. With implementation of the relevant 2005 LRDP Planning Strategies and Programs & Practices, this impact would be less than significant.	Less than significant	PP 4.7-7(a) PP 4.7-7(b)	No mitigation is required	Less than significant
Impact 4.4-5				
Cumulative development, including campus development under the proposed NDD Plan, would not expose the public to significant hazards due to the transport, use, disposal, or storage of hazardous materials (including chemical and radioactive waste) under routine and upset conditions. The cumulative impact would be less than significant.	Less than significant	PP 4.7-1 PP 4.7-2	No mitigation is required	Less than significant
4.5 Land Use and Planning				
Impact 4.5-1				
Implementation of the proposed North District Development Plan would result in minor changes in on-campus land uses. These changes would not be substantially incompatible with existing or proposed adjacent land uses on and off campus.	Less than significant	PS Land Use 4 PS Land Use 7 PS Open Space 4 PS Campus & Community 1 PS Transportation 6 PS Development Strategy 1 PP 4.9-1(a) PP 4.9-1(b)	No additional mitigation is required	Less than significant

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
Impact 4.5-2				
Cumulative development, including the proposed 2005 LRDP Amendment 2, would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the development. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.	Less than significant	None identified	No mitigation is required	Less than significant
4.6 Noise				
Impact 4.6-1				
Operation of the proposed project would not expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinances, or cause a substantial permanent increase in noise levels in the project vicinity above levels existing without the project. This impact would be less than significant.	Less than significant	PP 4.10-5(b) PP 4.10-1(a) PP 4.10-6 PS Campus & Community 1	No mitigation is required	Less than significant
Impact 4.6-2				
Construction of the proposed project could result in substantial temporary or periodic increase in ambient noise levels at certain sensitive uses in the project vicinity.	Significant	PP 4.10-7(b) PP 4.10-7(c) PP 4.10-7(d) PP 4.10-8	**MM NOI-1:** Barriers such as plywood structures or flexible sound control curtains shall be erected between the proposed project and adjacent sensitive receptors minimize the amount of noise during construction. These temporary sound barriers shall be capable of achieving a sound attenuation of at least 5 dB(A) and block the line-of-sight between the project site and these adjacent land uses. Sound barriers between the project site and the UCR Child Development Center shall be capable of achieving a sound attenuation of at least 16 dB(A) and block the line-of-sight between the project site and the Child Development Center.	Less than significant

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
Impact 4.6-3				
Construction associated with the proposed project would expose persons on- or off-campus to excessive groundborne vibration levels. This impact would be significant.	Significant	PP 4.10-2 MM 4.10-2	**MM NOI-2:** Noise and groundborne vibration construction activities whose specific location on the site may be flexible (e.g., operation of compressors and generators, cement mixing, general truck idling) shall be conducted as far as possible from the nearest noise- and vibration-sensitive land uses, and natural and/or manmade barriers (e.g., intervening construction trailers) shall be used to screen propagation of noise from such activities towards these land uses to the maximum extent possible.	Significant and unavoidable
Impact 4.6-4				
Cumulative development would cause a significant cumulative impact related to substantial permanent increases in ambient noise levels. The contribution of the proposed projects and related projects to this cumulative impact would be cumulatively considerable.	Significant	None identified	No mitigation is feasible	Significant and unavoidable
4.7 Population and Housing				
Impact 4.7-1				
Implementation of the proposed North District Development Plan, including the Phase 1 project, would not induce substantial population growth in an area, either directly (for example by proposing new homes and businesses) or indirectly (for example through extension of roads or other infrastructure).	Less than significant	None identified	No mitigation is required	Less than significant
Impact 4.7-2				
Cumulative development, including the proposed project and related projects, would not substantially induce population either directly or indirectly. The contribution of the proposed project to this cumulative impact would not be cumulatively considerable.	Less than significant	None identified	No mitigation is required	Less than significant

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
4.8 Public Services				
Impact 4.8-1				
Implementation of the proposed NDD Plan would not result in significant environmental impacts associated with the provision of new or altered fire protection facilities to maintain applicable service levels.	Less than significant	PP 4.12-1(a) PP 4.12-1(b)	No mitigation is required	Less than significant
Impact 4.8-2				
Implementation of the proposed NDD Plan would not result in significant environmental impacts associated with the provision of new or altered police protection facilities to maintain applicable service levels.	Less than significant	PP 4.12-2(a) PP 4.12-2(b)	No mitigation is required	Less than significant
Impact 4.8-3				
Implementation of the proposed project would not result in a significant cumulative public service impacts.	Less than significant	None identified	No mitigation is required	Less than significant
4.9 Recreation				
Impact 4.9-1				
The project-related increase in on-campus population would not increase the use of existing recreational facilities on campus such that substantial physical deterioration of the facilities would occur or be accelerated.	Less than significant	None identified	No mitigation is required	Less than significant
Impact 4.9-2				
The project-related increase in on-campus population would not increase the use of existing off-campus neighborhood and regional parks or other recreational facilities such that substantial deterioration of the facilities would occur or be accelerated.	Less than significant	None identified	No mitigation is required	Less than significant
Impact 4.9-3				
Implementation of the NDD Plan includes recreational facilities that would not have adverse physical effects on the environment.	Less than significant	None identified	No mitigation is required	Less than significant

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
4.10 Transportation and Traffic				
Impact 4.10-1				
Implementation of the proposed NDD Plan would result in additional vehicular trips, which would increase traffic volume and degrade intersection levels of service.	Significant	MM 4.14-1(b) MM 4.14-1(c)	**MM TRA-1:** The Campus shall review operations at the intersection of Aberdeen Drive & Linden Street following the completion of Phase 1 of the NDD Plan; should the intersection have degraded from acceptable operations, implement improvements, including but not limited to, a signal with a pedestrian/bike only phase during future phase(s) to return the intersection operation to an acceptable level.	Significant and unavoidable

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
Impact 4.10-2				
Implementation of the proposed NDD Plan would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections.	Potentially significant	PP 4.14-2	**MM TRA-2:** The University shall require the Project Developer to prepare and implement a Construction Traffic Management Plan that will include, but will not necessarily be limited to, the following elements: • Identify proposed truck routes to be used. • Specify construction hours, including limits on the number of truck trips during the AM and PM peak traffic periods (7:00 – 9:00 AM and 4:00 – 6:00 PM), if conditions demonstrate the need. • Include a parking management plan for ensuring that construction worker parking results in minimal disruption to surrounding uses. • Include a public information and signage plan to inform student, faculty and staff of the planned construction activities, roadway changes/closures, and parking changes. • Store construction materials only in designated areas that minimize impacts to nearby roadways. • To minimize disruption of emergency vehicle access, affected jurisdictions (Campus Police, City Police, County Sheriff, and City Fire Department) will be consulted to identify detours for emergency vehicles, which will then be posted by the construction contractor. • Ensure that access to fire hydrants remains available at all times.	Less than significant

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
Impact 4.10-3				
Implementation of the proposed NDD Plan would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under 2025 conditions.	Significant	None identified	No mitigation is feasible	Significant and unavoidable
Impact 4.10-4				
Implementation of the proposed NDD Plan could result in hazards due to design features or land use incompatibilities.	Less than significant	PP 4.14-4	No mitigation is required	Less than significant
Impact 4.10-5				
Implementation of the proposed NDD Plan could result in inadequate emergency access.	Less than significant	None identified	No mitigation is required	Less than significant
Impact 4.10-6				
Implementation of the proposed NDD Plan could conflict with adopted policies, plans, or programs supporting alternative transportation.	Less than significant	None identified	No mitigation is required	Less than significant
4.11 Utilities				
Impact 4.11-1				
Development under the proposed NDD Plan would generate an additional demand for water. However, the proposed project includes relevant Programs and Practices that will be implemented as individual development projects are proposed on the campus and will ensure that new or expanded water supply entitlements will not be required.	Less than significant	PP 4.15-1(a) PP 4.15-1(b) PP 4.15-1(c) PP 4.15-1(d)		Less than significant

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
Impact 4.11-2				
Development under the proposed NDD Plan would generate additional wastewater on the campus which could require the construction of new or expanded wastewater treatment facilities.	Potentially significant	PP 4.15-5	**MM UTL-1:** The on-site wastewater system should be designed to limit flows to the Linden Street sewer. Conveyance of dry-weather flow from the project site should be limited to 333 to 400 gpm. **MM UTL-2:** Following the completion of Phase 1 of the NDD Plan, the Campus shall perform new sewer monitoring to determine the existing flows. The Canyon Crest sewer shall be paralleled or upsized to meet the wastewater utilities demands generated by the proposed NDD Plan at Buildout. The upgrades would consider wet weather flows, peaks that may not coincide with existing flows, and flow attenuation.	Less than significant
Impact 4.11-3				
Development under the proposed NDD Plan would generate solid waste, but not enough to require the expansion of the permitted capacity of a regional landfill.	Less than significant	None identified	No mitigation is required	Less than significant
Impact 4.11-4				
Implementation of the proposed NDD Plan could increase the demand for electricity, but would not require or result in the construction of significant new distribution facilities, the construction of which could cause significant environmental impacts.	Less than significant	None identified	No mitigation is required	Less than significant
Impact 4.11-5				
Implementation of the proposed 2005 LRDP Amendment 2 could increase the demand for natural gas, but would not require or result in the construction of new gas production or transmission facilities, the construction of which could cause significant environmental impacts.	Less than significant	None identified	No mitigation is required	Less than significant
Impact 4.11-6				
Implementation of the proposed NDD Plan would not result in the wasteful, inefficient, or unnecessary use of energy by UCR.	Less than significant	None identified	No mitigation is required	Less than significant

Environmental Topic and Impact	Level of Significance before Mitigation	2005 LRDP PPs, PSs, and Mitigation Measures	Project Specific Mitigation Measures	Level of Significance after Mitigation
Impact 4.11-7				
Cumulative development, including the proposed project and related projects, would not necessitate the expansion of current utility facilities or the development of new water, wastewater, stormwater, solid waste, or energy facilities. The contribution of the proposed project to this cumulative impact would not be cumulatively considerable.	Less than significant	None identified	No mitigation is required	Less than significant

Table 2.0-4
Summary Comparison of Project Alternatives

Impact	Proposed Project Impact (Significant)	No Project Alternative	West Campus Alternative[1]	Reduced Project Alternative
Air Quality 4.2-2	Construction and operation of the proposed project would result in emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation.	Impact Less than Proposed Project	Impact Equal to Proposed Project	Impact Slightly Less than Proposed Project
Air Quality 4.2-4	Implementation of the proposed project would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard.	Impact Less than Proposed Project	Impact Equal to Proposed Project	Impact Equal to Proposed Project
Noise 4.6-3	Construction associated with the proposed project would expose persons on- or off-campus to excessive groundborne vibration levels. This impact would be significant.	Impact Less than Proposed Project	Impact Less than Proposed Project	Impact Equal to Proposed Project
Noise 4.6-4	Cumulative development would cause a significant cumulative impact related to substantial permanent increases in ambient noise levels. The contribution of the proposed projects and related projects to this cumulative impact would be cumulatively considerable.	Impact Less than Proposed Project	Impact Equal to Proposed Project	Impact Slightly Less than Proposed Project
Transportation and Traffic 4.10-1	Implementation of the proposed NDD Plan would result in additional vehicular trips, which would increase traffic volume and degrade intersection levels of service.	Impact Less than Proposed Project	Impact Equal to Proposed Project	Impact Slightly Less than Proposed Project
Transportation and Traffic 4.10-3	Implementation of the proposed NDD Plan would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under 2025 conditions.	Impact Less than Proposed Project	Impact Equal to Proposed Project	Impact Slightly Less than Proposed Project

Note:

1 *Alternative 2, the West Campus Alternative, would have significant and unavoidable impacts to agricultural resources that would be greater than that of the NDD Plan or Alternative 3.*

3.0 PROJECT DESCRIPTION

3.1 INTRODUCTION

This chapter presents the details of the proposed North District Development Plan (NDD Plan) put forth by the University of California, Riverside (UCR) to provide up to 5,200 student beds on the East Campus on an approximately 51-acre site located in the northeastern portion of the campus. The NDD Plan comprises Phase 1, which involves the construction of about 1,500 student beds and associated facilities by 2021 and a future phase(s), which involves the construction of up to 3,700 student beds and associated facilities after 2022, as feasible and needed.

The project site is developed with Canyon Crest Family Student Housing that was occupied by student families until summer 2017 and is currently vacant. The site is designated for *Family, Apartment Housing and Related Support*, *Residence Hall and Related Support*, *Athletics and Recreation,* and *Parking* in the 2005 LRDP. Furthermore, as a student housing project, the proposed project would support current and LRDP-projected enrollment on the campus. However, development and occupancy of the entire NDD Plan is expected to occur beyond the planning horizon used in the 2005 LRDP and analyzed in the 2005 LRDP EIR. Therefore, the University has determined that it will not tier the environmental review of this project from the 2005 LRDP EIR and the 2011 LRDP Amendment 2 EIR, but will instead prepare a stand-alone EIR that evaluates and disclose the potential environmental impacts of the proposed NDD Plan.

Although the NDD Plan CEQA analysis is not tiered from the 2005 LRDP EIR, as amended, UC Riverside has determined that the 2005 LRDP Planning Strategies (PS), Planning Principles (PP) and Mitigation Measures (MM) that have been incorporated into projects proposed under the 2005 LRDP are important to the Campus and so they will also be incorporated into all development under the NDD Plan.[1] The analysis in this Draft EIR references applicable Planning Strategies, Planning Principles, and Mitigation Measures as relevant.

3.2 PROJECT LOCATION AND SURROUNDING USES

The UCR campus is located in the City of Riverside, 1.5 miles east of downtown Riverside and just west of the Box Springs Mountains. The City of Riverside is located within the County of Riverside, in a larger geographic area known as the Inland Empire, which is comprised of western Riverside and San Bernardino counties. **Figure 3.0-1, Regional Context,** shows the location of the campus in a regional

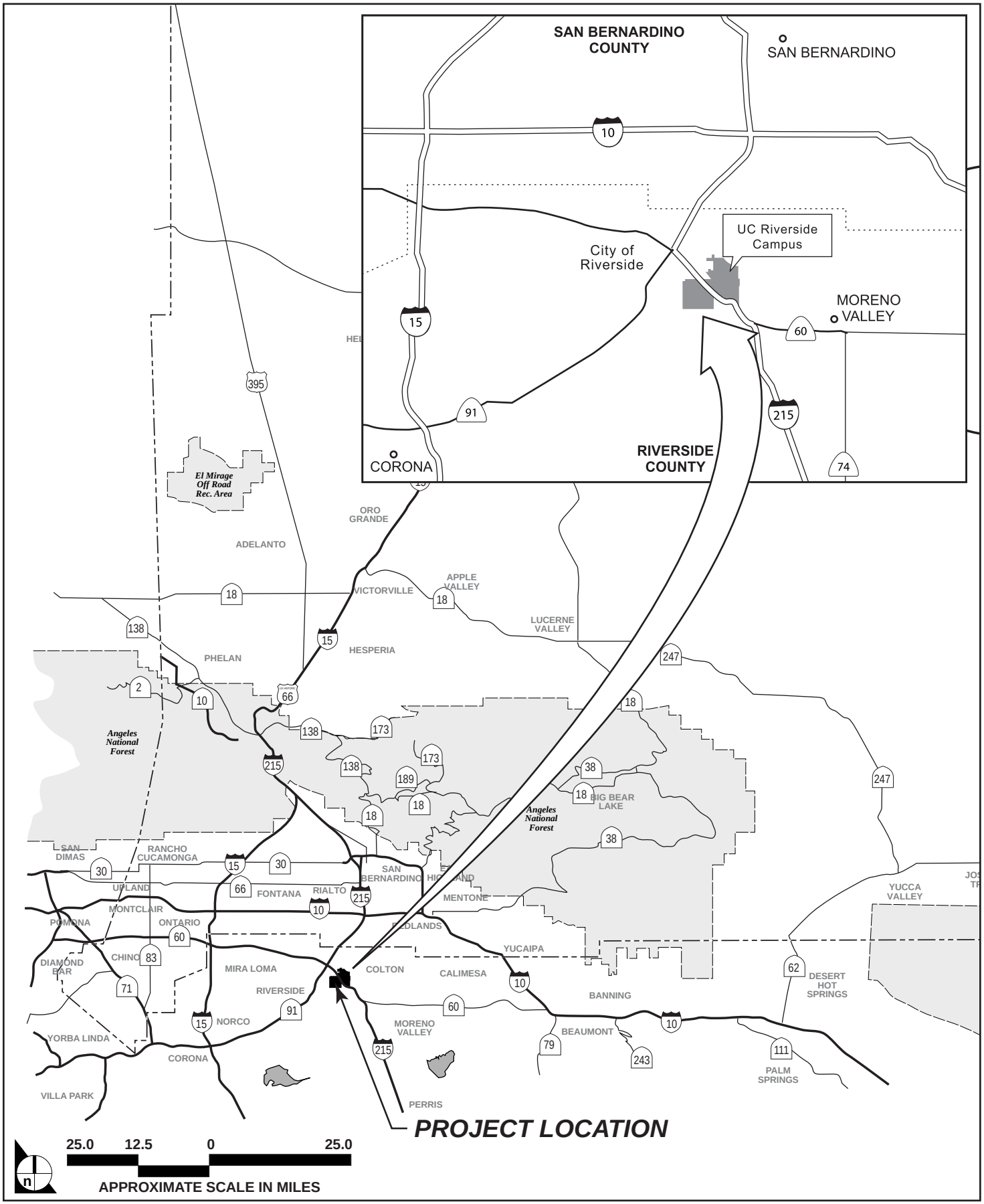
1 A listing of the 2005 LRDP and Planning Strategies (PS) and Planning Principles (PP) and Mitigation Measures (MM) and a table indicating their relevance to the proposed project are included in Appendix 1.0 to this Revised Draft EIR.

context. The campus is generally bounded by University Avenue and Blaine Street to the north, Watkins Drive and Valencia Hill Drive and its extension to the east, a line extending east from Le Conte Drive to the south, and Chicago Avenue to the west. The campus is bisected diagonally by the I-215/SR-60 freeway. **Figure 3.0-2, Local Setting,** shows the local setting of the campus.

The campus consists of approximately 1,145 acres, with approximately 615 acres east of the freeway (East Campus) serving as the undergraduate academic core and the location for the majority of existing academic, housing, and support facilities. The portion of the campus west of the freeway (West Campus), comprising approximately 530 acres, is primarily occupied by agricultural teaching and research fields, a solar farm, the University Extension, a third-party UCR student housing complex, and surface parking lots (Parking Lot 30, 50 and 51).

The proposed NDD Plan area is an approximately 51-acre site located in the northeastern portion of East Campus (**Figure 3.0-3, Project Location**). The Plan area consists of the existing vacant Canyon Crest Family Student Housing complex, which includes single-family dwellings, most of which are vacant although some are now used as storage and maintenance facilities, including permanent structures and modular units in the northwestern portion of the site. A park with a playground is located in the western portion of the Plan area, south of Cherry Street. There are nine asphalt-paved residential streets within the Plan area in addition to several gravel roads. The project site is bounded by Blaine Street and a small shopping plaza to the north, Canyon Crest Drive and the Falkirk Apartments to the west, Linden Street including the Police Facility, the UCR track facility, the Student Recreation Center, and the Aberdeen-Inverness (A-I) Residence Halls to the south, and the UC Riverside Child Development Centers, and the Campus Corporation Yard to the east.

Land uses surrounding the campus are primarily residential with some commercial uses along the major streets. Watkins Drive forms the northeastern edge of the East Campus and is separated from mostly one-story single-family residential uses (to the northeast) by an active railroad line, a high pressure jet fuel line (which turns south along Valencia Hill Drive), and a California Department of Water Resources pipeline and easement. Valencia Hill Drive fronts the eastern edge of the campus (north of Big Springs Road), with one-story single-family residential uses along the northern section of the road and two-story multi-family apartments along the southern section. Land uses north of Blaine Street west of the project site consist of multi-family residential and commercial uses.



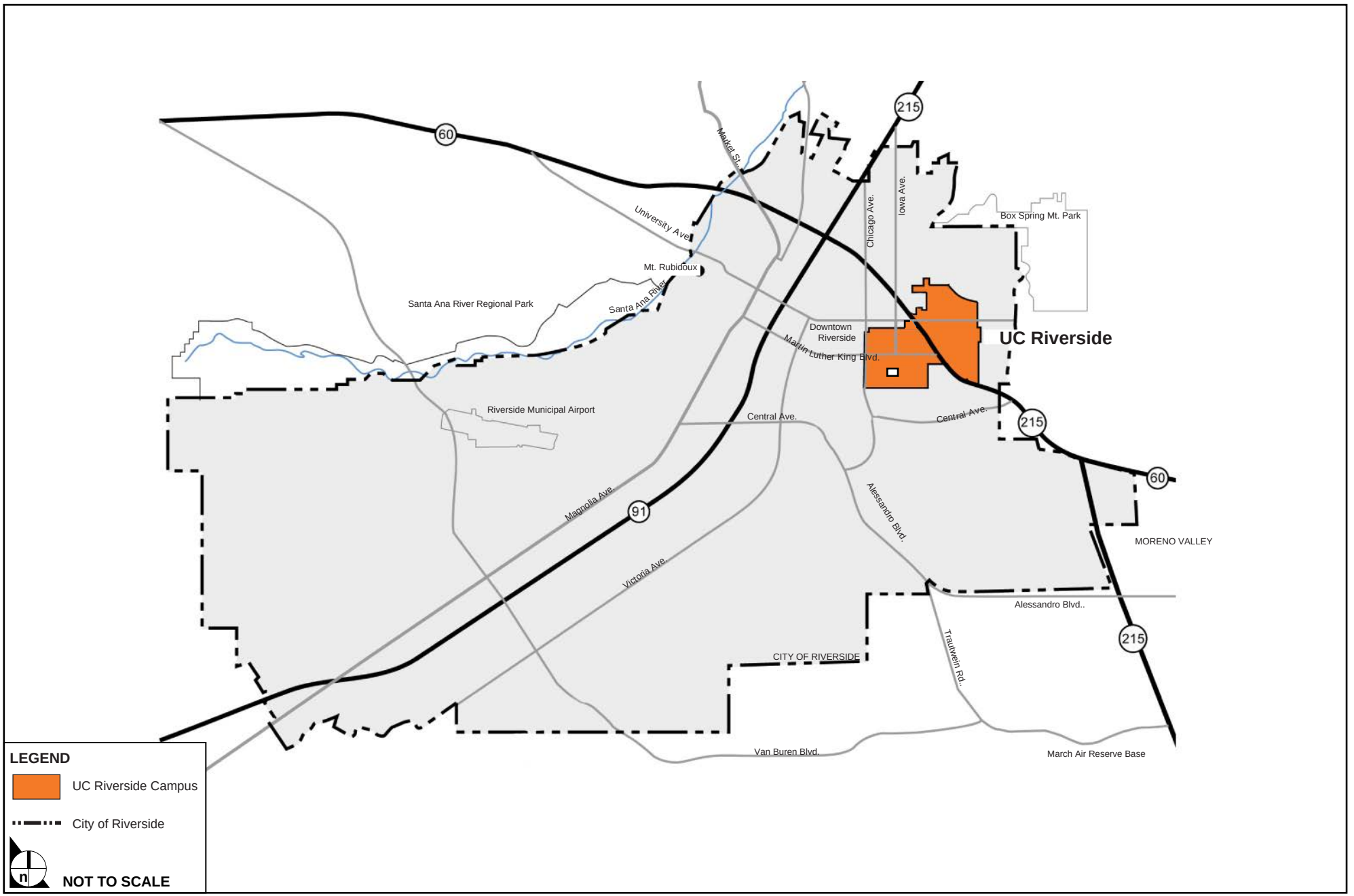
SOURCE: Impact Sciences, Inc. – May 2011

FIGURE **3.0-1**

Regional Context

IMPACT SCIENCES

1031-004•11/18



SOURCE: UCR LRDP 2005

FIGURE **3.0-2**

Local Setting

IMPACT SCIENCES

1031-004•11/18

SOURCE: Google Maps, 2018

FIGURE **3.0-3**

Project Location

IMPACT SCIENCES

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3.3 PROJECT NEED AND OBJECTIVES

3.3.1 Background

Established Student Housing Goals

The UCR 2005 Long Range Development Plan (LRDP) establishes a target to house up to 50 percent of enrolled students on-campus and to guarantee on-campus housing to all freshman and transfer students. This goal was established to enhance the student experience by integrating the principles of residential and academic life. The LRDP housing target also promotes environmental and sustainability goals by reducing vehicular trips to and from campus.

3.3.2 Project Need

Demand for On-Campus Housing and Housing Guarantees

Affordable on-campus housing is a major driver in recruitment and retention of students. The demand for on-campus student housing is driven by the benefits of living near campus amenities, including: academic resources, student services, student organizations, research facilities, clinical services, and recreation. Interest in on-campus apartment housing is very strong as shown by the wait list of over 2,200 students for the fall 2017 term.

The current and growing demand for on-campus student housing has several driving factors. Although UCR has developed and acquired new student apartment housing, the campus continues to experience strong housing demand and a current shortage of housing for non-freshman undergraduates and transfer students. With continued campus growth and current enrollment projections for fall 2021, the campus anticipates this need growing to over 2,600 student apartment beds. UCR is proposing to build a new student housing development to address a significant portion of this current and projected student housing demand. In addition, freshman enrollment is projected to continue to increase from fall 2017 through fall 2021. During this same period, the campus is aiming to increase the number of freshmen housed on campus from 72 percent to 78 percent. **Table 3.0-1** below illustrates the current campus housing inventory, plus the additional residence hall and apartment style beds that are planned to be delivered in fall of 2020 and 2021.

Table 3.0-1
UC Riverside Housing Inventory from Fall 2017 to Fall 2021

UCR Housing Inventory	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021
Residence Halls					
Beds by Designed Occupancy	2,943	2,943	2,943	2,943	2,943
Dundee Residence Hall	0	0	0	820	820
Added Beds[a]	477	512	512	246	427
Total	**3,420**	**3,455**	**3,455**	**4,009**	**4,190**
Apartments					
Beds by Designed Occupancy	3,010	3,010	3,010	3,010	3,010
North District Phase I	0	0	0	0	1,500
Total	**3,010**	**3,010**	**3,010**	**3,010**	**4,510**
All UCR On-Campus Housing Beds					
Total	**6,430**	**6,465**	**6,465**	**7,019**	**8,700**

[a] *Converting 2 to 3 Occupants/Room*
Source: University of California, Riverside, September 2018

UCR currently houses approximately 15 percent of new transfer students and approximately 21 percent of non-freshman undergraduates in on-campus apartment housing. Although UCR has increased its apartment housing stock in recent years, there remains unmet demand due to continued enrollment growth. Over the past decade, the total campus student population has grown more than 35 percent, from 17,187 to 23,278 total students (between fall 2007 and fall 2017). During this period, 1,300 apartment-style beds were added in the two phases of Glen Mor, and approximately 860 apartment-style beds were added with the acquisitions of Oban Apartments and Falkirk Apartments. However, these housing developments only partially addressed UCR's on-campus student apartment demands, as evidenced by the current shortfall of such housing (see **Table 3.0-2**).

Table 3.0-2
Fall 2017 UC Riverside Student Apartment Housing Shortfall

Fall 2017		
Bed Capacity	**Beds Needed[a]**	**Bed Shortfall**
3,010	5,252	2,242

[a] *"Beds Needed" represents wait list of 2,242 plus existing number of students housed (3,010)*
Source: University of California, Riverside, September 2018

Demand for on-campus student apartment housing is expected to grow beyond the current shortfall with increased enrollment and an anticipated increase in the transfer student population.

Off-campus Market

Riverside students have historically had access to affordable, off-campus housing options. However, the Riverside housing market has changed, as evidenced by very low vacancy rates and rising rental prices. Adjacent to the UCR campus there are a number of purpose-built, privately-owned student apartment projects, which were surveyed to test the rental rate assumptions of the North District Phase I project. When comparing on-campus bed rents to privately-owned student apartments, on-campus apartments were found to be 12 percent more affordable on an annual basis.[2]

Previous Steps to Address Housing Demand

The campus has taken several long- and short-term steps to address student housing demand. Over the last decade, the Riverside campus added 1,300 new apartment style beds (Glen Mor 1 and Glen Mor 2) to the on-campus housing supply.

From 2008 to 2015, the campus used between 200 and 300 doubles as triples annually to meet first-year student demand. In fall 2016, the campus converted all 489 suitable double occupancy rooms into triples. Also in fall 2016, the campus utilized 326 campus apartment beds as first-year student residence hall beds. While by taking these steps, the campus was able to house all first-year students who registered for campus housing before the housing guarantee deadline, it should be noted that the conversion of double occupancy rooms to triples is widely considered as a less-than ideal housing solution. Further, the campus had to place an additional 394 first-year students who registered after the deadline on a wait list.

Accelerated Enrollment Targets

At the November 2015 meeting, the Regents approved a budget plan that included a system-wide enrollment increase of 10,000 California resident undergraduate students over the next three years. As a result of this plan, the Riverside campus enrolled 1,329 more first-year students for the academic year 2016-17. These first-year students were given a housing guarantee in fall 2016, which had an immediate impact on campus housing inventory available for non-first-year students.

2 *UC Riverside, Table 3, Discussion Item for The Regent's Meeting of September 26, 2018.*

Ongoing Facility Renewal for On-Campus Housing

Two older residence halls on campus, Aberdeen-Inverness (opened in 1959) and Lothian (west wing opened in 1963 and east wing opened in 1990) require systems and seismic upgrades. Recent capital renewals in Lothian have included replacement of the cooling tower, seismic upgrades, interior refurbishments, bathroom upgrades, and room furniture replacements. The cooling tower at Aberdeen-Inverness needs to be replaced and both buildings need overhauls of their heating and boiler systems. The campus is currently programming these renewals in the housing reserves budgeting process.

The Lothian Dining facility was completely remodeled in 2005-06 and minor alterations are currently underway to increase dining capacity. The Aberdeen-Inverness Dining facility needs to be replaced, as a modern dining program will not fit within the current building envelope. With the current exploration of a Public-Private-Partnership (P3) delivery method to increase the number of student housing beds, early planning efforts are taking place for the concurrent delivery of a new dining facility.

In addition, Canyon Crest Family Housing in the North District is obsolete military housing consisting of 266 units of low-density, single-story housing spread over approximately 51 acres. The campus closed these units in summer 2017. The 2016 Physical Master Plan Study identified this site as one that provides an opportunity to enhance Riverside's campus community by creation of new, higher-density student housing facilities that will accommodate the future growth of the campus. As a result of the closure of Canyon Crest Family Housing, the campus will re-program the adjacent Oban campus apartments into a family housing complex, losing 320 beds available to single non-first-year students.

3.3.3 Project Objectives

The objectives of the NDD Plan are to:

- Support the Campus goal to house up to 50 percent of enrolled students on-campus and to guarantee on-campus housing to all freshman and transfer students;
- Enhance the student experience by integrating the principles of residential and academic life;
- Promote environmental and sustainability goals by reducing vehicular trips to and from the campus;
- Provide affordable on-campus student housing;
- Develop and operate, through phased development, approximately 4,000 to 5,200 beds of student housing for first year, second year, transfer, upper division undergraduate students and graduate students, along with adequate support spaces, multi-functional spaces, amenities and associated infrastructure while maximizing the building height and density of the entire project site;
- Provide an approximately 600-seat dining facility by delivery of a Future Phase of the project;

- Complete and open the student housing component of the first phase of approximately 1,500 beds by 2021;
- Complete and open the Athletics Event Center as soon as feasible;
- Establish a new iconic gateway to the Campus on the northwest corner of the project site;
- Provide adequate parking to support all phases of development through delivery of the Future Phase(s).

3.4 PROJECT DESCRIPTION

Proposed Land Use Map Changes

The proposed NDD Plan involves changes in the 2005 LRDP Land Use Designations of the approximately 51-acre project site located at the in the northeastern portion of East Campus. The site is currently designated for *Family, Apartment Housing and Related Support*, *Residence Hall and Related Support*, *Athletics and Recreation*, and *Parking* in the 2005 LRDP. The changes contemplated under the NDD Plan would not make substantial changes in the amount of area currently designated to each land use, but would rather readjust the land use areas within the project site to allow more efficient use of the site for the uses contemplated in the NDD Plan.

Land Use Plan: Figure 3.0-4, Proposed Land Use Designations presents the land use designations that are included in the NDD Plan. **Table 3.0-3** below presents the acres assigned to each land use designation/district and the types and intensity of land uses planned for each land use district.

Table 3.0-3
North District Development Plan
Proposed Land Use Designations and Districts

Land Use	Acres	Bed/Spaces/Seats/Mixed Use
Student Residential and Mixed Uses District 1	4.25	700-1,000 Beds 10,000-15,000 sf Mixed Use
Student Residential and Mixed Uses District 2	6.15	800-1300 Beds 13,000-22,000 sf Mixed Use 600 Seat Dining Facility
Student Residential and Mixed Uses District 3	5.45	700-1,400 Beds 30,000-50,000 sf Mixed Use
Student Residential and Mixed Uses District 4	8.40	1,400-2,600 Beds 50,000-70,000 sf Mixed Use
Student Residential and Mixed Uses District 5	3.40	700-1,000 Beds
Athletics Event Center	5.70	3,000-5,000 Seats
Parking 1	2.15	Less than or equal to 1,200 Spaces
Parking 2	4.05	Less than or equal to 1,200 Spaces

Land Use	Acres	Bed/Spaces/Seats/Mixed Use
Open Space	11.60	--
Total Acres	***51.15***	

Source: University of California, Riverside, February 2019

The NDD Plan provides for the phased development of apartments, mixed-use residential, resident life amenity spaces, living and learning spaces, resident life support spaces, dining facilities, athletics facilities, and parking areas (**Figure 3.0-5, North District Development Plan (Conceptual)**). **Table 3.0-4** below sets forth the number of student beds and other amenities that would be developed in Phase 1 of the Plan and the additional beds and facilities that would be built in the future phase(s).

The NDD Plan sets forth details regarding the facilities that would be built in Phase 1 and includes a land use diagram to guide the development of the future phase(s). The Plan, however, establishes building heights, noting that heights would range from 5- to 6-stories for the apartment buildings, 5- to 6-stories for residence halls, 1- to 2-stories for mixed use buildings, a 2-story dining facility, and parking structures would be 7-levels.

SOURCE: Solomon Cordwell Buenz, 2018

FIGURE **3.0-4**

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Proposed Land Use Designations

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NOT ACCORDING TO SCALE

SOURCE: Solomon Cordwell Buenz, 2018

FIGURE **3.0-5**

North District Development Plan (Conceptual)

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Table 3.0-4
North District Development Plan
Phased Development Program

Unit Mix	Phase 1	Future Phase(s)	NDD Plan Total
Apartments	1,500 beds	2,500 beds	4,000 beds
	390,000 sq. ft.	1,000,000 sq. ft.	1,390,000 sq. ft.
Residence Halls	--	1,200 beds	1,200 beds
		245,000 sq. ft.	245,000 sq. ft.
Residential Floor Amenity / Support Spaces	5,600 sq. ft.	TBD	TBD
Circulation, Mechanical, & Structure	116,000 sq. ft.	TBD	TBD
Living, Learning, Community & Administration	15,800 sq. ft.	TBD	TBD
Seminar Rooms	1,700 sq. ft.		
Food lab	2,900 sq. ft.		
Support & Maintenance	13,000 sq. ft.	TBD	TBD
Dining Facilities	--	33,400 sq. ft.	33,400 sq. ft.
Field House	--	22,000 sq. ft.	22,000 sq. ft.
Competition Field	--	5,000 seats	5,000 seats
Surface Parking	695 spaces	--	--
Structured Garage Parking	--	2,100 spaces	2,100 spaces

Note: all numbers are approximate and subject to minor modifications
Source: University of California, Riverside, February 2019

The NDD Plan provides for the construction of an athletic facility, dedicating approximately 5.7 acres for the construction and operation of an Athletics Event Center with a capacity of between 3,000 and 5,000 seats. The Athletics Event Center is anticipated to include a competition field, and an approximately 22,000 square foot Field House in addition to the stadium seating.

Open Space and Landscaping: The NDD Plan proposes a large open space area in the eastern portion of the Plan area. The site material palette for the NDD Plan would include hardscape and softscape materials that are derived from the existing campus aesthetic. Key intersections and open spaces, such as the primary plaza, main building entries, and courtyard patios, would include specialty paving that highlights the importance of those spaces. Planting materials would include native and adaptive species that are drought tolerant, reflect the native landscape of the region, and highlight UC Riverside's commitment to sustainability and water use reduction. Incorporation of trees throughout the site would provide shade and respite from the heat while creating pleasant places to rest and relax throughout the Plan area.

During construction, tree protection zones would be placed at or beyond the dripline of trees wherever possible. Protection fencing would include 6-foot high chain-link fence. Per the tree survey and arborist evaluation, one tier of trees would be considered for preservation.[3] Of the 681 trees in the site inventory, 46 shrubs, 132 invasive specimens (for example pepper trees) and six short-lived specimens would be removed. Of the remaining 497 trees, 110 trees are first tier. All second and third tier trees would be removed in Phase 1. The arrangement of buildings on the site of the future phase(s) would be positioned to retain clusters of healthy, existing trees. This approach would give the site development an immediate sense of scale and would provide shade for residents and visitors. The goal would be to add replacement trees at a rate of approximately four-to-one, which would help to strengthen the landscape design, highlight pedestrian corridors and provide future shade and comfort throughout the open spaces.

General Access and Circulation: Vehicular access would be provided from Linden Street, Blaine Street, and Watkins Drive.

As depicted in **Figure 3.0-5**, multi-modal routes would be provided to encourage walking and riding to and from the campus with the intent of creating a pedestrian friendly experience for students, staff, and visitors to the North District. Additional pedestrian walks, plazas, and bicycle routes would be developed under the NDD Plan. Bike lanes shall be included on all major streets. Bike parking would be provided throughout the NDD Plan area. Secure bike parking would be included in outdoor, secure parking facilities. These would be provided at a rate of one stall per ten residents.

Temporary and visitor automobile parking would be provided for all residential buildings, the NCAA field, and the dining facility at a rate of 2.5 percent of the maximum occupancy, with a minimum of four spaces per building; the parking will be clustered in two surface lots for phase one, converting to structured parking in future phases.

Service Access: The Plan's network of pedestrian walks would be sized and designed to allow for service access along the main multi-modal pathways throughout the site. Convenient pick-up locations for each housing area along the service routes would facilitate trash and recycling storage at residential buildings. The new dining facility would include loading and service area for food delivery and substantial trash and recycling collection.

Emergency Access: The NDD Plan would be designed to allow for direct emergency access to all buildings. Access would be provided on the surrounding streets as well as on the multi-modal malls

3 *The full North District Tree Evaluation, completed by Psomas in March 2017, is included as Appendix B to this Initial Study. According to the Evaluation, first tier trees consists of the following criteria: High health rating (4 min.), high aesthetic rating (4 min.), California natives, significant height, significant canopy, significant trunk. The second tier trees are selected for: Moderate-high health rating (3 min.), moderate-high aesthetic rating (3 min.), significant height, significant canopy, significant trunk. The third tier trees include: Low-moderate health rating (less than 3), low-moderate aesthetic rating (less than 3), California invasive tree species, trees that are short lived and/or brittle, trees that are dead or dying.*

throughout the development site. The design of these paths would meet the requirements for emergency vehicles, including the capacity to support the imposed load of fire apparatus weighing at least 75,000 pounds (per CFC Appendix D-D102.1) and access to building facades. Pedestrian egress routes have also been established to provide safe and direct routes for evacuation of the site during emergencies.

Utilities:

Water: Riverside Public Utilities (RPU) currently provides water to the Campus. Combined 10-inch fire and water lines would be installed throughout the NDD Plan area to serve future buildings. Tie-in points to the existing public 14-inch public water line would be installed at the intersections of Linden Street and the recreational mall and Linden Street and Aberdeen Drive.

Wastewater: Sanitary sewer lines would be installed to serve the proposed buildings. Three tie-in points would be installed at Linden Street and Aberdeen Drive, Linden Street nearby the recreational mall, and at Canyon Crest Drive. Development under final buildout of the NDD Plan would upsize 800 feet of the existing City sewer line located within Canyon Crest Drive, north of Linden Street, from 8 inches to 15 inches.

Stormwater: The NDD Plan area would be separated into multiple drainage areas. Stormwater flow would be directed towards proposed detention and treatment areas within each drainage area.

Electricity and Natural Gas: The RPU currently provides electricity to the campus. Natural gas is provided to the campus by the Southern California Gas Company (SCGC). In keeping with University of California Policy on Sustainable Practices, the NDD Plan would be an all-electric project. The Campus plans to size the new utility infrastructure to accommodate the future development in the NDD Plan area.

Sustainable Design Features: The approach to sustainable project master planning would be as follows:

Physical and Environmental Design

- The NDD Plan will minimize site disturbance by locating the development on land that is previously developed (the site currently contains the vacated Canyon Crest Family Student Housing complex) and by preserving as many Tier 1 trees as possible, focusing on larger clusters of those trees. New trees that are adaptive to the local environment would be added at a rate of approximately 4:1.

- The NDD Plan attempts to replicate natural site hydrology processes, to manage 85th percentile rainfall event rainwater runoff onsite using low-impact development strategies.

- Using a combination of existing and new shading trees, planting areas, and high albedo paving and roofing materials, the NDD Plan reduces the urban heat island effect resulting from roof and paved non-roof site surfaces.

- To increase night sky access, improve nighttime visibility, and reduce the consequences of development for the campus wildlife and off-campus neighbors, the NDD Plan will be designed to

minimize light pollution by limiting uplight and light trespass beyond the Plan area, using the International Dark Sky Association's (IES/IDA) Model Lighting Ordinance light fixture selection criteria.

- To manage solid waste, the project will provide convenient locations for the collection of waste, recycling, and composting throughout the development and will recycle, reuse, or salvage at least 50 percent of nonhazardous demolition and construction debris.

Organization/Building Form and Orientation

- Each building will be configured for the best use of space and solar orientation possible within the overall masterplan concept. Design features would incorporate passive solar design to minimize heat gain and glare on windows where feasible. Some windows would be shaded by an external overhang at the top floor or by vertical fins.

- The NDD Plan will promote livability, walkability, and transportation efficiency, by being a compact development.

Landscape and Irrigation Systems/Materials

- Outside of the athletics event center, outdoor water use would be reduced by prioritizing the planting of native/adaptive and drought tolerant plant species, with sub-surface irrigation to reduce maintenance, runoff, and fertilizer and pesticide applications. Outdoor water use will comply with the state of California Model Water Efficient Landscape Ordinance. The Ordinance seeks to increase water efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater reuse (optional), onsite storm water capture (optional), and by limiting the portion of landscapes that can be covered in turf.

- The proposed design of the NDD Plan would provide tree-lined pedestrian avenues and shaded sidewalks to encourage walking, skating, and bicycling. These strategies also help reduce urban heat island effects, improve air quality, increase evapotranspiration, and reduce cooling loads in buildings.

Mobility Systems

- North District is located on an existing bicycle network, with existing bike paths and lanes on Watkins Drive, Blaine Street, and Canyon Crest Drive. The Plan will provide long-term bicycle storage for at least 10 percent of the number of beds. The Plan will also provide short-term bicycle storage for at least 2.5 percent of all peak visitors to the North District.

- North District is also located on an existing quality public transit network that serves to reduce the number of vehicle miles travelled significantly for the future residents of the development.

- The NDD Plan will provide safe, appealing, and comfortable street environments (walkable streets) that encourage the existing patterns of walking, biking, and skateboarding on campus to continue onto the North District.

Phase 1

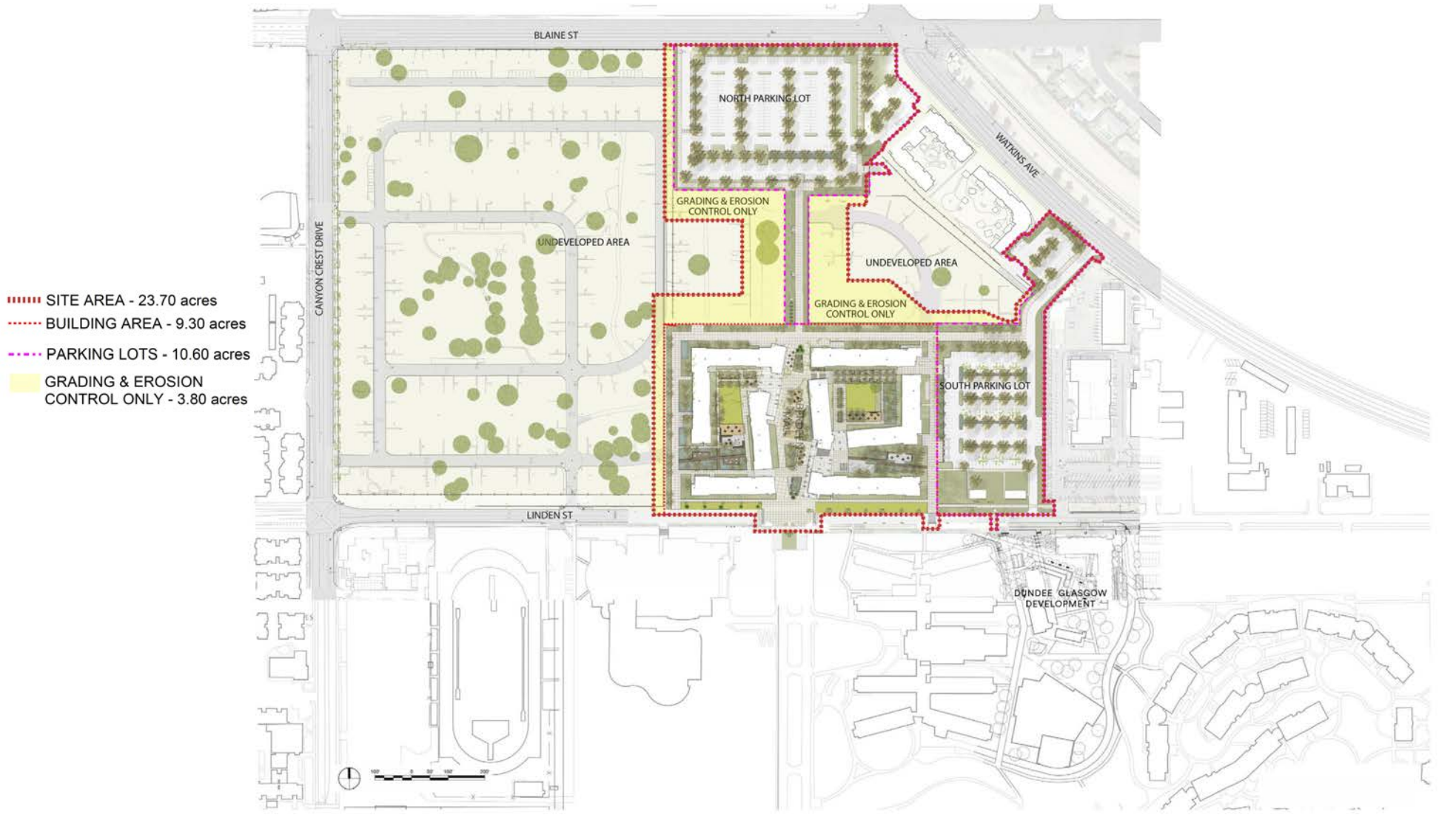
Phase 1 would be the first development completed within the NDD Plan. As described in **Table 3.0-5**, Phase 1 proposes to construct on-campus student apartments, living and learning spaces, resident life amenity spaces, two surface parking lots, and reconfigure two small adjacent parking lots that serve the existing UC Riverside Child Development Centers (**Figure 3.0-6, North District Development Plan - Phase 1 Site Plan**).

Table 3.0-5
Phase 1 Building Program

Program Element	No. of Units	No. of Beds	Average Sq Ft /Unit	Building Space (gross square feet)
4 Bedroom / 2 Bathroom Apartment	222	888	1,046	232,210
2 Bedroom / 2 Bathroom Apartment (Double)	131	524	920	120,910
2 Bedroom / 1 Bathroom Apartment	25	50	670	16,775
1 bedroom / 1 Bathroom Apartment	8	8	510	4,090
Single Occupied Unit (RA Unit)	26	26	510	13,290
2 Bedroom / 2 Bathroom Apartment (RD)	2	4	925	1,850
1 Bedroom / 1 Bathroom Apartment (ARD)	2	2	510	1,025
Total Program	**416**	**1,502**		**390,150**
Residential Floor Amenity / Support Spaces				5,600
Circulation, Mechanical, & Structure				116,000
Living, Learning, Community & Administration				15,800
Seminar Rooms				1,700
Food Lab				2,900
Support & Maintenance				13,000
Surface Parking				+/- 695 spaces
			Total Square Footage	***545,150***

Note: all numbers are approximate and subject to minor modifications
Source: University of California, Riverside, February 2019

Student Apartment Buildings: Student apartments would be located in two buildings, Buildings A and B. Building A would be 5 to 6 stories in height and Building B would be 4 to 5 stories high. Each one of buildings would have a general public entrance as well as separate resident entrances.



SOURCE: Soloman Cordwell Buenz, 2017

FIGURE **3.0-6**

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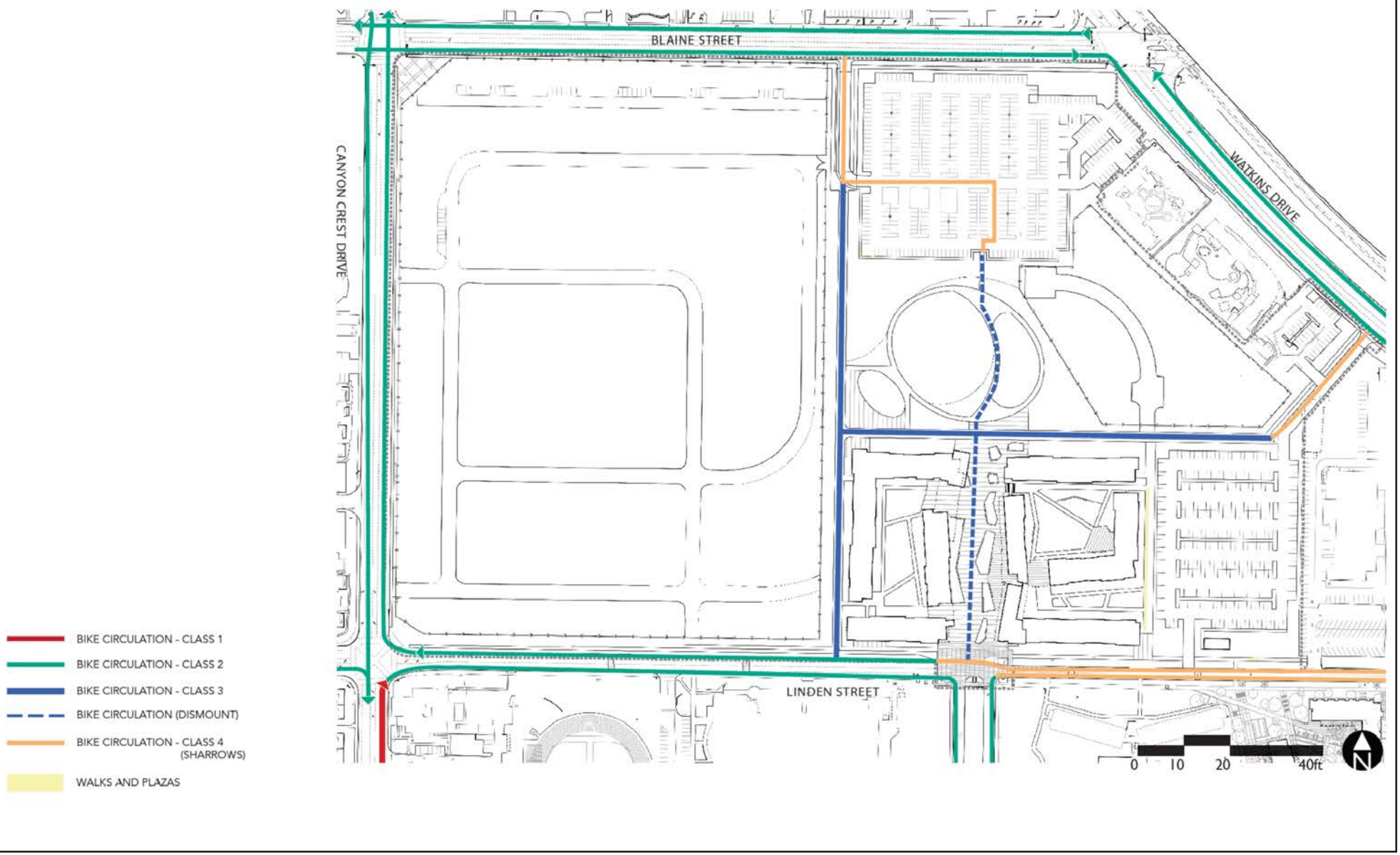
North District Development Plan - Phase I Site Plan



SOURCE: Solomon Cordwell Buenz, 2018

FIGURE **3.0-7**

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North District Development Plan - Phase 1 - Multi-Modal Routes

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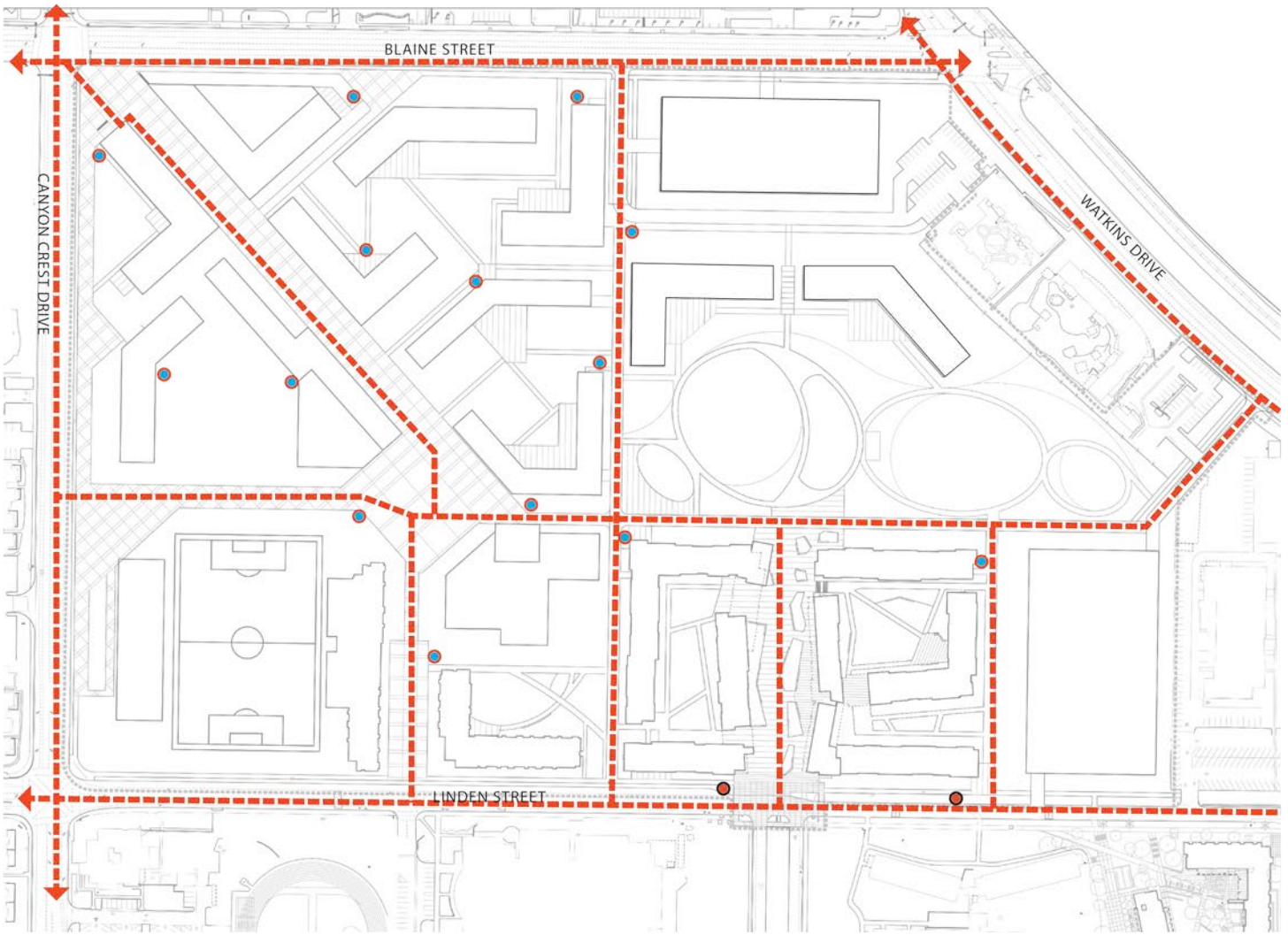

SOURCE: Solomon Cordwell Buenz, 2018

FIGURE **3.0-8**

Service and Emergency Access

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Landscaping: New tree plantings are proposed throughout the Phase 1 site to highlight main walkways and provide canopy in courtyard spaces. About 22 existing trees would remain on the proposed Phase 1 project site (1st tier trees and palm trees) and up to 277 new trees would be planted. All tier two and tier three trees would be removed to eliminate those that are unhealthy and are invasive. Landscaping would consist of climate adaptive planting.

Parking: Phase 1 of the proposed project would include four surface parking lots for students, faculty, visitors, and the UC Riverside Child Development Center (see **Table 3.0-6**).

Table 3.0-6
Proposed Surface Parking

Parking Location	Number of Spaces
Northern Lot	390
Southeastern Lot	225
North Childcare Lot	50
South Childcare Lot	30
Total	***695***

Note: all numbers are approximate and subject to minor variations
Source: University of California, Riverside, February 2019

General Access and Circulation: Vehicular access to Phase 1 of the project site would be from the south along Linden Street, from the north along Blaine Street, or from the East via Watkins Drive.

As shown in **Figure 3.0-7**, multi-modal routes would be provided to encourage walking and biking to and from the campus with the intent of creating a pedestrian friendly experience for students, staff, and visitors to the project site. Bike lanes would exist on all streets and bike routes include the following classifications: Class 1, 8-foot wide separated or buffered bike lanes; Class 2, 5 to 6-foot striped lanes on streets; Class 3 shared walkways; and Class 4 shared streets with sharrow markings.[4] The Phase 1 project site would have 152 outdoor secured bicycle parking spaces, and 32 outdoor temporary bicycle parking spaces.

Service Access: The project site's network of pedestrian walks would be sized and designed to allow for service access along the main multi-modal pathways and residential buildings would facilitate trash and recycling storage with convenient pick up locations for each housing area located along the primary service routes.

4 *Sharrows are shared lanes for motorist and bicyclists.*

Emergency Access*:* In Phase 1, the design concept would establish all future emergency access routes, giving responders full access to all buildings and to the undeveloped portions of the site. Emergency access would be provided via Blaine Street, Watkins Avenue, Linden Street, and Canyon Crest Drive. On the project site, emergency vehicles would travel down the project site's network of pedestrian walks which would be sized and designed to allow for emergency vehicle access. Where initial buildings would be developed, pedestrian egress routes would also be established to provide safe and direct routes for evacuation of the site during emergencies. See **Figure 3.0-8**, **North District Development Plan – Service and Emergency Access.**

Utilities:

Water: Existing water lines are located within Blaine Street, Canyon Crest Drive, and Linden Street. A combined 10-inch domestic water and fire line is proposed between the grouped apartment buildings and would connect to an existing water line in Linden Street at Aberdeen Drive (tie-in point to public water line). Peak domestic water demand under Phase 1 is estimated at 940 gallons per minute.

Wastewater: Existing 8-inch sanitary sewer lines are located in Canyon Crest Drive and Linden Street. There are two existing 8-inch sanitary sewer lines in Linden Street. One line serves the vacant Canyon Crest Family Student Housing complex and one line serves the corporation yard located adjacent to the east of the project site. Phase 1 of the proposed project would install sanitary sewer lines that serve each apartment building and would connect to the existing sanitary sewer line in Linden Street at Aberdeen Drive (tie-in point).

Stormwater: The Phase 1 project site will be divided into four main drainage areas. Site drainage and pipe conveyance will be designed for each of the drainage areas. Stormwater detention and treatment infiltration drywell systems are proposed to collect, slow, treat and infiltrate stormwater from each of the drainage areas. Stormwater drainage from the Phase 1 project site would generally drain to the west.

Sustainable Design Features: The proposed Phase 1 site would be designed to meet all provisions of the University Policy on Sustainable Practices and consider the UC Carbon Neutrality Initiative by targeting Leadership in Energy and Environmental Design (LEED) certification at a Silver level for individual buildings using the framework of the LEED rating system. The project proposes sustainable development that minimizes energy and water use, employs low-impact development criteria, reduces resource consumption for construction and operation, and provides healthy and comfortable living and working spaces. Sustainable features included in Phase 1 would be the same as the sustainable features described above for the NDD Plan.

3.4.4 Project Population

As a residential project, development under the NDD Plan is intended to meet the needs of the existing student population and projected campus enrollment as planned for in the 2005 UCR LRDP. The project

would not, of itself, cause an increase in the enrollment at UC Riverside. The NDD Plan would add up to an additional 5,200 on-campus beds for students, and compared to existing conditions, about 5,100 students would live on campus rather than seeking housing in the City of Riverside and other communities. The NDD Plan would add approximately 70 staff to the campus.

The first phase of the proposed project would house approximately 1,500 students, which would include both undergraduate and graduate students.

3.4.5 Project Construction

The construction under the NDD Plan would occur from 2019 through buildout. Construction would occur in phases with Phase 1 providing about 1,500 beds and occurring from 2019 to 2021. The phasing of the remainder of the NDD Plan development is uncertain at this time and may occur in one or more phases.

Phase 1 would demolish the existing Canyon Crest Family Student Housing. Site mobilization and preparation would occur beginning summer 2019. Building construction, including surface parking lot construction, would commence in late Summer/early fall 2019 and would be completed in fall 2021. Landscaping activities and off-site repairs would occur in the summer of 2021.

Grading and construction of Phase 1 of the NDD plan is anticipated to begin in fall 2019, with Project completion estimated in approximately 25 to 27 months; some construction activities would take place concurrently. The proposed construction sequence is anticipated as follows:

- Abatement and Demolition of existing housing: 1-3 months
- Site preparation, excavation, and underground utilities: 1-4 months
- Foundation (slab on grade) – Type I structure to Podium: 5-6 months
- Rough wood framing: 5-7 months
- Sheathing, insulation, and flashing: 2-3 months
- Roofing: 2-3 months
- Windows and openings: 2-3 months
- Exterior finish materials: 4-6 months
- Interior utility distribution: 5-6 months
- Interior partitions: 4-5 months
- Finishes, fixtures and casework: 4-5 months
- Site work, parking lots and landscaping: 5-6 months

Construction workers would access the site via Blaine Street and Watkins Drive. Construction workers

would park on the north parking area, which would also be used as a laydown area for construction of the proposed apartments. A construction trailer compound would be located adjacent to the northern border of the parking and laydown area. Construction workers would also park in an area west of the proposed apartments, which would also be used as a laydown area for construction of the apartments.

3.5 PROJECT APPROVALS

The North District Development Plan will be University of California facilities located on land owned by the University within the boundaries of UCR. As the public entity principally responsible for approving or carrying out the proposed projects, The University of California Board of Regents (Regents) is the Lead Agency under CEQA. The Regents or its delegate will review and consider this EIR in conjunction with the review and approval of the NDD Plan.

Necessary project approvals are anticipated to include, but are not limited to, consideration of the following by The University of California Board of Regents (anticipated in May 2019):

- Certification of the North District Development Plan EIR,
- Approval of the North District Development Plan,
- Approval and adoption of the proposed 2005 LRDP Amendment 5, and
- Approval of the design of the first phase of the proposed project.

There are no natural resources on or near the project site that could trigger the involvement of any trustee agencies.

4.0 ENVIRONMENTAL IMPACT ANALYSIS

4.0.1 INTRODUCTION

This Revised Draft Environmental Impact Report (RDEIR) is a program and project-level environmental assessment in accordance with Section 15151 of the *State CEQA Guidelines*. It evaluates the effects of implementation of the proposed North District Development Plan project (NDD Plan). The NDD Plan includes Phase 1 which involves the construction of about 1,500 student beds and associated facilities by 2021, and a future phase(s) which involves the construction of up to 3,700 student beds and associated facilities beyond 2022.

As described in **Chapter 1.0, Introduction**, based on preliminary environmental analysis and the input received during the EIR scoping process, this RDEIR addresses the following environmental factors in detail:

- Aesthetics
- Air Quality
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

The preparation of this RDEIR was preceded by an Initial Study (included in **Appendix 1.0**), which determined that the proposed NDD Plan project would not result in any significant impacts to agricultural resources, biological resources, cultural resources, geology and soils, hydrology and water quality, and mineral resources, and therefore further evaluation of these environmental factors in this EIR was not needed. The Initial Study also determined that the proposed project would not result in certain identified impacts related to the environmental factors listed above. The resource sections that follow clearly identify those impacts that were scoped out based on the analysis in the Initial Study and are therefore not evaluated further in this RDEIR.

4.0.2 LEVEL OF SIGNIFICANCE

Under the *California Environmental Quality Act* (CEQA), a variety of terms are used to describe the levels of significance of environmental impacts. The definition of terms used in this RDEIR is presented below.

- **Significant and Unavoidable Impact.** An impact that exceeds the defined standards of significance and cannot be avoided or reduced to a less than significant level through implementation of feasible mitigation measures.

- **Significant Impact.** An impact that exceeds the defined standards of significance and that can be avoided or reduced to a less than significant level through implementation of feasible mitigation measures.

- **Potentially Significant Impact.** A significant impact that may ultimately be determined to be less than significant; the level of significance may be reduced through implementation of policies or guidelines (that are not required by statue or ordinance), or through further definition of the project detail in the future. Potentially significant impacts may also be impacts for 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.

4.0.3 FORMAT OF ENVIRONMENTAL SECTIONS

Each environmental factor considered in this section of the RDEIR is addressed under six primary subsections: Introduction, Environmental Setting, Regulatory Setting, Project Impacts and Mitigation Measures, Cumulative Impacts and Mitigation Measures, and References. An overview of the information included in these sections is provided below.

4.0.3.1 Introduction

The introduction section describes the factor to be analyzed and the contents of the analysis. It also provides the sources used to evaluate the potential impact of the project, and lists issues and concerns relative to the environmental factor identified by the public and the agencies during the EIR scoping process.

4.0.3.2 Environmental Setting

The environmental setting section for each environmental factor provides a description of the applicable physical setting of the project area and its surroundings (e.g., existing land uses, existing soil conditions,

existing traffic conditions). The extent of the environmental setting area evaluated (the study area) differs among resources depending on the locations where impacts would be expected. For example, traffic impacts due to the proposed project are assessed for the local and regional roadway network, whereas aesthetic impacts from the implementation of the proposed project are assessed for immediate vicinity of the project. The setting sections describe both local resources and regional resources that occur throughout the broader geographic area.

Section 15125 of the *State CEQA Guidelines* requires EIRs to include a description of the physical environmental conditions in the area of a project that exist at the time that the Notice of Preparation (NOP) is circulated. These environmental conditions normally constitute the baseline physical conditions relative to which the lead agency evaluates the change in conditions that would result from project implementation. The NOP for the original Draft EIR was issued on June 18, 2018. Therefore, environmental conditions as of June 2018 represent the baseline for CEQA purposes. To evaluate most of the impacts of the proposed project, the conditions in 2018 are considered to be the baseline. Full development of the proposed project is then added to existing conditions in order to determine whether project implementation would substantially impact the resources, thereby resulting in a significant impact on the environment.

4.0.3.3 Regulatory Setting

The overview of regulatory considerations for each environmental factor is organized by agency, including applicable federal, State, regional, and local policies.

4.0.3.4 Project Impacts and Mitigation Measures

This subsection lists significance criteria that are used to evaluate impacts, followed by a discussion of the impacts that would result from implementation of the proposed project. Impacts are numbered and shown in bold type, and the mitigation measures are numbered to correspond to the impact. Impacts and mitigation measures are numbered consecutively within each section.

Although this environmental analysis is not tiered from the UC Riverside 2005 Long Range Development Plan (LRDP) EIR, UC Riverside has determined that the 2005 LRDP Planning Strategies (PS), Planning Principles (PP) and Mitigation Measures (MM) that were adopted by The Regents in conjunction with the approval of the 2005 LRDP and the 2005 LRDP Amendment 2 (2011) are important to the Campus and so they will also be incorporated into all development under the NDD Plan[1], consequently the relevant

[1] A listing of the 2005 LRDP and Planning Strategies (PS) and Planning Principles (PP) and Mitigation Measures (MM) and a table indicating their relevance to the proposed project are included in Appendix 1.0 to this Revised Draft EIR.

LRDP PSs, PPs, and MMs are also discussed in each subsection. Therefore, the analysis presented in this RDEIR evaluates environmental impacts that would result from project implementation after the application of the 2005 LRDP PSs, PPs, and MMs, as amended where relevant by the 2005 LRDP Amendment 2 (2011).

4.0.3.5 Cumulative Impacts and Mitigation Measures

In addition to the impacts of the proposed project, each resource topic section also discusses cumulative impacts of campus development under the 2005 LRDP, as amended, considered together with other development that may cause related impacts. The geographic area considered for each cumulative impact depends upon the impact that is being analyzed. For example, in assessing aesthetic impacts, only development within the vicinity of the campus would contribute to a cumulative visual effect. In assessing air quality impacts, on the other hand, all development within the air basin would contribute to regional emissions of criteria pollutants, and basin-wide projections of emissions are the best tool for determining the cumulative effect. For most resource areas, the cumulative study area is the City of Riverside.

The *State CEQA Guidelines* suggest that the analysis of cumulative impacts for each environmental factor can employ one of two methods to establish the effects of other past, current, and probable future projects. A lead agency may select a list of projects, including those outside the control of the agency, or, alternatively, a summary of projections. These projections may be from an adopted general plan or related planning document, or from a prior environmental document that has been adopted or certified, and these documents may describe or evaluate regional or area-wide conditions contributing to the cumulative impact. The 2005 UCR LRDP as amended includes projections of campus growth and is the applicable planning document. The 2005 LRDP projected student population to reach 25,000 by horizon year 2020-2021.

The cumulative impacts discussion describes the cumulative impacts of the proposed project, and determines whether the proposed project in combination with other foreseeable development would result in a significant cumulative impact, and, if so, whether the proposed project's contribution to the significant cumulative impact would be cumulatively considerable.

Section 15130 of the *State CEQA Guidelines* provides direction regarding cumulative impact analysis as follows:

- An EIR should not discuss cumulative impacts that do not result in part from the proposed project;
- A lead agency may determine that an identified cumulative impact is less than significant, and shall briefly identify facts and analysis in the EIR supporting its determination;
- A lead agency may determine a project's incremental effect is not cumulatively considerable, and therefore is not significant, and shall briefly describe in the EIR the basis of its determination; and
- A lead agency may determine a project's cumulatively considerable contribution to a significant cumulative impact may be rendered less than cumulatively considerable and therefore residually not significant, if the project implements or funds its fair share of mitigation measure or measures designed to alleviate the cumulative impact.

Regarding the proposed development and operation of a Science, Technology, Engineering, and Mathematics High School (STEM High School) for grades 9 through 12 by the Riverside Unified School District (RUSD), there is no commitment at this time by either RUSD or the University to proceed with the development of a STEM high school on any portion of the UC Riverside campus. As such, the construction of a STEM High School remains speculative; per *CEQA Guidelines* Section 15145 an EIR need not engage in "sheer speculation" as to future environmental consequences.

4.1 AESTHETICS

4.1.1 INTRODUCTION

This section describes the visual character of the project site and views from public areas into the site. This section also evaluates the changes to visual resources in the area, including changes in visual character, view obstruction, and night lighting, as a result of the development of the area. Potential impacts and related mitigation measures are discussed in this section as well.

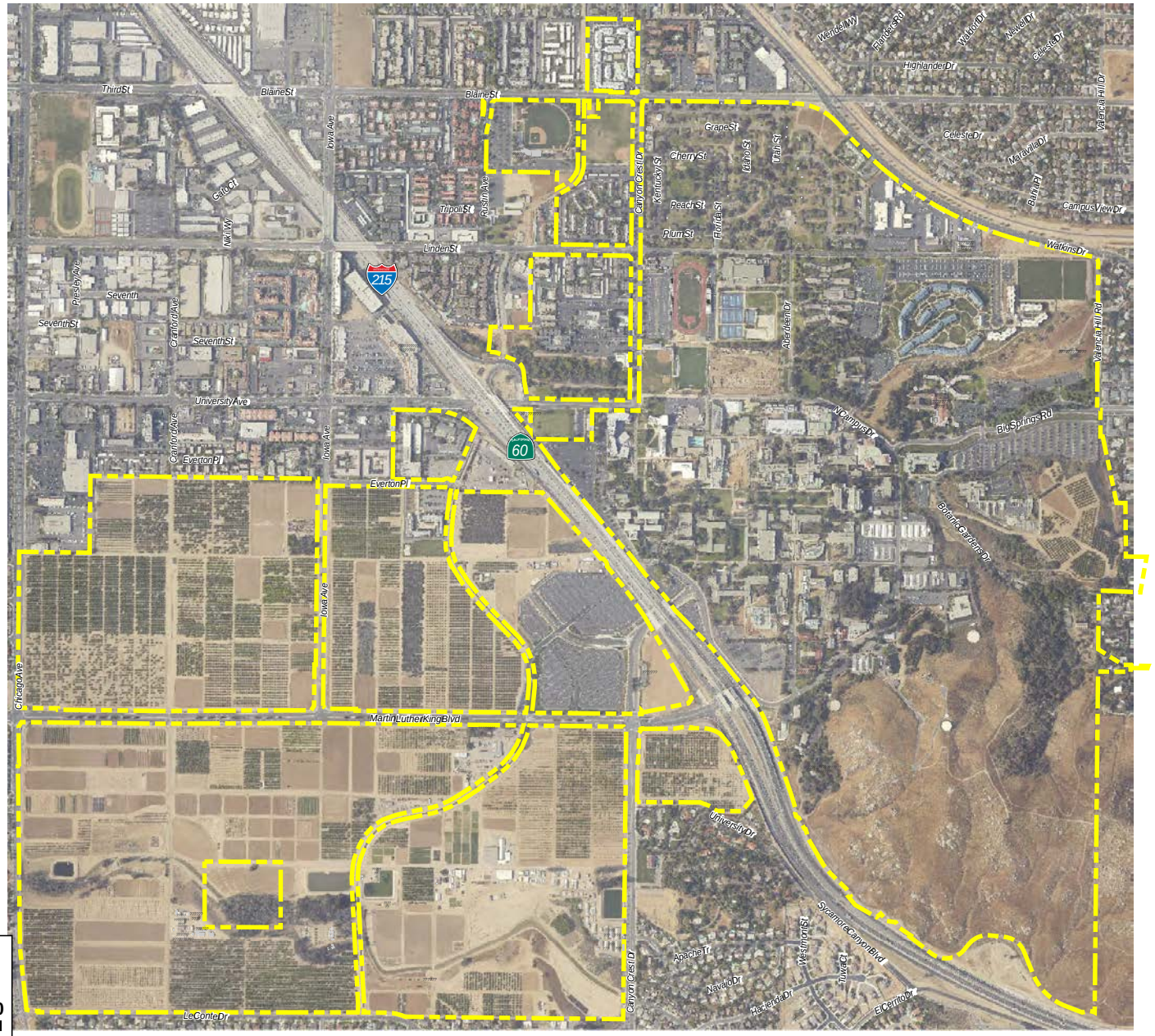
No public or agency comments related to visual resources were received in response to the Notice of Preparation or the Notice of Intent issued for this Draft Environmental Impact Report (DEIR).

4.1.2 ENVIRONMENTAL SETTING

The University of California (UC) Riverside campus is located in the City of Riverside (City), 1.5 miles east of downtown Riverside and just west of the Box Springs Mountains. The City of Riverside is located within the County of Riverside (County), in the Inland Empire area, which includes western Riverside and San Bernardino counties. The campus is generally bounded by University Avenue and Blaine Street on the north, Watkins Drive and Valencia Hill Drive and its extension south on the east, a line extending east from Le Conte Drive on the south, and Chicago Avenue on the west. The campus is bisected diagonally by the I-215/SR-60 freeway. The area to the east of I-215/SR-60 is called the East Campus.

The campus consists of a total of approximately 1,112 acres; 600.8 acres east of the freeway serves as the academic core and the location for the majority of existing academic, housing, and support facilities. The portion of the campus west of the freeway (approximately 511.3 acres) is primarily occupied by agricultural teaching and research fields, the new School of Medicine (SOM), student housing, and a large surface parking lot, refer to **Figure 4.1-1, Campus Aerial**.

The proposed North District Development Plan (NDD Plan) project site is an approximately 51-acre site located in the northeastern portion of the East Campus. The NDD Plan site is bounded by Blaine Street and a small shopping plaza to the north, Canyon Crest Drive and the Falkirk Apartments to the west, Linden Street including the Police Facility, the UCR track facility, the Student Recreation Center, and the Aberdeen-Inverness (A-I) Residence Halls to the south, and. the UC Riverside Child Development Centers, and the Campus Corporation Yard to the east. The project site is developed with Canyon Crest Family Student Housing that was occupied by student families until summer 2017 and is currently mostly vacant, although some of the buildings are now used as storage and maintenance facilities, including permanent structures and modular units in the northwestern portion of the site.



Legend:

Campus Boundary

950 475 0 950

APPROX. SCALE IN FEET

SOURCE: UCR – 2010, Impact Sciences, Inc – January 2011

FIGURE **4.1-1**

Campus Aerial

SOURCE: Google Maps, 2018

FIGURE **4.1-2**

Project Location

IMPACT SCIENCES

1031.004•11/18

A park with a playground is located in the western portion of the NDD Plan site south of Cherry Street. There are nine asphalt-paved residential streets within the NDD Plan site in addition to several gravel roads.

The NDD Plan proposes a phased development of student apartments, mixed-use residential, residential life amenity spaces, living and learning spaces, resident life support spaces, dining facilities, an athletics event center, and parking areas.

Visual Character

The general visual character of the area around the UCR campus is suburban in nature, with one-story single-family residential structures as the predominant feature, commercial uses along the major streets, two- and three-story multi-family residential structures near the campus, and some undeveloped land and agricultural uses interspersed between the predominant residential uses. Due to the largely residential nature of land uses surrounding the campus, the overall visual character is dominated by low-rise residential structures set back from the streets with landscaped front yards. Commercial uses along the major streets are generally fronted by surface parking lots with landscaping around the edges.

More specifically, single family residential, open space and industrial uses exist to the north and east of the NDD Plan site, while the Box Spring Mountains are visible further east. Land uses to the west of the project site include some recreation fields and multi-family residential buildings, including both UCR and private apartment complexes. Miscellaneous UC Riverside uses such as student housing, and recreation fields, dominate the landscape to the south of the project site. The I-215/SR-60 freeway is to the south of the project site.

Scenic Views and Vistas

Scenic vistas may generally be described as those views that are typically available from a publicly accessible viewpoint, such as roads or public gathering places, rather than views available from private residences. Given the almost flat topography as well as the developed nature of the project site, there are no scenic vistas or views into the project site. Distant views of the Box Spring Mountains are visible to the northeast of the project site, across Watkins Drive and beyond single family housing development. With a general on-campus elevation of between 1,000 and 1,100 feet (in the academic core and the area west of the I-215/SR-60 freeway), the Box Springs Mountains rise approximately 800 feet within one mile to the north and west of the campus and approximately 1,700 feet within two miles east of the campus. One segment of the Box Springs Mountains extends into the southeastern portion of the campus, with elevations that rise between 300 to 500 feet above the general campus elevation. Other visual features of note in the vicinity include Mount Rubidoux, approximately five miles to the west, the northern San Bernardino Mountains, and the San Gabriel Mountains approximately 35 miles to the northwest, with these ranges being visible from the campus only when atmospheric conditions permit. Though on clear days, views of these and other distant mountains such as Mount Rubidoux and the San Bernardino

Mountains are visible from various locations on the project site, these views are also blocked by buildings, trees, and landscaping, from various vantage points on the project site.[1]

Scenic Routes and Resources

There are no scenic highways or resources near the project site.[2] While the California Department of Transportation (Caltrans) has designated a number of County and State Scenic Highways in Riverside County, these are located in and around San Bernardino, over 12 miles to the north of the project site. Specifically, the NDD Plan site is generally bounded by Canyon Crest Drive, Blaine Street, Watkins Drive, and Linden Street; and none of these roads have been designated as state scenic highways.

Light and Glare

Across the existing campus, sources of light and glare include parking lots, sidewalks, recreation fields (when lit at night) and buildings. The Riverside Sports Complex located on the southwest corner of Blaine Street and Canyon Crest Drive contains lighted fields, including a competitive baseball field and a surface parking lot. Surface parking lots are also sources of light and glare, especially when lit at night and from vehicle headlights when entering and exiting the lots. In addition, building lights and night lighting of campus walkways and landscaped areas can produce light and glare. Sources of glare include reflective surfaces such as building exteriors, and glass.

Off-campus sources of light and glare include street lights and headlights from vehicles on the I-215-SR/60 freeway, and commercial land uses along the major streets, including University Avenue, Chicago Avenue, Iowa Avenue, and some sections of Blaine Street.

4.1.3 REGULATORY FRAMEWORK

4.1.3.1 Federal and State

There are no federal, state, or local regulations related to aesthetics that are applicable to the UCR campus.

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1 UCR 2005 Long Range Development EIR, EIP Associates, November 2005.

2 California Department of Transportation (Caltrans), California Scenic Highway Mapping System, http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm, accessed September 2018.

4.1.4 Impacts and Mitigation Measures

4.1.4.1 Significance Criteria

The impacts on aesthetics from the implementation of the proposed project would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines*:

- have a substantial adverse effect on a scenic vista;
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway;
- substantially degrade the existing visual character or quality of the site and its surroundings; or
- create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

4.1.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The Initial Study (IS) found that the proposed project would not substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway. The campus is bisected by the I-215/SR-60 freeway, and is generally bounded by University Avenue, Canyon Crest Drive, Blaine Street, Watkins Drive, Valencia Hill Drive, Le Conte Drive, and Chicago Avenue. None of these roadways is officially designated, or identified as eligible for designation as a state scenic highway. Therefore, implementation of the NDD Plan, including the Phase 1 project, would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway, and no impact would occur. No further analysis of this issue is required in the EIR.

The Initial Study deferred analysis of the impacts of the proposed project and related projects, relative to scenic vistas, visual character, and light and glare, to the EIR. Therefore, all of the CEQA checklist items are addressed in the following analysis.

4.1.4.3 Methodology

This EIR evaluates aesthetic impacts by comparing the existing visual condition of the project site with the anticipated visual condition after development of the proposed project and assessing the degree of change brought about by the proposed project. The potential for degradation of visual character of the campus and its surroundings is evaluated in terms of a substantial adverse change in the visual character or quality, including a change in land use, and development of currently undeveloped land. Visual change that is compatible with existing patterns of development would not be considered a significant impact.

4.1.4.4 Project Impacts and Mitigation Measures

Impact 4.1-1 **Implementation of the proposed project would not have a substantial adverse effect on a scenic vista. (*Less than Significant*)**

A scenic vista is generally defined as an expansive view of highly valued landscape as observable from a publicly accessible vantage point. In the vicinity of the UC Riverside campus, the Box Spring Mountains are the most prominent visual feature from many locations, and sweeping panoramic views of the Box Springs Mountains are considered a scenic vista. Although panoramic views of the Box Springs Mountains are available in the vicinity of the campus, no specific objects, scenes, settings, or features of interest are visible within that portion of the Box Springs Mountains adjacent to the NDD Plan project site. No specific focal views of the Box Springs Mountains were identified by the Campus in the 2005 LRDP EIR, and scenic vistas were considered to be limited to panoramic views of the Box Springs Mountains from publicly accessible viewpoints.

The NDD Plan provides for the phased development of apartments, mixed-use residential, resident life amenity spaces, living and learning spaces, resident life support spaces, dining facilities, athletics facilities, and parking areas. The NDD Plan sets forth details regarding the facilities that would be built and establishes building heights, noting that heights would range from 5 to 6 stories for the apartment buildings, 5 to 6 stories for residence halls, 1 to 2 stories for mixed use buildings, a 2-story dining facility, and that parking structures would typically be 7 levels.

The UCR campus, the hills to the south, and the Box Springs Mountains can be viewed from the NDD Plan site. Although these views would be partially or entirely blocked from areas close to the proposed buildings, views of the Box Springs Mountains would continue to be widely available from publicly accessible areas around the NDD Plan project site. In addition, the 5-story Glen Mor 2 Student Housing project also limits views south and southeast of the project site. Further, because of the limited publicly accessible viewpoints available on and around the project site due to the relatively flat topography in the project vicinity, the project would not have an adverse effect on a scenic vista. Impacts would be less than significant.

Impact 4.1-2 **Implementation of proposed project would not substantially degrade the visual character or quality of the project site and its immediate surroundings. (*Less than Significant*)**

The sites of the proposed NDD Plan buildings are visible from public viewpoints along Blaine Street and Watkins Drive. The existing single story buildings on the site would be replaced with the proposed range of buildings, up to 6-stories for apartments and residence halls and seven levels for parking structures. Each portion of the proposed project would be (or would continue to be) viewed against the backdrop of, and as an element of, the surrounding urban development; and as such, it would generally be consistent with the density and appearance of surrounding developed areas.

Further, although the NDD Plan CEQA analysis is not tiered from the 2005 LRDP EIR, as amended, UC Riverside has determined that the 2005 LRDP Planning Strategies (PS), Planning Principles (PP) and Mitigation Measures (MM) that have been incorporated into projects proposed under the 2005 LRDP are important to the Campus and so they will also be incorporated into all development under the NDD Plan.[3] As such, the following LRDP Planning Strategy is relevant to the preservation and enhancement of the visual character and quality of the project site and the surrounding areas:

PS Campus & Community 1 *Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.*

The proposed NDD Plan project would be consistent with the relevant LRDP Planning Strategy as the proposed NDD Plan would include improvements along Blaine Street and Canyon Crest Drive, which form edges of the campus. The new landscaped edge would provide visual screening of the new buildings and parking lots/structures as well as reduce noise and light effects that could be perceived from nearby locations.

With continued implementation of the following existing campus Program and Practice, the visual character and quality of the campus and surrounding area would also be preserved and enhanced:

Aesthetics PP 4.1-1 *The Campus shall provide design professionals with the 2007 Campus Design Guidelines and instructions to implement the guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design.*

(This is identical to Land Use PP 4.9-1(a).)

Aesthetics PP 4.1-2(a) *The Campus shall continue to provide design professionals with the 2007 Campus Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the Guidelines with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible.*

(This is identical to Land Use PP 4.9-1(b).)

The proposed NDD Plan project has been and will continue to be designed to be consistent with the 2007 Campus Design Guidelines, including consistent scale and massing, compatible architectural style, and landscaping.

In addition, UCR remains committed to participation in ongoing coordination with the City and local stakeholders through the University Neighborhood Enhancement Team (UNET) and the joint

[3] A listing of the 2005 LRDP and Planning Strategies (PS) and Planning Principles (PP) and Mitigation Measures (MM) is included in Appendix 1.0 to this Draft EIR.

City/University Coordinating Committee, providing opportunities for City and local stakeholder input regarding relevant land uses and project design features.

For the reasons discussed above, and with implementation of the 2005 LRDP Planning Strategies and continued implementation of existing campus Programs & Practices, implementation of the NDD Plan would not degrade the existing visual character or quality of the site and its surroundings, and a less than significant impact would occur.

Impact 4.1-3 **Implementation of proposed project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area substantially degrade the visual character or quality of the project site and its immediate surroundings. (*Less than Significant)***

Although there are some sources of light and glare currently on the project site, implementation of the NDD Plan, including the Phase 1 project, would result in the construction of a large number of new substantially taller buildings with increased sources of light and/or glare.

The NDD Plan site formerly included existing lighting from building interior and exterior lights and parking lot/driveway lighting. Nearby existing sources of light and glare include the pole lighting for the adjacent recreational fields, street lighting along Blaine Street and Watkins Drive, and interior and exterior lighting at the nearby campus residential buildings. Under the proposed NDD Plan, new light sources would include building interior and exterior lighting for the proposed residential and mixed-use buildings, as well as the athletic facility and parking lot lighting. Building lighting would consist of wall-mounted, downward-directed fixtures designed to light only the immediate area. New sources of daytime glare could include the building exteriors and roof and cars parked in or driving near the buildings and parking lots/structures.

The NDD Plan project site is located in an area that is fully developed with both multi-family and commercial uses, and associated light and glare sources. As previously discussed, all future development on the campus, including the proposed project, would continue to comply with existing campus Programs and Practices, such as PP 4.1-1, and PP 4.1-2(a) and (b), which require that buildings be designed to be consistent with the Campus Design Guidelines. Further, as discussed in section 3.0, under ***Sustainable Design Features***, the NDD Plan will be designed to minimize light pollution by using the International Dark Sky Association's (IES/IDA) Model Lighting Ordinance light fixture selection criteria.

Further, for reasons previously discussed, the NDD Plan, would also implement 2005 LRDP mitigation measure MM 4.1-3(a) through MM 4.1-3(c), which would require that building materials be made of non-reflective materials, that lighting be directed to the intended illumination site to reduce spill onto adjacent areas, and that all parking lots be designed to minimize the night-time glare of vehicle headlights:

MM 4.1-3(a) *Building materials shall be reviewed and approved as part of project-specific design and through approval of construction documents. Mirrored, reflective glass is prohibited on campus.*

MM 4.1-3(b) *All outdoor lighting on campus resulting from new development shall be directed to the specific location intended for illumination (e.g., roads, walkways, or recreation fields) to prevent stray light spillover onto adjacent residential areas. In addition, all fixtures on elevated light standards in parking lots, parking structures, and athletic fields shall be shielded to reduce glare. Lighting plans shall be reviewed and approved prior to project-specific design and construction document approval.*

MM 4.1-3(c) *Ingress and egress from new parking areas shall be designed and situated so as to minimize the impact of vehicular headlights on adjacent uses. Walls, landscaping or other light barriers will be provided. Site plans shall be reviewed and approved as part of project-specific design and construction document approval.*

For these reasons, and with implementation of the proposed Sustainable Design Features, and 2005 LRDP Programs and Practices and Mitigation Measures, the proposed project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area, and this impact would be less than significant.

4.1.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative aesthetic impacts includes the area immediately surrounding the project site that can be viewed together with development on the edge of the campus.

Impact 4.1-4 **Cumulative development, including the proposed project and related projects, would not substantially degrade the visual character or quality of the campus and the immediate surrounding area. (*Less than Significant*)**

The area surrounding the NDD Plan site is already built out, and no additional development in this portion of the campus is anticipated in the 2005 LRDP, as amended. The 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR (2011) concluded that impacts associated with visual character or quality would not be cumulatively considerable on a regional scale, as reflected in both the City of Riverside and the County of Riverside General Plan EIRs. Development under the 2005 LRDP, as amended, would be visually consistent with the surroundings and would not result in a cumulative impact to visual character or quality. Development under the NDD Plan and related projects would also be expected to be visually consistent with the surroundings and thus would not alter the conclusions of the previous cumulative impact analysis.

As stated in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR (2011), LRDP-related projects could result in the creation of new sources of substantial light or glare that could affect day or nighttime views.

Consequently, a significant cumulative impact could occur. Although the NDD Plan CEQA analysis is not tiered from the 2005 LRDP EIR, as amended, UC Riverside has determined that the 2005 LRDP Planning Strategies (PS), Planning Principles (PP) and Mitigation Measures (MM) that have been incorporated into projects proposed under the 2005 LRDP are important to the Campus and so they will also be incorporated into all development under the NDD Plan,[4] and with inclusion and implementation of relevant LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, the NDD Plan's contribution to a cumulative light and glare impact would not be cumulatively considerable. The proposed NDD Plan would also add new sources of light and glare to the campus, but for the reasons discussed above, as well as those presented in the 2005 LRDP EIR and Amendment 2 EIR, the contribution of the NDD Plan and related projects would not be cumulatively considerable. The impact would be less than significant.

4 A listing of the 2005 LRDP and Planning Strategies (PS) and Planning Principles (PP) and Mitigation Measures (MM) and a table indicating their relevance to the proposed project are included in Appendix 1.0 to this Revised Draft EIR.

4.2 AIR QUALITY

4.2.1 INTRODUCTION

This section evaluates the potential impacts on air quality resulting from implementation of the proposed North District Development Plan (NDD Plan), both during project construction and operation. This includes the potential for the NDD Plan to conflict with or obstruct implementation of the applicable air quality plan, to violate an air quality standard or contribute substantially to an existing or projected air quality violation, to result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment, or to expose sensitive receptors to substantial pollutant concentrations.

Data used to prepare this section were taken from various sources, including the South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook and the 2016 Air Quality Management Plan (AQMP), as amended, the UC Riverside 2005 LRDP EIR, and technical analyses conducted for the project by Impact Sciences, Inc. Copies of the calculations made to estimate potential air quality impacts associated with the NDD Plan and supporting technical data are found in **Appendix 4.2** of this Revised Draft EIR.

4.2.2 EXISTING CONDITIONS

4.2.2.1 Regional Air Quality

Background

The project is located in the South Coast Air Basin (Basin), a sub-region under the jurisdiction of the SCAQMD. The Basin includes all of Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside counties. The Basin is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east.

Air quality is affected by both the rate and location of pollutant emissions. Meteorological conditions such as wind speed, wind direction, solar radiation, atmospheric stability, and local topography heavily influence air quality by affecting the movement and dispersal of pollutants. Predominant meteorological conditions in the Basin are primarily light winds and shallow vertical mixing due to low-altitude temperature inversion that exists in the Basin on several days each year. These conditions, when coupled with the surrounding mountain ranges, hinder the regional dispersion of air pollutants. The strength and location of a semi-permanent, high-pressure cell over the northern Pacific Ocean is a primary climatological influence on the Basin, as is the ocean, which moderates the local climate by acting like a

large heat reservoir. As a result of these influences, warm summers, mild winters, infrequent rainfall, and moderate humidity typify climatic conditions through most of the Basin. These meteorological conditions, in combination with regional topography, are conducive to the formation and retention of ozone and urban smog.

Annual average temperatures throughout the Basin vary from the low to middle 60s degrees Fahrenheit (°F). However, due to decreased marine influence, the eastern portion of the Basin shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the Basin, and annual average minimum temperatures are 48°F in downtown Los Angeles, 49°F in San Bernardino, and 55°F in Long Beach. July and August are the warmest months in the Basin, and annual average maximum temperatures are 83°F in downtown Los Angeles, 95°F in San Bernardino, and 85°F in Long Beach. All portions of the Basin have recorded maximum temperatures above 100°F.

Although the climate of the Basin can be characterized as semi-arid, the air near the land surface is moist on most days because of the presence of a marine layer. Humidity restricts visibility in the Basin, also increasing the conversion of sulfur dioxide (SO_2) to sulfates. The annual average relative humidity is 71 percent along the coast and 59 percent inland. Because the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast. More than 90 percent of the region's rainfall occurs from November through April. Annual average rainfall varies from approximately 9 inches in Riverside to 14 inches in downtown Los Angeles. Monthly and yearly rainfall totals are variable. Summer rainfall usually consists of widely scattered thundershowers near the coast and slightly heavier shower activity in the eastern portion of the Basin near the mountains.

Regional Air Quality

Air pollutants of concern in the Basin are primarily generated by two categories of sources: stationary and mobile. Stationary sources are known as "point sources," which have one or more emission sources at a single facility, or "area sources," which are widely distributed emissions. 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. 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. Mobile sources refer to operational and evaporative emissions from motor vehicles. Within the Basin, mobile sources account for approximately 43 percent of reactive organic gas (ROG) emissions, 86 percent of nitrogen oxide (NO_x) emissions, 82 percent of carbon

monoxide (CO) emissions, 33 percent of sulfur oxides (SO_X) emissions, 20 percent of respirable particulate matter (PM10) emissions, and 24 percent of fine particulate matter (PM2.5) emissions.[1]

The criteria pollutants relevant to the proposed project and of concern in the Basin are briefly described below. While VOCs are not considered to be criteria pollutants, they are widely emitted from land development projects and participate in photochemical reactions in the atmosphere to form ozone (O_3); therefore, VOCs are relevant to the proposed project and are of concern in the Basin.

Ozone (O_3). O_3 is a gas that is formed when VOCs and nitrogen oxides (NO_X), both byproducts of internal combustion engine exhaust and other sources, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.

Volatile Organic Compounds (VOCs). VOCs are compounds comprised primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Adverse effects on human health are not caused directly by VOCs, but rather by reactions of VOCs to form secondary air pollutants, including ozone. VOCs are also referred to as reactive organic compounds (ROCs) or reactive organic gases (ROGs). VOCs themselves are not "criteria" pollutants; however, they contribute to formation of O_3.

Nitrogen Dioxide (NO_2). NO_2 is a reddish-brown, highly reactive gas that is formed in the ambient air through the oxidation of nitric oxide (NO). NO_2 is also a byproduct of fuel combustion. The principal form of nitrogen oxide produced by combustion is NO, but NO reacts quickly to form NO_2, creating the mixture of NO and NO_2 referred to as NO_X. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_X is only potentially irritating. NO_2 absorbs blue light, the result of which is a brownish-red cast to the atmosphere and reduced visibility.

Carbon Monoxide (CO). CO is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest during winter mornings, with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines and motor vehicles operating at slow speeds are the primary source of CO in the Basin, the highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

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1 CARB. 2012. *2012 Estimated Annual Average Emissions*. https://www.arb.ca.gov/app/emsinv/2013/emseic1_query.php?F_DIV=0&F_YR=2012&F_SEASON=A&SP=2013&F_AREA=AB&F_AB=SC&F_DD=Y, July 31, 2018.

Sulfur dioxide (SO_2). SO_2 is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high-sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When sulfur dioxide oxidizes in the atmosphere, it forms sulfates (SO_4).

Respirable Particulate Matter (PM10). PM10 consists of extremely small, suspended particles or droplets 10 micrometers or smaller in diameter. Some sources of PM10, like pollen and windstorms, are naturally occurring. However, in populated areas, most PM10 is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.

Fine Particulate Matter (PM2.5). PM2.5 refers to particulate matter that is 2.5 micrometers or smaller in size. The sources of PM2.5 include fuel combustion from automobiles, power plants, wood burning, industrial processes, and diesel-powered vehicles such as buses and trucks. These fine particles are also formed in the atmosphere when gases such as sulfur dioxide, NO_x, and VOCs are transformed in the air by chemical reactions.

Lead (Pb). Pb occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne lead in the Basin. The use of leaded gasoline is no longer permitted for on-road motor vehicles, so most such combustion emissions are associated with off-road vehicles such as racecars that use leaded gasoline. Other sources of Pb include the manufacturing and recycling of batteries, paint, ink, ceramics, and ammunition, and secondary lead smelters.

The U.S. Environmental Protection Agency (EPA) is the federal agency responsible for setting the National Ambient Air Quality Standards (NAAQS). The air quality of a region is considered to be in attainment of the NAAQS if the measured ambient air pollutant levels are not exceeded more than once per year, except for O_3, PM10, PM2.5 and those based on annual averages or arithmetic mean. The NAAQS for O_3, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The California Air Resources Board (CARB) is the State agency responsible for setting the California Ambient Air Quality Standards (CAAQS). The air quality of a region is considered to be in attainment of the CAAQS if the measured ambient air pollutant levels for O_3, CO, NO_2, SO_2, PM10, PM2.5, and lead are not exceeded, and other standards are not equaled or exceeded at any time in any consecutive three-year period. The NAAQS and CAAQS for each of the monitored pollutants and their effects on health are summarized in **Table 4.2-1, Ambient Air Quality Standards**.

Table 4.2-1
Ambient Air Quality Standards

Pollutant	Averaging Time	State Standard[a]	Federal Primary Standard[b]	Most Relevant Effects
Ozone (O_3)	1-Hour	0.09 ppm (180 μg/m³)	No Federal Standard	(a) Short-term exposures: 1) Pulmonary function decrements and localized lung edema in humans and animals; and, 2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; and, (d) Property damage.
	8-Hour	0.070 ppm (137 μg/m³)	0.070 ppm (137 μg/m³)	
Suspended Particulate Matter (PM10)	24-Hour	50 μg/m³	150 μg/m³	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; and (b) Excess seasonal declines in pulmonary function, especially in children.
	Annual Arithmetic Mean	20 μg/m³	No Federal Standard	
Suspended Particulate Matter (PM2.5)	24-Hour	No State Standard	35 μg/m³	(a) Increased hospital admissions and emergency room visits for heart and lung disease; (b) Increased respiratory symptoms and disease; and (c) Decreased lung functions and premature death.
	Annual Arithmetic Mean	12 μg/m³	12 μg/m³	
Carbon Monoxide (CO)	1-Hour	20 ppm (23 μg/m³)	35 ppm (40 μg/m³)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and, (d) Possible increased risk to fetuses.
	8-Hour	9 ppm (10 μg/m³)	9 ppm (10 μg/m³)	
Nitrogen Dioxide (NO2)	1-Hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and, (c) Contribution to atmospheric discoloration.
	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
Sulfur Dioxide (SO2)	1-Hour	0.25 ppm (655 μg/m³)	75 ppb (196 μg/m³)	Broncho-constriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
	24-Hour	0.04 ppm (105 μg/m³)	No Federal Standard	
Sulfates	24-Hour	25 μg/m³	No Federal Standard	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and, (f) Property damage
Hydrogen Sulfide (H2S)	1-Hour	0.03 ppm (42 μg/m³)	No Federal Standard	Odor annoyance.
Lead (Pb)	30-Day Average	0.15 μg/m³	No Federal Standard	(a) Increased body burden; and (b) Impairment of blood formation and nerve conduction.
	Calendar Quarter	No State Standard	0.15 μg/m³	
	Rolling 3-Month Average	No State Standard	0.15 μg/m³	

Pollutant	Averaging Time	State Standard[a]	Federal Primary Standard[b]	Most Relevant Effects
Visibility Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more due to particles when relative humidity is less than 70 percent..	No Federal Standard	The statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. This is a visibility based standard not a health based standard. Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent.
Vinyl Chloride	24-Hour	0.01 ppm (26 µg/m3)	No Federal Standard	Highly toxic and a known carcinogen that causes a rare cancer of the liver.

Source: South Coast Air Quality Management District, Final Program Environmental Impact Report for the 2016 Air Quality Management Plan, (2017) Table 3.2-5, p. 3.2-29.
µg/m³ = microgram per cubic meter.
ppm = parts per million by volume.
a. The California ambient air quality standards for O3, CO, SO2 (1-hour and 24-hour), NO2, PM10, and PM2.5 are values not to be exceeded. All other California standards shown are values not to be equaled or exceeded.
b. The national ambient air quality standards, other than O3 and those based on annual averages are not to be exceeded more than once a year. The O3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standards is equal to or less than one.

In addition to criteria pollutants, the SCAQMD periodically assesses levels of toxic air contaminants in the Basin. TACs are defined by California Health and Safety Code Section 39655:

> *"Toxic air contaminant" means an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the federal act (42 U.S.C. Sec. 7412(b)) is a toxic air contaminant.*

Between July 2012 and June 2013, the SCAQMD conducted the Multiple Air Toxics Exposure Study IV (MATES IV), which is a follow-up to previous MATES I, II, and III air toxics studies conducted in the Basin. The MATES IV Final Report was issued in May 2015. The MATES IV study, based on actual monitored data throughout the Basin, consisted of several elements. These included a monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize carcinogenic risk across the Basin from exposure to toxic air contaminants. The MATES IV study applied a 2-kilometer (1.24-mile) grid over the South Coast Air Basin and reported carcinogenic risk within each grid space (covering an area of 4 square kilometers or 1.54 square miles). The study concluded that the average of the modeled air toxics concentrations measured at each of the monitoring stations in the Basin equates to a background cancer risk of approximately 367 in 1,000,000. This represents a reduction of approximately 57 percent since the MATES III period, primarily due to changes in diesel emissions. The MATES IV study also found lower ambient concentrations of most of the measured air toxics compared to the levels measured in the previous MATES III study conducted during 2004 and 2006. Specifically, benzene and 1,3-butadiene, pollutants generated mainly from vehicles, were down 39 percent and 24

percent, respectively.[2] The reductions were attributed to air quality control regulations and improved emission control technologies.

4.2.2.2 Existing Local Air Quality

The SCAQMD has divided the Basin into Source Receptor Areas, in which air quality monitoring stations are operated. The project site is located in the Metropolitan Riverside Source Receptor Area (SRA 23). The monitoring stations for this area are located at 5888 Mission Boulevard in the City of Riverside (Station No. 4144), just over 6 miles northwest of the project site, and at 7002 Magnolia Avenue, also in the City of Riverside (Station No. 4146). These stations monitor emission levels of CO, O_3, NO_2, SO_2, PM10, and PM2.5.

Table 4.2-2, Ambient Pollutant Concentrations, lists the ambient pollutant concentrations registered and the exceedances of State and federal standards that have occurred at the abovementioned monitoring stations from 2014 through 2016, the most recent years in which data is available from the SCAQMD.[3] As shown, SRA 23 has registered values above State and federal standards for O_3, the State standard for PM10, and the federal standard for PM2.5. Values for lead and sulfate are not presented in the table below since ambient concentrations are well below the State standards in the area. Hydrogen sulfide, vinyl chloride, and visibility reducing particles were not monitored by CARB or the SCAQMD in Riverside County during the period of 2014 to 2016.

Table 4.2-2
Ambient Pollutant Concentrations

Pollutant	Standards[1]	Year		
		2014	2015	2016
OZONE (O_3)				
Maximum 1-hour concentration monitored (ppm)		0.141	0.146	0.116
Maximum 8-hour concentration monitored (ppm)		0.104	0.116	0.100
Number of days exceeding State 1-hour standard	0.090 ppm	29	54	25
Number of days exceeding State 8-hour standard	0.070 ppm	69	88	57
Number of days exceeding federal 8-hour standard[2]	0.070 ppm	66	64	35
NITROGEN DIOXIDE (NO_2)				
Maximum 1-hour concentration monitored (ppb)		59.9	57.4	73.1
Annual average concentration monitored (ppb)		15.1	14.4	14.9

2 South Coast Air Quality Management District (SCAQMD). 2015. *Multiple Air Toxics Exposure Study in the South Coast Air Basin Final Report (MATES-IV).* May.

3 The SCAQMD verifies the ambient air quality data before making it available on its website. Air pollutants levels determined to be caused by natural events (e.g., forest fires) are excluded because they do not count towards attainment of the air quality standards.

Pollutant	Standards[1]	Year		
		2014	2015	2016
Number of days exceeding State 1-hour standard	180 ppb	0	0	0
CARBON MONOXIDE (CO)				
Maximum 1-hour concentration monitored (ppm)		2	7	1.7
Maximum 8-hour concentration monitored (ppm)		1.9	2.0	1.8
Number of days exceeding 1-hour standard	20 ppm	0	0	0
Number of days exceeding 8-hour standard	9.0 ppm	0	0	0
SULFUR DIOXIDE (SO_2)				
Maximum 1-hour concentration monitored (ppb)		5.6	1.9	5.6
Maximum 24-hour concentration monitored (ppm)		--	--	--
Number of days exceeding State 1-hour standard	250 ppb	0	0	0
Number of days exceeding State 24-hour standard	40 ppb	0	0	0
RESPIRABLE PARTICULATE MATTER (PM10)				
Maximum 24-hour concentration monitored ($\mu g/m^3$)		118	115	77
Annual average concentration monitored ($\mu g/m^3$)		54.6	46.6	42.5
Number of samples exceeding State standard	50 $\mu g/m^3$	66	49	34
Number of samples exceeding federal standard	150 $\mu g/m^3$	0	0	0
FINE PARTICULATE MATTER (PM2.5)				
Maximum 24-hour concentration monitored ($\mu g/m^3$)		68.6	43.0	42.2
Annual average concentration monitored ($\mu g/m^3$)		18.1	13.4	13.4
Number of samples exceeding federal standard	35 $\mu g/m^3$	8	4	2

– Source: South Coast Air Quality Management District, "Historical Data by Year – Air Quality," http://www.aqmd.gov/smog/historicaldata.htm. 2016.

– [1] Parts by volume per million of air (ppm), parts by volume per billion of air (ppb), micrograms per cubic meter of air ($\mu g/m^3$), or annual arithmetic mean (aam).

– [2] The 8-hour federal O_3 standard was revised from 0.08 ppm to 0.075 ppm in March 2008. The statistics shown are based on the 2008 standard of 0.075 ppm.

Sensitive Receptors

Certain population groups are considered more sensitive than others to changes in air quality. According to the California Air Resources Board, the following groups are most likely to be affected by air pollution: children, the elderly, pregnant women, and those with serious health problems affected by air pollution.[4] The SCAQMD identifies sensitive receptor locations to include residences, schools, playgrounds, childcare centers, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.[5]

Nearby off-site sensitive receptors to the proposed project include residences and schools. The nearest off-site residences are located approximately 300 feet to the north of the project site. The closest schools

4 CARB, *Air Quality and Land Use Handbook: A Community Health Perspective.* April 2005.

5 SCAQMD, *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*. May 6, 2005

are Highland Elementary School, located approximately 800 feet northeast of the site; the Islamic Academy of Riverside, situated 1,000 feet southwest; and the REACH Leadership Academy, 1,200 feet to the west. The nearest on-site sensitive receptor is the UCR Child Development Center located approximately 50 feet to the northeast of the project site.

4.2.3 REGULATORY FRAMEWORK

Air quality within the Air Basin is addressed through the efforts of various federal, State, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through Comparative Risk Probabilities legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality within the Air Basin are discussed below.

4.2.3.1 Federal Regulations

Federal Clean Air Act

The U.S. EPA is responsible for enforcing the federal Clean Air Act and the NAAQS. These standards identify levels of air quality for seven criteria pollutants: ozone (O_3), CO, NO_2, SO_2, PM10, PM2.5, and lead. The thresholds are considered to be the maximum concentrations of ambient (background) air pollutants determined safe to protect the public health and welfare with an adequate margin of safety.

As part of its enforcement responsibilities, the U.S. EPA requires each State with areas that do not meet the federal standards to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain federal standards. The SIP must integrate federal, State, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the time frame identified in the SIP. CARB is required to describe in its SIP how the State will achieve federal standards by specified dates for each air basin that has failed to attain a NAAQS for any criteria pollutant. The SCAQMD has developed the 2016 AQMP, which demonstrates how the region will attain the air quality standards set for in the Clean Air Act Amendments.

The extent of mitigation implementation of a given SIP depends on the severity of the air quality condition within the State or a specific air basin. As required by the CAA, NAAQS have been established for seven major air pollutants: CO, NO_2, O_3, PM2.5, PM10, SO_2, and Pb. The extent of mitigation implementation of a given SIP depends on the severity of the air quality condition within the State or a specific air basin.

4.2.3.2 State Regulations

California Clean Air Act

The California Air Resources Board (CARB) oversees air quality planning and control throughout California. It is primarily responsible for ensuring implementation of the California Clean Air Act, responding to the federal Clean Air Act planning requirements applicable to the State, and regulating emissions from motor vehicles and consumer products within the State. In addition, CARB sets health-based air quality standards and control measures for toxic air contaminants (TACs). Much of CARB's research goes toward automobile emissions, as they are primary contributors to air pollution in California. Under the State Clean Air Act, CARB has the authority to establish more stringent standards for vehicles sold in California and for various types of equipment available commercially. It also sets fuel specifications to further reduce vehicular emissions.

The California Clean Air Act established a legal mandate for air basins to achieve the CAAQS by the earliest practical date. These standards apply to the same seven criteria pollutants as the federal Clean Air Act and also include sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. The State standards are generally more stringent than the federal standards.

CARB supervises and supports the regulatory activities of local air quality districts as well as monitors air quality itself. Health and Safety Code Section 39607(e) requires CARB to establish and periodically review area designation criteria. These designation criteria provide the basis for CARB to designate areas of the State as attainment, nonattainment, or unclassified according to State standards. CARB makes area designations for 10 criteria pollutants: O_3, CO, NO_2, SO_2, PM10, PM2.5, sulfates, lead, hydrogen sulfide, and visibility-reducing particles (CARB 2010).[6] The air quality of a region is considered to be in attainment of the State standards if the measured ambient air pollutant levels for O_3, CO, NO_2, PM10, PM2.5, SO_2 (1- and 24-hour), and lead are not exceeded, and all other standards are not equaled or exceeded at any time in any consecutive three-year period. The status of Riverside County with respect to attainment with the NAAQS is summarized in **Table 4.2-3, Ambient Air Quality Attainment Status for**

6 According to California Health and Safety Code, Section 39608, "state board, in consultation with the districts, shall identify, pursuant to subdivision (e) of Section 39607, and classify each air basin which is in attainment and each air basin which is in nonattainment for any State ambient air quality standard." Section 39607(e) states that the State shall "establish and periodically review criteria for designating an air basin attainment or nonattainment for any State ambient air quality standard set forth in Section 70200 of Title 17 of the California Code of Regulations. California Code of Regulations, Title 17, Section 70200 does not include vinyl chloride; therefore, CARB does not make area designations for vinyl chloride.

the South Coast Air Basin (Riverside County). Further details on federal regulations for air quality can be found in the 2005 LRDP EIR and the 2005 LRDP Amendment 2 EIR.[7]

Table 4.2-3
Ambient Air Quality Attainment Status for the South Coast Air Basin (Riverside County)

Pollutant	Federal Designation	State Designation
Ozone (O_3)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Unclassified/Attainment	Attainment
Nitrogen Dioxide (NO_2)	Unclassified/Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Respirable Particulate Matter (PM10)	Attainment	Nonattainment
Fine Particulate Matter (PM2.5)	Nonattainment	Nonattainment
Lead (Pb)	Unclassified/Attainment	Attainment
Sulfates (SO_4)	--	Attainment
Hydrogen Sulfide (H_2S)	--	Unclassified
Vinyl Chloride	--	Attainment
Visibility-Reducing Particles	--	Unclassified

Source: California Air Resources Board, "Area Designations Maps/State and National," https://www.arb.ca.gov/desig/adm/adm.htm; 2018.

4.2.3.3 Regional Regulations

South Coast Air Quality Management District (SCAQMD)

The management of air quality in the Basin is the responsibility of the SCAQMD. Under the Lewis-Presley Air Quality Act, the SCAQMD is responsible for bringing air quality in the areas under its jurisdiction into conformity with federal and State air quality standards. Specifically, the SCAQMD is responsible for monitoring ambient air pollutant levels throughout the Air Basin and for developing and implementing attainment strategies to ensure that future emissions will be within federal and State standards.

SCAQMD CEQA Air Quality Handbook

In 1993, the SCAQMD prepared its *CEQA Air Quality Handbook* to assist local government agencies and consultants in preparing environmental documents for projects subject to CEQA. The SCAQMD is in the process of developing an *Air Quality Analysis Guidance Handbook* to replace the *CEQA Air Quality Handbook*. The documents describe the criteria that SCAQMD uses when reviewing and commenting on

7 UC Riverside. 2005. *2005 Long Range Development Plan Environmental Impact Report*; UC Riverside. 2011. *2005 Long Range Development Plan Amendment 2 EIR*.

the adequacy of environmental documents. The Handbook recommends thresholds of significance in order to determine if a project will have a significant adverse environmental impact. Other important contents are methodologies for predicting project emissions and mitigation measures that can be taken to avoid or reduce air quality impacts. Although the Governing Board of the SCAQMD has adopted the *CEQA Air Quality Handbook*, it does not, nor does it intend to, supersede a local jurisdiction's CEQA procedures.[8]

Supplemental information has been adopted by the SCAQMD pursuant to the *Air Quality Analysis Guidance Handbook* update. These include revisions to the air quality significance thresholds and a new procedure referred to as "localized significance thresholds," which has been added as a significance threshold under the *Final Localized Significance Threshold Methodology*.[9] The applicable portions of the *CEQA Air Quality Handbook*, the *Air Quality Analysis Guidance Handbook* supplemental information, and other revised methodologies were used in preparing the air quality analysis in this section.

SCAQMD Air Quality Management Plan

The SCAQMD is required to develop AQMPs describing how air quality in the Air Basin will be improved. In addition, the U.S. EPA requires that conformity budgets be established in the AQMP based on the most recent planning assumptions. The SCAQMD adopted the currently applicable *2016 Air Quality Management Plan* in March 2017. In the same month, CARB approved the AQMP as the comprehensive SIP component for the Air Basin. The purpose of the AQMP for the Air Basin (and those portions of the Salton Sea Air Basin under the SCAQMD's jurisdiction) is to set forth a comprehensive program that will lead these areas into compliance with federal and State air quality planning requirements for ozone and PM2.5, through NOx reductions.

SCAQMD Rules and Regulations

The SCAQMD is responsible for limiting the amount of emissions that can be generated throughout the Basin by various stationary, area, and mobile sources. Specific rules and regulations adopted by the SCAQMD Governing Board limit the emissions that can be generated by various uses and activities and identify specific pollution reduction measures, which must be implemented in association with various uses and activities. These rules regulate the emissions of the federal and State criteria pollutants as well as

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8 SCAQMD. 2017. *South Coast Air Quality Management District Final 2016 Air Quality Management Plan (AQMP).* March.

9 SCAQMD. 2008. *South Coast Air Quality Management District Final Localized Significance Threshold Methodology.* July.

toxic air contaminants and acutely hazardous materials. The rules are also subject to ongoing refinement by SCAQMD.

Among the SCAQMD rules applicable to the proposed project are Rule 403 (Fugitive Dust), Rule 1113 (Architectural Coatings), and Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities). These and other potentially applicable rules are presented below.

- **Rule 402 (Nuisance)** – This rule prohibits the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

- **Rule 403 (Fugitive Dust)** – This rule requires fugitive dust generators to implement Best Available Control Measures for all sources, and all forms of visible particulate matter are prohibited from crossing any property line. SCAQMD Rule 403 is intended to reduce PM10 emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust (see also Rule 1186).

- **Rule 1113 (Architectural Coatings)** – This rule requires manufacturers, distributors, and end-users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

- **Rule 1121 (Control of Nitrogen Oxides from Residential Type, Natural Gas-Fired Water Heaters)** - This rule prescribes NO_x emission limits for natural gas-fired water heaters with heat input rates less than 75,000 Btu per hour. It applies to manufacturers, distributors, retailers, and installers of natural gas-fired water heaters. In lieu of meeting these NO_x limits, this rule allows emission mitigation fees to be collected from water heater manufacturers to fund stationary and mobile source emission reduction projects targeted at offsetting NO_x emissions from water heaters that do not meet Rule 1121 emission standards.

- **Rule 1146.2 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters)** – This rule requires manufacturers, distributors, retailers, refurbishers, installers, and operators of new and existing units to reduce NO_x emissions from natural gas-fired water heaters, boilers, and process heaters as defined in this rule.

- **Rule 1186 (PM10 Emissions from Paved and Unpaved Roads, and Livestock Operations)** – This rule applies to owners and operators of paved and unpaved roads and livestock operations. The rule is intended to reduce PM10 emissions by requiring the clean-up of material deposited onto paved roads, use of certified street sweeping equipment, and treatment of high-use unpaved roads (see also Rule 403).

- **Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities)** – This rule requires owners and operators of any demolition or renovation activity and the associated disturbance of asbestos-containing materials, any asbestos storage facility, or any active waste disposal site to implement work practice requirements to limit asbestos emissions from building demolition and

renovation activities, including the removal and associated disturbance of asbestos-containing materials.

Stationary sources of emissions are subject to these rules and other rules and are regulated through the SCAQMD's permitting process. Through this permitting process, SCAQMD monitors the amount of stationary emissions being generated and uses this information in developing AQMPs. The proposed project would be subject to SCAQMD rules and regulations to reduce specific emissions and mitigate potential air quality impacts.

Southern California Association of Governments (SCAG)

SCAG is a council of governments for the Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. As a regional planning agency, SCAG serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG also serves as the regional clearinghouse for projects requiring environmental documentation under federal and State law. In this role, SCAG reviews projects to analyze their impacts on SCAG's regional planning efforts.

Although SCAG is not an air quality management agency, it is responsible for several air quality planning issues. Specifically, as the designated Metropolitan Planning Organization for the Southern California region, it is responsible, pursuant to Section 176(c) of the 1990 amendments to the Clean Air Act, for providing current population, employment, travel, and congestion projections for regional air quality planning efforts. The SCAG projections form the basis for the transportation components of the AQMP and are utilized in the preparation of air quality forecasts and the consistency analysis that is included in the AQMP.

4.2.3.4 Local Regulations

UCR 2005 Long Range Development Plan (2005 LRDP) EIR and 2005 LRDP Amendment 2 (2011)

The 2005 LRDP EIR was prepared in November 2004 to evaluate potential impacts to the University and the surrounding area generated by the implementation of the LRDP. It details a series of Planning Strategies (PS) and Programs and Practices (PP) that are relevant to air quality and were intended to reduce impacts of buildout of the 2005 LRDP, as amended. Measures relating to potential air quality impacts of the proposed project are identified below.

PP 4.3-2(a) *Construction contract specifications shall include the following:*

(i) Compliance with all SCAQMD rules and regulations

(ii) Maintenance programs to assure vehicles remain in good operating condition

(iii) Avoid unnecessary idling of construction vehicles and equipment

(iv) Use of alternative fuel construction vehicles

(v) Provision of electrical power to the site, to eliminate the need for on-site generators

PP 4.3-2(b) *The campus shall continue to implement dust control measures consistent with SCAQMD Rule 403—Fugitive Dust during the construction phases of new project development. The following actions are currently recommended to implement Rule 403 and have been quantified by the SCAQMD as being able to reduce dust generation between 30 and 85 percent depending on the source of the dust generation. The Campus shall implement these measures as necessary to reduce fugitive dust. Individual measures shall be specified in construction documents and require implementation by construction contractor:*

(i) Apply water and/or approved non-toxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas that have been inactive for 10 or more days)

(ii) Replace ground cover in disturbed areas as quickly as possible

(iii) Enclose, cover, water twice daily, or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content

(iv) Water active grading sites at least twice daily

(v) Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period

(vi) All trucks hauling dirt, sand, soil, or other loose materials shall be covered or maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code

(vii) Sweep streets at the end of the day if visible soil material is carried over to adjacent roads

(viii) Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip

(ix) Apply water three times daily or chemical soil stabilizers according to manufacturers' specifications to all unpaved parking or staging areas or unpaved road surfaces

(x) Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads (This is identical to Geology PP 4.6-2(a) and Hydrology PP 4.8-3(c).)

PP 4.3-2(c) *The campus shall continue to implement SCAQMD Rule 1403—Asbestos when demolishing existing buildings on the campus.*

4.2.4 IMPACTS AND MITIGATION MEASURES

4.2.4.1 Significance Criteria

The impacts related to air quality from the proposed projects and related projects would be considered significant if they would exceed the following Standards of Significance, in accordance with Appendix G of the *State CEQA Guidelines*:

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

The *State CEQA Guidelines* (Section 15064.7) provide that, when available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make determinations of significance. The potential air quality impacts of the proposed project are, therefore, evaluated according to thresholds developed by the SCAQMD in the *CEQA Air Quality Handbook*, *Air Quality Analysis Guidance Handbook*, and subsequent guidance, discussed below. These thresholds generally incorporate the checklist questions contained in Appendix G of the *State CEQA Guidelines*.

Construction Emissions

Impacts related to construction emissions associated with the proposed projects and related projects would be considered significant if construction emissions would exceed the SCAQMD construction emissions thresholds specified in **Table 4.2-4, SCAQMD Daily Emissions Thresholds (Construction and Operations).**

Operational Emissions

The SCAQMD has recommended two sets of air pollution thresholds to assist lead agencies in determining whether or not the impact from operational-phase emissions of a proposed project would be significant. These are defined below as Primary and Secondary Thresholds. The SCAQMD recommends that a project's impacts be considered significant if either threshold is exceeded.

Significance Thresholds

Impacts related to operational emissions associated with the proposed project would be considered significant if its operational emissions exceed the limits specified in **Table 4.2-4**.

Table 4.2-4
SCAQMD Daily Emissions Thresholds (Construction and Operations)

	Pollutant (pounds per day)						
Significance Threshold	**VOC**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**Lead (Pb)**
Construction	75	100	550	150	150	55	3
Operation	55	55	550	150	150	55	3

Source: South Coast Air Quality Management District, Air Quality Significance Thresholds, (2015).

Localized Significance Thresholds

The SCAQMD recommends the evaluation of localized air quality impacts to sensitive receptors in the immediate vicinity of the project site as a result of construction and operational activities. The thresholds are based on standards established by the SCAQMD in the *Final Localized Significance Threshold Methodology*. The thresholds for NOx and CO represent the allowable increase in concentrations above background levels in the vicinity of the project that would not cause or contribute to an exceedance of the relevant ambient air quality standards. The thresholds for PM10 and PM2.5 are based on emission levels specified in SCAQMD rules so as to aid in progress toward attainment of the ambient air quality standards.

For project sites of 5-acres or less, the SCAQMD has established screening criteria/thresholds that can be used to determine the maximum allowable daily emissions that would satisfy the thresholds without project-specific dispersion modeling. The allowable emission rates depend on: (1) the SRA in which the project is located, (2) the size of the project site, and (3) the distance between the project site and the nearest sensitive receptor (e.g., residences, schools, hospitals). The project site is located in SRA 23 and is approximately 51 acres. Although earthmoving and construction activities would occur in different

locations and phases over the construction period, the maximum daily amount of disturbed area during project construction is estimated to be no more than 5-acres. The nearest off-site sensitive receptors are located approximately 75 meters to the north of the project site. The nearest on-site sensitive receptors are located within 25 meters of the project site at the UCR Child Development Center. A 25-meter distance was used to determine the screening criteria/threshold as a conservative assumption. A significant impact would occur during construction or operation if on-site emissions exceed the thresholds shown in **Table 4.2-5, Localized Significance Thresholds**.

Table 4.2-5
Localized Significance Thresholds

	Pollutant (pounds per day)[1]			
Localized Significance Threshold	**NOx**	**CO**	**PM10**	**PM2.5**
Construction (On site)	270	1,577	13	8
Operational (On site)	270	1,577	4	2

Source: South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, (2008), Appendix C.

[1] *The NOx LST thresholds contained in the SCAQMD lookup tables are based on emissions of NOx from construction of the Project and assume gradual conversion to NO_2 based on the distance from the Project site boundary.*

4.2.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The Initial Study (included in this Revised Draft EIR as Appendix 1.0) found that the proposed project would create odors related to diesel-fueled equipment and architectural coatings during the construction phase. Additionally, operation of the proposed project may result in limited, localized, and temporary odors from the occasional use of maintenance products, cooking activities, and trash receptacles. However, it was determined that these odors would not be pervasive enough to cause objectionable odors affecting a substantial number of people. Consequently, short-term construction and long-term operation from implementation of the NDD Plan, including the Phase 1 project, would not create objectionable odors that could affect a substantial number of persons, nor expose project site occupants to substantial odors, and the impact would be less than significant and no further evaluation is necessary.

With the exception of the aforementioned potential for the proposed project to create objectionable odors, the Initial Study deferred analysis of the air quality impacts of the proposed project and related projects to the EIR. Therefore, all of the CEQA checklist items are addressed in the following analysis.

4.2.4.3 Methodology

The proposed projects and related projects are evaluated in this EIR for potential impacts related to air quality, such as increases in construction or operational emissions or release of toxic air contaminants. While not a requirement of CEQA, the analysis of potential adverse air quality impacts in this EIR incorporates a conservative approach. This approach entails the premise that whenever the analysis requires that assumptions be made, the assumptions that result in the greatest reasonable adverse impacts are typically chosen. This method ensures that potential effects of the proposed projects and related projects are not understated.

The methodology used to evaluate the air quality impacts associated with construction and operation of the proposed projects and related projects is based on the SCAQMD's *CEQA Air Quality Handbook.*[10] The California Emissions Estimator Model (CalEEMod) was used to estimate emissions during construction and operation. CalEEMod is a program that calculates air emissions from land use sources and incorporates the CARB's EMFAC model for on-road vehicle emissions and the OFFROAD model for off-road vehicle emissions. The model also incorporates factors specific to the project region, such as VOC content in architectural coating and vehicle fleet mixes. The model can analyze emissions that occur during different phases of construction, such as building construction and architectural coatings, concurrently or separately. The emissions estimates are based on typical construction phasing schedules and equipment activity levels. Emission calculations and results of the air quality modeling conducted for the proposed projects and related projects are provided in **Appendix 4.2.**

Construction-related emissions can be distinguished as either on site or off site. On-site emissions generated during construction principally consist of exhaust emissions (VOC, NO_X, CO, SO_X, PM10, and PM2.5) from the operation of heavy-duty construction equipment, fugitive dust (PM10 and PM2.5) from disturbed soil, and VOC emissions from asphalt paving and architectural coatings. Off-site emissions during the construction phase normally consist of exhaust emissions and entrained paved road dust (PM10 and PM2.5) from construction worker commute trips, material delivery trips, and haul truck material removal trips to and from the construction site.

Air pollutants associated with operations would be generated primarily by two source categories: stationary and mobile. Stationary sources consist of "point sources," which have one or more fixed emission sources at a single facility, and "area sources," which are widely distributed and produce many small emissions. When viewed individually, an area source may have an insignificant impact on air quality; however, if viewed collectively, area sources could have a significant impact on air quality.

10 SCAQMD. 1993. *CEQA Air Quality Handbook.* November.

Examples of area sources include water heaters, painting operations, landscape maintenance equipment, and consumer products, such as cleaning supplies. "Mobile sources" refers to combustion exhaust and evaporative emissions from motor vehicles.

4.2.4.5 Project Impacts and Mitigation Measures

Impact 4.2-1: The project would not conflict with or obstruct implementation of the applicable air quality plan. (*Less than Significant*)

The proposed project will neither conflict with the SCAQMD's 2016 AQMP nor jeopardize the region's attainment of air quality standards. The AQMP focuses on achieving clean air standards while accommodating population growth forecasts by SCAG. Specifically, SCAG's growth forecasts from the 2016 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) are largely built off local growth forecasts from local governments which include population forecasts from UCR. UCR is currently consistent with their LRDP student population projections.[11] As shown in **Section 4.7**, **Population and Housing**, **Table 4.7-1,** the SCAG 2016 RTP/SCS accommodates up to 336,300 persons in 2020 and 384,100 persons in 2035. The housing provided by the NDD Plan accommodates the growth anticipated by the campus under the 2005 LRDP, and is not expected to increase enrollment not planned for by the campus, the City of Riverside General Plan, or the SCAQMD AQMP. Therefore, the proposed project is consistent with the applicable air quality plans, and this impact would be less than significant, and no mitigation is required.

Impact 4.2-2: Construction and operation of the proposed project could result in emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation. (*Significant; Significant and Unavoidable*)

Construction Emissions

Construction operations would result in emissions of air pollutants. These emissions were primarily modeled using CalEEMod, a land use and construction model used to calculate emissions generated from construction and operation of new development projects. Project-specific data was used where available. Where project-specific information was not available, model default values provided by CalEEMod were used. Construction of Phase 1 of the project is estimated to take place over approximately two and a half years beginning in the Spring of 2019 with an estimated completion of Fall of 2021. The phasing of the remainder of the NDD Plan development is uncertain at this time and may occur in one or more phases.

[11] LRDP estimate: 25,000 by the year 2015 with 50% being housed on-campus. Actual student population in 2015: 21,539. https://ucrtoday.ucr.edu/32863

To be conservative, for the purposes of this analysis, construction of the entire of the NND Plan is anticipated to begin in spring of 2019 with an estimated completion date of winter 2025.

Estimated maximum air pollutant emission rates for construction activities in the Basin are shown in **Table 4.2-6, Estimated Project Construction Emissions**.

The project will be required to implement dust control measures consistent with SCAQMD Rule 403 (Fugitive Dust) during the construction phases of new project development. The following actions are currently recommended to implement Rule 403 and have been quantified by the SCAQMD as being able to reduce dust generation between 30 and 85 percent depending on the dust generation source:

- Apply water and/or approved nontoxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas that have been inactive for 10 or more days).
- Replace ground cover in disturbed areas as quickly as possible
- Enclose, cover, water twice daily, or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content.
- Water active grading sites at least twice daily during construction activities.
- Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period.
- All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least 2 feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code.
- Sweep streets at the end of the day if visible soil material is carried over to adjacent roads.
- Install wheel washers or gravel construction entrances where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the sites each trip.
- Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads.

The emissions values shown in **Table 4.2-6, Estimated Project Construction Emissions- Unmitigated,** reflect compliance with SCAQMD Rule 403, as well as project design features noted in the model outputs in **Appendix 4.2**.

Table 4.2-6
Estimated Project Construction Emissions - Unmitigated

	Maximum Emissions in Pounds per Day					
Construction Year	**VOC**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
NDD Phase 1						
Maximum Daily Emissions	38	100	57	<1	30	18
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceeds Threshold?	**No**	**Yes**	**No**	**No**	**No**	**No**
Localized Emissions	36	100	55	<1	16	10
SCAQMD Localized Threshold	N/A	270	1,577	N/A	13	8
Exceeds Threshold?	**No**	**No**	**No**	**No**	**Yes**	**Yes**
Remaining Phases of NDD Plan						
Maximum Daily Emissions	71	50	89	<1	22	11
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Localized Emissions	64	39	33	<1	8	5
SCAQMD Localized Threshold	N/A	270	1,577	N/A	13	8
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Impact Sciences, 2019.
*Emissions calculations are provided in **Appendix 4.2**.*

As shown in **Table 4.2-6,** with implementation of SCAQMD Rule 403, Phase 1 would exceed SCAQMD localized thresholds of significance during construction for PM10 and PM2.5. The proposed project would only exceed the SCAQMD regional significance threshold for NOx during the remaining phases of the NDD Plan construction. Phase 1 would not exceed any SCAQMD thresholds of significance during construction.

It is possible that during subsequent phases of construction of the Plan, emissions may be slightly higher or lower than those presented in **Table 4.2-6**. Emissions would be affected by a number of factors, including construction schedule and the type of quantity of equipment needed to construct the project. Project construction time and phasing estimates are only currently available for Phase 1. Due to the variability of construction emissions for the remaining project site, mitigation measures listed below shall apply to both Phase 1 and also the remaining phases of construction required to build-out the remainder of the Plan. Construction phase impacts would be less than significant with mitigation incorporated.

Construction Mitigation Measure

The following mitigation measure is from the UC Riverside LRDP Amendment 2 Draft EIR, and is required in order to reduce NOx emissions from construction equipment:

MM 4.3-1b *For each construction project on campus, the University shall require that the project include a construction emissions control plan that includes a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used for an aggregate of 40 or more hours during any portion of the construction project. During construction activity, the contractor shall utilize CARB certified equipment or better for all on-site construction equipment according to the following schedule:*

- *Post January 1, 2015: All off-road diesel-powered construction equipment greater than 50 horsepower shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.*

- *A copy of each unit's certification specification, BACT documentation and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit or equipment.*

The contractor shall also implement the following measures during construction:

- *Prohibit vehicle and engine idling in excess of 5 minutes and ensure that all off-road equipment is compliant with CARB's in-use off-road diesel vehicle regulation and SCAQMD Rule 2449.*

- *Configure construction parking to minimize traffic interference.*

- *Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow.*

- *Provide dedicated turn lanes for movement of construction trucks and equipment on- and off site.*

- *Schedule construction activities that affect traffic flow on the arterial system to off-peak hour to the extent practicable.*

- *Improve traffic flow by signal synchronization, and ensure that all vehicles and equipment will be properly tuned and maintained according to manufacturers' specifications.*

- *Use diesel-powered construction vehicles and equipment that operate on low-NOx fuel where possible.*
- *Reroute construction trucks away from congested streets or sensitive receptor areas.*
- *Maintain and tune all vehicles and equipment according to manufacturers' specifications.*

Implementation of the following mitigation measure from the UC Riverside LRDP Amendment 2 Draft EIR would further reduce VOC impacts:

MM 4.3-1c *To minimize VOC emissions from the painting/finishing phase, for each construction project on the campus, the project contractor will implement the following VOC control measures:*

- *Construct or build with materials that do not require painting, or use pre-painted construction materials.*
- *If appropriate materials are not available or are cost-prohibitive, use low VOC content materials more stringent than required under SCAQMD Rule 113.*

Residual Impacts

Table 4.2-7, Estimated Project Construction Emissions- Mitigated, below, shows the estimated construction emissions during construction with the implementation of **MM 4.3-1b.** Both regional and localized construction emissions would not exceed SCAQMD significance thresholds. Residual impacts would be less than significant.

Table 4.2-7
Estimated Project Construction Emissions - Mitigated

	Maximum Emissions in Pounds per Day					
Construction Year	**VOC**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
NDD Phase 1						
Maximum Daily Emissions	35	11	59	<1	12	6
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Localized Emissions	32	5	54	<1	11	6
SCAQMD Localized Threshold	N/A	270	1,577	N/A	13	8
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
NDD Plan						
Maximum Daily Emissions	69	35	93	<1	21	6
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Localized Emissions	62	1	37	<1	7	4
SCAQMD Localized Threshold	N/A	270	1,577	N/A	13	8
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Impact Sciences, 2018.
*Emissions calculations are provided in **Appendix 4.2**.*
[1] Maximum emissions of VOC, PM10, and PM2.5 appear lower than Phase 1 as a result of a lengthened construction schedule as compared to Phase 1 to account for the construction of additional phases. As noted, the NDD Plan has not yet been designed beyond Phase 1, and the construction schedule, equipment, and resulting emissions are an estimate. To reflect a worst-case scenario, Phase 1 emissions are used in place of NDD Plan outputs when NDD Plan outputs are lower than Phase 1 outputs.

Operational Emissions

The proposed project would result in emissions of criteria pollutants during operation as a result of vehicle traffic, stationary sources such as natural gas usage, landscaping, and energy and water use. Operations would generate new operational traffic and result in a net increase in population, and would therefore result in emissions of air pollutants. **Table 4.2-8, Estimated Project Operational Emissions,** shows the emissions generate by operation of the project. These emissions include project design features, such as no wood burning stoves and assumptions made in the traffic study regarding modes of transportation.

Table 4.2-8
Estimated Project Operational Emissions

	Maximum Emissions in Pounds per Day					
Construction Year	**VOC**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
NDD Phase 1						
Maximum Daily Emissions	25	57	191	1	46	13
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Localized Project Emissions	13	<1	34	<1	<1	<1
SCAQMD Localized Threshold	N/A	270	1,577	N/A	4	2
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
NDD Plan						
Maximum Daily Emissions	61	107	415	<1	119	33
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceeds Threshold?	**No**	**Yes**	**No**	**No**	**No**	**No**
Localized Emissions	37	1	103	<1	1	1
SCAQMD Localized Threshold	N/A	270	1,577	N/A	4	2
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
NDD Plan (Phase 1 + Remaining Phases)						
Maximum Daily Emissions	**86**	**165**	**606**	**2**	**165**	**45**
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**
Localized Emissions	50	2	138	<1	1	1
SCAQMD Localized Threshold	N/A	270	1,577	N/A	4	2
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

*Source: Impact Sciences, Inc. Emissions calculations are provided in **Appendix 4.2**.*
Totals in table may not appear to add exactly due to rounding in the computer model calculations.

As shown in **Table 4.2-8,** operation of Phase 1 of the proposed project would result in operational emissions which would not exceed any of the SCAQMD regional or localized significance thresholds. However, with full buildout of the NDD Plan would result in significant regional emissions of VOC, NOx, CO, and PM10. NOx, CO, and PM10 emissions associated with buildout of the NDD Plan are primarily associated with off-site motor vehicle emissions. The proposed project includes feasible design features to reduce vehicle emissions, such as electric vehicle charging, bicycle parking, and a mixed-use design. However, off-site vehicle emissions would be difficult to further mitigate and also difficult to quantify.

NOx is an ozone precursor, and the main health concern of exposure to ground-level ozone is effects on the respiratory system, especially on lung function. Although it is difficult to predict the magnitude of

health effects from the project's exceedance of significance criteria for regional NOx emissions, the increase in emissions associated with the proposed project represents a fraction of total South Coast Air Basin regional NOx emissions (up to approximately 0.03 tons per day during Phase 1 operation and up to 0.08 tons per day during NDD Plan operation; compared to an estimated 359 tons per day in the basin region in 2018).[12] Table 4.2-2 above indicates that the applicable ozone standards were exceeded multiple times between 2014 and 2016. The proposed project's NOx increases could contribute to new or exacerbated air quality violations in the basin region by contributing to more days of ozone exceedance or result in Air Quality Index values that are unhealthy for sensitive groups and other populations. On unhealthy days, persons are recommended to avoid both prolonged and heavy-exertion outdoor activities.[13]

Adverse effects on human health are not caused directly by VOCs, but rather by reactions of VOCs to form secondary air pollutants, including ozone. VOCs are also referred to as reactive organic compounds (ROCs) or reactive organic gases (ROGs). VOCs themselves are not "criteria" pollutants; however, they contribute to formation of O_3. Although it is difficult to predict the magnitude of health effects from the project's exceedance of significance criteria for regional VOC emissions, the increase in emissions associated with the proposed project represents a fraction of total South Coast Air Basin regional CO emissions (up to approximately 0.01 tons per day during Phase 1 operation and up to 0.04 tons per day during NDD Plan operation; compared to an estimated 613 tons per day in the basin region in 2018).[14] The proposed projects VOC increases could exacerbate the health concerns listed above or result in Air Quality Index values that are unhealthy for sensitive groups and other populations. On unhealthy days, persons are recommended to avoid both prolonged and heavy-exertion outdoor activities.[15]

Excess amounts of CO can cause aggravation of angina pectoris and other aspects of coronary heart disease, decreased exercise tolerance in persons with peripheral vascular disease and lung disease, impairment of central nervous system functions; and, possible increased risk to fetuses. Although it is difficult to predict the magnitude of health effects from the project's exceedance of significance criteria for off-site, regional CO emissions, the increase in emissions associated with the proposed project represents a fraction of total South Coast Air Basin regional CO emissions (up to approximately 0.1 tons per day

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12 California Air Resources Board, CEPAM 2016- Standard Emission Tool https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php, accessed February 12, 2019.

13 U.S. Environmental Protection Agency, Air Quality Index, A Guide to Air Quality and Your Health, February 2014, www.epa.gov/airnow/aqi_brochure_02_14.pdf, accessed February 12, 2019.

14 California Air Resources Board, CEPAM 2016- Standard Emission Tool https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php, accessed February 12, 2019.

15 U.S. Environmental Protection Agency, Air Quality Index, A Guide to Air Quality and Your Health, February 2014, www.epa.gov/airnow/aqi_brochure_02_14.pdf, accessed February 12, 2019.

during Phase 1 operation and up to 0.3 tons per day during NDD Plan operation; compared to an estimated 2,530 tons per day in the basin region in 2018).[16] Table 4.2-2 above indicates that the applicable CO State standards were not exceeded between 2014 and 2016. The proposed project's CO increases could result in Air Quality Index values that are unhealthy for sensitive groups and other populations. On unhealthy days, persons are recommended to avoid both prolonged and heavy-exertion outdoor activities.[17]

PM10 emissions are expected to be from commuter vehicles primarily, and include road dust, brake and tire wear, and combustion. It is anticipated that the majority of students would not be driving diesel vehicles, and therefore, diesel particulate matter is not anticipated to be a large contributor to PM10 emissions. The main health concerns associated with PM10 include an exacerbation of symptoms in sensitive patients with respiratory disease and excess seasonal declines in pulmonary function, especially in children. Although it is difficult to predict the magnitude of health effects from the project's exceedance of significance criteria for regional PM10 emissions, the increase in emissions associated with the proposed project represents a fraction of total South Coast Air Basin regional PM10 emissions (up to approximately 0.02 tons per day during Phase 1 operation and up to 0.08 tons per day during NDD Plan operation; compared to an estimated 250 tons per day in the basin region in 2018).[18] Table 4.2-2 above indicates that the applicable PM10 State standards were exceeded multiple times between 2014 and 2016. The proposed projects PM10 increases could exacerbate the health concerns listed above or result in Air Quality Index values that are unhealthy for sensitive groups and other populations. On unhealthy days, persons are recommended to avoid both prolonged and heavy-exertion outdoor activities.[19]

The NDD Plan would result in significant air pollutant emissions of VOC, NOx, CO, and PM10, and therefore the proposed project could result in emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation. The NDD Plan would not result in significant emissions of localized criteria pollutants. There are no feasible mitigation measures to reduce off-site mobile source emissions; therefore, during operation, regional criteria pollutant emissions impacts would result in a significant impact.

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16 California Air Resources Board, CEPAM 2016- Standard Emission Tool https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php, accessed February 12, 2019.

17 U.S. Environmental Protection Agency, Air Quality Index, A Guide to Air Quality and Your Health, February 2014, www.epa.gov/airnow/aqi_brochure_02_14.pdf, accessed February 12, 2019.

18 California Air Resources Board, CEPAM 2016- Standard Emission Tool https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php, accessed February 12, 2019.

19 U.S. Environmental Protection Agency, Air Quality Index, A Guide to Air Quality and Your Health, February 2014, www.epa.gov/airnow/aqi_brochure_02_14.pdf, accessed February 12, 2019.

Project Specific Operational Mitigation Measure

The following mitigation measures are required to reduce VOC emissions from area sources:

MM AIR-1 When re-applying architectural coatings (e.g., paint), the campus shall use coatings that have no greater than a rating of 50 grams per liter of VOC.

MM AIR-2 The cleaning supplies used in common areas of campus facilities shall be designated as low-VOC products.

Residual Impacts

Although mitigation measures **MM AIR-1** and **MM AIR-2** would reduce on-site VOC emissions, it is not expected that this action alone would be capable of reducing VOC emissions to a level of less than significant. Emissions of VOC, NOx, CO, and PM10 would remain above SCAQMD significance thresholds, and therefore the proposed project could result in emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, operational impacts would be significant and unavoidable.

Impact 4.2-3: Implementation of the proposed project would expose sensitive receptors to substantial pollutant concentrations. (*Less than Significant*)

Toxic Air Contaminants

A project that would produce net emissions that exceed the SCAQMD's thresholds of significance for NO_x, CO, PM10 or PM2.5 expose sensitive receptors to substantial concentration of these local pollutants and would be considered significant. Sensitive receptors are populations that are more susceptible to the effects of air pollution than are the population at large. The SCAQMD identifies the following as sensitive receptors: long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, child care centers, and athletic facilities.[20]

As noted above, nearby off-site sensitive receptors include residences located approximately 300 feet to the north of the project site, and nearby schools including Highland Elementary School, located approximately 800 feet northeast of the site; the Islamic Academy of Riverside, situated 1,000 feet southwest; and the REACH Leadership Academy, 1,200 feet to the west. The nearest on-site sensitive receptor are the UCR Child Development Centers located approximately 50 feet to the northeast of the project site.

20 SCAQMD CEQA Air Quality Handbook, 1993, page 5-1.

The project would not result in any substantial emissions of TACs during the construction or operations phase. During the construction phase, the primary air quality impacts would be associated with the combustion of diesel fuels, which produce exhaust-related particulate matter that is considered a toxic air contaminant by ARB based on chronic exposure to these emissions.[21] However, construction activities would not produce chronic, long-term exposure to diesel particulate matter. Additionally, implementation of **MM 4.3-1b** would further reduce TAC emissions during construction by requiring the use of cleaner burning construction equipment. Therefore, project impacts related to TACs during construction would be less than significant.

During long-term project operations, the project does not include typical sources of acutely and chronically hazardous TACs such as industrial manufacturing processes and automotive repair facilities. Further, any station source of TACs associated with the project (emergency generator, restaurant equipment, etc.) would be required to be permitted by the SCAQMD prior to operation. As a result, the project would not create substantial concentrations of TACs. In addition, the SCAQMD recommends that health risk assessments be conducted for substantial sources of diesel particulate emissions (e.g., truck stops and warehouse distribution facilities) and has provided guidance for analyzing mobile source diesel emissions.[22] The project would not generate a substantial number of truck trips. Based on the limited activity of TAC sources, the project would not warrant the need for a health risk assessment associated with on-site activities. Long-term operation of the Proposed Project would not have any significant impacts on pollutant concentrations at nearby receptors. Project impacts would be less than significant and no further analysis is required.

CO Hotspots

Motor vehicles are a primary source of pollutants within the project vicinity. Traffic congested roadways and intersections have the potential to generate localized levels of CO. Localized areas where ambient concentrations exceed state and/or federal standards are termed CO "hotspots." CO is produced in greatest quantities from vehicle combustion and is usually concentrated at or near ground level because it does not readily disperse into the atmosphere. As a result, potential air quality impacts to sensitive receptors are assessed through an analysis of localized CO concentrations. Areas of vehicle congestion have the potential to create CO hotspots that exceed the state ambient air quality 1-hour standard of 20 ppm or the 8-hour standard of 9 ppm. The federal levels are less stringent than the state standards and are based on 1- and 8-hour standards of 35 and 9 ppm, respectively. Thus, an exceedance condition would occur, based on the state standards prior to exceedance of the federal standard.

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21 California Office of Environmental Health Hazard Assessment. Health Effects of Diesel Exhaust, website: www.http://oehha.ca.gov/public_info/facts/dieselfacts.html, accessed July 20, 2017.

22 SCAQMD, Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions, December 2002.

Long-term operations of the proposed project would not result in exceedances of CO air quality standards at roadways in the area. This is due to three key factors. First, CO hotspots are extremely rare and only occur in the presence of unusual atmospheric conditions and extremely cold conditions, neither of which applies to the project area. Second, auto-related emissions of CO continue to decline because of advances in fuel combustion technology in the vehicle fleet. Finally, the project would not contribute to the levels of congestion that would be needed to produce the amount of emissions needed to trigger a potential CO hotspot.

Screening analysis guidelines for localized CO hotspot analyses from Caltrans recommend that projects in CO attainment areas focus on emissions from traffic intersections where air quality may get worse.[23] Specifically, projects that significantly increase the percentage of vehicles operating in cold start mode, significantly increase traffic volumes, or worsen traffic flow should be considered for more rigorous CO modeling. The project is not anticipated to significantly increase traffic volumes or worsen traffic flow. In addition, the project would not significantly increase the percentage of vehicles operating in cold start mode or substantially worsen traffic flow.

As a result, no significant project-related impacts would occur relative to future carbon monoxide concentrations. The impact would be less than significant, and no further analysis is required.

4.2.4.6 Cumulative Impacts and Mitigation Measures

Impact 4.2-4: **Implementation of the proposed project could result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard. (*Cumulatively Considerable*)**

Projects that individually exceed the construction and/or operational mass-based emissions thresholds would also result in a cumulatively considerable contribution to air quality impacts and would be considered cumulatively significant. The SCAQMD recommends that a project's potential contribution to cumulative impacts should be assessed utilizing the same significance criteria as those for project specific impacts. Therefore, this EIR assumes that individual development projects that generate construction or operational emissions that exceed the SCAQMD recommended daily thresholds for project-specific impacts would also cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment.

23 Caltrans, Transportation Project-Level Carbon Monoxide Protocol, updated October 13, 2010.

As discussed previously under Impact 4.3-2, construction activities for both the NDD Plan and NDD Phase 1 would not cause a net increase in daily construction related emissions. Construction projects within the NDD Plan do not exceed the SCAQMD recommended daily thresholds for project-specific impacts would not be considered to cause a cumulatively considerable increase in emissions.

With regard to daily operational emissions, Impact 4.3-2 concludes that the net increase in daily operational emissions associated with the NDD Plan would exceed the regional thresholds of significance recommended by the SCAQMD for NOx and PM10 during operation. Therefore, implementation of the NDD Plan would result in a cumulatively considerable net increase in daily operational campus emissions that contribute to an existing or projected air quality exceedance. Odor impacts would not be cumulatively considerable. The NDD Phase 1 and NDD Plan's contribution to construction and operational impacts would be cumulatively considerable.

4.3 GREENHOUSE GAS EMISSIONS

4.3.1 INTRODUCTION

This section discusses the existing global, national, and statewide conditions related to greenhouse gases (GHG) and global climate change and evaluates the impacts on global climate from the implementation of the proposed North District Development Plan (NDD Plan or project), both during project construction and operation. The impact analysis includes an evaluation of the consistency of project site development with statewide and local planning efforts to reduce GHG emissions. The impact analysis includes an evaluation of the consistency of project site development with statewide and local planning efforts to reduce GHG emissions.

Data used to prepare this section were taken from various sources, including the South Coast Air Quality Management District's *Significance Thresholds*, and technical analyses conducted for the project by Impact Sciences, Inc. Copies of the calculations made to estimate GHG emissions associated with the NDD Plan and supporting technical data are found in **Appendix 4.2** of this Revised Draft EIR (RDEIR).

4.3.2 ENVIRONMENTAL SETTING

4.3.2.1 Background

Global climate change refers to any significant change in climate measurements, such as temperature, precipitation, or wind, lasting for an extended period (i.e., decades or longer).[1] Climate change may result from:

- natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- natural processes within the climate system (e.g., changes in ocean circulation, reduction in sunlight from the addition of GHGs and other gases to the atmosphere from volcanic eruptions); and
- human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

According to scientists, human activities have resulted in a change in global climate. The primary manifestation of global climate change has been a rise in the average global tropospheric temperature of 0.2 degree Celsius (°C) per decade, determined from meteorological measurements worldwide between 1990 and 2005.

1 US Environmental Protection Agency, 2018. "Glossary of Climate Change Terms," https://www3.epa.gov/climatechange/glossary.html.

The natural process through which heat is retained in the troposphere[2] is called the greenhouse effect. The greenhouse effect traps heat in the troposphere through a threefold process: (1) short-wave radiation in the form of visible light emitted by the Sun is absorbed by the Earth as heat; (2) long-wave radiation is re-emitted by the Earth; and (3) GHGs in the upper atmosphere absorb or trap the long-wave radiation and re-emit it back towards the Earth and into space. This third process is the focus of current climate change policy because increased quantities of GHGs in the earth's atmosphere result in more of the long-wave radiation being trapped in the atmosphere.

While water vapor and carbon dioxide (CO_2) are the most abundant GHGs, other trace GHGs have a greater ability to absorb and re-radiate long-wave radiation. To gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-emit long-wave radiation over a specific period. The GWP of a gas is determined using CO_2 as the reference gas, which has a GWP of 1 over 100 years.[3] For example, a gas with a GWP of 10 is 10 times more potent than CO_2 over 100 years. The use of GWP allows GHG emissions to be reported using CO_2 as a baseline. The sum of each GHG multiplied by its associated GWP is referred to as "carbon dioxide equivalents" (CO_2e). This essentially means that 1 metric ton of a GHG with a GWP of 10 has the same climate change impacts as 10 metric tons of CO_2.

The impacts of climate change have been documented by the Office of Environmental Health Hazard Assessment (OEHHA), which includes the following changes that are already occurring:[4,5]

- A recorded increase in annual average temperatures as well as increases in daily minimum and maximum temperatures.
- An increase in the occurrence of extreme events, including wildfire and heat waves.
- A reduction in spring runoff volumes, as a result of declining snowpack.
- A decrease in winter chill hours, necessary for the production of high-value fruit and nut crops.
- Changes in the timing and location of species sightings, including migration upslope of flora and fauna, and earlier appearance of Central Valley butterflies.

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2 The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface from 6 to 7 miles.

3 All GWPs are given as 100-year GWP. Unless noted otherwise, all GWPs were obtained from the Intergovernmental Panel on Climate Change. *Climate Change 1995: The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report of the IPCC*. Cambridge (UK): Cambridge University Press, 1996

4 OEHHA, *Indicators of Climate Change in California*. https://oehha.ca.gov/climate-change/document/indicators-climate-change-california, accessed October 2018.

5 California Air Resources Board, 2017. *California's 2017 Climate Change Scoping Plan*. November.

In addition to this, California's recent drought incited land subsidence, pest invasions that killed over 100 million trees, and water shortages. The total statewide economic cost of the 2014 drought was estimated at $2.2 billion, with a total loss of 17,100 jobs.[6] An analysis of water usage between 1990 and 2012 showed that while California's energy policies have supported climate mitigation efforts, the performance of these policies have increased vulnerability to climate impacts.[7]

According to the U.S. Forest Service National Insect and Disease Forest Risk Assessment,[8] California is at risk of losing 12 percent of the total area of forests and woodlands in the State due to insects and disease, or over 5.7 million acres. While future climate change is not modeled within the risk assessment, and current drought conditions are not accounted for in these estimates, the projected climate changes over a 15-year period (2013-2027) are expected to significantly increase the number of acres at risk, and will increase the risk from already highly destructive pests such as the mountain pine beetle. A recent aerial survey by the U.S. Forest Service identified more than 100 million dead trees in California.[9]

The warming climate also causes sea level rise by warming the oceans which causes water to expand, and by melting land ice which transfers water to the ocean. Sea level rise is expected to magnify the adverse impact of any storm surge and high waves on the California coast. As temperatures warm and GHG concentrations increase more carbon dioxide dissolves in the ocean, making it more acidic. More acidic ocean water affects a wide variety of marine species, including species that people rely on for food.[10]

While more intense dry periods are anticipated under warmer conditions, increased extreme wet conditions are also expected to increase due to more frequent warm, wet atmospheric river events and a higher proportion of precipitation falling as rain instead of snow. In recent years, atmospheric rivers have also been recognized as the cause of the large majority of major floods in rivers all along the U.S. West Coast and as the source of 30-50 percent of all precipitation in the same region.[11] These extreme precipitation events, together with the rising snowline, often cause devastating floods in major river basins (e.g., California's Russian River). Looking ahead, the frequency and severity of atmospheric rivers

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6 Howitt, R., Medellin-Azuara, J., MacEwan, D., Lund, J., and Summer, D. 2014. *Economic Analysis of 2014 Drought for California Agriculture.*

7 Fulton, J., and Cooley, H., 2015. *The Water Footprint of California's Energy System, 1990-2012.*

8 U.S. Forest Service, 2014. *2013-2027 National Insect and Disease Forest Risk Assessment.* January.

9 U.S. Department of Agriculture, 2016. *New Aerial Survey Identifies More Than 100 Million Dead Trees in California.* November.

10 California Air Resources Board, 2017. *California's 2017 Climate Change Scoping Plan.* November.

11 American Meteorological Society, 2013. *Atmospheric Rivers as Drought Busters on the U.S. West Coast,* April.

on the U.S. West Coast will increase due to higher atmospheric water vapor that occurs with rising temperature, leading to more frequent flooding.[12,13]

As GHG emissions continue to accumulate and climate disruption grows, such destructive events will become more frequent. Several recent studies project increased precipitation within hurricanes over ocean regions.[14,15] The primary physical mechanism for this increase is higher water vapor in the warmer atmosphere, which enhances moisture convergence in a storm for a given circulation strength. Since hurricanes are responsible for many of the most extreme precipitation events, such events are likely to become more extreme. Anthropogenic warming by the end of the 21st century will likely cause tropical cyclones globally to become more intense on average. This change implies an even larger percentage increase in the destructive potential per storm, assuming no changes in storm size.[16,17] Thus, the historical record, which once set our expectations for the traditional range of weather and other natural events, is becoming an increasingly unreliable predictor of the conditions we will face in the future. Consequently, the best available science must drive effective climate policy.[18]

California is committed to further supporting new research on ways to mitigate climate change and how to understand its ongoing and projected impacts. California's Fourth Climate Change Assessment and Indicators of Change Report will further update our understanding of the many impacts from climate change in a way that directly informs State agencies' efforts to safeguard the State's people, economy, and environment.[19,20]

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12 Hagos, S., Leung, L.R., Yoon, JH., Lu, J., and Gao, Y., 2016. *A projection of changes in landfalling atmospheric river frequency and extreme precipitation over western North America from the Large Ensemble CESM simulations.* January.

13 Payne, Ashley and Magnusdottir, Gudrun, 2015. *An Evaluation of Atmospheric Rivers over the North Pacific in CMIP5 and their response to warming under RCP 8.5.* November.

14 Easterling, D.R., Kunkel, K.E., Wehner, M.F., and Sun, L., 2016. *Detection and Attribution of Climate Extremes in the Observed Record.* March.

15 National Academies of Sciences, Engineering, and Medicine, 2016. *Attribution of Extreme Weather Events in the Context of Climate Change. , accessed October 2018.*

16 Sobel, A.H., Camargo, S.J., Hall, T.M., Lee, C-Y., Tippett, M.K., and Wing, A.A., 2016. *Human Influence on Tropical Cyclone Intensity, accessed October 2018.*

17 Kossin, James P., NOAA/National Centers for Environmental Information, 2016. *Past and Projected Changes in Western North Pacific Tropical Cyclone Exposure*. July.

18 California Air Resources Board, 2017. *California's 2017 Climate Change Scoping Plan.* November.

19 California's Fourth Climate Change Assessment. http://resources.ca.gov/climate/safeguarding/research/, accessed October 2018.

20 OEHHA, *Indicators of Climate Change in California*. https://oehha.ca.gov/climate-change/document/indicators-climate-change-california, accessed October 2018.

Together, historical data, current conditions, and future projections provide a picture of California's changing climate, with two important messages:

- Change is already being experienced and documented across California, and some of these changes have been directly linked to changing climatic conditions.
- Even with the uncertainty in future climate conditions, every scenario estimates further change in future conditions.

It is critical that California continue to take steps to reduce GHG emissions in order to avoid the worst of the projected impacts of climate change. At the same time, the State is taking steps to make the State more resilient to ongoing and projected climate impacts as laid out by the Safeguarding California Plan.[21] The Safeguarding California Plan is being updated in 2017 to present new policy recommendations and provide a roadmap of all the actions and next steps that state government is taking to adapt to the ongoing and inevitable effects of climate change. California's continuing efforts are vital steps toward minimizing the impact of GHG emissions and a three-pronged approach of reducing emissions, preparing for impacts, and conducting cutting-edge research can serve as a model for action.[22]

4.3.2.2 Greenhouse Gases

GHGs of most concern include the following compounds:

- **Carbon Dioxide (CO_2)**. Anthropogenic CO_2 emissions are primarily generated by fossil fuel combustion from stationary and mobile sources. Over the past 200 years, the burning of fossil fuels such as coal and oil, deforestation, land-use changes, and other activities have caused the concentrations of heat-trapping GHGs to increase significantly in our atmosphere.[23] Carbon dioxide is also generated by natural sources such as cellular respiration, volcanic activity, decomposition of organisms, and forest fires. Carbon dioxide is the most widely emitted GHG and is the reference gas (GWP of 1) for determining the GWP of other GHGs.
- **Methane (CH_4).** Methane is emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the US, the top three sources of CH_4 are landfills, natural gas systems, and

21 California Natural Resources Agency, *Safeguarding California and Climate Change Adaption Policy*, http://resources.ca.gov/climate/safeguarding/, accessed October 2018.

22 California Air Resources Board, 2017.*California's 2017 Climate Change Scoping Plan.* , accessed October 2018.

23 US Environmental Protection Agency, 2018. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2016*, accessed October 2018.

enteric fermentation.[24] Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of CH_4 is 21.

- **Nitrous Oxide (N_2O).** Nitrous oxide is produced by natural and human-related sources. Primary human-related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of N_2O is 310.

- **Hydrofluorocarbons (HFCs).** HFCs typically are used as refrigerants in both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is growing particularly as the continued phase-out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The GWP of HFCs ranges from 140 for HFC-152a to 6,300 for HFC-236fa.

- **Perfluorocarbons (PFCs).** Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. Perfluorocarbons are potent GHGs with a GWP several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime of up to 50,000 years.[25] The global warming potentials (GWPs) of PFCs range from 5,700 to 11,900.

- **Sulfur Hexafluoride (SF_6).** Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the Intergovernmental Panel on Climate Change with a GWP of 23,900. However, its global warming contribution is not as high as the GWP would indicate due to its low mixing ratio, as compared to CO_2 (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm] of CO_2).[26]

Global Ambient CO_2 Concentrations

To determine the global atmospheric variation of CO_2, CH_4, and N_2O from before the start of industrialization, air trapped by ice has been extracted from core samples taken from polar ice sheets. For the period from around 1750 to the present, global CO_2 concentrations increased from a pre-

24 US Environmental Protection Agency, 2018. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2016*, accessed October 2018.

25 US Department of Energy, Energy Information Administration, "Other Gases: Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride," http://www.eia.doe.gov/oiaf/1605/gg00rpt/other_gases.html. n.d., accessed October 2018.

26 US Environmental Protection Agency (US EPA), "High GWP Gases and Climate Change," http://www.epa.gov/highgwp/scientific.html#sf6. n.d., accessed October 2018.

industrialization period concentration to 391 ppm in 2011, which represents an exceedance of 1750 levels by approximately 40 percent.[27] Global CH_4 and N_2O concentrations show similar increases for the same period (see **Table 4.3-1, Comparison of Global Pre-Industrial and 2011 GHG Concentrations**).

Table 4.3-1
Comparison of Global Pre-Industrial and 2011 GHG Concentrations

Greenhouse Gas	Early Industrial Period Concentrations[1]	Natural Range for Last 650,000 Years[1]	2011 Concentrations[2]
Carbon Dioxide (CO_2)	280 ppm	180 to 300 ppm	391 ppm
Methane (CH_4)	715 ppb	320 to 790 ppb	1,803 ppb
Nitrous Oxide (N_2O)	270 ppb	NA	324 ppb

Source:
[1] Intergovernmental Panel on Climate Change (IPCC), Climate Change 2007: The Physical Science Basis, Summary for Policymakers 2007. [2] IPCC,Climate Change 2013 The Physical Science Basis. 2013.
ppm=parts per million; ppb=parts per billion.

Contributions to Greenhouse Gas Emissions

Global

Worldwide anthropogenic GHG emissions for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I) are tracked through the year 2014. The sum of the top five GHG producing nations (plus the European Union) totaled approximately 29,600 million metric tons of CO_2 equivalents ($MMTCO_2e$).[28,29] It should be noted that global emissions inventory data are not all from the same year and may vary depending on the source of the emissions inventory data.[30] The top

27 IPCC, 2013. *Climate Change 2013 The Physical Science Basis.*

28 World Resources Institute, "Climate Analysis Indicators Tool (CAIT)," https://www.climatewatchdata.org/ghg-emissions?breakBy=location&source=31&version=1, accessed October 2018.

29 The CO_2 equivalent emissions commonly are expressed as "million metric tons of carbon dioxide equivalent ($MMTCO_2E$)." The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP, such that $MMTCO_2E$ = (million metric tons of a GHG) x (GWP of the GHG). For example, the GWP for methane is 21. This means that the emission of one million metric tons of methane is equivalent to the emission of 21 million metric tons of CO_2.

30 The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2005 data, the United Nations Framework Convention on Climate Change (UNFCCC) data for the most recent year were used. United Nations Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF," http://unfccc.int/ghg_emissions_data/ghg_data_from_unfccc/time_series_annex_i/ items/3841.php and "Flexible GHG Data Queries" with selections for total GHG emissions excluding LULUCF/LUCF, all years, and non-Annex I countries, http://unfccc.int/di/FlexibleQueries/Event.do?event= showProjection. n.d., accessed October 2018.

five countries and the European Union accounted for approximately 55 percent of the total global GHG emissions according to the most recently available data (see **Table 4.3-2, Top Five GHG Producer Countries and the European Union [Annual]**). The GHG emissions in more recent years may differ from the inventories presented in **Table 4.3-2**; however, the data is representative of currently available global inventory data.

United States

As noted in **Table 4.3-2**, the US was the number two producer of global GHG emissions in 2014. The primary GHG emitted by human activities in the US was CO_2, representing approximately 82 percent of total GHG emissions.[31] Carbon dioxide from fossil fuel combustion, the largest source of GHG emissions, accounted for approximately 76 percent of US GHG emissions.[32]

Table 4.3-2
Top Five GHG Producer Countries and the European Union (Annual)

Top Emitting Countries	2014 GHG Emissions ($MMTCO_2e$)
China	12,000
United States	6,300
European Union (EU), 27 Member States	3,600
India	3,200
Indonesia	2,500
Russia	2,000

Source: World Resources Institute, "Climate Analysis Indicators Tool (CAIT)," http://cait.wri.org/. 2017
Excludes emissions and removals from land use, land-use change, and forestry (LULUCF).
Note: Emissions are based on 2014 data, which is the most recent available.

State of California

The California Air Resources Board (CARB) compiles GHG inventories for the State of California. Based on the 2017 GHG inventory data (i.e., the latest year for which data are available), California emitted 440 $MMTCO_2e$ including emissions resulting from imported electrical power in 2015.[33] Based on the GHG

31 Ibid.

32 Ibid.

33 California Air Resources Board, "California Greenhouse Gas 2000-2015 Inventory by IPCC Category - Summary," 2017. https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_ipcc_sum_2000-15.pdf, accessed October 2018.

inventories compiled by the World Resources Institute,[34] California's total statewide GHG emissions rank second in the US (Texas is number one with 874 $MMTCO_2e$) with emissions of 455 $MMTCO_2e$ in 2017.[35]

The primary contributors to GHG emissions in California are transportation, electric power production from both in-state and out-of-state sources, industry, agriculture and forestry, and other sources, which include commercial and residential activities. **Table 4.3-3, GHG Emissions in California**, provides a summary of GHG emissions reported in California in 2000 and 2015 separated by categories defined by the United Nations Intergovernmental Panel on Climate Change (IPCC).

Table 4.3-3
GHG Emissions in California

Source Category	2000 ($MMTCO_2e$)	Percent of Total	2016 ($MMTCO_2e$)	Percent of Total
ENERGY	**408.90**	**87.52%**	**352.30**	**82.06%**
Energy Industries	159.12	--	115.11	--
Manufacturing Industries & Construction	22.75	--	19.21	--
Transport	175.29	--	168.39	--
Other Sectors (Residential/Commercial/Institutional)	44.67	--	41.08	--
Solid Fuels	0.04	--	0.01	--
Fugitive Emissions from Oil & Natural Gas	5.78	--	6.96	--
Fugitive Emissions from Geothermal Energy Production	1.13	--	1.51	--
Pollution Control Devices	0.11	--	0.00	--
INDUSTRIAL PROCESSES & PRODUCT USE	**19.60**	**4.20%**	**35.0**	**8.15%**
Mineral Industry	5.60	--	5.21	--
Chemical Industry	0.06	--	0.00	--
Non-Energy Products from Fuels & Solvent Use	2.46	--	2.52	--
Electronics Industry	0.52	--	0.16	--
Substitutes for Ozone Depleting Substances	6.10	--	19.24	--
Other Product Manufacture and Use	1.52	--	1.37	--
Other	3.31	--	6.52	--
AGRICULTURE, FORESTRY, & OTHER LAND USE	**29.40**	**6.29%**	**31.30**	**7.30%**
Livestock	19.62	--	22.99	--
Aggregate Sources & Non-CO_2 Sources on Land	9.76	--	8.32	--
WASTE	**9.30**	**1.99%**	**10.70**	**2.49%**
Solid Waste Disposal and Biological Treatment	7.22	--	8.47	--
Biological Treatment of Solid Waste	0.13	--	0.34	--
Wastewater Treatment & Discharge	1.93	--	1.92	--

34 World Resources Institute, *U.S. State Emissions Explorer Tool*, 2017. http://cait.wri.org/, accessed October 2018.

35 Ibid.

Source Category	2000 ($MMTCO_2e$)	Percent of Total	2016 ($MMTCO_2e$)	Percent of Total
EMISSIONS SUMMARY				
Gross California Emissions	**467.19**		**429.30**	

Sources:

[1] *California Air Resources Board, "California Greenhouse Gas 2000-2016 Inventory by IPCC Category - Summary," https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_ipcc_sum_2000-16.pdf, 2017.*

Between 2000 and 2015, the population of California grew by approximately 4.5 million, from 33.9 to 38.4 million.[36] This represents an increase of approximately 13 percent from 2000 population levels. In addition, the California economy, measured as gross state product, grew from $1.4 trillion in 2000 to $2.5 trillion in 2015, nearly doubling the 2000 gross state product.[37] Despite the population and economic growth, California's net GHG emissions only grew by approximately 2 percent. The California Energy Commission (CEC) attributes the slow rate of growth to the success of California's renewable energy programs and its commitment to clean air and clean energy.

4.3.3 REGULATORY FRAMEWORK

4.3.3.1 International

Intergovernmental Panel on Climate Change

The World Meteorological Organization (WMO) and United Nations Environmental Program (UNEP) established the IPCC in 1988. The goal of the IPCC is to evaluate the risk of climate change caused by human activities. Rather than performing research or monitoring climate, the IPCC relies on peer-reviewed and published scientific literature to make its assessment. While not a regulatory body, the IPCC assesses information (i.e., scientific literature) regarding human-induced climate change and the impacts of human-induced climate change, and recommends options to policy makers for the adaptation and mitigation of climate change. The IPCC reports its evaluations in special reports called assessment reports. The latest assessment report (i.e., Fifth Assessment Report, consisting of three working group reports and a synthesis report based on the first three reports) was published in 2013. In its 2013 report,

36 US Census Bureau, "American Fact Finder," https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF, accessed October 2018.

37 California Department of Finance, 2018. "Financial & Economic Data: Gross Domestic Product, California," http://www.dof.ca.gov/Forecasting/Economics/Indicators/Gross_State_Product/, accessed 2018. Amounts are based on current dollars as of the data of the report. April.

the IPCC stated that global temperature increases since 1951 were extremely likely attributable to man-made activities (greater than 95 percent certainty).[38]

Paris Accord

The most recent international climate change agreement was adopted at the United Nations Framework Convention on Climate Change in Paris in December 2015 (the "Paris Accord").[39] In the Paris Accord, the United States set its intended nationally determined contribution to reduce its GHG emissions by 26 to 28 percent below its 2005 level in 2025 and to make best efforts to reduce its emissions by 28 percent. These targets were set with the goal of limiting global temperature rise to below 2 degrees Celsius and getting to the 80 percent emission reduction by 2050.

However, in June 2017, the U.S. announced its intent to withdraw from the Accord.[40] The earliest effective date of a withdrawal by the U.S. is November 2020.

4.3.3.2 Federal

Supreme Court Ruling

The US Supreme Court ruled in *Massachusetts v. Environmental Protection Agency, 127 S.Ct. 1438 (2007)*, that carbon dioxide and other greenhouse gases are pollutants under the Federal Clean Air Act (CCA), which the US Environmental Protection Agency (USEPA) must regulate if it determines they pose an endangerment to public health or welfare.

US EPA Endangerment Finding

On December 7, 2009, the US EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act (42 USC Section 7521):

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere threaten the public health and welfare of current and future generations.

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38 IPCC, 2013. *Climate Change 2013 The Physical Science Basis.*

39 United Nations, Paris Agreement, 2015. Available: http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf, accessed July 25, 2018

40 https://www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord/, accessed July 25, 2018

- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Energy Independence and Security Act

The Energy Independence and Security Act of 2007 includes several key provisions that will increase energy efficiency and the availability of renewable energy, which will reduce greenhouse gas emissions as a result. First, the Act sets a Renewable Fuel Standard that requires fuel producers to use at least 36 billion gallons of biofuel by 2022. Second, it increased Corporate Average Fuel Economy (CAFE) Standards to require a minimum average fuel economy of 35 miles per gallon for the combined fleet of cars and light trucks by 2020. Third, the adopted bill includes a variety of new standards for lighting and for residential and commercial appliance equipment. The equipment includes residential refrigerators, freezers, refrigerator-freezers, metal halide lamps, and commercial walk-in coolers and freezers.

EPA Reporting Rule

The US Environmental Protection Agency (USEPA) adopted a mandatory GHG reporting rule in September 2009. The rule would require suppliers of fossil fuels or entities that emit industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to the USEPA beginning in 2011 (covering the 2010 calendar year emission). Vehicle and engine manufacturers were required to begin reporting GHG emissions for model year 2011.

Clean Power Plan

In 2015, US EPA published the Clean Power Plan (80 Fed. Reg. 64661, October 23, 2015). The Clean Power Plan sets achievable standards to reduce CO_2 emissions by 32 percent from 2005 levels by 2030. This Plan establishes final emissions guidelines for states to follow in developing plans to reduce GHG emissions from existing fossil fuel-fired electric generating units (EGUs). Specifically, US EPA is establishing: (1) CO_2 emission performance rates representing the best system of emission reduction (BSER) for two subcategories of existing fossil-fuel-fired EGUs, fossil-fuel-fired electric utility steam generating units and stationary combustion turbines; (2) state-specific CO_2 goals reflecting the CO_2 emission performance rates; and (3) guidelines for the development, submittal and implementation of state plans that establish emission standards or other measures to implement the CO_2 emission performance rates, which may be accomplished by meeting the state goals. This final rule would continue progress already under way in the United States to reduce CO_2 emissions from the utility power sector. On February 9, 2016, the Supreme Court (Order No. 15A773) stayed implementation of the Clean Power Plan pending judicial

review. In addition, US EPA is currently proposing to repeal the Clean Power Plan after completing a thorough review as directed by the Executive Order on Energy Independence (as discussed below). In sum, the Clean Power Plan continues to face multiple legal challenges and its future is uncertain.

Executive Order on Energy Independence

On March 28, 2017, President Donald Trump signed Executive Order 13783, "Promoting Energy Independence and Economic Growth," which calls for:

- Review of the Clean Power Plan
- Review of the 2016 Oil and Gas New Source Performance Standards for New, Reconstructed, and Modified Sources
- Review of the Standards of Performance for GHG Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Generating Units
- Withdrawal of Proposed Rules: Federal Plan Requirements for GHG Emissions From Electric Utility Generating Units Constructed on or Before January 8, 2014; Model Trading Rules; Amendments to Framework Regulations; and Clean Energy Incentive Program Design Details

4.3.3.3 State

Executive Order (EO) S-3-05

On June 1, 2005, EO S-3-05 set the following GHG emission reduction goals: reduce GHG emissions to 2000 levels by 2010; reduce GHG emissions to 1990 levels by 2020; and reduce GHG emissions to 80 percent below 1990 levels by 2050.[41] EO S-3-05 also calls for the Secretary of California Environmental Protection Agency (Cal/EPA) to be responsible for coordination of state agencies and progress reporting.

In response to the Executive Order, the Secretary of the Cal/EPA created the Climate Action Team (CAT). California's CAT originated as a coordinating council organized by the Secretary for Environmental Protection. It included the Secretaries of the Natural Resources Agency, and the Department of Food and Agriculture, and the Chairs of the Air Resources Board, Energy Commission, and Public Utilities Commission. The original council was an informal collaboration between the agencies to develop potential mechanisms for reductions in GHG emissions in the state. The council was given formal recognition in Executive Order S-3-05 and became the CAT.

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41 While EO S-3-05 sets a goal that Statewide GHG emissions be reduced to 80 percent below 1990 levels by 2050, the EO does not constitute a "plan" for GHG reduction, and no State plan has been adopted to achieve the 2050 goal.

The original mandate for the CAT was to develop proposed measures to meet the emission reduction targets set forth in the executive order. The CAT has since expanded and currently has members from 18 state agencies and departments.

The CAT is responsible for preparing reports that summarize the state's progress in reducing GHG emissions. The most recent CAT Report was published in December 2010. The CAT Report discusses mitigation and adaptation strategies, state research programs, policy development, and future efforts.

Assembly Bill 32 (AB 32) and CARB Scoping Plan

The State of California has implemented numerous laws targeting GHG emissions. Chief among these is the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) (Health & Safety Code Section 38500 et seq.). AB 32 represents the first enforceable statewide program to limit GHG emissions from all major sectors with penalties for noncompliance. Like EO S-3-05, AB 32 requires the State of California to reduce its emissions to 1990 levels by 2020. The Act establishes key deadlines for certain actions the state must take in order to achieve the reduction target. The first action under AB 32 resulted in California Air Resources Board's (CARB) adoption of a report listing three specific early action GHG reduction measures on June 21, 2007. On October 25, 2007, CARB approved an additional six early action GHG reduction measures under AB 32.[42]

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 $MMTCO_2e$, since updated to 431 $MMTCO_2e$.[43] The inventory indicated that in 1990, transportation, with 35 percent of the state's total emissions, was the largest single sector generating carbon dioxide; followed by industrial emissions, 24 percent; imported electricity, 14 percent; in-state electricity generation, 11 percent; residential use, 7 percent; agriculture, 5 percent; and commercial uses, 3 percent (figures are based on the 1990 inventory). AB 32 does not require individual sectors to meet their individual 1990 GHG emissions inventory; the total statewide emissions are required to meet the 1990 target by 2020.

In addition to the 1990 emissions inventory, CARB also adopted regulations requiring the mandatory reporting of GHG emissions for large facilities on December 6, 2007 (17 Cal. Code Regs. Section 95100 *et seq.*). The mandatory reporting regulations require annual reporting from the largest facilities in the state, which account for approximately 94 percent of GHG emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and

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42 CARB. 2017. *Early Action Items*. Available at: https://www.arb.ca.gov/cc/ccea/ccea.htm, accessed August 6, 2018

43 CARB. 2017. *California 1990 Greenhouse Gas Emissions Level and 2020 Limit*. Available at: *https*://www.arb.ca.gov/cc/inventory/1990level/1990level.htm, accessed July 25, 2018.

include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 tons of CO_2 each year from on-site stationary combustion sources. Affected facilities began tracking their emissions in 2008, and reported them beginning in 2009, with a phase-in process to allowed facilities to develop reporting systems and train personnel in data collection. Emissions for 2008 could be based on best available emission data. Beginning in 2010, however, emissions reporting requirements became more rigorous and are subject to third-party verification. Verification will take place annually or every three years, depending on the type of facility.

In December 2008, CARB adopted a *Climate Change Scoping Plan*[44] indicating how emission reductions will be achieved from significant sources of GHGs via regulations, market mechanism, and other actions. The *Climate Change Scoping Plan* identifies 18 recommended strategies the state should implement to achieve AB 32.

CARB's initial Scoping Plan contains the main strategies California would implement to reduce the projected 2020 Business-as-Usual (BAU) emissions to 1990 levels, as required by AB 32. These strategies are intended to reduce CO_2e[45] emissions by 174 million metric tons (MT), or approximately 30 percent, from the State's projected 2020 emissions level of 596 million MTCO2e (MMTCO2e) under a BAU[46] scenario. This reduction of 42 million MTCO2e, or almost 10 percent from 2002 to 2004 average emissions, would be required despite the population and economic growth forecast through 2020.

CARB's initial Scoping Plan calculates 2020 BAU emissions as those expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic sectors (e.g., transportation, electrical power, commercial and residential, industrial). CARB used 3-year average emissions, by sector, for 2009 to 2011 to forecast emissions to 2020. The measures described in CARB's Scoping Plan are intended to reduce the projected 2020 BAU to 1990 levels, as required by AB 32.

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44 CARB. 2017. *Initial AB 32 Climate Change Scoping Plan.* Available at: https://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm, accessed July 25, 2018.

45 Carbon dioxide equivalent (CO_2e) – A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

46 "Business-as-Usual" refers to emissions expected to occur in the absence of any GHG reduction measure (California Environmental Protection Agency Air Resources Board Website, http://www.arb.ca.gov/cc/inventory/data/bau.htm, Accessed July 31, 2018). Note that there is significant controversy as to what BAU means. In determining the GHG 2020 limit, CARB used the above as the "definition."

The First Update to California's Climate Change Scoping Plan (2014 Scoping Plan Update[47]) was developed by the CARB in collaboration with the CAT and reflects the input and expertise of a range of state and local government agencies. The 2014 Scoping Plan Update lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050.

On December 14, 2017, CARB approved the final version of *California's 2017 Climate Change Scoping Plan* (2017 Scoping Plan Update), which outlines the proposed framework of action for achieving the SB 32 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels (CARB 2017a). See further discussion below.

California Cap-and-Trade Program

Authorized by the California Global Warming Solutions Act of 2006 (AB 32), the Cap-and-Trade Program is a core strategy that California is using to meet its statewide GHG reduction targets for 2020 and 2030, and ultimately achieve an 80 percent reduction from 1990 levels by 2050. Pursuant to its authority under AB 32, CARB has designed and adopted a California Cap-and-Trade Program to reduce GHG emissions from major sources (deemed "covered entities") by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve AB 32's emission-reduction mandate of returning to 1990 levels of emissions by 2020 (17 CCR Sections 95800 to 96023).

In September 2012, CARB adopted a California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms, which established the cap-and-trade program to manage GHG emissions, for California. The cap-and-trade program is a market-based approach wherein the government determines an overall emission target, or "cap," for a particular set of facilities. The cap is the total amount of emissions that all of the facilities can produce. Tradable emissions allowances totaling the overall emissions cap are distributed by auction or given out amongst the particular set of facilities. The emissions allowances can be traded amongst the facilities.

Under the Cap-and-Trade Program, an overall limit is established for GHG emissions from capped sectors (e.g., electricity generation, petroleum refining, cement production, and large industrial facilities that emit more than 25,000 metric tons CO_2e per year) and declines over time, and facilities subject to the cap-and-trade permits to emit GHGs. The statewide cap for GHG emissions from the capped sectors commenced in 2013 and declines over time, achieving GHG emission reductions throughout the

47 CARB. 2014. *First Update to the AB 32 Scoping Plan*. Available at: https://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm, accessed July 31, 2018.

program's duration (see generally 17 CCR Sections 95811, 95812). On July 17, 2017, the California Legislature passed Assembly Bill 398, extending the Cap-and-Trade Program through 2030.

The cap-and-trade regulation provides a firm cap, helping to ensure that the 2020 and 2030 statewide emission limits will not be exceeded. An inherent feature of the Cap-and-Trade Program is that it does not direct GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are ensured on a state-wide basis.

Senate Bill 32 (SB32) and AB 197

On September 8, 2016, California signed into law Senate Bill 32 (SB 32), which adds Section 38566 to the Health and Safety Code and requires a commitment to reducing statewide GHG emissions by 2020 to 1990 levels and by 2030 to 40 percent less than 1990 levels. SB 32 was passed with companion legislation AB 197 Chapter 250, Statutes of 2016), which provides greater legislative oversight of CARB's GHG regulatory programs, requires CARB to account for the social costs of GHG emissions, and establishes a legislative preference for direct reductions of GHG emissions.

In November 2017, CARB adopted California's 2017 Climate Change Scoping Plan (2017 Update), which outlines the proposed framework of action for achieving California's SB 32 2030 GHG target: a 40 percent reduction in GHG emissions by 2030 relative to 1990 levels.[48] The 2030 target is intended to ensure that California remains on track to achieve the goal set forth by E.O. B-30-15 to reduce statewide GHG emissions by 2050 to 80 percent below 1990 levels.

The 2017 Update identifies key sectors of the implementation strategy, which includes improvements in low carbon energy, industry, transportation sustainability, natural and working lands, waste management, and water. Through a combination of data synthesis and modeling, CARB determined that the target statewide 2030 emissions limit is 260 $MMTCO_2e$, and that further commitments will need to be made to achieve an additional reduction of 50 $MMTCO_2e$ beyond current policies and programs. Key elements of the 2017 Update include a proposed 20 percent reduction in GHG emissions from refineries and an expansion of the Cap-and-Trade program to meet the aggressive 2030 GHG emissions goal and ensure achievement of the 2050 limit set forth by E.O. B-30-15. For the transportations sector, the 2017 Update indicates that while most of the GHG reductions will come from technologies and low carbon fuels, a reduction in the growth of vehicle miles traveled (VMT) is also needed. The 2017 Update indicates that stronger SB 375 GHG reduction targets will enable the State to make significant progress toward this goal, but alone will not provide all of the VMT growth reductions that will be needed. It notes that there is a gap between what SB 375 can provide and what is needed to meet the State's 2030 and 2050 goals.

48 CARB, 2017. *California's 2017 Climate Change Scoping Plan,* November.

The 2017 Update recommends that local governments consider policies to reduce VMT, including: land use and community design that reduces VMT; transit-oriented development; street design policies that prioritize transit, biking, and walking; and increasing low carbon mobility choices, including improved access to viable and affordable public transportation and active transportation opportunities.

Executive Order (EO) B-55-18

EO B-55-18 was establishes a new statewide policy of achieving net zero carbon emissions by 2045 and to achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing GHG emissions. This EO supersedes the 2050 reduction target established by EO S-3-05, however, no legislation has been adopted for reduction goal B-55-18.

California Environmental Quality Act Guidelines Amendments

California Senate Bill (SB) 97 (Chapter 185, Statutes of 2007) required the Governor's Office of Planning and Research (OPR) to develop California Environmental Quality Act (CEQA) Guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions." The *CEQA Guidelines* amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The significance of GHG emissions are specifically addressed in *State CEQA Guidelines* Section 15064.4. Section 15064.4 calls for a lead agency to make a "good-faith effort" to "describe, calculate or estimate" GHG emissions in CEQA environmental documents. Section 15064.4 further states that the analysis of GHG impacts should include consideration of (1) the extent to which the project may increase or reduce GHG emissions; (2) whether the project emissions would exceed a locally applicable threshold of significance; and (3) the extent to which the project would comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions." The guidelines also state that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of GHG emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (*State CEQA Guidelines* Section 15064(h)(3)).

Senate Bill 375 (SB 375)

SB 375, adopted in 2008, builds on AB 32, SB 375 (Chapter 728, Statutes of 2008) seeks to coordinate land use planning, housing planning, regional transportation planning, and GHG reductions. By coordinating these efforts, it is envisioned that vehicle congestion and travel can be reduced resulting in a

corresponding reduction in emissions. SB 375 directed CARB to set regional targets to reduce emissions; regional transportation plans are required to identify how they will meet these targets.

SB 375 has three major components:

- Using the regional transportation planning process to achieve reductions in emissions consistent with AB 32's goals.
- Offering California Environmental Quality Act (CEQA) incentives to encourage projects that are consistent with a regional plan that achieves emissions reductions.
- Coordinating the Regional Housing Needs Allocation (RHNA) process with the regional transportation process while maintaining local authority over land use decisions.

A Sustainable Communities Strategy (SCS) is a required component of the Regional Transportation Plan (RTP). The SCS is a land use pattern for the region which, in combination with transportation policies and programs, strives to reduce emissions and helps meet CARB's targets for the region. An alternative planning strategy (APS) must be prepared if the SCS is unable to reduce emissions and achieve the emissions reduction targets established by CARB.

Certain transportation planning and programming activities must be consistent with the SCS; however, SB 375 expressly provides that the SCS does not regulate the use of land, and further provides that local land use plans and policies (e.g., general plans) are not required to be consistent with either the RTP or SCS. For the 2018 RTP/SCS cycle, CARB set reduction targets for the Southern California Association of Governments (SCAG) region (of which Riverside County is a part) at 8 percent for 2020 and 21 percent for 2035.[49]

Senate Bill 1078, Senate Bill 107, Executive Order S-14-08, and Executive Order S-21-09 (Renewables Portfolio Standard)

On September 12, 2002, Governor Gray Davis signed SB 1078 (Chapter 516, Statutes of 2002) requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 (Chapter 464, Statutes of 2006), signed by the Governor on September 26, 2006 changed the due date for this goal from 2017 to 2010. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewables Portfolio Standard (RPS) goal for California requiring that all retail

[49] CARB Staff Recommendations for SB 375 GHG emission reduction targets, https://arb.ca.gov/cc/sb375/appendix_a_mpo_target_recommendations_and_carb_staff_recommendations.pdf, accessed September 2018.

sellers of electricity serve 33 percent of their load with renewable energy by 2020. Increased use of renewable energy sources will decrease California's reliance on fossil fuels, reducing emissions of GHGs from the energy sector. In April 2011, SB X1-2 required that all electricity retailers adopt the new RPS goals providing 20 percent renewable sources by the end of 2013, 25 percent by the end of 2016, and 33 percent by the end of 2020. Senate Bill SB 350 of 2015 (Chapter 547, Statutes of 2015) increased the renewable portfolio standard to 50 percent by the year 2030.

Executive Order S-21-09 directs CARB to adopt regulations to increase California's RPS to 33 percent by 2020. The target was signed into law as SB 2 by Governor Brown in April 2011. This builds upon SB 1078 (2002), which established the California RPS program, requiring 20 percent renewable energy by 2017, and SB 107 (2006), which advanced the 20 percent deadline to 2010.

Executive Order (EO) S-1-07, the Low Carbon Fuel Standard

On January 18, 2007, EO S-1-07 was issued establishing a statewide goal to reduce at least 10 percent in the carbon intensity of California's transportation fuels by 2020. Regulatory proceedings and implementation of the Low Carbon Fuel Standard have been directed to the California Air Resources Board (ARB). The Low Carbon Fuel Standard has been identified by ARB as a discrete early action item in the *Climate Change Scoping Plan*.[50] CARB expects the Low Carbon Fuel Standard to achieve the minimum 10 percent reduction goal; however, many of the early action items outlined in the *Climate Change Scoping Plan* work in tandem with one another. To avoid the potential for double-counting emission reductions associated with AB 1493 (see previous discussion), the *Climate Change Scoping Plan* has modified the aggregate reduction expected from the Low Carbon Fuel Standard to 9.1 percent.

Executive Order S-13-08

Executive Order S-13-08, signed on November 14, 2008, directs California to develop methods for adapting to climate change impacts through preparation of a statewide plan. In response to this order, the California Natural Resources Agency coordinated with 10 state agencies, multiple scientists, a consulting team, and stakeholders to develop the first statewide, multi-sector adaptation strategy in the country. The resulting report, *2009 California Climate Adaptation Strategy*[51],[52], summarizes the best-known science to assess the vulnerability of the state to climate change impacts, and outlines possible solutions that can

50 CARB, *Climate Change Scoping Plan: a framework for change.* December 2008.

51 California Natural Resources Agency, 2009. *2009 California Climate Adaption Strategy.*

52 This report has been updated twice, once in 2014, and once in 2018 to reflect current adaption strategies and incorporate a "Climate Justice" chapter highlighting how equity is woven throughout the entire plan.

be implemented within and across state agencies to promote resiliency. This strategy is the first step in an evolving process to reduce California's vulnerability to climate change impacts.

Adaptation refers to efforts that prepare the state to respond to the impacts of climate change – adjustments in natural or human systems to actual or expected climate changes to minimize harm or take advantage of beneficial opportunities. California's ability to manage its climate risks through adaptation depends on a number of critical factors. These include its baseline and projected economic resources, technology, infrastructure, institutional support and effective governance, public awareness, access to the best available scientific information, sustainably managed natural resources, and equity in access to these resources.

California's Energy Efficiency Standards for Residential and Nonresidential Buildings

California established statewide building energy standards following legislative action. The legislation required the standards to:

- Be cost effective;
- Be based on the building life cycle; and
- Include both prescriptive and performance-based approaches.

The standards have been periodically updated as technology and design have evolved. Generally, the standards are updated every three years. As a result of AB 970, passed in the fall of 2000 in response to the state's electricity crisis, an emergency update of the Standards went into effect in June 2001. The Commission then initiated an immediate follow-on proceeding to consider and adopt updated Standards that could not be completed during the emergency proceeding. The 2005 Building Energy Efficiency Standards were adopted in November 2003, took effect October 1, 2005. The latest amendments were made in June 2015 and went into effect on January 1, 2017.

Title 24 of the California Code of Regulations comprises the state Building Standards Code. Part 6 of Title 24 is the California Energy Code, which includes the building energy efficiency standards. The standards include provisions applicable to all buildings, residential and non-residential, which describe requirements for documentation and certificates that the building meets the standards. These provisions include mandatory requirements for efficiency and design of the following types of systems, equipment, and appliances:

- Air conditioning systems
- Heat pumps

- Water chillers
- Gas- and oil-fired boilers
- Cooling equipment
- Water heaters and equipment
- Pool and spa heaters and equipment
- Gas-fired equipment including furnaces and stoves/ovens
- Windows and exterior doors
- Joints and other building structure openings (envelope)
- Insulation and cool roofs
- Lighting control devices.

The standards include additional mandatory requirements for space conditioning (cooling and heating), water heating and indoor and outdoor lighting systems and equipment in non-residential, high-rise residential, and hotel or motel buildings.

In May 2018, the California Energy Commission voted unanimously, 5-0, to recommend energy efficiency standards to be added to state building regulations later in 2018, effecting all construction after Jan. 1, 2020. The rules will make California the first state in the nation to require solar panels on new homes.

California Green Building Code

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development in 2008. The purpose of this code is to improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices including recycling of construction (diversion of 50 percent) and other waste streams.

The California Energy Code (California Code of Regulations, Title 24, Section 6) was created as part of the California Building Standards Code (Title 24 of the California Code of Regulations) by the California Building Standards Commission in 1978 to establish statewide building energy-efficiency standards to reduce California's energy consumption. These standards include provisions applicable to all buildings,

residential and nonresidential, which describe requirements for documentation and certificates that the building meets the standards. These provisions include mandatory requirements for efficiency and design of energy systems, including space conditioning (cooling and heating), water heating, indoor and outdoor lighting systems and equipment, and appliances. California's Building Energy Efficiency Standards are updated on an approximately 3-year cycle as technology and methods have evolved. The 2016 Standards, effective January 1, 2017, focus on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings, and include requirements that will enable both demand reductions during critical peak periods and future solar electric and thermal system installations.

Assembly Bill 811 (AB 811)

AB 811 (2008) (Chapter 811, Statutes of 2008) authorizes California cities and counties to designate districts within which willing property owners may enter into contractual assessments to finance the installation of renewable energy generation and energy efficiency improvements that are permanently fixed to the property. These financing arrangements would allow property owners to finance renewable generation and energy efficiency improvements through low-interest loans that would be repaid as an item on the property owner's property tax bill.

Executive Order B-30-15

On April 29, 2015, Governor Brown issued Executive Order B-30-15. Therein, the governor directed the following:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 (subsequently codified in SB 32).
- Ordered all state agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of CO_2 equivalent.

Senate Bill 350 (SB 350)

Known as the Clean Energy and Pollution Reduction Act of 2015, SB 350 (Chapter 547, Statutes of 2015) was approved by Governor Brown on October 7, 2015. SB 350 will: (1) increase the standards of the California RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030;

(2) require the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; and (3) provide for the evolution of the Independent System Operator (ISO) into a regional organization;. Among other objectives, the Legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

SB 1383- Short Lived Climate Pollutants

Short-lived climate pollutants (SLCP) SLCPs include black carbon (soot), methane, and fluorinated gases (F-gases). SB 1383 of 2016 (Chapter 395, Statutes of 2016) sets forth legislative direction for control of SLCPs. It requires CARB, no later than January 1, 2018, to approve and begin implementing its SLCP strategy to achieve the following reductions in emissions by 2030 compared to 2013 levels: methane by 40 percent, hydrofluorocarbons by 40 percent, and black carbon (non-forest) by 50 percent. The bill also specifies targets for reducing organic waste in landfills. SB 1383 also requires CARB to adopt regulations to be implemented on or after January 1, 2024 specific to the dairy and livestock industry, requiring a 40 percent reduction in methane emissions below 2013 levels by 2030, if certain conditions are met. Lastly, the bill requires CalRecycle to adopt regulations to take effect on or after January 1, 2022 to achieve specified targets for reducing organic waste in landfills.

4.3.3.4 Regional

South Coast Air Quality Management District (SCAQMD)

The SCAQMD convened a GHG CEQA Significance Threshold Working Group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. Members included government agencies implementing CEQA and representatives from stakeholder groups that provides input on developing GHG CEQA significance thresholds. On December 5, 2008, the SCAQMD Governing Board adopted interim GHG significance threshold for projects where the SCAQMD is lead agency. This threshold uses a tiered approach to determine a project's significance, with 10,000 metric tons of CO_2 equivalent ($MTCO_2e$) as a screening numerical threshold for stationary sources.

The SCAQMD has not adopted guidance for CEQA projects under other lead agencies. In September 2010, the Working Group released additional revisions that recommended a screening threshold of 3,500 MTCO2e for residential projects, 1,400 MTCO2e for commercial projects, and 3,000 MTCO2e for mixed use projects. Additionally, the Working Group identified project-level efficiency target of 4.8 MTCO2e per service population as a 2020 target and 3.0 MTCO2e per service population as a 2035 target. The

recommended area-wide or plan-level target for 2020 was 6.6 MTCO2e and the plan-level target for 2035 was 4.1 MTCO2e. The GHG Significance Threshold Working Group continues to evaluate potential GHG significance thresholds.[53] In the meantime, the project level thresholds can be used as a non-binding guide.

The SCAQMD has also adopted Rules 2700, 2701, and 2702 that address GHG emissions reductions. However, these rules address boilers and process heaters, forestry, and manure management projects, none of which are proposed or required by the project.

4.3.3.5 Local

UC Policy on Sustainable Practices

The UC Office of the President's Policy on Sustainable Practices and Guidelines (See http://www.universityofcalifornia.edu/sustainability/documents/policy_sustain_prac.pdf) has goals to strengthen implementation of best practices in efficient energy use and resource conservation; foster environmental awareness; reduce environmental consequences; and provide educational leadership. The guidelines recommend that University operations incorporate: the principles of energy efficiency and sustainability in projects, operations and maintenance within budgetary constraints and program requirements; minimize the use of non-renewable energy sources; incorporate alternative means of transportation and provide affordable on-campus housing; track, report and minimize greenhouse gas emissions; minimize waste sent to landfills; and utilize purchasing power to meet sustainability objectives. This includes a goal of obtaining 100% clean electricity by the year 2025, and an overall goal of climate neutrality from scope 1 and 2 emission sources by 2025. A goal of climate neutrality from specific scope 3 emission sources by the year 2050, or sooner.[54]

In March 2007, the University of California signed the American College & University Presidents Climate Commitment (ACUPCC), pledging that all 10 UC campuses will maintain greenhouse gas (GHG) emission inventories and achieve climate neutrality as soon as possible. In conjunction with joining the ACUPCC, the University of California adopted system-wide interim climate protection targets to reduce greenhouse gas emissions to 2000 levels by 2014, and 1990 levels by 2020. In addition, as signatory to the ACUPCC, the UC system has a long-term goal of becoming carbon neutral by 2050.

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53 SCAG, *2016 RTP/SCS Draft Program Environmental Impact Report.* December 2015. http://scagrtpscs.net/Documents/2016/peir/draft/2016dPEIR_3_8_GreenhouseGases.pdf, accessed September 2018.

54 University of California. *Sustainable Practices.* Last reviewed January 30th, 2018. https://policy.ucop.edu/doc/3100155/SustainablePractices

UCR Sustainability Action Plan

UCR has prepared a draft UCR Sustainability Action Plan (SAP) to address the goals of campus sustainability and provide a detailed and actionable road map to sustainability, which builds on campus successes and develops new initiatives to further the objectives. Nine focus areas are addressed, which are intentionally complimentary and interconnected due to the interdisciplinary aspects of sustainability issues. Major components of each of these areas are listed below.

1. **Built Environment** – Develop exemplary facilities within which to learn, live, and work which provide healthy environments that integrate the highest possible sustainable design, construction, operations, and maintenance standards.

2. **Energy & Climate Protection** - Strive to achieve campus-wide climate neutrality through energy conservation and efficiency, on-site generation when and where appropriate, procurement of clean and renewable energy while ensuring supporting policies and resources.

3. **Water** - Reduce imported water demands through indoor water reduction, conservation and re-use measures and outdoor conversions to low water requiring landscapes or weather-based irrigation systems where appropriate.

4. **Sites** - Enhance natural resource and watershed functioning through protection of open space, design and maintain landscapes to enhance ecological function; implement Low Impact Development practices; and, design infrastructure to promote a sustainable campus environment.

5. **Transportation** - Implement transportation strategies to reduce fuel consumption, air pollution and carbon dioxide and other toxic emissions while furthering alternative transportation programs and infrastructure.

6. **Recycling & Waste Management** - Achieve a net zero waste campus through front-end consumption reduction programs and back-end waste stream diversion practices to close loops on all campus inputs and outputs.

7. **Procurement** - Achieve cradle-to-cradle certification or similar for all product purchases to ensure source location, raw materials, manufacturing process, packaging, and disposal life-cycle phases promote sustainability.

8. **Food** - Increase consumption of locally grown and organic foods while applying sustainable practices to food procurement, preparation, service and disposal and related systems, equipment and facilities.

9. **Academics & Research** - Promote integration and awareness of the triple-bottom line (environmental stewardship, social justice, and economic prosperity) impacts into educational and research activities.

The Sustainability Action Plan is intended to be a living document and a roadmap for achieving the Campus sustainability goals and will be updated when appropriate to report progress and achievements.

UCR Climate Action Plan

To comply with the ACUPCC requirements, UCR prepared and published a Climate Action Plan (CAP) and submitted the plan to the ACUPCC in December 2010. The UCR CAP is a strategic roadmap to establish emissions reduction targets and implement strategies to reach UCR's goal of reducing GHG emissions. To achieve this commitment, the CAP presents the campus's baseline, existing, and projected GHG emissions, summarizes UCR's current emissions reduction strategies, and lists additional GHG emissions reduction strategies that UCR plans to implement in the future. The CAP also includes other relevant information such as how UCR plans to monitor its progress towards the reduction goal and potential funding for its GHG reduction strategies.

Below is a summary of emissions reduction strategies as part of the CAP.

Scope 1 Direct Emissions

- **Launch fume hood sash management campaign**
  Deploying a "shut the sash" campaign can shape user behavior and save energy. This is a useful program even though many labs have occupancy sensors because training users to do this consistently will help ensure proper occupant behavior at labs that lack sensors.

- **Adopt a vehicle procurement policy**
  Develop and implement a formal policy that provides criteria for environmentally-preferable vehicle procurement. Use this policy to optimize the composition of the fleet.

    - **Reduce number of campus owned vehicles**
        - Reduce number of Fleet-owned vehicles
        - Reduce number of Department-owned vehicles

    - **Right-size vehicles to the task at hand**
      The number and size of the vehicle should complement the type of work demanded
        - Number of Light-Duty vehicles (all carts, compact and full-size sedans, trucks, and vans)

        - Number of Heavy-Duty vehicles (larger trucks or specialty vehicles)

    - **Acquire more HYBRID vehicles**
      Both Fleet and Department owned (non-plug-in) vehicles

    - **Acquire more CNG vehicles**
      Both Fleet and Department owned vehicles

    - **Acquire more ELECTRIC (Plug-in) vehicles**
      Both Fleet and Department owned plug-in vehicles

    - **Acquire more FUEL EFFICIENT vehicles**
      Increased average fuel efficiency of newly purchased vehicles of all types

- **Establish a task force to investigate alternative refrigeration**
  New technologies are being developed and becoming available for a variety of refrigeration uses that will reduce fugitive emission. A task force would investigate available technology and feasibility of implementation to reduce campus emissions.

Scope 2 Indirect Emissions (electricity)

- **Complete the campus's first USGBC LEED NC certification**
  Completing the campus's first LEED NC project and successfully pursuing certification through the USGBC will introduce UCR to the LEED program and pave the way for future certification projects.

- **Certify an existing building through the USGBC LEED EBOM rating system**
  UCR has all the in-house expertise to assemble a team from across campus departments to complete a LEED EBOM certification. This team will also be setting up the system and protocols to complete certification of additional campus buildings.

- **Develop a LEED EBOM policy**
  As UCR continually makes improvements to its operations and maintenance practices; update written policies to reflect these changes. Formalize the campus's approach and criteria for LEED EBOM certification of existing buildings.

- **Draft and adopt "cool roof" guideline**
  Cool roofs use high-albedo materials that reflect rather than absorb sunlight. This reduces the heat island effect, a phenomenon where urban areas experience higher temperatures compared to rural areas due to the replacement of vegetation by buildings, pavement, and other heat-

absorbing materials. Roofs with a high solar reflectance index (SRI) also reduce cooling energy use by lowering a building's internal heat gain. These roofs can be installed in both new and existing buildings. To limit UCR's contribution to the heat island effect and reduce energy costs, UCR shall adopt cool roof guidelines for new construction and renovation projects where new roofing is required.

- **Begin to perform monitoring-based commissioning (MBCx) on existing buildings identified in the UC Strategic Energy Plan (2008)**
  Buildings that undergo monitoring-based commissioning typically experience a 10 percent reduction in energy use.

- **Begin implementation heat recovery projects in existing buildings identified in the UC Strategic Energy Plan (2008)**
  UCR will be undertaking heat recovery projects for existing buildings beginning in fiscal year 2008/09, with planned completion by 2010.

- **Require all new construction projects to surpass California Energy Code Title 24**
  UCR has committed to meeting current UC Policy mandates by adopting LEED Silver as its minimum level of certification. Similarly raising the bar with respect to Title 24 is essential in order for the campus to make critical emission reductions and meet its climate neutrality goals. Formalize the campus's requirement by adopting a written policy signed by the Chancellor.

- **Procure 20 percent of electricity from renewable sources per UC policy**
  UCR purchases its electricity from the Riverside Public Utility (RPU). In 2006, 13 percent of RPU's power mix was derived from eligible renewable sources. The utility is on track to meet the 20 percent goal by 2010, and is scheduled to increase its renewable resources portfolio to 33 percent by 2011 through its purchase of geothermal power.

- **Investigate the feasibility of purchasing renewable geothermal power**
  The City of Riverside has contracted with the Northwestern Band of Shoshone Nation to purchase renewable power from a new 100 megawatt geothermal power plant. The first 32 megawatts will come online in 2010. The City of Riverside will ultimately purchase 64 megawatts.

- **Require that eligible projects utilize the Savings by Design and Labs 21 programs**
  Utilizing the Savings by Design and Labs21 programs will generate significant energy savings and reduce operational costs. Formalize the campus's requirement by adopting a written policy signed by the Chancellor stating that all eligible projects must use these programs.

- **Develop energy intensity standards for the campus's major space usage types**
  Based on UCR's historical energy intensity and the campus's preferred level of energy use; develop energy intensity standards for the major space usage types on campus, such as administrative/classroom and laboratory. Use the energy intensity standards to target energy use at the building or departmental level and promote conservation.

- **Purchase Energy Star appliances and electronics for 100 percent of items covered by this standard**
  UC Policy calls for campuses to procure products with an Energy Star rating for all product categories where Energy Star rated products are available. Adopt and implement a formal campus policy.

- **Purchase EPEAT-registered products for 100 percent of items covered by this standard**
  Purchasing desktop computers, notebooks and monitors that are certified through the Electronic Product Environmental Assessment Tool (EPEAT) will allow UCR to be certain it procures products with quantifiable environmental benefits. Over thirty manufacturers have registered over 1,000 products with EPEAT. The EPEAT has three environmental performance tiers: Bronze, Silver and Gold. UC's systemwide contract with Hewlett Packard requires Gold certification for all desktop computers, notebooks, and monitors sold to the University. Adopt and implement a formal campus policy.

- **Develop behavioral/education programs that promote energy conservation**
  Properly designed and operated buildings and utility infrastructure are necessary components of an energy-efficient campus. However, building users must also be educated and encouraged to conserve energy if UCR is to meet its climate protection goals. Possibilities include demonstration projects:
    - Construct the first carbon neutral building at UCR
    - Construct a first green roof project at UCR
    - Construct first solar power project at UCR

Scope 3 Indirect Emissions (other)

- **Develop a map for bicycle commuters**
  Developing and distributing a map for bicyclists will help individuals navigate the campus and encourage commuting by bike.

- **Facilitate bicycle use by creating a bicycle paths master plan**
  Developing a master plan will help ensure that both the existing East Campus and new West Campus are bicycle-friendly. Designing a safe, interconnected network of bike paths will encourage bicycle use among both UCR students and employees, reducing intra-campus trips.

- **Increase the number of vanpools to 30**
  There are currently 24 campus vanpools routes serving staff, faculty and student commuters who live in four counties. Based on current employee data, some areas within San Bernardino and Los Angeles counties are underserved and would benefit from the creation of new routes.

- **Exceed the SCAQMD's mandated AVR, progressively over time, by 10 percent**
  UCR currently exceeds the SCAQMD's mandate of a 1.50 AVR. The University would like to attain an AVR of 1.575 within 5 years, reflecting a 5 percent increase over its current AVR, and increasing to an AVR of 1.65 within 10 years, reflecting a 10 percent increase over its current AVR.

- **Develop a system for tracking University-sponsored air travel and estimating the carbon emissions from that air travel**
  The ACUPCC requires that signatories report estimated air travel emissions, as well as needed emissions reporting to The Climate Registry. University-sponsored air travel and related emissions will need to be track before strategies for reducing them can be developed.

- **Reduce business air travel by developing programs and technologies for remote conferencing**
  Develop and enhance UCR's information technology infrastructure to support remote conferencing.

- **Petition the City of Riverside to develop live/work communities downtown**
  Work with master planners for the City of Riverside to bring live/work developments to the downtown Riverside area. Providing housing and amenities near the University can draw faculty and staff closer to their place of employment and reduce commute distances.

4.3.4 IMPACTS AND MITIGATION MEASURES

4.3.4.1 Significance Criteria

In accordance with *State CEQA Guidelines* (Appendix G), the following significance threshold criteria should be used to evaluate the potential GHG impacts of proposed projects. The project would have a significant GHG emissions impact if it would:

- generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, or
- conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

South Coast Air Quality Management District (SCAQMD)

At present time, the SCAQMD has not adopted GHG thresholds for institutional, residential, or commercial projects such as this project. The SCAQMD is considering a tiered approach to determine the significance of residential and commercial projects. The most recent version of the draft approach that was published in September 28, 2010 is as follows:[55]

- Tier 1: Is the project exempt from further analysis under existing statutory or categorical exemptions? If yes, there is a presumption of less than significant impacts with respect to climate change.
- Tier 2: Is the project's GHG emissions consistent with an approved GHG reduction plan? (The plan must be consistent with *State CEQA Guidelines* Sections 15064(h)(3), 15125(d), or 15152(s).) If yes, there is a presumption of less than significant impacts with respect to climate change.
- Tier 3: Is the project's incremental increase in GHG emissions below or mitigated to less than the significance screening values? If yes, there is a presumption of less than significant impacts with respect to climate change. (The SCAQMD advised the lead agency to use one of the following options consistently.)
  - 3,500 $MTCO_2e$ per year for residential projects or 1,400 $MTCO_2e$ per year for commercial projects; or
  - 3,000 $MTCO_2e$ for mixed-use or all land use projects.
- Tier 4: Does the project meet one of the following performance standards? If yes, there is a presumption of less than significant impacts with respect to climate change.
  - Option 1: Percent Emission Reduction Target (e.g., San Joaquin Valley Air Pollution Control District recommends a 29 percent reduction from a base-case scenario);
  - Option 2: Early Implementation of applicable AB 32 Scoping Plan Measures.
  - Option 3: Achieve the SCAQMD efficiency target:
    - 2020 Targets: 4.8 $MTCO_2e$ per year per service population (project-level analysis) or 6.6 $MTCO_2e$ per year per service population (program-level analysis);

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55 South Coast Air Quality Management District, "Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting #15," http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf?sfvrsn=2. 2011.

  - 2035 Targets: 3.0 $MTCO_2e$ per year per service population (project-level analysis) or 4.1 $MTCO_2e$ per year per service population (program-level analysis);[56]

- Tier 5: Does the project obtain offsets alone or in combination with the above to achieve the target significance screening level (offsets provided for 30-year project life, unless project life limited by permit, lease, or other legally binding conditions)? If yes, there is a presumption of less than significant impacts with respect to climate change. Otherwise, the project is significant.

The SCAQMD has not announced when staff is expecting to present a finalized version of these thresholds to the Governing Board for approval and adoption. The SCAQMD has adopted Rules 2700, 2701, and 2702 that establishes a voluntary GHG reduction program for boilers and process heaters, forestry, and manure management projects. However, these rules do not directly relate to the proposed project.

For the purpose of evaluating GHG emissions in this analysis, Tier 4 Option 3 efficiency targets will be used to compare project emissions to the targets SCAQMD has set forth to assure residential development projects in the region contribute their fair share of emissions reductions necessary to meet state targets. As noted below,[57] SCAQMD target thresholds rely on statewide data, and in light of the Golden Door Properties case noted below, are used for informational purposes only and is not being used to reach the EIR's significance conclusion or for purposes of mitigation.

Consistency with UC Policy and State Targets

For the purposes of determining the significance of project-related GHG emissions, this analysis relies on consistency with UC Policy on Sustainable Practices, and specifically the Carbon Neutrality Initiative component of the UC Policy on Sustainable Practices. Consistency with UC Policy on Sustainable Practices is expected to enable the campus to ensure consistency with SB 32 by providing at least a 40 percent reduction in GHG emissions as compared to GHG emissions in the year 1990. This would be consistent with both University and statewide goals to reduce GHG emissions.

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56 *Golden Door Properties, LLC v. County of San Diego/Sierra Club, LLC v. County of San Diego* (2018) 27 Cal.App.5th 892 held that use of an efficiency-metric threshold, to the extent the threshold is formulated in reliance on statewide data as opposed to data local to the project in question, must be supported by substantial evidence that the threshold is appropriate for use in assessing the emissions of the project in question. The analysis in this section uses the SCAQMD-recommended efficiency threshold, which relies on statewide data, for informational purposes only. The analysis then looks at whether the project would meet UC policies and thereby demonstrate compliance with state targets to reduce GHG emissions.

57 Ibid.

4.3.5 PROJECT IMPACTS

Impact 4.3-1: Construction and operation of the proposed project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. (*Less than Significant with Mitigation*)

Construction Impacts

The construction activities required to facilitate buildout of the NDD Plan would include the use of heavy-duty construction equipment. The vast majority of construction equipment (*e.g.*, backhoes, cranes, rubber-tired loaders, scrapers, and haul trucks) relies on fossil fuels, primarily diesel, as an energy source. The combustion of fossil fuels in construction equipment results in GHG emissions of CO_2 and much smaller amounts of CH_4 and N_2O. Emissions of GHG would also result from the combustion of fossil fuels from haul trucks and vendor trucks delivering materials, and construction worker vehicles commuting, to and from the project site. Typically, light-duty and medium-duty automobiles and trucks would be used for worker trips and heavy-duty trucks would be used for vendor trips. The vast majority of motor vehicles used for worker trips rely on gasoline as an energy source while motor vehicles used for vendor trips relies on diesel as an energy source. The combustion of gasoline in motor vehicles results in GHG emissions of CO_2 and smaller amounts of CH_4 and N_2O. The combustion of diesel in heavy-duty trucks results in GHG emissions of CO_2 and much smaller amounts of CH_4 and N_2O.

Construction GHG emissions would be short-term – that is, the emissions would occur only during active construction and would cease after the proposed project has been built out. The other primary GHGs (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) are typically associated with specific industrial sources and are not expected to be emitted during construction.

The construction-related emissions of GHG associated with construction equipment and activities were estimated using the CalEEMod model. Construction activity was modeled based on the construction schedule, equipment types, and activity levels described above for the air quality analysis. Phase 1 of the NDD Plan would result in 2,241 $MTCO_2e$, and total NDD Plan construction emissions would result in 7,280 $MTCO_2e$.

Operational Impacts

The proposed project would result in direct operational emissions of GHG from mobile sources. The direct operational emissions of GHG were estimated using the CalEEMod model.

The project would also result in indirect GHG emissions due to electricity demand. In addition to electrical demand, operation of the proposed project would result in indirect GHG emissions as the result

of water demand, wastewater generation, and solid waste generation. GHG emissions from water demand are due to the electricity needed to convey, treat, and distribute potable water. GHG emissions from wastewater are attributable to the electricity needed to treat wastewater. GHG emissions from solid waste generation are due to the decomposition of organic material, which releases CH_4 into the atmosphere. The indirect operational emissions of GHG were estimated using the CalEEMod model.

Table 4.3-4
Proposed Project Estimated Total Greenhouse Gas Emissions

Emissions Sources	Emissions in Metric Tons CO_2e Per Year
NDD Phase 1	
Construction Emissions	
Amortized Construction Emissions[1]	75
Direct GHG Emissions	
Operational (Mobile) Sources	8,805
Area Sources	7
Indirect GHG Emissions	
Energy	2,169
Water	892
Waste	61
Total Proposed Project	12,009
Proposed Project Emissions Per Service Population	8.0
SCAQMD 2020 Project-Level Threshold ($MTCO_2e$ per year)	4.8 $MTCO_2e$ per year per service population
SCAQMD 2035 Project-Level Threshold ($MTCO_2e$ per year)	3.0 $MTCO_2e$ per year per service population
Exceed Threshold?	**Yes (2020 and 2035)**
Remaining Phases of NDD Plan	
Construction Emissions	
Amortized Construction Emissions[1]	243
Direct GHG Emissions	
Operational (Mobile) Sources	20,573
Area Sources	22
Indirect GHG Emissions	
Energy	7848
Water	2295
Waste	276
Total Proposed Project	31,257
Proposed Project Emissions Per Service Population	6.9

SCAQMD 2020 Program-Level Threshold ($MTCO_2e$ per year)	6.6 $MTCO_2e$ per year per service population
SCAQMD 2035 Program-Level Threshold ($MTCO_2e$ per year)	4.1 $MTCO_2e$ per year per service population
Exceed Threshold?	**Yes (2020 and 2035)**
NDD Plan (Phase 1 + Remaining Phases)	
Construction Emissions	
Amortized Construction Emissions[1]	317
Direct GHG Emissions	
Operational (Mobile) Sources	29,379
Area Sources	29
Indirect GHG Emissions	
Energy	10,017
Water	3,187
Waste	337
Total Proposed Project	43,266
Proposed Project Emissions Per Service Population	7.2
SCAQMD 2020 Program-Level Threshold ($MTCO_2e$ per year)	6.6 $MTCO_2e$ per year per service population
SCAQMD 2035 Program-Level Threshold ($MTCO_2e$ per year)	4.1 $MTCO_2e$ per year per service population
Exceed Threshold?	**Yes (2020 and 2035)**

Source: Impact Sciences, Inc. Emissions calculations are provided in ***Appendix 3.2****.*

[1] *SCAQMD recommends that construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies.*

A summary of emissions generated by construction and operation of the proposed project are presented in **Table 4.3-4, Proposed Project Estimated Total Greenhouse Gas Emissions**. As shown, the proposed project would generate GHG emissions that would exceed the SCAQMD thresholds of significance for individual projects.[58] As noted above, the SCAQMD threshold is based on statewide GHG and population data, and is not based on local or regional data. This threshold is used to illustrate the level of emissions that the appropriate regulatory agency considers appropriate for individual development projects, and is not used to circumvent consistency with a qualified GHG reduction plan, as detailed below.

While the project would exceed SCAQMD recommended threshold of significance for individual projects, the campus as a whole would comply with the UC Policy on Sustainable Practices, and therefore achieve

[58] As noted above, the SCAQMD recommended efficiency threshold has been included for informational purposes only, and has not been used to strengthen the analysis, but to provide the reader with a clear understanding of what the SCAQMD considers a significant level of GHG emissions, and is not the sole method of determining significance. It is used in concert with GHG reduction plan consistency.

or exceed emissions reductions necessary to meet state targets. Specifically, the campus would achieve carbon neutrality for scopes 1 and 2 emissions by 2025. This carbon neutrality policy is a more stringent target than SB 32 because it requires net zero Scope 1 and 2 emissions. As shown in **Table 4.3-5 Campus-Wide Greenhouse Gas Emissions Totals Before Mitigation**, by achieving carbon neutrality of Scope 1 and 2 emissions, UC Riverside would reduce Scope 1 & 2 annual GHG emissions to approximately 52,307 MT of CO2e by 2030, even as the student population continues to increase, which would be below the 40 percent GHG emission reductions necessary to achieve the SB 32 target for 2030.

Table 4.3-5
Campus-Wide Greenhouse Gas Emissions Totals Before Mitigation

Emissions Sources	Emissions in Metric Tons CO_2e Per Year
2017	
Scope 1	23,835
Scope 2	48,794
Scope 3	N/A
Scope 1 & 2 Emissions	72,629
2030	
Scope 1	27,259
Scope 2	25,048
Scope 3	N/A
Scope 1 & 2 Emissions	52,307

Source: UCR Office of Sustainability. February 2019.
Note: 2030 estimates do not include Scope 3 emissions.
- *2030 Emissions Estimates include Scope 1 & 2 reduction measures as part of the UC Policy on Sustainable Practices carbon neutral policy.*

Construction and operation of the NDD project would generate direct emissions from the use of electricity; it would increase existing campus-wide emissions. Therefore, in order for the NDD project to be consistent with UC policy to achieve carbon neutrality in Scope 1 and 2 emissions by 2025, implementation of Mitigation Measures **MM 4.3.1** and **MM GHG-1** would be required to offset the UC Riverside's increased GHG emissions. The implementation of Mitigation Measures 4.3.1 and 4.3.2 would reduce the impact of GHG emissions from the project to a less than significant level.

GHG Mitigation Measure

The following mitigation measure is from the UC Riverside LRDP Amendment 2 Draft EIR, and is required in order to reduce campus-wide GHG emissions in accordance with UC Policy:

MM 4.3-1 *All projects developed under the amended 2005 LRDP shall be evaluated for consistency with the GHG reduction policies of the UCR CAP and UC Policy on Sustainable Practices, as may be*

updated from time to time by the University. GHG reduction measures, including, but not limited to, those found within the UCR CAP and UC Policy identified in ***Table 4.3-6*** *and* ***4.3-7*** *shall be incorporated in all campus projects so that at a minimum an 8 percent reduction in emissions from BAU is achieved. It is expected that the GHG reduction measures in the UCR CAP will be refined from time to time, especially in light of the evolving regulations and as more information becomes available regarding the effectiveness of specific GHG reduction measures. As part of the implementation of the UCR CAP, the Campus will also monitor its progress in reducing GHG emissions to ensure it will attain the established targets.*[59]

Project Specific Mitigation Measure

The following mitigation measure is specific to this project, and is not from the UC Riverside LRDP Amendment 2 Draft EIR. It is required in order to reduce campus-wide GHG emissions:

MM GHG-1 By May 1, 2026, UC Riverside shall purchase carbon offsets and/or renewable energy certificates to achieve campus-wide carbon neutrality in Scope 1 and 2 emissions by 2025, consistent with the UC Policy on Sustainable Practices.

59 As a member of the ACUPCC, UCR has specific reporting obligations. These obligations in turn create monitoring and tracking needs in order to create the reports. The ACUPCC requires GHG emissions inventories to be reported every other year and narrative reports describing progress towards reduction goals on alternating years. This is in addition to UCR's other GHG reporting requirements, which include annual reports to TCR. Consequently, UCR must track emissions, actual reductions accomplished, and progress towards reductions targets. This will require regular communication and coordination with various campus departments to gather data. Meticulous recordkeeping is also required, especially as TCR reports must undergo a rigorous third-party verification process. Additionally, the success of UCR policies and guidelines intended to address sustainability issues must be ensured and evaluated. This includes monitoring a wide variety of efforts, including compliance with campus green building design guidelines by contractors, the design team and facility maintenance personnel, the campus composting program, the generation of power through on-site renewable energy projects, utilization of videoconferencing equipment to reduce business travel, expanding the vanpool and Zipcar programs, etc. These functions are the responsibility of the Office of Sustainability, who will need to gather data from various campus departments and maintain records of data gathered and calculations made. The specifics of the monitoring program will be decided in collaboration with all campus stakeholders under the supervision of the Office of Sustainability.

Residual Impacts

LRDP mitigation measure **MM 4.3-1** and project specific mitigation measure **MM GHG-1** would ensure compliance with UC Policy on Sustainable Practices, and in combination with the UC Policy to reduce Scope 1 and 2 emissions to achieve carbon neutrality would ensure consistency with EO B-55-18, and also SB 32 by reducing campus-wide GHG emissions to 40 percent below 1990 GHG emission levels. As a result, this impact is considered **less than significant with mitigation.**

4.3.5.1 Greenhouse Gas Reduction Plans

Impact 4.3-2: **The proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. (*Less than Significant*)**

The proposed project would have a significant impact with respect to GHG emissions and global climate change if it would substantially conflict with the provisions of Section 15064.4(b) of the State CEQA Guidelines.

The project is consistent with the State's Executive Orders S-3-05 and B-30-15, which are orders from the State's Executive Branch for the purpose of reducing GHG emissions. These strategies call for developing more efficient land-use patterns to match population increases, workforce, and socioeconomic needs for the full spectrum of the population. As noted above, the UC Policy on Sustainable Practices, and specifically the Carbon Neutrality Initiative, would ensure consistency with EO B-55-18 by contributing fair share towards statewide 2045 carbon neutrality goals.

The CARB *California's 2017 Climate Change Scoping Plan* details measures designed to meet the goals set by SB 32. As detailed in the analysis above, the NDD Plan is anticipated to meet or exceed the goals set by SB 32. Further, Although difficult to quantify, the UCR GHG reduction measures shown in **Tables 4.3-6** and **4.3-7** are anticipated to further lower emissions resulting from the operation of both the NDD Plan Phase 1 and the NDD Plan and provide design measures that will reduce GHG emissions and provide consistency with *California's 2017 Climate Change Scoping Plan*. **Table 4.3-6** shows measures currently in practice, and **Table 4.3-7** shows measures planned for future implementation.

Although the NDD Plan's emissions level in 2050 cannot be reliably quantified, statewide efforts are underway to facilitate the State's achievement of that goal and it is reasonable to expect the NDD Plan's emissions profile to decline as the regulatory initiatives identified by ARB in the First Update are implemented, and other technological innovations occur. Stated differently, the NDD Plan's emissions total at build-out presented in this analysis represents the maximum emissions inventory for the project

as California's emissions sources are being regulated (and foreseeably expected to continue to be regulated in the future) in furtherance of the State's environmental policy objectives. As such, given the reasonably anticipated decline in project emissions once fully constructed and operational, the NDD Plan is consistent with the Executive Order's horizon-year goal.

Many of the emission reduction strategies recommended by ARB would serve to reduce a project's post-2020 emissions level to the extent applicable by law and help lay the foundation "…for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050," as called for in ARB's First Update to the AB 32 Scoping Plan.[60,61]

As such, the NDD Plan's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets and Executive Orders S-3-05 and B-30-15.

60 CARB, First Update, p. 4, May 2014. See also id. at pp. 32–33 [recent studies show that achieving the 2050 goal will require that the "electricity sector will have to be essentially zero carbon; and that electricity or hydrogen will have to power much of the transportation sector, including almost all passenger vehicles."]

61 CARB, First Update, Table 6: Summary of Recommended Actions by Sector, pp. 94-99, May 2014.

Table 4.3-6
GHG Reduction Measures in Current Practice

Reduction Strategy	Implementation	Targeted Emission Source
Energy-reducing shading mechanisms for windows, porch, patio and walkway overhangs installed either in new buildings or during retrofits.	Included in Campus Design Guidelines; ODC works with architects to incorporate these strategies.	Energy Consumption
Grid power (as opposed to diesel generators) used for job site power needs where feasible during construction.	This is a current UCR practice.	Energy Consumption
75 or more percent of buildings oriented to face either north or south (within 30 degrees of N/S).	Campus is on a north-south grid. Most buildings respect this orientation or incorporate remedial measures.	Energy Consumption
Light-colored pavement (e.g., increased albedo pavement) included as part of project design guidelines.	Campus Design Guidelines require the use of "UCR Tan" integral color mixture for all concrete surfaces and limits asphalt surfaces to roads only.	Energy Consumption
All projects required to obtain LEED, Labs21 or other green building certification.	UC policy requires all new projects to achieve LEED Silver, and aim higher where possible.	Energy Consumption
Efficient lighting and lighting control systems installed in new construction and retrofit projects. Daylight used as an integral part of lighting systems in buildings.	All new buildings will continue to adopt this strategy. This strategy is integral to UC's commitment to LEED EBOM.	Energy Consumption
Trees and vegetation planted near structures to shade buildings and reduce energy requirements for heating/cooling.	This is a current UCR practice.	Energy Consumption
Parking lot areas provided with 50% tree cover within 10 years of construction, in particular, low emitting, low maintenance, low water requiring trees. Open lots may be provided with photovoltaic sun shades.	While this strategy is identified in the 2007 Campus Design Guidelines and being followed, the timeframe for establishing 50% tree cover is not established.	Energy Consumption
All new construction projects required to surpass California Energy Code Title 24 by 20 percent or better.	UC Policy requires outperforming Title 24 by 20%.	Energy Consumption
On-site trees that may be removed due to development replaced or preserved as a means of providing carbon storage.	This is a current UCR practice.	Energy Consumption
Developing on-site renewable energy capacity. Photovoltaic shades to be installed for HEV and PHEV Zipcar parking areas.	UCR is in the initial stages of developing on-site solar energy capacity.	Energy Consumption
Water-efficient irrigation systems and devices installed, such as soil moisture-based irrigation controls, to create water-efficient landscapes.	Both landscapes and irrigations systems on campus are water-efficient.	Energy Consumption

Reduction Strategy	Implementation	Targeted Emission Source
Heat recovery projects implemented in campus buildings.	This is an ongoing practice where feasible. To date UCR has: Installed an economizer on the central plant's largest boiler, resulting in an efficiency gain of roughly 35 percent. Added heat recovery at the Chemical Sciences building by re-circulating the office exhaust air that was originally once-through air. Installed run-around loop heat recovery at Boyce Hall. Implemented retro-commissioning for the Science Library and Rivera Library.	Energy Consumption
Promote "least polluting" ways to connect people and goods to their destinations. Provide information on all options for individuals and businesses to reduce transportation-related emissions. Provide education and information about public transportation.	The Sustainability Coordinator (with ODC) is tasked to work with TAPS to further increase awareness and develop educational material to help reduce transportation related emissions.	Motor Vehicles
Accommodations for car sharing programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.	Zipcars are available on campus. Transportation and Parking Services also administer and incentivize a carpool program.	Motor Vehicles
Purchasing vehicles and buses that use alternatives fuels or technology, such as electric hybrids and CNG. Where feasible, fleet vehicles are required to be low emission vehicles. Promote the use of these vehicles in the general community.	Campus Fleet Services has acquired alternative fuel (CNG) vehicles, hybrid vehicles and EV/HEV/PHEV vehicles amounting to 26 percent of the current Fleet Services inventory. This strategy will require further educating the campus constituents and a commitment to alternative fuel vehicles, provided they are economically viable.	Motor Vehicles
Incentives and benefits provided for faculty and staff members who pursue alternative transportation methods.	UCR students, faculty and staff can ride RTA buses at no-cost. Registered participants of the Public Transit Program also receive complimentary parking privileges on campus. When classes are in session, operation of two shuttle routes that service nearby student housing and apartment communities reduce vehicle trips to the campus. Discounted vouchers for Metrolink, a regional commuter rail system, are also available to students. An RTA bus route connects the downtown Riverside Metrolink station with campus.	Motor Vehicles
Bicycle lanes and walking paths designed to facilitate traffic to from and at schools, parks and other community destination points.	UCR works collaboratively with the City of Riverside to facilitate bicycle and pedestrian movement and supports necessary improvements on campus.	Motor Vehicles
Increasing the number of secure bicycle corrals.	Secure bike corrals are being placed on campus at strategic locations based on observed need.	Motor Vehicles
Developing a map for bicycle commuters.	Capital & Physical Planning (CPP) and Transportation and Parking Services (TAPS) are collaborating on a comprehensive map that documents both on and off-campus bike lanes.	Motor Vehicles

Reduction Strategy	Implementation	Targeted Emission Source
Increasing the number of vanpools.	The Vanpool Program is extremely successful and has expanded significantly since its inception. Additional routes are continuously being considered.	Motor Vehicles
Pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements included in project designs. Roadways designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips by featuring traffic calming measures.	Campus improvement projects always take these factors into consideration.	Motor Vehicles
Providing conductive/inductive electric vehicle charging stations.	Electric vehicle charging stations are being considered in partnership with the City of Riverside.	Motor Vehicles
Increasing on-campus housing for students and staff.	UCR is committed to providing on-campus housing for 50% of its student population. Additionally, UCR owns and manages faculty/staff housing close to campus.	Motor Vehicles
Implementing land use strategies to encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density development along transit corridors.	UCR owns and manages faculty/staff housing close to campus.	Motor Vehicles
Including mixed-use, infill, and higher density in development projects to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of services and goods.	UCR is committed to providing on-campus housing for 50% of its student population in the long term. It has promoted the University Village project and continues to work with the City of Riverside on mutually beneficial opportunities.	Motor Vehicles
Construction waste managed during projects.	UCR is committed to LEED Silver. Major Renovations (MR) credits require careful consideration of waste management protocols.	Solid Waste
Uniform outdoor cluster recycling provided.	Outdoor cluster recycling is available at high intensity use areas on campus. UCR is committed to expanding the program and has recently established a transfer station to separate recycle items.	Solid Waste
Introduced campus composting program, including food waste receptacles in appropriate areas with signage.	UCR has an ongoing composting program.	Solid Waste
Developing and implementing sustainable operations in Housing, Dining and Residential Services (HDRS) to include waste reduction, recycling, cleaning supplies, water and energy use.	Ongoing initiative that is being expanded when feasible in collaboration with related campus units.	Solid Waste

Table 4.3-7
GHG Reduction Measures for Future Implementation

Reduction Strategy	Implementation	Targeted Emission Source
Develop a campus certification program for departments or groups meeting sustainability or emissions reductions targets.	Provide targets for departments with official recognition of those departments that meet them.	Energy Consumption
Develop energy intensity standards for the campus's major space usage types.	Include strategy in design and construction guidelines and/or initiate for retrofit projects.	Energy Consumption
Draft and adopt "cool roof" guidelines, require in all new construction projects and retrofit of existing roofs.	Include strategy in design and construction guidelines and/or initiate retrofit projects.	Energy Consumption
Incentive or cost-sharing program to encourage departments or administrative groups to replace older appliances and equipment.	Establish a campus-level fund to support departments in replacing appliances. Consider loan program or joint curricular program to fund operations.	Energy Consumption
Install light emitting diodes (LEDs) for traffic, street and other outdoor lighting.	Replace older lighting with modern high-efficiency lighting.	Energy Consumption
Launch fume hood sash management campaign.	Education, signage, and possible installation of sensors to shut off fume hoods when not in use; also deploy a "shut the sash" campaign to shape user behavior and save energy.	Energy Consumption
Reduce business air travel by developing programs and technologies for remote conferencing.	Purchase equipment for videoconferencing; develop policy encouraging or requiring remote conferencing under specific circumstances (travel distance, type of event, etc).	Air Travel
Limit idling time for commercial vehicles, including delivery and construction vehicles.	Post signage in loading/unloading zones and loading docks; enforce via campus police.	Motor Vehicles
All truck loading and unloading docks shall be equipped with one 110/208 volt power outlet for every two dock doors. Diesel trucks shall be prohibited from idling and must be required to connect to the 110/208 volt power to run any auxiliary equipment. Signage shall be provided.	Include strategy in campus operations guidelines.	Motor Vehicles
Implement a pilot program to implement zero waste events.	Include strategy in campus operations guidelines.	Solid Waste
Work with vendors to reduce unnecessary packaging.	Include strategy in campus purchasing guidelines.	Solid Waste
Encourage environmentally responsible purchasing. Require or give preference to products that reduce or eliminate indirect greenhouse gas emissions, e.g., by giving preference to recycled products over those made from virgin materials.	Include strategy in campus purchasing guidelines.	Solid Waste
Favor projects that use materials which are resource efficient, recyclable, with long life cycles and manufactured in an environmentally friendly way.	Include strategy in campus design and construction guidelines.	Energy Consumption

Reduction Strategy	Implementation	Targeted Emission Source
Implement a comprehensive food procurement program that supports local and/or sustainable foods. Procure sustainable foods for 30% of total food purchases.	Include strategy in purchasing guidelines.	Dining
Educate patrons about sustainable food choices.	Develop educational program/campaign.	Dining
Certify one restaurant as a green business by December 2011. Work with third-party food service providers on campus to green their operations.	Certify using s selected system such as Green Seal's Restaurants and Food Services Operations certification program, or the Green Restaurant Association certification program. Incorporate requirements in contracts with third party food service providers.	Dining
Reduce use of food stuffs with a large CO_2 footprint.	Include strategy in purchasing guidelines.	Dining
Trayless Dining.	Implement across campus, develop alternatives for the summer quarter.	Dining

UC Policy on Sustainable Practices

The UC Policy on Sustainable Practices requires each campus to develop strategies for meeting the University's goals in nine areas of sustainable practices. These goals apply to UCR as a whole, and UC Policy does not require each new project to meet the goals. Nonetheless, the NDD Plan would not conflict with goals set forth in the Policy.

The University requires all UC projects to achieve a minimum of a Silver rating under United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Building Design and Construction (BD+C) v4.0 Green Building Rating System (the "LEED Rating System"). The project is targeting to achieve a LEED Silver certification. The proposed project would include the following sustainable features for each site that would provide greater energy, water and wastewater efficiencies than factored into the calculation of the reported GHG emissions:

- All buildings would be designed and constructed to be energy efficient. The exterior envelope would be optimized to improve thermal isolation. The exterior walls and roofs would have enhanced insulating qualities. High-performance glass would be used to promote daylighting and passive solar heat gain in the winter without excessive use of glazing. Some horizontal sun shades and vertical fins would be installed to reduce solar heat gains during the summer and allow passive solar heating during winter months.

- The general lighting in the buildings would be accomplished through a combination of daylighting and general artificial lighting. In areas of special function, specialty lighting would be utilized. Light fixtures and lighting system would be selected based on performance and aesthetics.

- The student housing units and common areas would be provided with heating, cooling, and ventilation from split system fan coil units. The units would also be provided with operable windows to provide natural ventilating and passive cooling whenever conditions are appropriate. Corridors will be provided ventilation air from dedicated outside air rooftop package units. Cooling would also be provided at certain mechanical spaces such as main electrical rooms.

- High efficiency electrical and water fixtures and appliances would be included in the proposed housing.

- The project would include adequate facilities to encourage recycling and composting, and minimization of solid waste that would need landfill disposal.

- A minimal amount of vehicle parking would be provided to discourage use of personal vehicles by the residents.
- Bicycle parking would be provided throughout the project site to encourage bicycle use.
- The street network will be designed to encourage multi-model circulation.
- Climate-appropriate plant materials that require less irrigation will be used.
- Low-flow water fixtures, energy star appliances, high-efficiency irrigation systems, high-performance exterior building envelopes, insulated glazing, LED lighting, and natural ventilation will also be utilized.

UCR Climate Action Plan

The proposed project's growth in building space and beds on the campus was accounted for by UCR in developing its LRDP, and subsequently in developing its CAP. The CAP has been designed to ensure that even as the campus grows, new development adds incrementally fewer GHG emissions (i.e., new buildings are more "green") and the Campus implements measures to reduce emissions from its existing sources. Furthermore, in compliance with **Mitigation Measures 4.3-1 and MM GHG-1** above, each building project proposed at the campus under the amended 2005 LRDP would be evaluated for its consistency with the emission reduction measures in the CAP as applicable, and emission reduction measures would be incorporated into those projects that are found not to be consistent with the CAP. The proposed project is required to be consistent with the CAP and implement all emissions reduction strategies incorporated in the CAP. Therefore, as the proposed project would be consistent with the UCR CAP, impacts would be **less than significant.**

4.4 HAZARDS AND HAZARDOUS MATERIALS

4.4.1 INTRODUCTION

This section addresses hazards associated with the North District Development Plan (NDD Plan) that may potentially affect public health and safety or degrade the environment. The section summarizes the findings of the following:

- *Preliminary Limited Environmental Site Investigation, North District Predevelopment Studies,* dated May 2017, prepared by Haley & Aldrich, Inc.;
- A*ddendum to the Preliminary Limited Environmental Site Investigation, UC Riverside - North District Development, North of West Linden Street, East of Canyon Crest Drive, Riverside, California*, dated August 2018, prepared by Haley & Aldrich, Inc.;
- *Phase I Environmental Site Assessment (ESA), UC Riverside - Phase 1B Development (North District), North of West Linden Street and East of Canyon Crest Drive, Riverside, California,* dated May 7, 2018, prepared by Haley & Aldrich, Inc.; and
- *Environmental Data Resources Database Report,* dated January 24, 2018.

Each of the reports identified above is incorporated by reference, and included within **Appendix 4.4** of this environmental impact report (EIR). The purpose of these studies was to identify the environmental conditions on the site, including the likely presence of any hazardous substances or conditions that indicate an existing release, past release, or a material threat of a release into structures or onto property, or into the ground, groundwater, or surface drainages and provide recommendations for remediation where necessary.

4.4.2 ENVIRONMENTAL SETTING

As stated in the 2005 LRDP EIR, UC Riverside is a licensed generator of hazardous waste, which includes chemical, radioactive, and biohazardous (infectious) waste. The policies and procedures for the safe management of hazardous materials and wastes at UCR are approved and administered at the Vice Chancellor level. The UCR Vice Chancellor Finance and Business Operations (VC-FBO) organization includes the Environmental Health and Safety (EH&S), which is the principal administrator for hazardous materials/waste management on the UCR campus.

While departments such as Air Pollution Research, Art/Photography, Biomedical Sciences, Chemistry, etc. are primary users of hazardous materials, maintenance and custodial services use commercial

products formulated with hazardous materials on the campus daily. Additionally, almost all campus buildings contain commercial products (e.g., cleaners, copier toners, etc.) that could be considered "hazardous materials" under regulatory definitions.[1] The campus has prepared a Hazardous Materials Business Plan (HMBP)[2] that contains information about the location of, and emergency procedures for, campus buildings in which hazardous materials are handled. The HMBP lists the names and quantities of all hazardous chemical materials found on campus in quantities greater than 1 gallon of liquid, 10 pounds of solids, or 100 cubic feet of gas per building and provides an inventory to the local administering agency (the City of Riverside Fire Department [RFD]).

As the NDD Plan project site is currently occupied with the vacant Canyon Crest Family Housing complex, there are no hazardous materials actively generated or utilized at the site. However, hazardous materials may be released during the demolition of the existing structures and may be used during the construction of the new buildings. Campus protocol provides oversight and direction to ensure the safe usage, transportation, and disposal of hazardous materials, which the NDD Plan would adhere to. Once the project is finished, it is not expected to generate or use any hazardous materials besides those commonly used within other residential areas on campus (i.e., for cleaning and maintenance purposes).

Definitions

Hazardous Material. A number of properties may cause a substance to be considered hazardous, including toxicity, ignitability, corrosivity, or reactivity. A hazardous material is defined as "a substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating irreversible illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed." (Title 22, *California Code of Regulations* [CCR], Section 66084)

Hazardous Waste. Once a hazardous material is ready for discard, it becomes a hazardous waste. A hazardous waste, for the purpose of this report, is any hazardous material that is abandoned, discarded, or recycled (*California Health and Safety Code*, Section 25124). In addition, hazardous wastes occasionally may be generated by actions that change the composition of previously non-hazardous materials. The same criteria that render a material hazardous make a waste hazardous: toxicity, ignitability, corrosivity, or reactivity.

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1 UC Riverside. 2011. *UC Riverside 2005 LRDP Amendment II Draft EIR*. August.

2 UC Riverside. 2016. *Hazardous Materials Business Plan Summary Document*. December. https://ehs.ucr.edu/hazmatbusiness/hmbp_summary.pdf, accessed October 5, 2018.

Asbestos. Asbestos, a naturally occurring fibrous material, was used for years in many building materials for its fireproofing and insulating properties. Any activity that involves cutting, grinding, or drilling during building renovation or demolition or relocation of underground utilities could release friable asbestos fibers unless proper precautions are taken. In accordance with Sections 25915 through 25916 of the California Health and Safety Code, EH&S maintains a campus-wide inventory of locations of asbestos-containing building materials and provides annual campus-wide notification of locations containing asbestos. Appropriate signs are posted when asbestos-containing materials are disturbed during construction or renovation at campus locations, in accordance with State and South Coast Air Quality Management District regulations.[3]

Lead. Lead is a naturally occurring metallic element. Among its numerous uses and sources, lead can be found in paint, water pipes, solder in plumbing systems, and soils around buildings and structures painted with lead-based paint. In 1978, the federal government required the reduction of lead in house paint to less than 0.06 percent (600 parts per million). Because many structures on the UCR campus were constructed prior to 1978, wall surfaces and other building materials may contain lead-based paints. As required by the Residential Lead-Based Paint Hazard Reduction Act, the Campus provides appropriate disclosure of lead hazards and also provides information from the EPA regarding the risks and effects of lead exposure.[4]

Organochlorine Pesticides (OCPs). OCPs are chlorinated hydrocarbons used extensively in the mid-1900s in agriculture and mosquito control, of the chlorinated pesticides, DDT is the most well-known of these chemicals. The United States banned the production of OCPs in 1977; however, some of these pesticides and insecticides are still in use in developing countries around the world. The primary routes of pesticide exposure are ingestion through food from pesticide residue, and drinking water as the chemicals leech through soil into drinking water reservoirs. OCPs are neurotoxicants and human exposure to high doses of them, either through inhalation or ingestion of contaminated foods, can cause nausea, vomiting, and confusion in the short term and serious damage to the central nervous system, thyroid, and liver in the long term. Human health effects from OCPs at low environmental doses are unknown. A small portion of the general population has measureable DDT in their system. Finding measurable amounts of DDT in serum does not mean that the levels of these chemicals cause an adverse health effect.[5]

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3 UC Riverside. 2011. *UC Riverside 2005 LRDP Amendment II Draft EIR*. August.

4 Ibid.

5 Centers for Disease Control and Prevention (CDC) DDT Fact Sheet, website https://www.cdc.gov/biomonitoring/pdf/ddt_factsheet.pdf, accessed February 15, 2019.

Phase I ESA Methodology and Findings

Summary of Preliminary Site Investigation and Phase I ESA

Reports of the site show that it was largely vacant until the 1930s, when it was utilized for citrus groves. In 1940, housing was developed on the site by the U.S. Army Corps of Engineers to accommodate the families of active duty service members stationed at nearby March Field, the complex was passed to the Housing Authority of the County of Riverside in 1942, and subsequently purchased by the University of California in 1955 for use as family student housing.[6] Over time, the adjacent land and citrus groves were graded and also developed with UC Riverside buildings and athletic fields as the campus expanded. Currently, the site is occupied by the vacant Canyon Crest Student Housing area, composed of single-story student housing, associated facilities and maintenance buildings, paved and gravel roads, and an outdoor recreation area. The KUCR radio station is also present at the site. No underground storage tanks (USTs) were observed on the site, and none were identified as having been historically located on the site.

The 2018 Phase I ESA identified two areas of recognized environmental concern (REC) at the site. Testing conducted during the "Preliminary Limited Environmental Site Investigation" by Haley & Aldrich (included as **Appendix 4.4** to this Revised Draft EIR) showed the presence of lead in the soil above the California Department of Toxic Substances Control's (DTSC) modified screening level for residential land use. It is likely that the presence of lead is due to lead-based paint, used historically on structures at the site. The second REC is the presence of organochlorine pesticides (OCPs) in the soil, probably resulting from termiticides used historically at the site. The levels found in soil samples during the "Preliminary Limited Environmental Site Investigation" were also above the DTSC modified screening levels for residential land use. No controlled or historical RECs were identified in connection with the project site.

Federal and State Database Review

A government database report, prepared by Environmental Data Resources (EDR) of available federal, state, and County agency databases was reviewed to identify government-regulated properties having known and potential RECs within the vicinity of the site. Due to the size of the site, the radii of investigation for the federal and state agency lists were extended up to one mile. A description of the reviewed government databases is available in the EDR report (**Appendix 4.4**). Also included in the EDR report are maps illustrating the location of listed properties relative to the location of the site.

A summary of properties that could not be mapped by EDR, but were identified as potentially within the site vicinity (orphan properties) is also included in the EDR reports. Of the listed unmappable properties,

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6 *Historic Resource Evaluation Report for Canyon Crest Family Housing Complex*, Daly & Associates, March 2017.

two are identifiable as being located adjacent to the site. The pertinent findings of the government database review are summarized below:

- The site is not identified in the EDR report.
- The site is not located within 1.0 mile of a federal Superfund property.
- There are three properties located within 0.5 miles of the site listed by the RCRA as either a generator or a Treatment, Storage, and Disposal (TSD) facility. Being a registered generator of hazardous waste does not indicate that a release has occurred on the property.
- There are 17 properties located within 0.5 miles of the project site listed as having State/Tribal Leaking Storage Tanks and two are listed as having State/Tribal Registered Storage Tanks.
- Within 0.5 miles of the project site, five properties are listed as State/Tribal Equivalent CERCLIS (currently known as the Superfund Enterprise Management System (SEMS)) Sites.
- There is one site within one mile of the project site that is listed as a State/Tribal Equivalent NPL Site.

Based on the database review, there is a low probability that the listed off-site properties in the site vicinity have impacted the site due to their regulatory status (case closed, waste generators), their down-gradient locations from the site, and their distances from the site.

County of Riverside Department of Environmental Health (DEH)

The DEH was contacted for information concerning the reported water wells located on the site. As of the completion of the 2018 Phase I ESA report, the DEH had yet to respond, and affiliated files had not been made available for review. However, during a site reconnaissance, performed by Haley & Aldrich, no wells of any kind were observed.[7]

Aerial Photograph Review

Copies of aerial photographs for the years 1931, 1938, 1949, 1953, 1967, 1975, 1978, 1985, 1989, 1994, 2006, 2010, and 2014; and historical topographic maps from the years 1901, 1942, 1947, 1953, 1967, 1980, and 2012 were reviewed by Haley & Aldrich for historical land use identification. Based on the review of available aerial photographs and maps, the historical development of the site and vicinity was evaluated. Findings from the historic aerial photograph and topographic map review conclude that the site has been

7 Haley & Aldrich. 2018. *ASTM Phase I Environmental Site Assessment. UC Riverside - Phase 1B Development (North District)*. March. Included as **Appendix 4.4** to this Draft EIR.

developed with citrus orchards since at least the 1930s and was modified in 1940 with approximately 178 bungalow style residences. Properties surrounding the site were also largely undeveloped, with only scattered structures, roadways, and a railroad until the 1940's and 1950's when the land was planted for orchards. Like the project site, the surrounding area was eventually purchased by the University and urbanized.

Site Reconnaissance

On March 7, 2018, Haley & Aldrich visited the site to observe conditions. All portions of the site and adjoining properties were observed from on foot. The 51-acre site is occupied by a complex of single-story student housing units, yards, and a large park with a playground is present in the western portion of the site, south of Cherry Street. Permanent and modular structures, associated with storage and maintenance facilities are located in the northwest and southeast portions of the site. Several gravel roads and nine paved roads currently exist on the project site. Typical residential above and underground utilities are present throughout the site.

In a covered and fenced area in the central area of the site, paint is stored in up to 5-gallon containers. However, the area is paved with asphalt and no evidence of staining of leaking was discovered during the site reconnaissance. No other use, storage, and/or disposal of petroleum products or hazardous materials were observed at the project site. At the time of the site visit, no underground storage tanks, aboveground fuel tanks, pits, ponds, stressed vegetation, significant debris, or stained soil were observed on the site.

No evidence of the former citrus groves was observed by Haley & Aldrich during the site visit. However, the potential use of organochlorine pesticides (such as DDT) in the areas of the site formerly developed with orchards remained an REC at the site.

Adjacent Property Reconnaissance

Observations of the adjacent land parcels were made from the project site. North of the project site, across Blaine Street, are a church and commercial and retail properties, such as a laundromat, car wash, grocery store, and a boba tea house. Parking lots and two Child Development buildings are located northwest of the site and corporation yards and affiliated warehouses and parking lots lie west of the site. Student residences, as well as the Student Recreation Center and the UCR track facility are located to the south of the project site, across Linden Street. The Falkirk Apartments are situated to the west of the site, across Canyon Crest Drive, as is a large athletic/recreation field with two baseball diamonds. Landscaped and hardscaped areas, as well as parking lots are present on all of the parcels surrounding the site. It is anticipated that the neighboring land uses would not adversely impact the project site.

A database report, conducted by Haley & Aldrich, identified two sites nearby the NDD Plan project site that may have potential to impact the site. Both are identified by Leaking Underground Storage Tank (LUST) database, although one is also listed on Underground Storage Tank (UST), Historical Underground Storage Tank (HIST UST), California Hazardous Material Incident Reporting System (CHMIRS) databases. At the time of the preparation of this report, neither site is considered to be a REC and lack potential to impact the project site.

EZ Serve – 811 Blaine Street. The LUST, Leaking Underground Tank Closed Sites List, included this site as the location of a gasoline leak, which impacted soil only. As the groundwater was not impacted, it is not likely to impact the project site. The case was closed in 1992.

UC Riverside Fleet Services / UC Riverside Central Steam Plant – 3401 Watkins Drive. This site is located about 0.16 miles east of the project site.

In 1997, a 10,000-gallon gasoline UST, a 6,000-gallon gasoline UST, and a 500-gallon waste oil UST were removed from the site. Soil samples taken during the excavation activities showed that leaking had occurred and a LUST case was opened. Borings showed high concentrations of total petroleum hydrocarbons (TPH) gasoline, toluene, ethylbenzene, and xylenes. However, these constituents were not detected in deeper borings, indicating that groundwater had not been impacted. The case was closed in 2000.

Limited Phase II Soils Assessment

In order to confirm or deny significant impacts to the shallow soil from the potential use of organochlorine pesticides and lead-based paints, Haley & Aldrich performed additional soil samplings on March 29 and March 30, 2018. During the 2017 preliminary environmental investigation, 11 locations were found to exceed OCP DTSC screening levels and 10 more exceeded both lead and OCP screening levels. At these locations, a total of 41 boring locations were hand augured and soil samples were chilled and transported to Eurofins Calscience for analysis. The laboratory results are summarized below.

- With the exception of one location, lead concentrations were less than the DTSC screening level. The outlier contained a maximum lead concentration of 94 milligrams per kilogram (mg/kg), slightly above the DTSC screening level of 80 mg/kg.

- It appears that lead at the site is present at up to a depth of 2-feet below ground surface (bgs) and a distance of three feet from each painted structure.

- Most concentrations of OCPs in the soil samples taken were below DTSC screening levels. Chlordane and Dieldrin concentrations exceeded DTSC screening levels in three of the 2-feet bgs samples but concentrations decreased with depth and were generally less than the DTSC screening levels at increased depths.

- It appears that the OCPs are generally delineated at the site at a depth of 3-feet bgs and a distance of 3-feet from the structures.

Human Health Risk Evaluation

Following the soil sampling and analysis performed in March 2018, a human health risk evaluation (HHRE) was conducted in a manner generally consistent with the "*Preliminary Endangerment Assessment (PEA) Guidance Manual*," prepared by the DTSC dated January 1994 (revised October 2015), the "*Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), Interim Final*" (RAGS Part A) prepared by the United Stated Environmental Protection Agency (US EPA) dated December 1989, and site-specific exposure characteristics. The purpose of the HHRE is to estimate human health risks for future on-site student residents.

As previously discussed, chemicals of potential concern (COPCs) were identified as lead and any OPC detected in vadose zone soil[8] above the laboratory detection limit during both the 2017 and 2018 soil sampling events at the site.

Exposure Assessment

The exposure assessment includes a description of the most sensitive receptors, their possible exposure pathways (i.e., how they may come into contact with the COPCs at the site), derivation of exposure point concentrations, and estimation of chemical intakes by the receptors.

Potential Receptors and Exposure Pathways

It was assumed that the receptor with the greatest potential exposure, the future on-site student resident, may be exposed to COPCs in soil at the site. The following potentially complete exposure pathways were evaluated:

- Incidental ingestion (swallowing) of soil;

- Dermal (skin) contact with soil; and

8 The vadose zone is the Earth's terrestrial subsurface that extends from the ground surface to the regional groundwater table.

- Inhalation of fugitive dust in ambient air.

It was conservatively assumed that a student resident would be present at the site for 24 hours per day, 350 days per year, for four years as an adult. This is considered conservative, because a student would likely reside at the residence hall for less than four years and less than 350 days per year.

Exposure Point Concentrations

The concentrations soil used to estimate exposure point concentrations (EPCs) for the future on-Site student resident were identified as either the maximum detected concentrations or 95% upper confidence levels (95% UCLs) concentrations in soil at the site (collected during the 2017 and 2018 investigations). The 95% UCL concentrations were calculated using the US EPA ProUCL Version 5.1.002 statistical software (ProUCL). The 95% UCL calculations are presented in Appendix C of the A*ddendum to the Preliminary Limited Environmental Site Investigation, UC Riverside - North District Development, North of West Linden Street, East of Canyon Crest Drive, Riverside, California*, dated August 2018, prepared by Haley & Aldrich, Inc., included as **Appendix 4.4c** to this DEIR. EPCs are presented below in **Table 4.4-1**, **Exposure Point Concentrations, North District Development Plan Project Site**.

Table 4.4-1
Exposure Point Concentrations
North District Development Plan Project Site

Chemical	Maximum Concentration	95% UCL	EPC	Basis
DDD	0.52	--	0.52	Maximum Concentration
DDE	1.4	--	1.4	Maximum Concentration
DDT	1.2	--	1.2	Maximum Concentration
Chlordane	15	1.1	1.1	95% UCL
Dieldrin	0.5	0.029	0.029	95% UCL
Endrin	0.005	--	0.005	Maximum Concentration
Heptaclor	0.083	--	0.083	Maximum Concentration
Heptachlor Epoxide	1.3	0.04	0.04	95% UCL
Lead	434	79	79	95% UCL

Notes:
Concentrations in milligrams per kilogram (mg/kg)
95% UCL = 95% Upper Confidence Level
EPC = Exposure Point Concentration
Source: Haley & Aldrich, Inc., August 2018.

COPC intakes and exposure concentrations were estimated using the methodology in the PEA Guidance Manual and RAGS Part A. The toxicity values used in the HHRE were selected using the methodology described in the "Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note Number 3: DTSC-modified Screening Levels (DTSC-SLs)" (HHRA Note 3) prepared by the DTSC and dated June 2018.

Summary of Risk Characterization Results

A summary of the estimated risk results is presented below; the associated risk calculations are presented in Appendix C of the A*ddendum to the Preliminary Limited Environmental Site Investigation, UC Riverside - North District Development, North of West Linden Street, East of Canyon Crest Drive, Riverside, California*, dated August 2018, prepared by Haley & Aldrich, Inc., included as **Appendix 4.4c** to this DEIR.

Total Non-cancer Hazard Index

Most environmental programs employ a Hazard Index (HI) of unity (i.e., 1) as an acceptable target for risk decisions. The most explicit directive comes from the US EPA federal Superfund program, which is also California Environmental Protection Agency (Cal/EPA) policy. This directive specifies an HI of 1 as the acceptable target for risk management decisions. This non-cancer risk threshold was used in the HHRE for the future on-site student resident as the acceptable total HI to assess whether exposure to COPCs at the site may pose an adverse non-carcinogenic effect.

Cumulative Incremental Lifetime Cancer Risk

A total Incremental Lifetime Cancer Risk (ILCR) of 10^{-6} and 10^{-4} corresponds to theoretical probability of 1 chance in 1 million to 1 chance in ten thousand, which is in addition to, or in excess of the background cancer risk. Potential risk estimates between 10^{-6} and 10^{-4} require risk management decisions based on site-specific land use/exposure scenarios and may or may not require remediation or mitigation. It is generally accepted in the regulatory community that risk estimates equal to or less than 10^{-6} are less than significant and, therefore, do not require remediation or mitigation measures.

California Proposition 65 (1986, Safe Drinking Water and Toxic Enforcement Act of 1986, Proposition 65, Health and Safety Code Section 25249.5 et seq.) requires specific notification and warning for exposure to carcinogens above a chemical-specific "no significant risk level," which is based on a 10^{-5} excess lifetime cancer risk. A cumulative ILCR threshold of 10^{-6} was used in the HHRE to assess whether exposure to COPCs at the site may pose an unacceptable cumulative ILCR for the future on-site student resident.

Lead

Potential human health effects from exposure to lead are typically inferred from blood lead levels, rather than intake and, as such, are not amenable to the above risk estimation approach. Therefore, the EPC for lead was compared to the DTSC residential land use screening level as identified by HHRA Note 3 of 80 mg/kg. This comparison is conservative because the residential DTSC screening level is based on a child receptor and children will not be residing at the site.

Conclusions of Risk Characterization Results

Based on the results of the HHRE for the future on-site student resident, the ILCR is 3×10^{-7} and the total HI is 0.02. The cumulative ILCR is less than the acceptable cumulative ILCR threshold of 1×10^{-6}, and the total HI is less than the acceptable total HI of 1. The lead EPC at the site is 79 mg/kg, which is less than the residential DTSC screening level of 80 mg/kg.

4.4.3 REGULATORY FRAMEWORK

Hazardous materials handling and hazardous waste management are governed by federal, state, and local laws and regulations. Key regulations are summarized below.

4.4.3.1 Federal Regulations

The US EPA is the main federal agency responsible for enforcing laws and regulations relating to hazardous materials and wastes, including evaluation and remediation of contamination and hazardous wastes. The US EPA works collaboratively with other agencies to enforce hazardous materials handling and storage regulations and site cleanup requirements. The Occupational Safety and Health Administration (OSHA) and the Department of Transportation (DOT) are authorized to regulate safe transport of hazardous materials.

Resource Conservation and Recovery Act (RCRA)

Under RCRA, US EPA regulates the generation, treatment, and disposal of hazardous waste, and the investigation and remediation of hazardous waste sites. RCRA includes procedures and requirements for reporting releases of hazardous materials and for cleanup of such releases. RCRA also includes procedures and requirements for handling hazardous wastes or soil or groundwater contaminated with hazardous wastes. Individual states may apply to US EPA to authorize them to implement their own hazardous waste programs in lieu of RCRA, as long as the state program is at least as stringent as federal RCRA requirements. California has been authorized by US EPA to implement its own hazardous waste

program, with certain exceptions. The California program is handled by the Department of Toxic Substances Control (DTSC), see below.

Hazardous and Solid Waste Amendments Act of 1984 (HSWA)

The HSWA amended the Solid Waste Disposal Act (Act) of 1965, as amended by the RCRA. The Act placed greater responsibility on the US EPA to implement and enforce hazardous waste rules set in place by the RCRA. The HSWA includes more than 70 provisions, including the establishment of permitting deadlines for hazardous waste facilities, the regulation of small-quantity generators of hazardous waste, and the formation of RCRA Corrective Action requirements, which assist hazardous waste facilities in investigating and cleaning up any release of hazardous waste.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA, also known as Superfund, establishes clean-up liability regime and process for certain properties contaminated by hazardous substances that poses a threat to human health and the environment. CERCLA created a tax on chemical and petroleum industries, which generated a trust fund for cleaning abandoned or uncontrolled hazardous waste sites with no identified responsible party. It also authorized short-term and long-term removal and response actions to address hazardous substance releases and/or permanently reduce of releases or threats of releases.

Superfund Amendments and Reauthorization Act (SARA)

In 1986, SARA amended CERCLA, reflecting the US EPA's experience in administering the Superfund program over six years. SARA provided new enforcement authorities and tools, increased the amount of funds available for hazardous waste site clean-ups, and increased the awareness of human health problems affiliated with hazardous waste sites. Another change generated by SARA was the revision of the US EPA's Hazard Ranking System, to accurately assess the risk posed to human health and the environment by uncontrolled hazardous waste sites.

Emergency Planning and Community Right-to-Know (EPCRA) (SARA Title III)

EPCRA was created under SARA Title III to help communities protect public health and safety from chemical hazards. The national legislation requires each state to appoint a State Emergency Response Commission (SERC), which then divides each state into Emergency Planning Districts and nominates a Local Emergency Planning Committee (LEPC) for each district. EPCRA provides compliance and reporting standards as well as waste, chemical, and cleanup enforcement, allowing each district to plan and prepare thoroughly, should a hazardous waste accident or release arise.

Hazardous Materials Transportation Act (HMTA)

The HMTA was developed in 1975 to create a uniform ruling on the transportation of hazardous materials in the United States. The law was intended to coordinate existing regulations, which previously varied widely across statelines and led to mismanagement and illegal dumping of hazardous waste. HMTA is administered by the DOT via its issuance of inspections, training, and transportation requirements and information; the federal government delegates enforcement authority to the states.

Section 402 of the Clean Water Act- National Pollutant Discharge Elimination System

The Clean Water Act (CWA) authorizes the US EPA to regulate water quality in California by controlling the discharge of pollutants to water bodies from point and non-point sources through the National Pollution Discharge Elimination System (NPDES).

The State Board administers the NPDES *General Permit for Discharges of Stormwater Runoff Associated with Construction Activity* (General Construction Permit). In order to cover a construction project disturbing one acre or more of land under the General Construction Permit, a facility must submit a Notice of Intent to the State Board prior to the beginning of construction. Effective July 1, 2010, all dischargers are required to obtain coverage under the Construction General Permit Order 2009-0009-DWQ adopted on September 2, 2009.

The General Construction Permit requires that projects develop and implement a Stormwater Pollution Prevention Plan (SWPPP), identifying potential sources of pollution and specifying runoff controls during construction for the purpose of minimizing the discharge of pollutants in stormwater from the construction area. The SWPPP should contain a site map which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

The permit also includes post-construction standards with the requirement for all construction sites to match pre-project hydrology to ensure that the physical and biological integrity of aquatic ecosystems is maintained. This “runoff reduction” approach is analogous in principle to Low Impact Development (LID) and will serve to protect related watersheds and water bodies from both hydrologic-based and pollution impacts associated with the post-construction landscape.

4.4.3.2 State Regulations

State agencies that regulate the use of hazardous materials include the California Environmental Protection Agency (Cal/EPA), the Office of Emergency Services (OES), the Department of Health Services (DHS), the DTSC, and, the State Water Resources Control Board (State Board), and the Regional Water Quality Control Boards (RWQCBs).

Department of Toxic Substances Control (DTSC)

The DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste, and the investigation and remediation of hazardous waste sites. The DTSC implements the provisions of both federal and state hazardous waste laws through the California Hazardous Waste Control Law. The DTSC and the RWQCBs administer laws for the clean-up on of environmentally impacted sites. Lead responsibility for remediation depends on the proposed use of a parcel, the character of waste contaminants, and the need for site monitoring.

Hazardous Waste and Substance Site List- Site Cleanup (Cortese List)

The Cortese List was developed by the DTSC, under the Cortese Act, to provide the location of hazardous materials release sites. The list serves as a planning document for State and local agencies, as well as developers, who are required to comply with the California Environmental Quality Act (CEQA). The Cortese List is updated at least annually by Cal/EPA to provide the public with the hazardous sites' location and status. The DTSC is responsible for a portion of the reporting of the Cortese List, which is made available via the EnviroStor database.[9]

Hazardous Materials Transportation

The United States Department of Transportation (USDOT) regulates hazardous materials transportation between states. The state agency with primary responsibility in California for enforcing federal and state regulations and responding to hazardous materials transportation emergencies is the California Highway patrol (CHP). Together, these agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roads.

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9 EnviroStor is DTSC's online data management system for tracking their cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. DTSC is a public agency, so EnviroStor is available to the general public to view and monitor on-going remediation projects.

Hazardous Materials Emergency Response

California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local government and private entities. Response to hazardous materials incidents is one component of this plan. The State Office of Emergency Services administers the plan, which coordinates the responses of other agencies, including Cal/EPA, the CHP, the Department of Fish and Wildlife, the Regional Water Quality Control Board (RWQCB), and the Radiologic Health Branch of the DHS. EH&S will continue to implement the plan at UCR, in cooperation with the RFD.

Worker Safety

The California Occupational Safety and Health Administration (Cal/OSHA) and the federal Occupational Safety and Health Administration (Fed/OSHA) are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. In California, Cal/OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices.

Hazardous Waste Handling

Cal/EPA and the DTSC regulate the generation, transportation, treatment, storage, and disposal of hazardous waste under the Resource Conservation and Recovery Act (RCRA) and the California Hazardous Waste Control Law. Both laws impose "cradle to grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

Lead Regulations

Because of its toxic properties, lead is regulated as a hazardous material. Lead is also regulated as a toxic air contaminant (TAC). State-certified contractors must perform inspection, testing, and removal (abatement) of lead-containing building materials in compliance with applicable health and safety and hazardous materials regulations. The Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X) requires disclosures of the presence of lead paint in residential structures.

The California Accidental Release Prevention (CalARP) Program

The CalARP program regulates facilities that store greater than a threshold quantity of a regulated substance, which the State has determined represents a potential health and safety hazard beyond the facility's boundary. The regulated substances include 276 toxic chemicals and 63 flammable substances. This program requires a regulated facility to develop and implement a Risk Management Plan (RMP) that includes the following: (1) a Hazard Assessment, (2) Prevention Elements, (3) Management System, and (4) Emergency Response Program. The Hazard Assessment requires external event analyses, including

seismic analysis, worst-case release scenario (WCRS) modeling, alternate release scenarios (ARS) modeling, and a review of historical accidents. The prevention elements, which are in place to prevent an accidental release, include operating procedures, mechanical integrity, training, incident investigation, and managing change that may occur in the processes. The facilities are required to have a management system in place to ensure that all of the prevention elements are being implemented. The facilities are also required to have an emergency response program, including an emergency response plan. CalARP regulated facilities are required to submit their risk management plan (RMP) to the local Certified Unified Program Agency (see below).

California Code of Regulations (CCR) Title 8

Title 8 of the CCR discusses hazardous waste operations and emergency response. Guidance is provided regarding hazardous waste treatment, storage, and disposal, clean-up operations, corrective actions, and emergency response. It mandates the preparation of an emergency response plan by employers of those working with hazardous and toxic materials, to minimize uncontrolled releases and accidental exposures. Title 8 details the elements of an emergency response plan, which include pre-emergency planning, site security and control, and emergency alerting and response procedures.

4.4.3.3 Local Regulations

Certified Unified Program Agency (CUPA)

The primary local agency, known as the Certified Unified Program Agency (CUPA), with responsibility for implementing federal and state laws and regulations pertaining to hazardous materials management is Riverside County Environmental Health Department, Hazardous Materials Unit. The Unified Program is the consolidation of six state environmental regulatory programs into one program under the authority of a CUPA. A CUPA is a local agency that has been certified by Cal/EPA to implement the six state environmental programs within the local agency's jurisdiction. A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. The City of Riverside Fire Department (RFD) maintains a special program that regulates hazardous materials through disclosure and risk management plans as well as above ground storage tank referral in cooperation with the County of Riverside. Thus, the RFD is a PA with the Riverside County Environmental Health Department, Hazardous Materials Unit as the CUPA.

University of California, Riverside Long Range Development Plan (LRDP)

The UC Riverside LRDP is a document intended to help guide campus development in a way that uniformly maximizes land usage, safety, and the educational experience for students and others at UC

Riverside. With regards to hazards, the LRDP describes existing conditions of hazardous materials currently transported, used, or stored on campus and details procedures critical to minimizing accidental releases of hazardous materials into the environment. Specific policies relating to the North District Development Plan (NDD Plan) are listed below in **Section 4.4.4.4, Project Impacts and Mitigation Measures**.

University of California, Riverside Main Campus Emergency Action Plan (EAP)

As required by the California Code of Regulations (CCR) Title 8, UC Riverside prepared and implemented an EAP in July 2012. The latest revision to the plan occurred in 2016.[10] The document is intended to guide the emergency response actions of all campus personnel during an emergency event, as well as provide standard actions that each person should be aware of in the case of a safety-threatening emergency.

City of Riverside General Plan

4.4.4 IMPACTS AND MITIGATION MEASURES

4.4.4.1 Significance Criteria

The following thresholds for determining the significance of impacts related to hazards and hazardous materials are contained in the environmental checklist form contained in Appendix G of the most recent update of the *California Environmental Quality Act (CEQA) Guidelines*. Impacts related to hazards and hazardous materials are considered significant if the Project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;

10 UC Riverside. 2016. *Emergency Action Plan*. February. https://ehs.ucr.edu/emergency/emergency_action_plan.pdf, accessed October 12, 2018.

- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

4.4.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The Initial Study (IS) found that the NDD Plan would not create a significant hazard to the surrounding public or environment, as it is not located on properties associated with a hazardous site listed under Government Code Section 65962.5, also known as the Cortese List.[11] Similarly, the UC Riverside campus is not located within two miles of a public airport or public use airport, and is not included in an airport land use plan. As the nearest airports are located four and six miles from the project site, development of the NDD Plan would not result in a safety hazard with regards to airports and airport land use plans. Finally, while the southeast hills bordering the southeast end of campus may be susceptible to wildland fires, the project site is not adjacent to them and would therefore not be at risk of wildland fires. Therefore, implementation of the NDD Plan, including the Phase 1 project, would not result in a safety hazard from wildland fires, hazardous materials sites, or airports and private airstrips. As such, no impact would occur and no further analysis of this issue is required in this EIR.

The Initial Study deferred analysis of the impacts of the NDD Plan, relative to transport, use, disposal, and/or accidental release of hazardous materials, hazardous emissions within one-quarter mile of a school, and the potential interference with an adopted emergency response plan, to the EIR. Therefore, all of the CEQA checklist items are addressed in the following analysis.

4.4.4.3 Methodology

The analysis in this section focuses on the use, disposal, transport, or management of hazardous or potentially hazardous materials resulting from potential development or redevelopment resulting from the implementation of the proposed NDD Plan. Disposal options, the probability for risk of upset, and

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11 EnviroStor list included in the A*ddendum to the Preliminary Limited Environmental Site Investigation, UC Riverside - North District Development, North of West Linden Street, East of Canyon Crest Drive, Riverside, California*, dated June 2018, prepared by Haley & Aldrich, Inc.

the severity of consequences to people or property associated with the increased use, handling, transport, and/or disposal of hazardous materials associated with the implementation of the proposed NDD Plan is also analyzed. This section addresses potential short-term construction impacts resulting from demolition of existing structures, as well as from contaminated soils, and impacts related to the operation of development in the Plan area over time. Operational impacts would generally be associated with the type of uses proposed and the materials that operation of these uses would entail. In determining the level of significance, the analysis assumes that any development under the proposed NDD Plan would comply with relevant federal and State laws and regulations, as well as the policies and procedures set by the University of California and the UCR HMBP.

4.4.4.4 Project Impacts and Mitigation Measures

Impact 4.4-1 Implementation of the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (*Less than Significant*)

The proposed NDD Plan would demolish the current Canyon Crest Family Housing complex and construct student housing and support spaces (including dining facilities), athletic facilities, and parking. Due to the nature of the NDD Plan, the primary new sources of hazardous material use and disposal within the Plan area would generally be typical household cleaning products and minor industrial related chemicals from housing and support land uses. Examples of such hazardous materials include maintenance products (e.g., paints and solvents); oils, lubricants and refrigerants associated with building, mechanical, and HVAC systems; and grounds and landscape maintenance products formulated with hazardous substances, including fuels, cleaners and degreasers, solvents, paints, lubricants, adhesives, sealers, and pesticides/herbicides. It is not expected that these housing and support, parking, and athletic facility land uses would involve the use, transport, or disposal of significant amounts of hazardous materials, including hazardous chemical, radioactive, and biohazardous materials.

All phases of NDD Plan construction may also involve small quantities of hazardous materials. However, compliance with local, state, and federal regulations would minimize risks associated with the routine transport, use, or disposal of hazardous materials during both project construction and operation. Furthermore, in compliance with NPDES requirements, the University would develop a construction-phase SWPPP to further ensure the proper management of hazardous materials during construction. As with all campus development, demolition and construction of the NDD Plan would also be guided by existing Campus EH&S protocols for handling hazardous materials and 2005 LRDP **PP 4.7-1**.

PP 4.7-1 *The Campus shall continue to implement the current (or equivalent) health and safety plans, programs, and practices related to the use, storage, disposal, or transportation of hazardous materials, including, but not necessarily limited to, the Business Plan, the Broadscope Radioactive Materials License, and the following programs: Biosafety, Emergency Management, Environmental Health, Hazardous Materials, Industrial Hygiene and Safety, Laboratory/Research Safety, Radiation Safety, and Integrated Waste Management. These programs may be subject to modification as more stringent standards are developed or if the programs are replaced by other programs that incorporate similar health and safety protection measures.*

Compliance with such rules and regulations would minimize potential impacts from the routine transport, use, or disposal of hazardous materials during construction and operation of the NDD Plan to a less than significant level. Further analyses regarding impacts regarding toxic air and/or fugitive dust are discussed in **Section 4.2, Air Quality.**

Impact 4.4-2 Implementation of the proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (*Less than Significant*)

As the NDD Plan consists of residential and support buildings and an athletic event center, it is not anticipated that large quantities of hazardous materials would be present at the site during project operation. However, according to the Phase II site assessment conducted by Haley & Aldrich in 2018, historical use of termicides and lead-based paint at the site has resulted in the presence of OCPs and lead in higher concentrations than what is generally considered acceptable by the DTSC.

Given this finding, as previously discussed, per the guidance of the DTSC PEA Guidance Manual, further study was undertaken in the form of an HHSE for the site. Based on the results of this HHSE for the future on-site student resident, the ILCR is 3×10^{-7} and the total HI is 0.02. The cumulative ILCR is less than the acceptable cumulative ILCR threshold of 1×10^{-6}, and the total HI is less than the acceptable total HI of 1. The lead EPC at the site is 79 mg/kg, which is less than the residential DTSC screening level of 80 mg/kg. As previously discussed, this comparison is conservative because the residential DTSC screening level is based on a child receptor and children will not be residing at the site.

NDD Plan would also be guided by existing Campus EH&S protocols for handling hazardous materials and 2005 LRDP **PP 4.7-2** and **PP 4.7-3**.

PP 4.7-2 *The Campus shall perform hazardous materials surveys on buildings and soils, if applicable, prior to demolition. When remediation is deemed necessary, surveys shall identify all potential*

hazardous materials within the structure to be demolished, and identify handling and disposal practices. The Campus shall follow the practices during building demolition to ensure construction worker and public safety.

PP 4.7-3 *The Campus will inform employees and students of hazardous materials minimization strategies applicable to research, maintenance, and instructional activities, and require the implementation of these strategies where feasible. Strategies include but are not limited to the following:*

(i) Maintenance of online database by EH&S of available surplus chemicals retrieved from laboratories to minimize ordering or new chemicals.

(ii) Shifting from chemical usage to micro techniques as standard practice for instruction and research, as better technology becomes available.

Therefore, implementation of the proposed project would not 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; impacts would be less than significant, and mitigation is not necessary to protect the health of the future on-site student residents.

Impact 4.4-3 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. (*Less than Significant*)

There are no existing or proposed public schools within one-quarter mile of the NDD Plan area, including the project site. However, the UCR Child Development Center, which includes a preschool, kindergarten, and childcare facility, is located immediately adjacent to the NDD Plan site to the east. Although the proposed NDD Plan development would handle hazardous materials and wastes, as described above, operations would comply with federal, State, and local regulations, including 2005 LRDP **PP 4.7-1**, pertaining to hazardous wastes. Adherence to these regulations, policies, and mitigation which require proper handling techniques, disposal practices, and/or clean-up procedures, would ensure that risks associated with hazardous emissions or materials to the UC Riverside Child Development Center would be reduced to a less than significant level. Further analyses regarding impacts regarding toxic air and/or fugitive dust are discussed in **Section 4.2, Air Quality.**

Impact 4.4-4 Implementation of the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (*Less than Significant*)

As discussed above, UC Riverside maintains an Emergency Action Plan (EAP) to guide campus personnel in case of an emergency. As the NDD Plan consists of a mixed-use residential development, an athletic facility, and parking uses, emergency protocols would not vary from those currently laid out for other residential and athletic facilities on campus. There are five emergency call boxes located immediately adjacent to, or on the edge of, the project site, along Blaine Street and Canyon Crest Drive and various emergency assembly areas are situated less than 500 feet away in the south, west, and east directions. Development of the NDD Plan would not affect the call boxes or emergency assembly areas.

However, while the majority of demolition and construction impacts would be restricted to the NDD Plan project site, the NDD Plan may result in temporary lane or roadway closures that may impact adequate access for emergency vehicles. None of the roads bordering the project site are identified as critical access routes and the NDD Plan is not anticipated to substantially interfere with the operation of traffic on Blaine Street, Canyon Crest Drive, Linden Street, or Watkins Drive. Development within the project site would adhere to emergency protocols laid out in the EAP as well as the Campus Programs & Practices and Planning Strategies detailed below.

PP 4.7-7(a) *To the extent feasible, the campus shall maintain at least one unobstructed lane in both directions on campus roadways. At any time only a single lane is available, the campus shall provide a temporary traffic signal, signal carriers (i.e., flagpersons), or other appropriate traffic controls to allow travel in both directions. If construction activities require the complete closure of a roadway segment, the campus shall provide appropriate signage indicating alternative routes.*

PP 4.7-7(b) *To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, the Office of Design and Construction shall consult with the UCPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes.*

Adherence to such policies and regulations would reduce the impact to a less than significant level and no further mitigation is required.

4.4.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative impacts from hazardous materials use, transport, and disposal is the City of Riverside. The analysis accounts for all anticipated cumulative growth within this geographic area, as represented by full implementation of the City of Riverside General Plan.

Impact 4.4-5 Cumulative development, including campus development under the proposed NDD Plan, would not expose the public to significant hazards due to the transport, use, disposal, or storage of hazardous materials (including chemical and radioactive waste) under routine and upset conditions. (*Less than Significant)*

As described in **Impacts 4.4-1** and **4.4-2** above, project-related impacts from the routine use, transport, or disposal of hazardous materials, or as a result of accidental release of hazardous materials would be less than significant. While the UCR campus will continue to use varying amounts and types of hazardous materials (including chemical and bio-hazardous materials) in day-to-day activities and operations, the Campus will continue to comply with all applicable laws and regulations concerning the use, storage, transportation, and/or exposure of hazardous materials, as well as with existing Programs and Practices, as required by **PP 4.7-1** and **PP 4.7-2**, to reduce potential impacts of each project constructed on the campus under the amended 2005 LRDP and the NDD Plan.

With respect to future growth in the Riverside area, it is reasonable to assume that the growth will result in an incremental increase in the amount of hazardous materials used, treated, transported, and disposed area-wide, which could create a hazard to the public and increase the potential for an accident to occur. However, while each development site has potentially unique hazardous materials considerations, all future growth will comply with federal, state, and local hazardous materials statutes and regulations, as enforced by appropriate regulatory agencies. These statutes and regulations have been designed to ensure that both project-specific and cumulative impacts resulting from the use, transport, and disposal of hazardous materials, or risk of upset from a release of hazardous materials, would not be significant. Therefore the proposed project, in conjunction with past, present and reasonably foreseeable future growth in the Riverside area, would not result in a significant cumulative impact related to hazardous materials transport, use, disposal and storage under both routine and upset conditions and no mitigation is required.

4.5 LAND USE AND PLANNING

4.5.1 INTRODUCTION

This section describes existing land uses on the UC Riverside campus and analyzes the potential for implementation of the proposed NDD Plan to result in impacts with respect to land use and planning.

4.5.2 EXISTING CONDITIONS

4.5.2.1 On-Campus Land Use

The approximately 1,144-acre campus is located entirely within the City of Riverside in Riverside County. The I-215/SR-60 freeway generally bisects the campus in a northwest-southeast alignment. The project site is located within the East Campus, which is approximately 614.5 acres and contains the academic core, most student housing and support uses, and all existing recreation facilities. The East Campus is bounded by Blaine Street (including the northwest corner parcel at Blaine Street and Canyon Crest Drive) and Watkins Drive to the north, the freeway to the west and south, and a line roughly following Valencia Hill Drive to the east. The West Campus is approximately 530 acres located west of the freeway and is primarily used for agricultural teaching and research. This area is generally bounded by the freeway on the east, University Avenue/Everton Place and its extension west on the north, Chicago Avenue to the west, and Le Conte Drive to the south.

East Campus

The following describes the existing land uses on the East Campus by functional land use category.

Academic

The Academic land use designation represents instruction and research uses, as well as administrative and student support facilities such as Registrar and Financial Aid. The majority of the existing academic facilities are located within the East Campus academic core, which is generally surrounded by Campus Drive. The College of Humanities, Arts, and Social Sciences (CHASS) is generally located in the western quadrant of the core. The College of Natural and Agricultural Sciences (CNAS) is generally located in the eastern section of the core, as evidenced by the numerous laboratories and greenhouses, with the Physical and Life Sciences primarily located in the northeast section. The Bourns College of Engineering (BCOE) is generally located in the core's northern section and the School of Business Administration (SoBA) is in the southern section.

Housing

Housing land uses, according to the LRDP, are designated as *Family, Apartment Housing, and Related Support* and *Residence Hall and Related Support*. These two land use designations include residence halls, family student housing, apartment complexes, child care and other related support. The majority of student housing on the UCR campus is located on the East Campus, north of University Avenue, Campus Drive, and Box Springs Road. Residence halls are located east of Aberdeen Drive, south of Linden Street, and north of Big Springs Road. Apartment facilities are located west of Canyon Crest Drive. The Glen Mor Student Apartments (1 and 2) complex is located north of Big Springs Road, east of the residence halls. The (former) Canyon Crest Family Student Housing complex, currently vacant except for some single family dwellings being used as storage and maintenance facilities, is located east of Canyon Crest Drive between Blaine and Linden Streets.

Athletics and Recreation

Recreational facilities and outdoor fields are generally located in the northwestern portion of the East Campus. These facilities include those that are used for intercollegiate athletics, intramural sports, sports clubs, and general recreation. These facilities include a student recreation center, a swimming pool, a gymnasium, a track stadium, handball courts, and tennis courts. Outdoor playing fields are located on the East Campus south of Linden Street and include the UCR Track Facility, the UCR Soccer Stadium, the Amy Harrison Athletic (softball) Field, and the Glen Mor 1 recreation fields. Additionally, UCR and the City of Riverside jointly operate the UCR/City Sports Center, located on campus lands at the southwest corner of Canyon Crest Drive and Blaine Street. This facility provides multi-use playing fields, a baseball field with stadium style seating for 2,500 persons, maintenance structures, and parking for 350 vehicles.

Open Space

Under the 2005 LRDP, a significant amount of land area at UCR was set aside for the malls, quads, plazas, courtyards, and other formal and informal gathering spaces that are so essential to campus life. Campus open space includes areas such as:

- Naturalistic open spaces, including the arroyos and their edges,
- The Botanic Gardens,
- Malls, which serve as the primary connections throughout campus and movement corridors for pedestrians and bicycles, and
- Important campus buffer areas, which provide setbacks from adjacent uses.

Campus Support

Campus support uses consist of maintenance and operational functions to maintain the campus physical plant and support academic and research activities, including: corporation yard and maintenance; grounds maintenance; central utility plant and satellite plants; electric substation; materials management; fleet services; EH&S; and Transportation and Parking Services (TAPS).

Parking

Parking on the UCR campus is currently provided in surface lots, which are concentrated around the edge of the academic core on the East Campus, with access provided via Campus Drive, Canyon Crest Drive, and Box Springs Road. Additional parking is located adjacent to the student residence halls, with access via Linden Street and North Campus Drive.

4.5.2.2 Existing Adjacent Land Uses

Land uses surrounding the project site are primarily Athletics and Recreation, and Housing, but also include Parking and Campus Support designations. The UC Riverside Baseball Complex and the Falkirk (student) Apartments are located to the west of the project site, across Canyon Crest Drive. Additional athletic and housing uses lie south of the project site. The UCR Student Recreation Center with various athletic facilities including pools, tennis courts, and a gym, and the UCR Track Facility is located across Linden Street, as is the Aberdeen- Inverness Student Residence complex. Scattered open space and parking lots are also within this area. Bordering the project site to the east is the UCR Corporation Yard and affiliated buildings parking areas. The UCR Child Developments and Eady Center complex is also to the east of the project site.

The NDD Plan project site is bordered to the north by Blaine Street, which represents the northern perimeter of the campus. The off-campus land uses north of the project site are primarily multi-family residential and commercial, such as a car wash, laundromat, mini mart, and parking. The Gethsemane Lutheran Church is also northeast of the project site.

4.5.3 REGULATORY FRAMEWORK

As a state entity, the University of California is not subject to regional or local plans and policies. Nevertheless, such plans and policies are of interest or concern because the campus and local development are coincident. UC Riverside has a long tradition of working voluntarily and cooperatively with the City of Riverside and other regional agencies, and it is University policy to seek consistency with regional and local plans and policies, where feasible. Therefore, a summary of these plans is presented in

this EIR and the consistency of the proposed NDD Plan and related projects with these plans is evaluated later in this section.

4.5.3.1 Federal and State

There are no federal or State laws related to land use and planning that are applicable to the proposed NDD Plan.

4.5.3.2 Regional

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is a regional council of governments that serves as the Metropolitan Planning Organization for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. SCAG serves as a forum for regional issues relating to transportation, the economy and community development, and the environment. SCAG reviews environmental documents for regionally significant projects for their consistency with the adopted Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). For the purpose of determining consistency with CEQA, lead agencies such as local jurisdictions have the sole discretion in determining a local project's consistency with the RTP/SCS.

2016 RTP/SCS

The SCAG Regional Council adopted the 2016 RTP/SCS in April 2016. The 2016 RTP/SCS seeks to improve mobility, promote sustainability, facilitate economic development and preserve the quality of life for the residents in the region. To achieve the goals of the 2016 RTP/SCS, a wide range of land use and transportation strategies are included in the 2016 RTP/SCS. The 2016 RTP/SCS builds upon the progress from the 2012 RTP/SCS and continues to focus on integrated, coordinated, and balanced planning for land use and transportation that the SCAG region strives toward a more sustainable region, while the region meets and exceeds in meeting all of applicable statutory requirements pertinent to the 2016 RTP/SCS. These strategies within the regional context are provided as guidance for lead agencies such as local jurisdictions when the proposed project is under consideration.

Santa Ana Regional Water Quality Control Board

The Santa Ana Regional Water Quality Control Board (Santa Ana RWQCB) is the regional Water Quality Control Board that regulates water quality in the region of northwestern Orange County, western Riverside County, and parts of southwestern San Bernardino County. The Santa Ana RWQCB regulates surface water quality in the Santa Ana River watershed via the Santa Ana Basin Plan, which was updated

in February 2008. The Santa Ana RWQCB prepares (and updates) the Santa Ana Basin Plan, which identifies beneficial uses of water and establishes implementation programs to protect those beneficial uses. Through Waste Discharge Requirements, the RWQCB sets limits on pollutants that may be discharged into the Santa Ana River and its tributaries. These limits are designed to meet the water quality objectives established in the Santa Ana Basin Plan. The UCR campus is located within the region under the jurisdiction of the Santa Ana RWQCB.

South Coast Air Quality Management District

The management of air quality in the South Coast Air Basin is the responsibility of the South Coast Air Quality Management District (SCAQMD). The SCAQMD is responsible for bringing air quality in the areas under its jurisdiction into conformity with federal and state air quality standards. Specifically, the SCAQMD is responsible for monitoring ambient air pollutant levels throughout the South Coast Air Basin and for developing and implementing attainment strategies to ensure that future emissions will be within federal and state standards.

In order to achieve air quality standards, the SCAQMD adopts an Air Quality Management Plan (AQMP) that serves as a guideline to bring pollutant concentrations into attainment with federal and state standards. The SCAQMD determines if certain rules and control measures are appropriate for the region according to technical feasibility, cost effectiveness, and the severity of nonattainment. Once the SCAQMD has adopted the proper rules, control measures, and permit programs, it is responsible for implementing and enforcing compliance with those rules, control measures, and programs.

The SCAQMD adopted the currently applicable Final 2016 Air Quality Management Plan (AQMP) as the comprehensive State Implementation Plan component for the South Coast Air Basin in March of 2017. The purpose of the 2016 AQMP for the Basin is to set forth a comprehensive program that will lead these areas into compliance with federal and state air quality planning requirements for ozone and particulate matter (PM).

4.5.3.3 Local

County of Riverside

Western Riverside County Multi-Species Habitat Conservation Plan

To provide an integrated approach to land use and habitat conservation planning, the County of Riverside has developed a Multiple-Species Habitat Conservation Plan (MSHCP) in coordination with an update of the County General Plan and a Transportation Corridor Plan. The MSHCP builds upon the

previously approved Stephens' Kangaroo Rat Habitat Conservation Plan, and addresses an area of 1.26 million acres along with proposing a conservation area, including public lands, of approximately 500,000 acres. The core of the MSHCP area reserves includes riparian, oak woodland, and 15,000 acres of coastal sage scrub habitat.

The Western Riverside County MSHCP study area encompasses approximately 1.26 million acres, including the UCR campus. Conservation target areas within the plan include areas in the vicinity of the campus, such as the Box Springs Mountains and Sycamore Canyon Park. Although sections of Cells 634 and 719 of the MSHCP do include portions of the campus, the plan does not identify any portion of the UCR campus for conservation.[1]

City of Riverside

General Plan

The City of Riverside adopted its current General Plan (General Plan 2025) in November 2007. The General Plan 2025 designates the entire UCR campus for public facilities/institutional uses. The UCR campus is located at the eastern edge of the City of Riverside, within the University Neighborhood Plan area, which was adopted in 2008 under the provisions of the General Plan 2025. The University Neighborhood Plan provides the most recent statement of the City's land use designations, goals and policies relevant to the campus.

University Neighborhood Plan

The areas in the City surrounding UCR are subject to the provisions of the University Neighborhood Plan. Written by the City with input from UCR, residents, and property owners, and adopted in June 2008, the University Neighborhood Plan was developed as part of the Riverside General Plan 2025. The Plan accommodates the expansion of facilities and student enrollment at UCR while ensuring the preservation and enhancement of residential areas within the University Neighborhood and encourages the reuse and/or revitalization of underutilized commercial areas with appropriately scaled mixed-use developments to serve both residents of the City and UCR students, faculty and staff. The University Neighborhood Plan addresses five primary land use challenges and opportunities: the need for an adequate supply of housing in proximity to the UCR campus, lack of adequate space for student housing in vacant parcels within the University Neighborhood, student demand for rental units and overcrowding of rental units within the single-family areas east of Watkins Drive, current lack of development opportunities for new types of retail areas surrounding UCR, and the economics of

1 UC Riverside. 2005. *2005 Long Range Development Plan*. November.

revitalizing small, neighborhood shopping areas. The University Neighborhood Plan includes various land use policies relevant to these issues:

UNP 1.1 Coordinate with UCR and neighborhood groups in joint planning efforts, including the joint development and updates of the UCR Long Range Development Plan.

UNP 1.2 The City should support UCR-created Educational Programs for UCR students regarding their relationships with the University Neighborhood.

UNP 1.3 Protect the character of the existing single-family neighborhoods, seeking to minimize potential "town gown" conflicts.

UNP 1.4 Encourage the reuse and/or revitalization of underutilized commercial areas through appropriately scaled mixed-use development.

UNP 1.5 Seek opportunities to develop commercial centers that serve both students and civilian needs.

UNP 2.1 Encourage the construction of new rental apartments as well as the retention of existing and future rental stock and the provision of affordable units.

UNP 3.1 Protect and maintain the single-family residential areas located primarily east of Watkins Drive and the pockets of single-family areas located west of Watkins Drive.

UNP 3.2 Provide quality, affordable housing for University Neighborhood residents, students, faculty and staff.

UNP 3.3 Explore opportunities to revitalize older shopping centers by increasing the level of neighborhood shopping and pedestrian amenities, upgrading the tenant mixes and encouraging private sector investment in the existing shopping centers throughout the University Neighborhood. This may include introducing mixed-use housing where appropriate.

UNP 3.4 Continue to upgrade University Avenue as a location for community and University related housing and commercial areas as well as enhancing University Neighborhood's accessibility to Downtown and the Riverside Marketplace.

UNP 4.1 Update the University Avenue Specific Plan to allow for mixed-use and residential development along the corridor that supports land use designations of the General Plan.

UNP 4.2 Encourage the creation of a continuous uniform streetscape along University Avenue.

UNP 4.3 Encourage student housing and activities along the University Avenue corridor.

UNP 5.1 Preserve the rural lifestyle in the Mount Vernon Bowl District.

UNP 5.2 Encourage Riverside County to carefully review development proposals for open spaces adjacent to the Box Springs Mountain Reserve Park in order to ensure sensitivity to the natural terrain and compatibility with residential uses in the Mount Vernon Bowl area.

UC Riverside

2005 Long Range Development Plan (2005 LRDP)

The 2005 LRDP serves as the applicable land use plan for the campus. A Long Range Development Plan is not a commitment to specific projects or to a particular implementation schedule. It is, rather, a general guide that discusses future land use patterns and development of facilities, roads, open space, and infrastructure. The current LRDP establishes the NDD Plan area with four land use designations: *Family, Apartment Housing and Related Support*, *Residence Hall and Related Support*, *Athletics and Recreation*, and *Parking*. The following land use planning goals are pertinent to the proposed project:

- Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing.
- Over time, relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate.

4.5.4 IMPACTS AND MITIGATION MEASURES

4.5.4.1 Significance Criteria

The impacts on land use and planning from the implementation of the proposed projects and the related projects would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines*:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

4.5.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR.

- Would the proposed project physically divide an established community?

As discussed in the Initial Study, development under the NDD Plan, including the Phase 1 project, would be located on the East Campus in an area surrounded by existing student housing, dining facilities, athletic facilities, and parking lots. Implementation of the NDD Plan, including the Phase 1 project, would not physically divide an established community.

- Would the proposed project conflict with any applicable habitat conservation plan or natural community conservation plan.

As mentioned in the Initial Study, the NDD Plan area, which includes the Phase 1 project site, is not within the portion of the campus that is included in the MSHCP. There would be no impact with respect to this criterion.

4.5.4.3 Methodology

To determine the potential for the proposed project to result in conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect, the proposed NDD Plan's consistency with the applicable plans and policies was evaluated. In addition, proposed land uses were compared with existing and planned adjacent land uses both on- and off-campus to see if they would be compatible with existing or planned land uses. The University is not subject to local plans of cities and counties, such plans and policies are of interest or concern because the campus and local development are coincident. It is University policy to seek consistency with regional and local plans and policies, where feasible.

4.5.4.4 Relevant LRDP Mitigation Measures, Planning Strategies, and Programs and Practices

The 2005 LRDP Amendment 2 EIR identifies a series of Planning Strategies (PS) and Programs and Practices (PP) that are relevant to land use and includes Mitigation Measures (MM) to reduce impacts of buildout of the campus under the 2005 LRDP as amended. These measures are considered part of the proposed projects and related projects for purposes of this analysis. The full list of PSs, PPs, and LRDP MMs is included in **Appendix 1.0** of this EIR, and those relevant to land use considerations for the proposed projects and related projects are provided in each impact discussion below.

4.5.4.5 Project Impacts and Mitigation Measures

Impact 4.5-1: **Implementation of the proposed North District Development Plan would result in minor changes in on-campus land uses. These changes would not be substantially incompatible with existing or proposed adjacent land uses on and off campus.** ***(Less than Significant)***

As UC Riverside is a part of the University of California, a constitutionally created State entity, it is not subject to municipal regulations of surrounding local governments, such as the general plans and land use ordinances of the City of Riverside and Riverside County for uses on property owned or controlled by the University that are in furtherance of the University's education purposes. However, although the University is not subject to local plans of cities and counties, such plans and policies are of interest or concern because the campus and local development are coincident. It is University policy to seek consistency with regional and local plans and policies, where feasible.

The project site is currently designated for family, apartments, and residence hall student housing, related support, athletics, recreation, and parking uses by the 2005 LRDP. As noted in **Section 3.0, Project Description,** the changes contemplated under the NDD Plan would readjust the land use areas of the project site without substantially changing the amount of area currently designated to each land use. The land uses proposed at the project site under the NDD Plan are detailed below in **Table 4.5-1, Proposed Land Use Designations.**

Table 4.5-1
Proposed Land Use Designations

Land Use	Acreage
Student Residential and Mixed Uses District 1	4.25
Student Residential and Mixed Uses District 2	6.15
Student Residential and Mixed Uses District 3	5.45
Student Residential and Mixed Uses District 4	8.40
Student Residential and Mixed Uses District 5	3.40
Athletics Event Center	5.70
Parking 1	2.15
Parking 2	4.05
Open Space	11.60
Total Acres	**51.15**

Source:
University of California, Riverside, May 2018

Although the proposed NDD Plan would alter current land use designations, the difference would be minimal, as the location of land use designations within the project site would change but not the overall types of land uses. As such, it would not substantially change activities and type of development at the site.

The proposed NDD Plan is consistent with campus planning principles regarding location and design maximizing and efficiently using available developable space on campus. Furthermore, an amendment to the 2005 LRDP would be prepared to document the land use changes and ensure compatibility with the 2005 LRDP. Additionally, development of the proposed NDD Plan has been guided by a range of LRDP PSs and PPs. The following 2005 LRDP PSs and PPs are relevant to land use on the project site and the adjacent areas:

PS Land Use 4 — *Pursue a goal of housing 50 percent of student enrollment in on campus or campus controlled housing.*

PS Land Use 7 — *Over time, relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate.*

PS Open Space 4 — *Provide landscaped buffers and setbacks along campus edges, such as Valencia Hill Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, and the I-215/SR-60 freeway.*

PS Campus & Community 1	*Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.*
PS Transportation 6	*Implement parking management measures that may include* • *Restricted permit availability* • *Restricted permit mobility* • *Differential permit pricing*
PS Development Strategy 1	*Establish a design review process to provide regular review of building and landscape development on campus.*
Land Use PP 4.9-1(a)	*The Campus shall provide design professionals with the 2007 Campus Design Guidelines and instructions to implement the guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design. (Identical to Aesthetics PP 4.1.1)*
Land Use PP 4.9-1(b)	*The Campus shall continue to provide design professionals with the 2007 Campus Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the Guidelines with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible. (Identical to Aesthetics PP 4.1-2(a))*

In addition, as previously discussed, the campus remains committed to participation in ongoing coordination with the City and local stakeholders through the University Neighborhood Enhancement Team (UNET) and the joint City/University Coordinating Committee, providing opportunities for City and local stakeholder input regarding relevant land uses and project design features.

For the reasons discussed above, and with implementation of the identified LRDP Planning Strategies and campus Programs and Practices which are a part of the proposed projects, implementation of the proposed NDD Plan projects would not result in development of land uses that are substantially incompatible with existing adjacent land uses or with proposed uses. The impact would be less than significant.

Impact 4.5-2 **Cumulative development, including the proposed 2005 LRDP Amendment 2, would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the development adopted for the purpose of mitigating environmental impacts. The contribution of the amended 2005 LRDP to this cumulative impact would not be cumulatively considerable.**

The geographic context for the analysis of cumulative land use and planning impacts includes the portions of the City of Riverside immediately surrounding the East Campus, which contain a mix of land uses, including commercial, residential, industrial, and institutional. The analysis accounts for all anticipated cumulative growth within this geographic area, as represented by full implementation of the City of Riverside General Plan.

Future non-University development off-campus would be reviewed for consistency with adopted land use plans and policies by the City of Riverside, in accordance with the requirements of CEQA, the State Zoning and Planning Law, and the State Subdivision Map Act, all of which require findings of plan and policy consistency prior to approval of entitlements for development. For this reason, impacts associated with inconsistency of future non-University development off-campus with adopted plans and policies would not be applicable. Even if the cumulative land use impact of future development would be significant, the contribution of the proposed NDD Plan to such impacts would not be cumulatively considerable. For reasons presented in **Impact 4.5-1** above, development under the proposed NDD Plan would be compatible with the off-campus land uses that surround it, in light of the continuation of the residential, mixed-use, athletics, parking and open space land uses, and the campus' geographical separation from related projects, the impact would be less than significant.

4.6 NOISE

4.6.1 INTRODUCTION

This section describes existing noise conditions on the UCR campus and evaluates the potential noise impacts resulting from implementation of the proposed North District Development Plan (NDD Plan), including the potential for substantial temporary or permanent increases in ambient noise levels within or near the campus and the potential for the projects to expose people to excessive noise levels or vibration.

Data used in the preparation of this section were taken from various sources, including the 2005 LRDP EIR, the 2005 LRDP Amendment 2 EIR (2011), the *UC Riverside North District Development Transportation Impact Study*, prepared by Fehr and Peers (included as **Appendix 4.10** to this Draft EIR), and noise modeling conducted for the project by Impact Sciences, Inc. Copies of the calculations made to estimate potential noise impacts associated with the NDD Plan and supporting technical data are found in **Appendix 4.6** of this Draft EIR.

4.6.2 EXISTING CONDITIONS

4.6.2.1 Characteristics of Noise

Noise is usually defined as unwanted sound that is disturbing or annoying. It is an undesirable by-product of society's normal day-to-day activities. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, and/or when it has adverse effects on health. The objectionable nature of sound may be caused by its pitch, its loudness, or both. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (i.e., frequency) of the vibrations by which it is produced. Higher-pitched signals sound louder to humans than sounds with a lower pitch. Loudness is the amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement, which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a tenfold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its decibel level. Each 10-decibel increase in sound level is perceived

as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms for noise are defined in **Table 4.6-1, Definitions of Acoustical Terms**.

Table 4.6-1
Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dB(A)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, Leq	The average A-weighted noise level during the measurement period. The hourly Leq used for this report is denoted as dB(A) Leq[h].
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 PM to 10:00 PM and after addition of 10 decibels to sound levels in the night between 10:00 PM and 7:00 AM.
Day/Night Noise Level, Ldn	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 PM and 7:00 AM.
L01, L10, L50, L90	The A-weighted noise levels that are exceeded 1 percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.

There are several methods of characterizing sound. The most common in California is the A-weighted sound level, referenced in units of dB(A).[1] This method is used because sound pressure level alone is not a reliable indicator of loudness, as the human ear does not respond uniformly to sounds at all

1 All sound levels discussed in this section use the A-weighting scale.

frequencies. For example, it is less sensitive to low and high frequencies than to the medium frequencies that more closely correspond to human speech. The A-weighted noise level was developed to better correspond with peoples' subjective judgment of sound levels. In general, changes in community noise levels of less than 3 dB(A) are not typically noticed by the human ear (FHA 1980). Changes from 3 to 5 dB(A) may be noticed by some individuals who are especially sensitive to changes in noise. An increase greater than 5 dB(A) is readily noticeable, while, as noted above, the human ear perceives a 10 dB(A) increase in sound level to be a doubling of sound volume. A doubling of sound wave energy (for example, from doubling the volume of traffic on a roadway) would result in a 3 dB increase in sound, a barely perceptible change in sound level. Common noise levels associated with certain activities are shown on **Figure 4.6-1, Common Noise Levels**.

Noise sources include: (1) point sources, such as stationary equipment or individual motor vehicles; and (2) line sources, such as a roadway with a large number of point sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6.0 dB(A) for each doubling of distance from the source to the receptor at acoustically "hard" sites and 7.5 dB at acoustically "soft" sites.[2] For example, a 60 dB(A) noise level measured at 50 feet from a point source at an acoustically hard site would be 54 dB(A) at 100 feet from the source and 48 dB(A) at 200 feet from the source. Sound generated by a line source typically attenuates at a rate of 3.0 dB(A) and 4.5 dB(A) for each doubling of distance from the source to the receptor for hard and soft sites, respectively. Sound levels can also be attenuated by man-made or natural barriers (e.g., sound walls, berms, ridges), as well as elevation differences.

Wall/berm combinations may reduce noise levels by as much as 10.0 dB(A) depending on their height and distance relative to the noise source and the noise receptor (US Department of Transportation 1980b). Noise levels may also be attenuated 3.0 to 5.0 dB(A) by a first row of houses and 1.5 dB(A) for each additional row of houses.

The minimum exterior-to-interior noise attenuation provided by typical building construction in California is provided in **Table 4.6-2, Outside to Inside Noise Attenuation (dBA)**. These noise reduction levels are based on older (pre-1970s) construction; exterior-to-interior noise reduction of newer residential units constructed in California is generally 30 dB(A) or more.

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2 Examples of "hard" or reflective sites include asphalt, concrete, and hard and sparsely vegetated soils. Examples of acoustically "soft" or absorptive sites include soft sand, plowed farmland, grass, crops, or heavy ground cover.

Table 4.6-2
Outside to Inside Noise Attenuation (dBA)

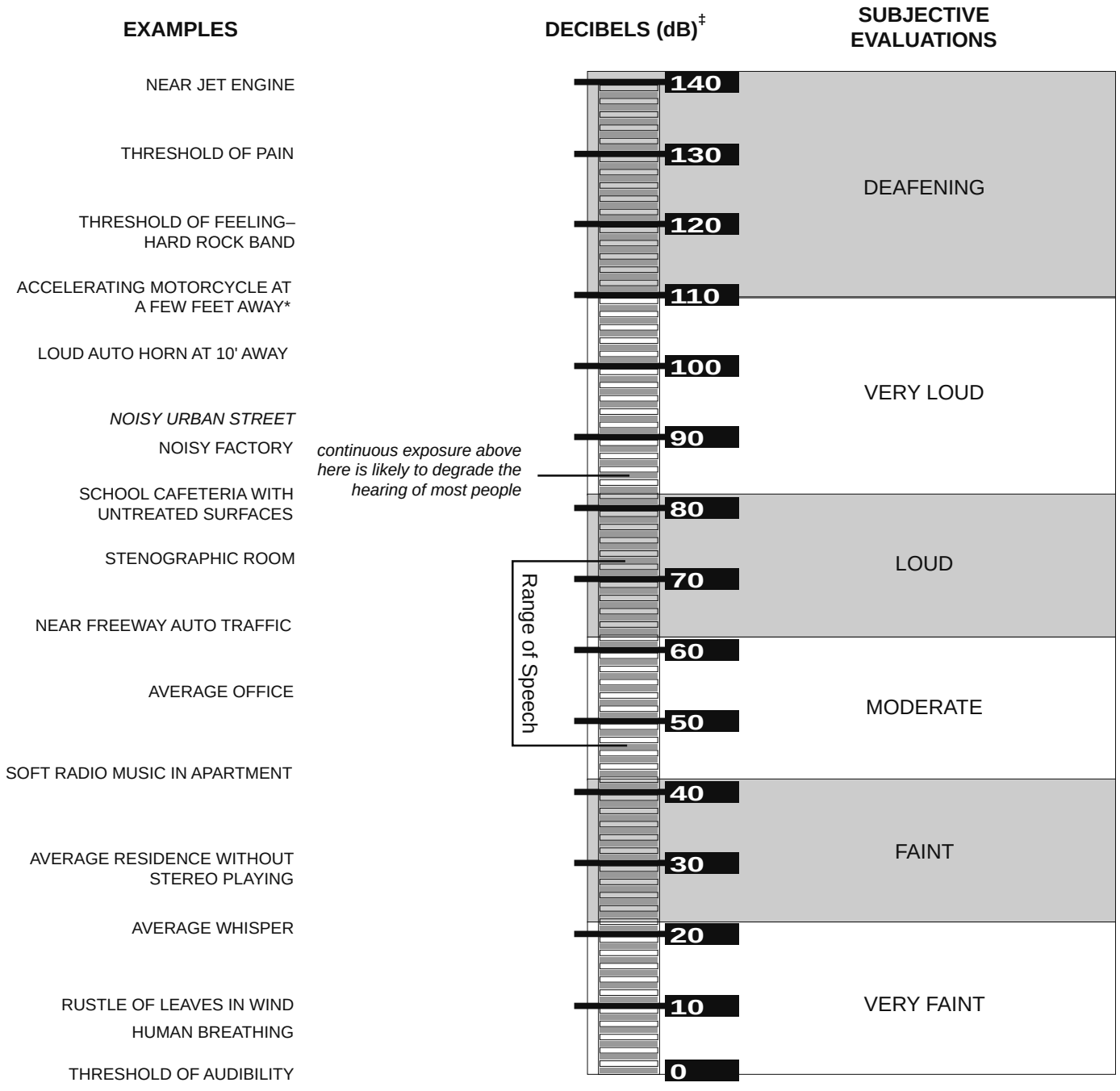
Building Type	Open Windows	Closed Windows
Residences	17	25
Schools	17	25
Churches	20	30
Hospitals/Convalescent Homes	17	25
Offices	17	25
Theaters	20	30
Hotels/Motels	17	25

Source: Transportation Research Board, National Research Council, Highway Noise: A Design Guide for Highway Engineers, National Cooperative Highway Research Program Report 117.

When assessing community reaction to noise, there is an obvious need for a scale that averages varying noise exposures over time and quantifies the results in terms of a single number descriptor. Several scales have been developed that address community noise level. Those that are applicable to this analysis are the Equivalent Noise Level (Leq), the Day-Night Noise Level (Ldn), and the Community Noise Equivalent Level (CNEL).

- Leq is the average A-weighted sound level measured over a given time interval. Leq can be measured over any period, but is typically measured for 1-minute, 15-minute, 1-hour, or 24-hour periods.
- Ldn is a 24-hour Leq with a "penalty" of 10 dB added during the nighttime hours (10:00 PM to 7:00 AM), which is typically sleeping time.
- CNEL is another average A-weighted sound level measured over a 24-hour period. However, the CNEL noise scale is adjusted to account for some individuals' increased sensitivity to noise levels during the evening as well as the nighttime hours. A CNEL noise measurement is obtained after adding a "penalty" of 5 dB to sound levels occurring during the evening from 7:00 PM to 10:00 PM, and 10 dB to sound levels occurring during the nighttime from 10:00 PM to 7:00 AM.[3]

[3] The logarithmic effect of adding these penalties to the peak-hour L_{eq} measurement results in a CNEL measurement that is within approximately 3 dBA (plus or minus) of the peak-hour L_{eq}. California Department of Transportation, *Technical Noise Supplement; A Technical Supplement to the Traffic Noise Analysis Protocol*, October 1998, pp. N51-N54.



** NOTE: 50' from motorcycle equals noise at about 2000' from a four-engine jet aircraft.*

‡NOTE: dB are “average” values as measured on the A–scale of a sound–level meter.

FIGURE **4.6–1**

Common Noise Levels

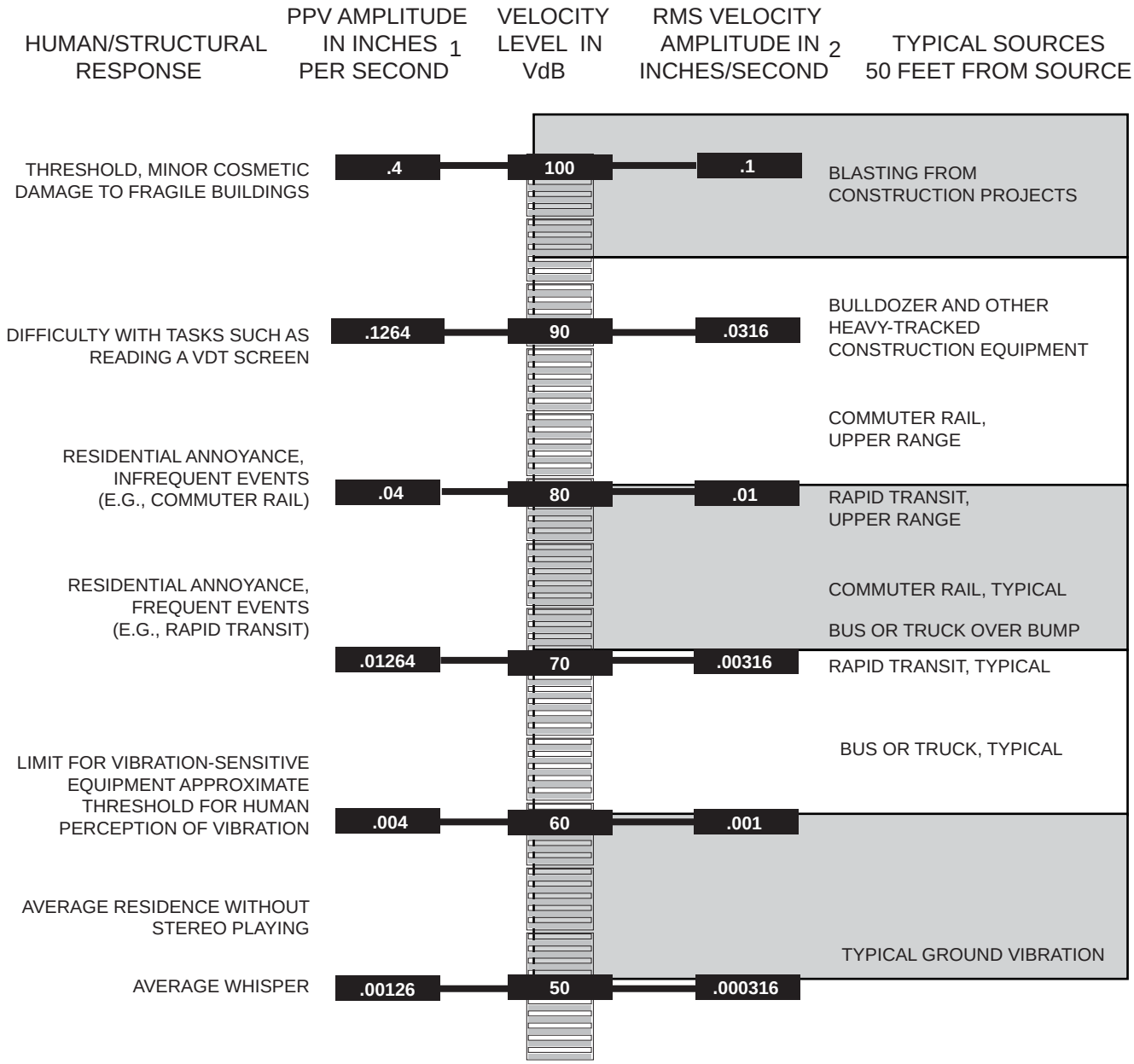
4.6.2.2 Characteristics of Vibration

Vibration is minute variation in pressure through structures and the earth, whereas noise is minute variation in pressure through air. Thus, vibration is felt rather than heard. Some vibration effects can be caused by noise, e.g., the rattling of windows from truck pass-bys. This phenomenon is related to the production of acoustic energy at frequencies that are close to the resonant frequency of the material being vibrated. Groundborne vibration attenuates rapidly as distance from the source of the vibration increases.

Vibration can be measured as particle velocity in inches per second and referenced as vibration decibels (VdB). The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is barely perceptible. The range of interest is from approximately 50 VdB, which is typical background vibration velocity, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. **Figure 4.6-2, Typical Levels of Groundborne Vibration**, identifies the typical groundborne vibration levels in VdB and human response to different levels of vibration.

4.6.2.3 Noise-Sensitive Land Uses

Existing noise-sensitive off-site sensitive receptors to the proposed project include residences and schools. The nearest off-site residences are located approximately 300 feet to the north of the project site. The closest schools are Highland Elementary School, located approximately 800 feet northeast of the site; the Islamic Academy of Riverside, situated 1,000 feet southwest; and the REACH Leadership Academy, approximately 1,200 feet to the west. On-site receptors include the UCR Child Development Centers, located approximately 50 feet to the northeast; Aberdeen-Inverness Residence Hall, located approximately 100 feet to the south; Stonehaven Apartments, located approximately 200 feet to the northwest; and the Falkirk (student) Apartments, located approximately 115 feet to the west of the project site.



[1] PPV is typically a factor 1.7 to 6 times greater than RMS vibration velocity. A factor of 4 was used to calculate noise levels.

[2] Vibration levels in terms of velocity levels are defined as: $V=20 \times \log_{10} (a/r)$
V=velocity levels in decibels
a=RMS velocity amplitude
r=reference amplitude (accepted reference quantities for vibration velocity are 1×10^{-6} inches/second in the United States)

FIGURE **4.6-2**

Typical Levels of Ground-Borne Vibration

4.6.2.4 Existing Noise Levels

Existing Ambient Noise Levels

Existing ambient noise measurements were taken using a Larson David LxT Class 1 Sound Level Meter on October 4, 2018. These measurements are used for the basis of comparing estimated construction noise levels to existing noise levels, as well as verifying existing traffic noise levels. The estimated noise levels are presented in **Table 4.6-3, Existing Ambient Noise Levels**.

Table 4.6-3
Existing Ambient Noise Levels

Measurement Location	dB(A) Leq
Abderdeen-Iverness Campus Housing	62.2
Child Development Center	55.5
Stonehaven Apartments	61.6
Falkirk Student Apartments	59.6

Source: Impact Sciences, 2018.

Existing Roadway Noise Levels

Existing traffic noise for Linden Street was estimated using the Federal Highway Administration Highway (FHWA) Traffic Noise Model (TNM2.5). Linden Street was selected for modeling due to it having the largest increase in vehicle traffic with implementation of the NDD Plan. The estimated noise levels are presented in **Table 4.6-4, Existing Roadway Modeled Noise Levels.** As shown, the modeled roadway noise levels in the vicinity of the proposed project site range from a low of 54.4 dB(A) CNEL on to a high of 62.2 dB(A) CNEL. It should be noted that actual noise levels along these roadways are likely higher than the modeled levels due to the contribution of noise from other non-traffic sources as well as ambient growth since 2005. However, traffic is the dominant noise source in the area.

Table 4.6-4
Existing Roadway Modeled Noise Levels

Roadway Segment/Intersection	dB(A) CNEL
Linden Street	
Between Canyon Crest Drive and Aberdeen Drive	56.5
Linden Street	
East of Aberdeen Drive	54.4
Linden Drive	
West of Canyon Crest Drive	60.6

Source: Impact Sciences, 2018.

Railroad Noise

The BSNF railroad tracks are located along the northern border of the East Campus, across Watkins Drive northeast of the project site, and produce noise from train pass-bys. Noise measurements taken at 396 East Big Springs Road, located 0.5 mile to the northeast of the campus, and at 277 Nisbet Way, located approximately 500 feet to the east of the campus, range from 54 dB(A) at 125 feet from the tracks to 62 dB(A) at 90 feet from the tracks, respectively.[4]

Construction Noise

Construction of new facilities occurs on an ongoing basis on the UCR campus. Noise is generated daily by these activities, although it is primarily isolated in the immediate vicinity of each construction site. The actual noise levels generated by construction vary by site and on a daily and hourly basis, depending on the activity that is occurring and the types and number of pieces of equipment that are operating.

Equipment used during construction generates both steady state and episodic noise that would be heard both on and off campus. The US Department of Transportation has compiled data regarding the noise-generating characteristics of specific types of construction equipment; these are presented in **Figure 4.6-3, Noise Levels of Typical Construction Equipment**. As shown, noise levels generated by heavy equipment can range from approximately 73 dB(A) to noise levels in excess of 80 dB(A) when measured at 50 feet.

4 Riverside County Transportation Commission. 2010. *Supplemental Environmental Assessment and Section 4(f) Evaluation, Perris Valley Line, Riverside County, California.*

4.6.2.5 Existing Campus Noise Controls

Stationary Source Noise Controls

UCR implements numerous programs to reduce on-campus noise levels and motor vehicle trips (thereby reducing associated off-campus noise levels). These programs are discussed below.

Stationary Source Noise Controls

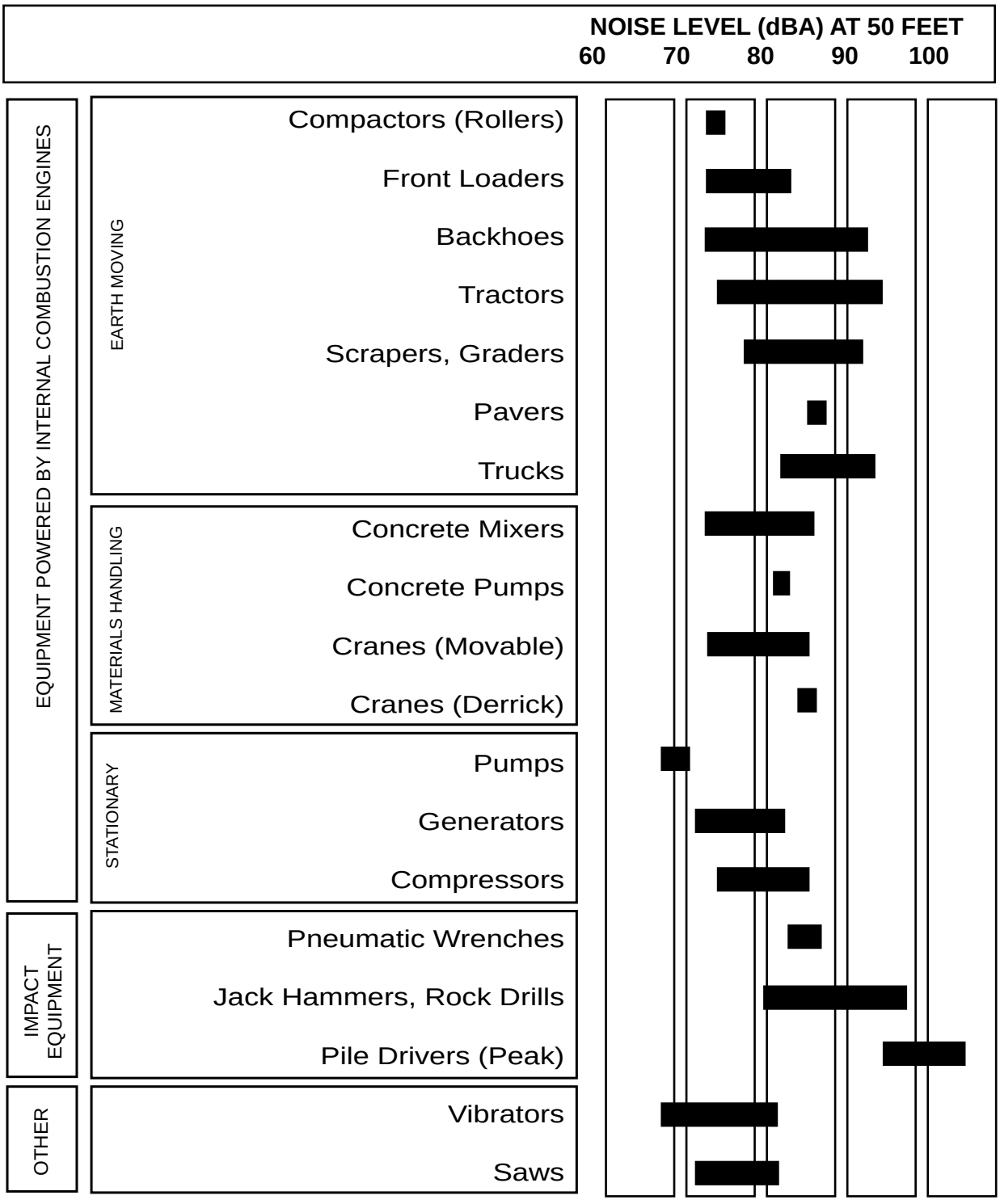
In order to provide a relatively quiet environment on the campus that is conducive to the educational process, and in compliance with campus Practices and Programs (PPs) and Planning Strategies (PSs), noise-generating uses such as truck access, parking areas, mechanical heating and ventilation, and refrigeration units are designed and evaluated when planning specific individual new facilities to minimize the potential for noise impacts to adjacent land uses. Applicable PPs and PSs are discussed in **Subsection 4.6.4.4**, below. In addition, building setbacks, building design, and site orientation are used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes.

Land Use Buffering

UCR includes landscaped buffers along the east edge of the East Campus and the south edge of the West Campus (Valencia Hill Drive Landscape Buffer Area and Martin Luther King Boulevard Landscape Buffer Area, respectively). These buffers maintain setbacks between on-campus uses and the surrounding area and provide an acoustically soft environment to reduce noise levels. They also reduce the effect of noise generated in the surrounding area (primarily roadway noise) on the campus. Likewise, they reduce the noise levels in the surrounding area due to noise generated on the campus.

Construction Noise Controls

UCR limits the hours of exterior construction activities from 7:00 AM to 9:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Saturday (LRDP Amendment 2 PP 4.10-1(a)). Transportation routes are established for each construction project to minimize the impacts of construction traffic (including noise impacts) on the surrounding community.



NOTE: Based on limited available data samples.

SOURCE: United States Environmental Protection Agency, 1971, "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," NTID 300-1

FIGURE **4.6-3**

Noise Levels of Typical Construction Equipment

Vehicular Traffic Noise Controls

UCR is served by several modes of alternative transportation, including public bus services. UCR also implements an Alternative Transportation program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling. The goal of the program is to reduce the total number of vehicle trips made to campus by faculty, staff, and students. Program-related services are available to UCR faculty, staff, and students. While transportation programs are not implemented specifically to reduce noise levels, they do have the positive effect of reducing the number of motor vehicle trips that might otherwise be generated in association with UCR. By reducing the number of potential motor vehicle trips, the potential noise levels that could be experienced in the surrounding vicinity are, likewise, reduced.

4.6.2.6 Existing Groundborne Vibration Environment

The primary regular sources of groundborne vibration at the campus and within the immediate vicinity are construction activities, roadway truck traffic, and train pass-bys along the railroad tracks located along the northeast border of the Campus. (Seismic events also cause vibration, but occur sporadically and are unpredictable in nature.) **Table 4.6-5, Vibration Levels for Construction Equipment**, identifies various vibration velocity levels for the types of construction equipment that is used on campus.

Table 4.6-5
Vibration Levels for Construction Equipment

	Approximate VdB			
Equipment	**25 Feet**	**50 Feet**	**75 Feet**	**100 Feet**
Large Bulldozer	87	81	77	75
Loaded trucks	86	80	76	74
Jackhammer	79	73	69	67
Small Bulldozer	58	52	48	46

Source: Federal Railroad Administration, 2005.

Heavy trucks that transport materials to and from the construction sites within the campus typically generate groundborne vibration velocity levels of around 63 VdB. These levels can reach 72 VdB where trucks pass over bumps in the road. Based on measurements taken at 396 East Big Springs Road, train

pass-bys on the BNSF railroad tracks north of the campus produce on average a vibration level of 58 VdB at a distance of 50 feet from the tracks.[5]

4.6.3 REGULATORY FRAMEWORK

4.6.3.1 Federal

There are no federal noise standards that are applicable to the UCR campus.

4.6.3.2 State

Title 24 of the California Code of Regulations codifies Sound Transmission Control requirements, which establish uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings. Specifically, Title 24 states that interior noise levels attributable to exterior sources shall not exceed 45 dB(A) CNEL in any habitable room of new dwellings. Dwellings are to be designed so that interior noise levels will meet this standard for at least 10 years from the time of building permit application. This standard applies to all new student housing developed on the UCR campus.

4.6.4 PROJECT IMPACTS AND MITIGATION MEASURES

4.6.4.1 Significance Criteria

The impacts related to noise from the implementation of the proposed projects and related projects would be considered significant if they would exceed the following Standards of Significance, in accordance with Appendix G of the *State CEQA Guidelines*:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinances, or applicable standards of other agencies;
- Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels;

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5 Riverside County Transportation Commission. 2010. *Supplemental Environmental Assessment and Section 4(f) Evaluation, Perris Valley Line, Riverside County, California.*

- 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 airstrip, expose people residing or working in the project area to excessive noise levels; or

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

The State standard for interior noise levels within new dwellings other than detached single-family dwellings, such as student housing, is 45 dB(A) CNEL.

The *CEQA Guidelines* do not define the levels at which temporary and permanent increases in ambient noise are considered "substantial." For the purposes of this analysis, noise impacts would be considered significant if the project resulted in the following:

- Construction activities lasting more than one day that increase the ambient noise levels by 10 dB(A) Leq or more over a 1-hour period at any on-campus or off-campus noise-sensitive location.

- A permanent (i.e., long term operational) increase of 5 dB(A) CNEL over ambient noise levels at any on-campus or off-campus noise-sensitive land use.

- A permanent (i.e., long term operational) increase of 3 dB(A) CNEL over ambient noise levels at any on-campus or off-campus noise-sensitive land use location where the future resulting noise level would exceed 70 dB(A) CNEL (i.e., the noise levels would be considered unacceptable for noise-sensitive uses by most public agencies).

The *State CEQA Guidelines* also do not define the levels at which groundborne vibration or groundborne noise is considered "excessive." This analysis uses the Federal Railroad Administration's (FRA) vibration impact thresholds for sensitive buildings, residences, and institutional land uses.[6] These thresholds are 65 VdB at buildings where vibration would interfere with interior operations (e.g., sensitive on-campus research buildings), 80 VdB at residences and buildings where people normally sleep (e.g., student housing buildings and nearby residences), and 83 VdB at other institutional buildings (FRA 2005).

4.6.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the proposed projects and related projects and circulated with the NOP concluded that further analysis of the following issues was not required in the EIR:

- 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 airstrip, expose people residing or working in the project area to excessive noise levels

6 The thresholds are for infrequent events which are defined as fewer than 70 vibration events per day.

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

The Initial Study for the proposed project noted that the NDD Plan area, which includes the Phase 1 project site, is not located within the boundaries of any airport land use plan and is more than 2 miles from the nearest public airport. The project area is not located within the vicinity of a private airstrip. Therefore, implementation of the NDD Plan and Phase 1 project would not be affected by operation of a public airport or private airstrip. These issues are not discussed further in the analysis below.

4.6.4.3 Methodology

The analysis in this section focuses on the nature and magnitude of the potential change in the noise environment due to development of the proposed projects and related projects. The primary sources of noise associated with the proposed projects would be construction activities and project-related traffic and events. Noise levels associated with anticipated construction activities are identified for locations within and around the project site and are compared with thresholds to determine whether temporary or periodic noise impacts would occur. Noise levels associated with construction and on-site equipment and activities are discussed quantitatively, as well as qualitatively with regard to the minor redistribution of traffic that would result from implementation of the proposed projects and related projects. These projected noise levels are compared with standards of significance to determine whether substantial permanent increases in ambient noise levels would occur. Future noise levels within the vicinity of the project site have also been identified to assess the compatibility of the proposed projects and related projects with the existing noise environment.

4.6.4.4 Project Impacts and Mitigation Measures

Impact 4.6-1 **Operation of the proposed project would not expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinances, or cause a substantial permanent increase in noise levels in the project vicinity above levels existing without the project. (*Less than Significant*)**

Traffic Noise

The proposed project would accommodate an increased student population, as well as result in increased worker trips for commercial uses on-site. This would result in additional vehicular traffic on and around the campus, which in turn could increase ambient noise levels. In compliance with LRDP PP 4.10-5(b), the Campus operates a robust alternative transportation program that includes transit passes for all students,

faculty and staff, as well as carpool, vanpool, and cyclist/walker programs that further reduce campus-related vehicular traffic, including the traffic associated with the additional students and employees at the proposed project:

PP 4.10-5(b) *The Campus shall continue to implement an Alternative Transportation program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling.*

The Alternative Transportation program reduces the number of motor vehicle trips for campus students, faculty, and staff. Continued implementation of PP 4.10-5(b) would ensure that motor vehicle trips to and from the campus and the associated noise levels are reduced to the maximum extent feasible.

Although the Campus alternative transportation programs ensure that motor vehicle trips would be reduced to the maximum extent possible, there could still be increases in noise as a result of increased trips. As a result, roadways near the campus could experience slight changes in noise levels. As discussed in **Subsection 4.6.2** above, it generally requires a doubling in the volume of traffic on a roadway for noise levels to increase by 3 dB, which is the change in noise that is perceptible to most individuals.

The only roadway which would experience traffic volume doubling (or near doubling), would be along Linden Street east of Canyon Crest Drive during the Build-Out Plus Project conditions. The nearest sensitive receptor east of Aberdeen Drive, south of Linden Street is the Aberdeen-Inverness Residence Hall. Student apartments west of Canyon Crest Drive were also included for illustrative purposes. The results of the traffic noise modeling are shown in **Table 4.6-6, Roadway Noise Modeling Results**, below.

Table 4.6-6
Roadway Noise Modeling Results (dB(A) CNEL)

Roadway Segment/Intersection	Existing Conditions	Future No Project	Future Plus Project	Future Plus Project Minus Existing Conditions	Future Plus Project Minus Future No Project
Linden Street					
Between Canyon Crest Drive and Aberdeen Drive	56.5	57.9	59.0	1.4	2.5
Linden Street					
East of Aberdeen Drive	54.4	55.2	57.4	0.8	3.0
Linden Drive					
West of Canyon Crest Drive	60.6	61.7	62.6	1.1	2.0

Source: Impact Sciences, 2018.

As shown in **Table 4.6-6**, the receptors at the Aberdeen-Inverness Residence Hall east of Aberdeen Drive would experience the greatest traffic noise level increases as a result of implementation of the NDD Plan. However, the greatest noise increase would be approximately 3.0 dB(A), which although audible, is below the 5 dB(A) threshold of significance. There would thus be no significant increase in on-campus noise levels due to the proposed project.

Because the roadway noise levels at all on- and off-campus locations would not increase by more than 5 dB(A) CNEL, the proposed project would not generate significant increased local traffic volumes that cause a substantial permanent increase in ambient noise levels on- or off-campus and the project would not expose persons off and on-campus to noise levels above applicable standards. The impact would be less than significant.

Stationary Noise

Mechanical heating, ventilation, and air conditioning (HVAC) equipment would be located on the rooftops of the proposed project buildings. The type of equipment currently installed on new buildings within the campus generates noise levels that average approximately 66 dB(A) Leq on the air inlet side and 62 dB(A) Leq on the other sides when measured at 50 feet from the source. As discussed previously in this section, 24-hour CNEL noise levels are about 6.7 dB(A) greater than 24-hour Leq. This means that this equipment could generate noise levels that average 69 to 73 dB(A) CNEL at 50 feet when the equipment is operating constantly for 24 hours. Based on observations of the existing HVAC equipment at existing campus buildings, the shielding installed around all new equipment at the campus reduces these noise levels by at least 15 dB(A). Therefore with shielding, noise from the proposed project HVAC equipment would not produce noise levels over 70 dB(A) CNEL at 50 feet. Nearby off-site sensitive receptors to the proposed project include residences and schools. The nearest off-site sensitive receptors are located approximately 300 feet to the north of the project site. The nearest on-site sensitive receptors are approximately 50 feet northeast of the project site. HVAC equipment could generate up to 55 dB(A) at 50 feet at the nearest sensitive receptor. This would result in a noise level of approximately 57.7 dB(A) CNEL, with an ambient noise level increase of approximately 4.2 dB(A). Therefore, noise from the proposed project's stationary sources would not result in a substantial increase of 5 dB(A) or more at the nearest sensitive receptors.

Proposed parking lots would add noise from vehicles entering and exiting the lot, as well as from vehicle movement within the parking lot, vehicle start-ups, and occasional car alarms. Parking noises are typically around 60 dB(A) at 50 feet, depending on a variety of factors. At 300 feet, this would result in a noise level of approximately 45 dB(A). At the nearest on-site sensitive receptors, noise levels would increase approximately 2.3 dB(A) to approximately 57.8 dB(A). Like HVAC noise, the distance between

the proposed project and sensitive receptors would result in noise levels that would not substantially increase ambient noise levels at sensitive receptors. The impact would be less than significant.

Provision of the equipment shielding and screening of the loading dock described above, and the attenuation provided by the distance between on-site stationary and area noise sources and the nearest off-campus receptors, the proposed projects would not result in a substantial permanent increase in ambient noise levels at off-campus locations.

Furthermore, to minimize noise from all stationary and area sources associated with the proposed project, the Campus would implement the following campus PPs, which are included in and as a part of the NDD Plan:

PP 4.10-1(a) *UCR will incorporate the following siting design measures to reduce long-term noise impacts:*

(i) Truck access, parking area design, and air conditioning/refrigeration units will be designed and evaluated when planning specific individual new facilities to minimize the potential for noise impacts to adjacent developments.

(ii) Building setbacks, building design and orientation will be used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes, such as Blaine Street, Canyon Crest Drive, University Avenue, and Martin Luther King Jr. Boulevard. Noise walls may be advisable to screen existing and proposed facilities located near the I-215/SR-60 freeway.

(iii) Adequate acoustic insulation would be added to residence halls to ensure that the interior Ldn would not exceed 45 dB(A) during the daytime and 40 dB(A) during the nighttime (10:00 PM to 7:00 AM) in rooms facing major streets.

(iv) Potential noise impacts would be evaluated as part of the design review for all projects. If determined to be significant, mitigation measures would be identified and alternatives suggested. At a minimum, campus residence halls and student housing design would comply with Title 24, Part 2 of the California Administrative Code.

PP 4.10-6 *The Campus shall continue to shield all new stationary sources of noise that would be located in close proximity to noise sensitive buildings and uses.*

Furthermore, as part of the proposed projects, the Campus would implement the following PS, as well as PP 4.10-6 (discussed above), which would reduce potential impacts associated with new stationary noise sources:

PS Campus and Community 1 *Provide sensitive land use transitions and landscaped buffers where residential off campus neighborhoods might experience noise or light from UCR activities.*

With the shielding and screening included in the project design in compliance with existing LRDP PSs and PPs, the proposed project would not result in a substantial permanent increase in ambient noise levels above existing levels. The impact would be less than significant.

Athletic Events Center Noise

The NDD Plan includes the construction of a 5,000 seat athletic event center near the southwest quadrant of the proposed project site for the purpose of conducting periodic special events. Athletic events can generate noise from athletic activity, crowd noise, whistles from officials, and loudspeakers making announcements during athletic activities. Sample noise from stadiums with between 5,200 and 5,800 fans have average ambient noise levels ranging from 81-97 dB(A). Whistles from officials are approximately 80 dB(A) at 50 feet.[7]

The nearest off-site sensitive receptors are located approximately 300 feet to the north of the project site. The nearest on-site noise-sensitive receptors are located at the Falkirk Apartments, approximately 115 feet to the west of the project site. As discussed above, sound generated by a point source typically attenuates at a rate of at least 6 dB(A) for each doubling of distance from the source to the receptor. With no noise shielding, this results in a maximum noise level of approximately 90 dB(A) for peak noise levels, and 73 dB(A) for whistles from officials.

Although peak noise levels during special sporting events with near-capacity crowds would temporarily increase ambient noise levels by more than 5 dB(A), the City of Riverside Municipal Code Section 7.35.020 part B exempts noise sources associated with reasonable sounds emanating from authorized school bands, school athletic, and school entertainment events and occasional public and private outdoor or indoor gatherings, public dances, shows, bands, sporting and entertainment events conducted between the hours of 7:00 a.m. and 10:00 p.m. Sporting events at the athletic facility are not anticipated to operate outside of the hours of 7:00 a.m. to 10:00 p.m. Although peak noise levels associated with athletic events will temporarily raise ambient noise levels by more than 5 dB(A), these sporting events are exempted from standards presented in the City of Riverside Municipal Code.

In addition to noise reducing design features that would be incorporated into the athletic facility, The University Neighborhood Enhancement Team (UNET), a cooperative effort between the University of California Police Department at Riverside and the Riverside Police Department, works very closely with the University Neighborhood Association (UNA). UNA is a community action group which is comprised of residents, university students, and university staff who live in the immediate area. UNET team

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7 Ammon, Robin; Mahoney, Kimberly; Fried, Gil; Al Arkoubi, Khadija; and Finn, Dale. 2015. *Roar of the Crowd: Noise-Related Safety Concerns in Sport*. Journal of Legal Aspects of Sport, 2015, 25, 10-26.

members attend UNA monthly meetings and bring community concerns back to the team. The team has proactively worked on the concerns of UNA and brought several livability issues to a close. Traffic problems, noise ordinance problems, and municipal code violations continue to be the main community concerns. In response to these concerns, team members have developed collaborative solutions, including working jointly with Riverside City Code Enforcement officers and the UCR Student Conduct Office. As a result, proactive and cooperative steps are taken to improve the quality of life in the university neighborhood. UNA has been instrumental in identifying problems in the university neighborhood, and UNET continues to work closely with this organization, as their goal is to better their neighborhood

Although this impact would be considered less than significant, the proposed athletic facilities would be required to go through a project-level environmental review which would further detail any possible noise reducing design features included in the athletic facility. At this time, the athletic facility is included for the purpose of land use planning, and has not yet been fully designed as it is included in a later phase of project construction.

Because this impact is exempted from the City of Riverside Municipal Code noise regulations, this would be a less than significant impact.

Impact 4.6-2 **Construction of the proposed project could result in substantial temporary or periodic increase in ambient noise levels at certain sensitive uses in the project vicinity. (*Less than Significant with Mitigation*)**

The basic types of activities that would be expected to generate noise during construction of the NDD Phase 1 and NDD Plan are demolition and site clearance, grading and excavation, building construction, paving, architectural coating, and landscaping. During each stage of construction, there would be a different mix of equipment operating and noise levels would vary based on the number and type of equipment in operation and the location of the activity.

Demolition or construction work which would interfere with the operation of neighboring buildings or the occupants enjoyment of the use of any such buildings would be restricted by contract to between the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays. No construction activity would be permitted on Sundays or federal holidays (with the exception of minor interior work that is not visible or audible from outside the project site). Construction activity will be consistent with the City of Riverside Municipal Code Section 7.35.020G, exemption of noise restrictions during construction, granted that no construction activity occurs between 7:00 p.m. and 7:00 a.m. on weekdays, and between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays.

The potential noise levels associated with typical construction equipment and outdoor construction activities were identified in **Figure 4.6-3**. The nearest on-campus sensitive receptors are approximately 50 feet from construction activity, and off-campus sensitive receptors are located about 225 feet from the proposed project site. Daytime construction noise levels could temporarily reach approximately 89 dB(A) at 50 feet from the source. As discussed above, sound generated by a point source typically attenuates at a rate of at least 6 dB(A) for each doubling of distance from the source to the receptor. Therefore, noise levels at the nearest residential buildings could periodically reach 83 dB(A) during project construction. This is an increase of more than 10 dB(A) Leq over the existing daytime noise levels at the affected locations. An additional concern during construction is the use of backup alarms on heavy equipment. According to the FHWA, warning horns have an actual measured noise level of 83 dB(A) L_{max} at 50 feet. Although several decibels lower than the maximum noise level of the equipment itself, backup alarms generate a tonal, impulsive or repetitive sound, and it may be necessary to restrict or prohibit certain construction equipment and activities to operate in evening or nighttime hours to avoid annoyance. As noted above, construction activities would not occur outside of 7:00 a.m. to 6:00 p.m. Monday through Friday, and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays. However, construction noise levels could substantially increase existing noise levels at residential uses on and off campus during normal construction hours.

As part of the proposed projects, the Campus will implement the following campus PPs that would reduce potential impacts associated with construction noise:

PP 4.10-7(b) *The Campus shall continue to require by contract specifications that construction equipment be required to be muffled or otherwise shielded. Contracts shall specify that engine-driven equipment be fitted with appropriate noise mufflers.*

PP 4.10-7(c) *The Campus shall continue to require that stationary construction equipment material and vehicle staging be placed to direct noise away from sensitive receptors.*

PP 4.10-7(d) *The Campus shall continue to conduct regular meetings, as needed, with on- campus constituents to provide advance notice of construction activities in order to coordinate these activities with the academic calendar, scheduled events, and other situations, as needed.*

PP 4.10-8 *The Campus shall continue to conduct meetings, as needed, with off-campus constituents that are affected by campus construction to provide advance notice of construction activities and ensure that the mutual needs of the particular construction project and of those impacted by construction noise are met, to the extent feasible.*

Although the implementation of the campus PPs would reduce construction-related noise, the Campus cannot ensure that construction noise levels would not increase by less than 10 dB(A) Leq or more over a 1-hour period at noise-sensitive uses located in close proximity to the construction site. Therefore, the

proposed projects could result in a substantial periodic increase in ambient noise levels in the project vicinity above existing levels. This impact would be significant.

Construction Mitigation Measure

MM NOI-1 Barriers such as plywood structures or flexible sound control curtains shall be erected, as needed, between the proposed project and adjacent sensitive receptors minimize the amount of noise during construction. These temporary sound barriers shall be capable of achieving a sound attenuation of at least 5 dB(A) and block the line-of-sight between the project site and these adjacent land uses. Sound barriers between the project site and the UCR Child Development Centers shall be capable of achieving a sound attenuation of at least 16 dB(A) and block the line-of-sight between the project site and the Child Development Center.

Residual Impacts

MM NOI-1 would reduce temporary construction noise levels, including back-up alarms, to below a 10 dB(A) increase in noise levels. Because noise level increases would not exceed the 10 dB(A) threshold of significance, residual impacts would be less than significant.

Impact 4.6-3 **Construction associated with the proposed project would expose persons on- or off-campus to excessive groundborne vibration levels. (*Significant and Unavoidable*)**

The proposed project site is located approximately 50 feet from the nearest on-campus sensitive receptor (Child Development Centers) and approximately 225 feet from the nearest off-campus sensitive receptor (Gethsemane Lutheran Church). At these distances, the vibration generated by typical construction equipment would range from approximately 78 VdB to approximately 58 VdB. This level of vibration would be above the FRA's 65 VdB vibration impact threshold for buildings where vibration would interfere with interior operations (e.g., classrooms, Child Development Centers). The nearest residences are located in the Aberdeen-Inverness Residence Hall, which is approximately 90 feet from the project site. At this distance, the vibration generated would be approximately 70 VdB. This level of vibration would fall below the FRA's 80 VdB vibration impact threshold for residential uses. Therefore, construction associated with the proposed projects may expose persons at the UCR Child Development Centers to excessive groundborne vibration levels, and this impact would be significant.

Heavy trucks would continue to transport materials to and from the campus when construction activities occur. These trucks typically generate groundborne vibration levels of around 63 VdB. These levels could

reach 72 VdB where trucks pass over bumps in the road. In both instances, the resulting groundborne vibration levels would be less than the FRA's 80 VdB vibration impact threshold for residential uses. However, these vibration levels would exceed the FRA's 65 VdB threshold for buildings where vibration would interfere with interior operations (e.g., classrooms). Therefore, construction associated with the proposed projects may expose persons along the truck route to excessive groundborne vibration levels, and this impact would be significant.

As part of the proposed projects, the Campus would implement PP 4.10-2 and LRDP MM 4.10-2, which would further reduce vibration effects.

PP 4.10-2 *The UCR campus shall limit the hours of exterior construction activities from 7:00 AM to 9:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Saturday when necessary. Construction traffic shall follow transportation routes prescribed for all construction traffic to minimize the impact of this traffic (including noise impacts) on the surrounding community.*

MM 4.10-2 *The Campus shall notify all academic and residential facilities within 300 feet of approved construction sites of the planned schedule of vibration causing activities so that the occupants and/or researchers can take necessary precautionary measures to avoid negative effects to their activities and/or research.*

Project Specific Construction Mitigation Measure

MM NOI-2 Noise and groundborne vibration construction activities whose specific location on the site may be flexible (e.g., operation of compressors and generators, cement mixing, general truck idling) shall be conducted as far as possible from the nearest noise- and vibration-sensitive land uses, and natural and/or manmade barriers (e.g., intervening construction trailers) shall be used to screen propagation of noise from such activities towards these land uses to the maximum extent possible.

Residual Impacts

Although implementation of project specific **MM NOI-2**, along with 2005 LRDP *MM 4.10-2,* and *PP 4.10-2* would reduce vibration impacts at nearby sensitive receptors, **MM NOI-2** may not be feasible at adjacent receptors such as the Child Development Centers, where activities such as grading may require the use of construction equipment near the receptor. As a result, this impact would remain **significant and unavoidable**.

4.6.4.6 Cumulative Impacts and Mitigation Measures

Impact 4.6-4 **Cumulative development would cause a significant cumulative impact related to substantial permanent increases in ambient noise levels. The contribution of the proposed projects and related projects to this cumulative impact would be cumulatively considerable. (*Significant and Unavoidable*)**

Cumulative Impacts Related to Noise Standards

The proposed project would not make a cumulatively considerable contribution to the impact associated with exposure of persons to noise levels in excess of applicable standards. As shown in **Impact 4.6-1** above, the proposed projects and related projects would not cause a significant increase in traffic noise along area roadways. Therefore, the projects would make a contribution to ambient noise levels along major roadways that would be cumulatively not considerable.

The proposed project would not add significant additional traffic on the study area roadway segments and would not result in a significant cumulative impact as it would contribute to a substantial permanent increase in ambient noise levels.

Cumulative Impacts Related to a Temporary Increase in Noise

The proposed project would result in a significant impact related to construction noise. Although **MM NOI-1** would reduce the significance of construction impacts to a level of less than significant, it is possible that concurrent projects in the project vicinity could temporarily elevate ambient noise levels to more than 10 dB(A) above existing ambient noise levels. Because the proposed project could not regulate noise levels from other nearby projects, this impact would be considered cumulatively considerable.

Cumulative Impacts Related to Groundborne Vibration

The proposed project would result in a significant and unavoidable impact related to groundborne construction vibration. Although **MM NOI-2** would reduce the severity of these impacts, the impact would remain significant and unavoidable. Nearby related construction projects operating concurrently with the proposed project could further worsen significant impacts. Like construction noise, it is not feasible to regulate off-site related projects. Because of this, this impact would be considered cumulatively considerable.

Conclusion

In summary, the proposed projects and related projects would not result in cumulatively considerable contributions to cumulative operation noise impacts. However, both cumulative construction noise and

vibration would be considered cumulatively considerable. Because there is no feasible way to regulate off-site construction noise and vibration substantially, there is no feasible mitigation and this impact would remain significant.

Mitigation Measures: No mitigation is feasible.

Significance after Mitigation: The impact would be significant and unavoidable.

4.7 POPULATION AND HOUSING

4.7.1 INTRODUCTION

This section provides an overview of existing population, housing, and employment conditions surrounding the campus and evaluates impacts associated with the proposed project. Topics addressed include the anticipated population, housing, and employment growth. The section uses information from a variety of public agencies including, the United States Census Bureau (US Census), the Southern California Association of Governments (SCAG) and the City of Riverside.

4.7.2 EXISTING CONDITIONS

4.7.2.1 Population

Regional Growth Trends

The City of Riverside is located within the County of Riverside, in a larger geographic area known as the Inland Empire. This area includes western Riverside and San Bernardino Counties, and is defined by the San Bernardino Mountains to the north and east, the San Diego County line to the south, and the Los Angeles County and Orange County lines to the west. According to the US Census the population of Riverside County in 2010 was 2,189,641 and current estimates (2017) show an increase to 2,423,266, an increase of more than 10 percent in less than a decade.

The City of Riverside ranks as the 12th most populous city in California with approximately 311,955 residents as of 2013. The City of Riverside's recent history has been marked by steady growth, adding approximately 40,000 new residents each decade since the 1960s[1]. **Table 4.7-1, City of Riverside Population Growth (2000-2040),** shows the growth in the population of the City of Riverside since 2000 as well as SCAG forecasts to the year 2040.

Table 4.7-1
City of Riverside Population Growth (2000-2040)

Year	Population	Average Annual Growth (Persons per year)	Average Annual Growth Rate (percent)
2000	255,166	---	---
2010	303,871	4,871	1.9
2020[a]	336,300	3,243	1.1

1 City of Riverside. 2017. *General Plan 2025, 2014-2021 Housing Element*. Adopted October 2017.

Year	Population	Average Annual Growth (Persons per year)	Average Annual Growth Rate (percent)
2035 [a]	384,100	3,187	0.9
2040[a]	386,600	500	0.1

Source: U.S. Census Bureau 2000 and 2010. SCAG 2016.
a Estimated by SCAG in 2018 RTP/SCS Growth Forecast by Jurisdiction

Households

The U.S. Census Bureau defines a household as all people who occupy a housing unit. The Census Bureau and planning agencies distinguish between households and population because not all of the population lives in households; some live in group quarters, such as board and care facilities or student housing, and a small proportion are homeless. The DOF and the Census Bureau do not include student occupied housing units in the total number of households; although students are counted in the population, they are not counted as distinct households.

The average household size in the City of Riverside and Riverside County has grown since 2010. **Table 4.7-2, Households in City of Riverside and Riverside County (2010-2018)**, shows that in 2010, the City of Riverside had 91,932 households, with an average household size of 3.18 persons per housing unit (pph). By 2018, the number of households increased to 94,703, with an increased average household size of 3.31 pph. According to 2018 estimates, average household size is slightly greater in the City of Riverside than the Riverside County average of 3.26 pph. Both the City and County have higher average household sizes than the State of California average of 2.97 pph.[2]

Table 4.7-2
Households in City of Riverside and Riverside County (2010-2018)

	Total Households[a]		Increase	Average Household Size	
	2010	2018	2010-2018	2010	2018
City of Riverside	91,932	94,703	2,771	3.18	3.31
County of Riverside	686,260	729,920	43,660	3.14	3.26

Source: California Department of Finance
a Represents occupied housing units.

2 Department of Finance (DOF). E-5 Population and Housing Estimates for Cities, Counties, and the State. Available online at: http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/, accessed October 9, 2018.

Age Distribution

Table 4.7-3, City of Riverside Age Distribution (2016), provides age distribution in the City of Riverside in 2016, from the latest available American Community Survey data.[3] As **Table 4.7-3** shows, approximately 29.1 percent of the City's population is school-age, and 10 percent of the population is over 65 years of age.

Table 4.7-3
City of Riverside Age Distribution (2016)

Age Group	Number	Percent of Population[a]
Preschool (0 to 4)	21,033	6.6
Elementary School (5 to 9)	21,989	6.9
Middle School (10 to 14)	21,989	6.9
High School (15 to 19)	27,722	8.7
Young Adults (20 to 24)	34,099	10.7
Prime Working (25 to 54)	128,427	40.3
Retirement (55 to 64)	31,230	9.8
Seniors (65+)	31,868	10.0
Total	318,678a	99.9

Source: 2018 US Census Bureau, American Community Survey
[a] *Total does not equal 100 percent due to rounding.*

UCR Population

Total On-Campus Population

The *on-campus population*, or the number of individuals either enrolled or employed on campus, consists of students, academic employees, and staff employees. Students are the largest group, followed by non-academic staff and academic employees. Other individuals comprise the remaining average weekday population. This category includes conference and event participants; volunteers; gallery, museum, library, and recreation facility visitors; vendors; and construction workers.

The existing on-campus average weekday population is shown in **Table 4.7-4, Existing Campus Population (2017).**

3 United States Census Bureau, American Community Survey, City of Riverside, https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF, accessed October 2018.

Table 4.7-4
Existing Campus Population (2017)

Type	Population
Students	23,365
Academic Personnel	1,958
Nonacademic Staff	5,308
Other Individuals	3,521
Total	**34,152**

Source: UC Riverside, August 2018

Residential Distribution of Campus Population

Table 4.7-5, UCR Population Distribution (2017), shows the residential distribution of student and faculty/staff, based on enrollment and parking information. Approximately 28 percent of the students live on campus, and about 19 percent live off-campus in the City of Riverside. With respect to faculty and staff, about 41 percent live in the City and the rest in other communities in the County and in other neighboring counties.

Table 4.7-5
UCR Population Distribution (2017)

	Students		Faculty and Staff	
	Percent	Number	Percent	Number
UCR Campus	28.1%	6,564	0.0%	0
City of Riverside (exclusive of campus)	18.8%	4,403	41.3%	2,875
County of Riverside (exclusive of City)	12.4%	2,886	19.9%	1,381
Outside of Riverside County	40.7%	9,512	38.8%	2,699
Total	**100.0%**	**23,365**	**100.0%**	**6,955**

Source: UCR Capital Asset Strategies - Campus Planning, September 2018

4.7.2.1 Housing

City of Riverside Housing

Total Housing Stock

The housing stock in the City of Riverside slightly increased with 98,444 total housing units in 2010 to 100,515 housing units in 2018 as shown in **Table 4.7-6, Housing Stock in the City of Riverside**.

Table 4.7-6
Housing Stock in the City of Riverside

Year	Number of Units	Percent Increase
2010	98,444	--
2014	99,254	0.8
2018	100,515	1.3

Source: California Department of Finance. E-5 Population and Housing Estimates for Cities, Counties, and the State, January 2011- 2018, with 2010 Benchmark. May

According to the 2016 American Community Survey, 54.5 percent of occupied housing units are owner occupied, while 45.5 percent of occupied housing units are renter occupied. The breakdown of housing by type of structure is about 68 percent single family; 6 percent multi-family (2 to 4 units); 24 percent multi-family (5+ units); and 2 percent for mobile homes/other[4].

Vacancy Rates

Vacancy rates and the affordability of housing are key elements in the balance between supply and demand in the City's housing market. High vacancy rates usually indicate low demand and/or high prices in the housing market. Conversely, low vacancy rates usually indicate high demand and/or low prices in the housing market. However, vacancy rates are not the sole indicator of market conditions; they must be viewed in the context of all the characteristics of the local and regional market and economy.

Vacancy rates that indicate a roughly balanced supply and demand of housing units generally range from 1 to 3 percent for single-family units and from 3 to 5 percent for multifamily units. Fluctuations in the regional and national economies in recent years affected the housing market, and growth in the local area resulted in declining vacancy rates for apartments through 2008.

Table 4.7-7, City of Riverside Vacancy Rates (2000-2016) provides the vacancy data for the City. The total vacancy rates include vacant units that are not available for rent or sale, such as those that have been rented or sold, but have not yet been occupied as of the date of the census, and units being held for repairs/modernization or for personal reasons. These units make the apparent vacancy rate higher than the real rate because they are not on the market and are not available for rental or purchase.

4 United States Census. 2017. *2016 American Community Survey*.

Table 4.7-7
City of Riverside Vacancy Rates (2000-2016)

Year	Vacant Units	Vacancy Rate (percent)
2000	3,969	4.6
2010	6,512	6.6
2016	5,812	5.8

Source: U.S Census 2000; US Census 2010; DOF 2018

UCR Housing

Existing On-Campus Housing Supply

The Campus housed approximately 28.1 percent of its total student body in 2017, substantially beneath its goal of 50% percent. There are three housing options available on Campus- Residence Halls, UCR Campus Apartments, and Family Housing**.** There are currently 6,430 single students housed and 134 family housing students housed by the University[5].

Table 4.7-8
UC Riverside Housing Inventory

	Fall 2017	Fall 2018
Residence Halls		
Beds by Designed Occupancy	2,943	2,943
Added Beds (Converting 2 to 3 Occupants/Room)	477	512
Total	**3,420**	**3,455**
Apartments		
Beds by Designed Occupancy	3,010	3,010
Total	**3,010**	**3,010**
Total UCR On-Campus Housing Beds	**6,430**	**6,465**

Source: UCR Capital Asset Strategies - Campus Planning, September 2018

5 UC Riverside. 2017. *FY 2018-2019 Business Plan, UCR Housing Demand*. July.

Existing UCR Housing Demand

Approximately 6,564 students were housed on campus in the fall of 2017[6]. **Table 4.7-9, UCR Current and Projected Campus Housing Demand (Number of Beds)** shows current and estimated demand of students for UC Riverside housing.

Table 4.7-9
UC Riverside
Current and Projected Campus Housing Demand (Number of Beds)

Year	Demand	Shortfall with Current Bed Capacity	Shortfall with Planned Improvements
Fall 2018	8,510	2,557	2,045
Fall 2019	8,829	2,876	2,364
Fall 2020	9,729	3,776	2,710
Fall 2021	10,437	3,664	1,737

Source: UC Riverside. 2017. FY 2018-2019 Business Plan, UCR Housing Demand. July.

4.7.2.3 Employment

The total labor force for the County of Riverside was estimated at 1,082,600 persons in July 2018. Of this number, 1,031,000 persons were employed and 51,100 were unemployed, for a 4.7 percent unemployment rate. Within the City of Riverside, the labor force totaled 153,400 persons in July 2018[7].

4.7.2.4 Population, Housing, and Employment Projections

The Southern California Council of Governments (SCAG) is the regional planning agency for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG forecasts for population, household, and employment are provided in **Table 4.10-10, SCAG Population, Housing, and Employment Estimates**, for the City of Riverside and Riverside County.

6 Ibid.

7 State of California, Employment Development Department (EDD). 2017. Riverside County, California. "Current Month Labor Force Data."

Table 4.7-10
SCAG Population, Housing, and Employment Estimates

	2020	2035	2040
City of Riverside			
Population	336,300	384,100	386,600
Households	101,200	117,700	118,600
Employment	157,900	195,900	200,500
County of Riverside			
Population	2,479,800	3,055,100	3,183,700
Households	802,400	1,009,000	1,054,300
Employment	848,700	1,111,800	1,174,300

Source: SCAG. 2016. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction.

4.7.3 REGULATORY FRAMEWORK

4.7.3.1 Federal and State

There are no federal or State regulations related to population and housing that are applicable to the UCR campus.

4.7.3.2 Local

City of Riverside General Plan Housing Element

According to the Riverside General Plan Housing Element (as updated in 2017) and pursuant to State law, the City of Riverside supports the provision of sites for special-needs housing, such as for college students. Therefore, one objective identified in the City's General Plan is a provision to provide adequate housing and supportive services for Riverside residents with special needs, such as students, faculty, and employees of educational institutions. The Riverside Zoning Code permits dormitories as well as other standard housing opportunities in multifamily residential zones. In addition, these provisions further Riverside's commitment to fair and equal housing opportunities.

University Neighborhood Plan

The University Neighborhood Plan, the City of Riverside's first neighborhood plan developed under the provisions of the General Plan 2025, was adopted by the City Council on June 17, 2008. The plan encompasses the University Neighborhood, which is bounded by Chicago Avenue to the west, Spruce Street and the City boundary to the north, Le Conte Drive and University Drive to the south, and the City

boundary to the east. The plan includes objectives and policies that relate to providing affordable housing for residents and UCR students, faculty and staff, including the provision of high density mixed use along University Avenue.

4.7.4 IMPACTS AND MITIGATION MEASURES

4.7.4.1 Significance Criteria

The impacts related to population and housing from the implementation of the North District Development Plan would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines*:

- Induce substantial population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through the extension of roads or other infrastructure).
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

The analysis below evaluates the project's impacts on Population and Housing.

4.7.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the project concluded that further analysis of issues related to the following significance criteria was not required in the EIR:

- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

As discussed in the Initial Study, the existing Canyon Crest Family Student Housing Facility is currently vacant and has been since the summer of 2017; as a result of the closure of Canyon Crest Family Housing, the campus re-programed the adjacent Oban Apartments into a family housing complex. Therefore, implementation of the NDD Plan would not displace housing or people and no impact would occur. Further analysis in the NDD Plan EIR is not required.

4.7.4.3 Methodology

The impact analysis presented below examines the population and housing impacts on the study area that would result from the population added to the study area as a result of campus growth. For purposes of analysis, it was assumed that full development under the amended 2005 LRDP would occur by 2020. To estimate the potential for implementation of the NDD Plan to cause population-related impacts, projected population levels under the amended 2005 LRDP were compared to both existing conditions as well as future (2020) without project conditions to determine whether substantial changes in population and housing demand would occur.

4.7.4.4 Project Impacts and Mitigation Measures

Impact 4.7-1 **Implementation of the proposed North District Development Plan, including the Phase 1 project, would not induce substantial population growth in an area, either directly (for example by proposing new homes and businesses) or indirectly (for example through extension of roads or other infrastructure). (*Less than Significant*)**

The proposed NDD Plan includes land use designations to establish the basis for where and what type of development can occur. With adoption of the proposed plan and LRDP Amendment 5, land use designations would be revised in accordance with **Table 3.0-3, North District Development Plan Proposed Land Use Designations and Districts**. The proposed plan would allow for increased development in the project area to accommodate current and projected housing needs for the University.

The UCR 2005 Long Range Development Plan (LRDP) establishes a target to house up to 50 percent of enrolled students on-campus and to guarantee on-campus housing to all freshman and transfer students. This goal was established to enhance the student experience by integrating the principles of residential and academic life. The LRDP housing target also promotes environmental and sustainability goals by reducing vehicular trips to and from campus.

As shown in **Table 4.7-5**, approximately 28 percent of the students live on campus, and about 18 percent live off-campus in the City of Riverside. With respect to faculty and staff, about 41 percent live in the City and the rest in other communities in the County and in other neighboring counties. Affordable on-campus housing is a major driver in recruitment and retention of students and interest in on-campus apartment housing is very strong as shown by the wait list of over 2,200 students for the fall 2017 term.

The NDD Plan would not increase enrollment at UC Riverside, only provide additional on-campus housing. The current and growing demand for on-campus student housing has several driving factors.

Although UCR has developed and acquired new student apartment housing, the campus continues to experience strong housing demand and a current shortage of housing for non-freshman undergraduates and transfer students. With current enrollment and remaining enrollment growth projected in the 2005 LRDP, the campus anticipates this need growing to over 2,600 student apartment beds. In addition, freshman enrollment is expected to increase from fall 2017 to fall 2021. During this same period, the campus is aiming to increase the number of freshmen housed on campus from 72 percent to 78 percent. UCR is proposing the NDD Plan to address a significant portion of this current and anticipated student housing demand.

Although UCR has increased its apartment housing stock in recent years, there remains unmet demand due to continued enrollment growth. Over the past decade, the total campus student population has grown more than 35 percent. During this period, 1,300 apartment-style beds were added in the two phases of Glen Mor, and approximately 860 apartment-style beds were added with the acquisitions of Oban Apartments and Falkirk Apartments (see **Table 4.7-11**). However, these housing developments only partially addressed UCR's on-campus student apartment demands, as evidenced by the current shortfall of such housing (see **Table 4.7-12**). Demand for on-campus student apartment housing is expected to grow beyond the current shortfall with increased enrollment and an anticipated increase in the transfer student population.

Table 4.7-11
UC Riverside Housing Inventory from Fall 2017 to Fall 2021

UCR Housing Inventory	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021
Residence Halls					
Beds by Designed Occupancy	2,943	2,943	2,943	2,943	2,943
Dundee Residence Hall	0	0	0	820	820
Added Beds[a]	477	512	512	246	427
Total	**3,420**	**3,455**	**3,455**	**4,009**	**4,190**
Apartments					
Beds by Designed Occupancy	3,010	3,010	3,010	3,010	3,010
North District Phase I	0	0	0	0	1,500
Total	**3,010**	**3,010**	**3,010**	**3,010**	**4,510**
All UCR On-Campus Housing Beds					
Total	**6,430**	**6,465**	**6,465**	**7,019**	**8,700**

[a] *Converting 2 to 3 Occupants/Room*
Source: University of California, Riverside, September 2018

Table 4.7-12
Fall 2017 UC Riverside Student Apartment Housing Shortfall

Fall 2017		
Bed Capacity	**Beds Needed[a]**	**Bed Shortfall**
3,010	5,252	2,242

[a] "Beds Needed" represents wait list of 2,242 plus existing number of students housed (3,010)
Source: University of California, Riverside, September 2018

Riverside students have historically had access to affordable, off-campus housing options. However, the Riverside housing market has changed, as evidenced by very low vacancy rates and rising rental prices. Over the last five years, the regional Riverside market has experienced average annual rent growth of 6.5 percent, compared to UCR housing rates that have increased on average 1.5 percent per year over the same time period. For the private market this translates to a cumulative apartment rent increase of 28.5 percent for that same five-year period in the Riverside market. In addition, the market continues to have strong occupancy rates with average occupancy above 95 percent over the last five years and current occupancy in excess of 96 percent. This increasing and sustained strength of the privately-owned rental market in the region has caused increases in rental rates near campus.

The campus has taken several long- and short-term steps to address student housing demand. Over the last decade, the campus added 1,300 new apartment style beds (Glen Mor 1 and Glen Mor 2) to the on-campus housing supply.

From 2008 to 2015, the campus used between 200 and 300 doubles as triples annually to meet first-year student demand. In fall 2016 the campus converted all 489 suitable double occupancy rooms into triples. Also, in fall 2016, the campus utilized 326 campus apartment beds as first-year student residence hall beds. While by taking these steps, the campus was able to house all first-year students who registered for campus housing before the housing guarantee deadline, it should be noted that the conversion of double occupancy rooms to triples is widely considered as a less-than ideal housing solution. Further, the campus had to place an additional 394 first-year students who registered after the deadline on a wait list.

The NDD Plan is intended to meet the needs of projected campus enrollment and would not, of itself, increase the enrollment at UC Riverside. At full buildout, the NDD Plan would allow approximately 5,100 students to live on campus rather than seek housing in the City of Riverside and other communities. This would reduce student dependence on City housing stock and reduce some of the tightness in the existing housing market around the campus, as discussed above. The City of Riverside has identified in its 2014 – 2021 Housing Element, buildout potential of as many as 11,646 dwelling units and 38,791

persons[8] which would also add much needed housing stock. This buildout would exceed SCAG's estimates; however, the City has identified locations for these potential units.

The NDD Plan also includes the potential for 70 employees. The increase in jobs resulting under the NDD Plan would support new employment opportunities but would not be considered sufficient to include employment generating uses that would result in unplanned population growth due to the small number of jobs added.

The NDD Plan would not introduce new infrastructure or the extension of roads, but instead would plan for anticipated growth by creating additional housing opportunities for students. The NDD Plan would not increase substantial growth in population through employment generating uses and would be consistent with state, regional, and local policies (see **Section 4.4, Land Use**). While the City of Riverside as a whole could exceed SCAG projections for the City (based on the 2014 Housing Element) the projected growth is expected to be accommodated by existing or planned facilities and services. Therefore, impacts related to inducing substantial growth under the NDD Plan would be less than significant.

4.7.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative population impacts includes the City of Riverside.

Impact 4.7-2 **Cumulative development, including the proposed project and related projects, would not substantially induce population either directly or indirectly. The contribution of the proposed project to this cumulative impact would not be cumulatively considerable. (*Less than Significant*)**

As discussed above, the proposed project would accommodate expected student demand for on-campus housing, and would not, in and of itself, increase enrollment. Although the project is not directly assumed within the City of Riverside's Housing Element, the project would help accommodate SCAG projections by increasing housing opportunities in the City by freeing up existing housing stock that is currently in use by students. Based on the information above, the cumulative impact of the proposed project would be less than significant and would not be cumulatively considerable.

8 City of Riverside. 2017. *General Plan 2025, 2014-2021 Housing Element*. Adopted October 2017.

4.8 PUBLIC SERVICES

4.8.1 INTRODUCTION

This section of the EIR describes the existing conditions related to fire and police services, schools, and libraries that serve the UC Riverside campus and analyzes the potential for the proposed North Development District Plan (NDD Plan) project to result in substantial adverse physical impacts associated with the provision of new or physically altered public service facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for these public services.

The information in this section is based on consultation with the City of Riverside Fire and Police Departments, the UCR Department of Environmental Health and Safety, UCR Police, and Riverside Unified Schools District, and City of Riverside and Riverside County parks departments.

4.8.2 ENVIRONMENTAL SETTING

4.8.2.1 Fire Life Safety

Fire protection on Campus is provided by both the City and the University. The UC Riverside Department of Planning, Design & Construction (UCR PDC) is responsible for fire protection engineering and prevention, including design consultation, inspections, and safety training. The Campus maintains a memorandum of understanding (MOU) with the California Office of the State Fire Marshal (OSFM), which allows UC personnel to serve as local campus fire inspectors. The MOU also allows for a designated Deputy State Fire Marshal on campus, as well as additional support from the State Fire Marshal. Primary fire suppression services for the Campus are provided by the City of Riverside Fire Department, although the County of Riverside provides back-up emergency services as needed.[1]

UCR Department of Planning, Design & Construction

The UCR PDC is responsible for the majority of fire prevention, protection engineering, and safety on Campus. To maximize safety on campus and prevent fire-related emergencies, PDC Fire Life Safety performs design consultation services, formal plan review and approval, and a variety of inspections and tests for new construction and renovations on campus. Additionally, current facilities are regularly evaluated and maintained by PDC Fire Life Safety to ensure the proper function of fire and life safety equipment and fire hazard prevention techniques. UCR PDC Fire Life Safety along with UCR

1 UC Riverside. 2005. *2005 Long Range Development Plan Environmental Impact Report*. November.

Department Environmental Health & Safety (EH&S) also hosts free safety training courses, performs inspections for special events, designs and maintains suitable emergency vehicle access routes, and assists in the implementation of the Emergency Operations Plan.[2]

City of Riverside Fire Department

The City of Riverside Fire Department (RFD) was founded in 1887 and manages fire services for the City, covering over 81 square miles. As of 2017, the RFD consisted of 14 fire stations, housing 212 sworn firefighters and 23 personnel, including an Administrative Services Manager, Emergency Services Administrator, Emergency Medical Services Coordinator, six fire inspectors, two plan check engineers, and 12 support staff.[3] The RFD is distributed into five divisions. The Fire Prevention division houses the Office of the Fire Marshal and works with the community to ensure public facilities and events comply with all applicable fire safety codes. The Fire Operations Division provides fire suppression, emergency medical services, rescues, and public outreach, while the Fire Training Division coordinates ongoing training and instruction in order to meet safety standards. Finally, the Fire Special Services Division manages the Emergency Operations Center, disaster planning and recovery, and community emergency response.

The closest RFD station to the project site is Fire Station 4, located at 3510 Cranford Avenue, 0.7 miles west of the project site. There are four people on duty at all times at Station 4: a captain, an engineer, a firefighter, and a firefighter/paramedic.[4] The station houses two engines, Engine 4 and OES Engine 225.

RFD has a goal of having a complete fire response arrive on scene within 18 minutes. For medical emergencies, the department has a goal of arriving within seven minutes and thirty seconds. Currently, RFD arrives on scene within 18 minutes and 42 seconds for fire response and seven minutes and forty seconds for medical calls. It is important to note that the fire department will never meet its benchmark because response times are reevaluated every year and the target goal is lowered for continuous improvement.[5]

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2 UC Riverside. 2018. *Department of Environmental Health & Safety- Fire and Life Safety*. Available online at: https://ehs.ucr.edu/fire/, accessed October 17, 2018.

3 City of Riverside. 2016. *Fire Department Strategic Plan 2017-2022.*

4 Administrative Assistant for Fire Prevention. Personal communication with Tricia Thrasher, UCR. October 24, 2018.

5 Hearn, La Wayne. Deputy Chief- Fire Administration. Personal communication with Tricia Thrasher, UCR. November 1, 2018.

Riverside County Fire Department

The Riverside County Fire Department is a part of a master mutual aid agreement with the RFD and provides fire protection services for the UC Riverside campus on a backup basis. The County Fire Department provides all available manpower and equipment as requested. The nearest County fire station is Station 19, approximately 2.3 miles north of the project site, at 469 Center Street in Riverside.

4.8.2.2 Police Services

UC Riverside Police Department

The UC Riverside Police Department is responsible for providing police services on the campus. The Department is located near the NDD Plan project site at 3500 Canyon Crest Drive, immediately south of Linden Street. Currently, the Department employs 32 sworn officers, six dispatchers, and three support staff.[6] All UC Riverside police officers are sworn peace officers under section 830.2(b) of the California Penal Code and possess the same authority as municipal police officers. As the current student population is approximately 24,470 students, the campus currently has a ratio of 1.31 sworn officers per 1,000 students, which is close to meeting the recommended average for universities of 1.4 officers per 1,000 students. The daytime population of the Campus is approximately 31,735 persons, making for a ratio of 1.01 officers/ 1,000 campus population.[7]

The emergency response time for the UC Riverside Police Department is usually between 1-2 minutes. The Department's non-emergency response time, under normal circumstances, is approximately five minutes.[8]

Riverside Police Department

The City of Riverside Police Department (RPD) serves University-owned and leased off-campus facilities, as well as providing additional support to UC Riverside Police Department as needed. The RPD is comprised of five stations, one of which is specifically for the University community. The closest station to the project site is UCR Station, located at 1201 University Avenue, approximately 0.4 miles to the southwest. Currently, the department employs 368 sworn officers and 152 civilian staff members.[9] With

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6 Freese, John. Assistant Chief of Police, UC Riverside Police Department. Personal communication with Impact Sciences Staff. October 15, 2018.

7 Ibid.

8 Ibid.

9 Diaz, Sergio. Chief of Police, Riverside Police Department. Personal communication with Impact Sciences Staff. October 17, 2018.

an estimated citywide population of approximately 328,000 people, the RPD had a ratio of 1.12 sworn officers per 1,000 residents. The RPD does not currently have a computer-aided dispatch system capable of providing accurate and reliable response times.[10]

Riverside County Sheriff's Office

The Riverside County Sheriff's Office is located at 4095 Lemon Street in the City of Riverside, approximately 2.5 miles west of the project site. The County Sheriff's Office does not patrol the UC Riverside campus. The Sheriff's Office instead assists the UC Riverside Police Department and RPD upon request. Such assistance usually consists of crime investigation support, crowd control, and coroner's duties.

4.8.2.3 Schools

The proposed project is located within the boundaries of the Riverside Unified School District (RUSD). During the 2017-2018 school year, the District had an enrollment of 42,428 students, almost ten percent of the countywide enrollment.[11]

The RUSD operates 29 elementary schools, seven middle schools, and six high schools, as well as nine small/specialty schools and an adult school. The project site is located within the area served by Highland Elementary School, University Heights Middle School, and John W. North High School.

Highland Elementary School is located approximately 0.2 miles north of the proposed NDD Plan project site, at 700 Highlander Drive. In the 2017-2018 school year, Highland Elementary had an enrollment of 717 students. University Heights Middle School is located about 0.4 miles northwest of the campus and in 2017-18 had an enrollment of 799 students. Finally, John W. North High School is located approximately 0.7 miles west of the project site at 1550 Third Street and in 2017-18 had an enrollment of 2,294 students.[12]

According to the RUSD's Facilities Master Plan (2016), the schools serving the University are operating near or at capacity, due to the densely populated community in which they are located. As enrollment at all three schools is expected to increase further, it is imperative that they phase out some relocatable classrooms, renovate existing structures, and construct new ones to develop a more permanent solution

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10 Ibid.

11 California Department of Education (CDE). 2018. *Data Quest- Riverside Unified School District*. Available online at: https://dq.cde.ca.gov/dataquest/dqcensus/EnrGrdLevels.aspx?cds=3367215&agglevel=District&year=2017-18, accessed October 15, 2018.

12 Ibid.

to growth in the area. The Facilities Master Plan suggests the renovation and expansion of Highland Elementary, University Heights Middle, and John W. North High School.[13]

4.8.2.4 Libraries

The University Library primarily serves UC Riverside students, faculty, and staff; however, its collections are also made available to community members and California public schools teachers. The University Library is composed of two main facilities: Tomas Rivera Library and the Orbach Science Library. The Tomas Rivera Library is a four-story facility that houses the Arts, Humanities, and Social Science collections. The, Special Collections and University Archives are also located within the building, while the Music Library is located in the ARTS Building. The Orbach Science Library is three stories tall and houses the life and physical sciences collections, as well as a ground floor Map Collection.

The City of Riverside operates its own public library system, Riverside Public Library. A new Main Library is currently under construction and set to begin operation in 2020. There are also seven branch libraries within the City. The closest branch to the project site is the SPC. Jesus S. Duran Eastside Library, located at 4033-C Chicago Avenue, approximately 1.15 miles southwest.

4.8.3 REGULATORY CONSIDERATIONS

4.8.3.1 Federal Laws and Regulations

There are no federal laws that control or regulate public services.

4.8.3.2 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.

4.8.3.3 Local Plans and Policies

None of the City and County plans and policies related to public services are applicable to campus projects.

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13 Riverside Unified School District. 2016. *Long Range Facilities Master Plan.*

4.8.4 IMPACTS AND MITIGATION MEASURES

4.8.4.1 Significance Criteria

The impacts on public services and recreation from the implementation of the proposed project would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines*:

- Result in substantial adverse physical impacts associated with the provision of 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 fire protection, police protection, schools, or other facilities.

4.8.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

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

The analysis in Section 5.14 of the IS/MND found that the development of the proposed NDD Plan would not generate new students in the area. The proposed Plan would not provide housing for families with school-age children and would therefore have no impact with regards to this criterion.

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

The analysis in Section 5.14 of the IS/MND found that, while the proposed Plan would increase the number of students on campus, they would all be served by campus libraries. As such, an expansion of libraries would not be needed and there would be no impact.

4.8.4.3 Methodology

Public service providers serving the campus were contacted to determine existing operational service levels. Then details of the proposed project were provided to the service providers, and the service providers determined whether there would be a need to construct new or physically altered public facilities in order to maintain acceptable service ratios and serve the proposed project.

4.8.4.4 Project Impacts and Mitigation Measures

Impact 4.8-1: Implementation of the proposed NDD Plan would not result in significant environmental impacts associated with the provision of new or altered fire protection facilities to maintain applicable service levels. (*Less than Significant*)

Fire services at the project site would be provided primarily by the RFD. The proposed NDD Plan would increase demand for fire services in the project area, as it would transition from vacant buildings up to approximately 5,200 beds at full buildout. Development of the NDD Plan would result in apartment buildings and residence halls approximately 5 to 6 stories tall, mixed-use buildings 1 to 2 stories tall, a 2-story dining facility and 7-level parking structures. The structures would all be designed in accordance to applicable fire safety codes and regulations. PDC Fire Life Safety programs such as design consultation services and inspections would further ensure fire safety.

Assuming that the City of Riverside maintains and staffs the existing fire stations near the campus, future on-campus development would continue to be served within the current response times and no increase in service response time is anticipated. Additionally, the County Fire Department would continue to assist the City in mutual aid situation. Although the number of calls could increase due the increase in campus population, no expansion of fire services would be needed to maintain acceptable response times.

To meet the fire service needs of the project population at full buildout, the following 2005 LRDP Programs and Practices (PP) would ensure adequate fire protection as the Campus expands and population increases:

PP 4.12-1 (a) *As development occurs, the following measures will be incorporated:*

(i) New structures would be designed with adequate fire protection features in compliance with State law and the requirements of the State Fire Marshal. Building designs would be reviewed by appropriate campus staff and government agencies.

(ii) Prior to implementation of individual projects, the adequacy of water supply and water pressure will be determined in order to ensure sufficient fire protection services.

(iii) Adequate access will be provided to within 50 feet of the main entrance of occupied buildings to accommodate emergency ambulance service.

(iv) Adequate access for fire apparatus will be provided within 50 feet of stand pipes and sprinkler outlets.

(v) Service roads, plazas, and pedestrian walks that may be used for fire or emergency vehicles will be constructed to withstand loads of up to 45,000 pounds.

(vi) As implementation of the LRDP occurs, campus fire prevention staffing needs would be assessed, increases in staffing would be determined through such needs assessments.

PP 4.12-1(b) *(i) Accident prevention features shall be reviewed and incorporated into new structures to minimize the need for emergency response from the City of Riverside.*

(ii) Increased staffing levels for local fire agencies shall be encouraged to meet needs generated by LRDP project related on-campus population increases.

In order to maintain or improve existing service levels as the community grows, the RFD is already planning to expand their facilities.[14] The environmental consequences of developing these new facilities would be evaluated in a separate CEQA analysis, conducted by the City of Riverside acting as the Lead Agency. As determined under *City of Hayward v. Trustees of the California State University* (2015) 242 Cal.App.4th at 833, it is not UCR's responsibility to build a new fire station, just to mitigate physical impacts of construction of such facilities if they are determined to be required by UCR actions. Therefore, if and when the City decides to construct a new facility, UCR will negotiate its proportional share of funding for the mitigation of environmental impacts from the construction of the facility. As the RFD would expand to meet the needs of the growing community and campus population, with or without the proposed NDD Plan, the impact generated by the implementation of the proposed NDD Plan related to fire protection services would be less than significant.

Impact 4.8-2: Implementation of the proposed NDD Plan would not result in significant environmental impacts associated with the provision of new or altered police protection facilities to maintain applicable service levels. (*Less than Significant*)

Police services at the project site would be provided primarily by the UCR Police Department. Buildout of the proposed NDD Plan would increase demand for police services in the project area, as it would transition from being largely vacant to housing up to 5,200 students at full buildout.

In order to maintain or improve existing service levels as the campus grows, the 2005 LRDP includes the projected expansion of police facilities, within the next five years. Development of such facilities would adhere to the following LRDP Programs and Practices:

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14 City of Riverside Fire Department Strategic Plan 2017-2022, website: https://www.riversideca.gov/fire/pdf/forms/administrative/Strategic-Plan-2017-2022.pdf , accessed November 9, 2018.

PP 4.12-2(a) *As development under the LRDP occurs, the Campus will hire additional police officers and support staff as necessary to maintain an adequate level of service, staff, and equipment, and will expand the existing police facility when additional space is required.*

PP 4.12-2(b) *The Campus will continue to participate in the "UNET" program (for coordinated police response and staffing of a community service center), which provides law enforcement services in the vicinity of the campus, with equal participation of UCR and City police staffs.*

Further, it is standard procedure for campus architectural design development to incorporate *Crime Prevention Through Environmental Design* (CPTED) concepts in the design of buildings, lighting, and landscaping. The UCR Police Department is represented on campus project design teams. Per PP 4.12.2(b) campus also remains committed to participation in ongoing coordination with the City through the University Neighborhood Enhancement Team (UNET) and the joint City/University Coordinating Committee, providing opportunities for City and RPD input regarding relevant design features.

The Campus currently has adequate land for the expansion of the Campus police facilities as needed. As the Campus Police Department would expand to meet the needs of the growing campus population, with or without the proposed NDD Plan, the impact generated by the implementation of the proposed NDD Plan related to police services would be less than significant.

4.8.6 CUMULATIVE IMPACTS AND MITIGATION MEASURES

Impact 4.8-3: Implementation of the proposed project would not result in a significant cumulative public service impacts. (*Less than Significant*)

The cumulative impact of campus development under the NDD Plan along with other development in the region, including in the City of Riverside, with respect to the provision of fire services is analyzed in the 2005 LRDP EIR. The analysis in the 2005 LRDP EIR found that cumulative growth in the study area, including 2005 LRDP-related off-campus population, would result in demand for new or expanded fire service facilities. However, the construction of these facilities would not result in significant adverse environmental impacts.[15] As discussed above, the proposed NDD Plan would not increase enrollment at UC Riverside or the regional population levels. For these reasons, the proposed project would not alter the previously evaluated cumulative impact. The project's cumulative impact related to fire services would be less than significant.

15 UC Riverside. 2005. *2005 Long Range Development Plan Environmental Impact Report*. November.

For the same reasons presented above, the proposed NDD Plan would not change the conclusions of other cumulative impacts on other public services including police, schools, and libraries analyzed in the 2005 LRDP EIR. The project's cumulative impacts would be less than significant.

4.9 RECREATION

4.9.1 INTRODUCTION

This section describes the recreational facilities currently available at the UCR campus and in the surrounding community, as well as the potential impacts on recreational resources that would result from implementation of the North District Development Plan (NDD Plan).

4.9.2 ENVIRONMENTAL SETTING

UC Riverside maintains a variety of indoor and outdoor recreational facilities on the primary campus and off campus. The Campus maintains approximately 46.1 acres of active recreational space and about 157,290 gsf of developed recreational facilities.[1] The facilities include various athletic fields and stadiums, courts, and swimming pools, as well as weight rooms, climbing walls, and an outdoor excursion shop. There are recreational facilities on the existing project site, and in the vicinity of the project site. **Table 4.9-1, Recreational Facilities in the Vicinity of the Project Site**, provides a summary of existing recreational facilities on the project site and in the surrounding vicinity.

Table 4.9-1
Recreational Facilities in the Vicinity of the Project Site

Site	Description	Distance from Project Site
Student Recreation Center and Sports Complex	A 155,000 square-foot facility with racquetball/volleyball courts, squash courts, a 21,000 square-foot weight training facility, an area dedicated to cardio-fitness machines. The complex includes a 237,000 gallon pool, basketball and badminton courts, full locker rooms, multipurpose rooms, a gymnasium, and indoor climbing wall. Outdoors, there are tennis courts, a multi-use field, sand volleyball courts, basketball courts, a full size roller hockey rink, and a jogging trail. The facility is located immediately to the south of the project site across W Linden Street.	Less than 50 feet from project site
UC Riverside Sports Complex	The complex includes a 2,500-seat baseball stadium, two recreational softball fields, surface parking, and storage and restroom facilities. The facility is jointly owned and maintained by UC Riverside and the City of Riverside.[a] The complex is located immediately to the west of the project site across Canyon Crest Drive.	Less than 50 feet from project site
UC Riverside Track	The UC Riverside track and field complex supports track and field events. The complex consists of a full size running track, additional track and field event facilities (shotput, long jump, discus, etc.), track and field equipment storage, and surface parking. The complex is located immediately to the south of the project site across W Linden Street.	Less than 50 feet from project site
Soccer Stadium and Amy S. Harrison Athletic Field	The UC Riverside Soccer Stadium and Amy S. Harrison Athletic Field are a soccer field, a baseball field, and a general grass recreational area located approximately 750 feet to the south of the project site, adjacent to the UC Riverside Track.	750 feet from project site

1 University of California Riverside. Student Recreation Center Expansion Initial Study, May 2012.

Site	Description	Distance from Project Site
Glen Mor Recreation Fields	UC Riverside has three intramural/recreational fields adjacent to the Glen Mor community area. The fields are located on the south side of Watkins Drive, approximately 750 feet to the southwest of the project site.	750 feet from project site
Highland Park	Highland Park is a public park owned and managed by the City of Riverside. The park consists of a grassy field, play structure, and surface parking. It is located to the north of the project site across Watkins Drive and the Union Pacific Riverside Line ROW on Glenhill Drive.	1,000 feet from project site

Source: UC Riverside. 2018.
University of California Riverside. Glen Mor 2 Student Apartments Project Environmental Impact Report. 2011. Page 3.12-2.

As noted in **Table 4.9-1**, there are a variety of recreational facilities around the project site. These facilities are managed by UC Riverside, and are generally available for UC Riverside students, faculty, and administrative staff. In addition to formal recreational facilities, there are various passive open spaces throughout the UC Riverside campus. These spaces include areas like pocket lawns within the various housing areas, the wide landscaped median along Aberdeen Drive, the open lawns surrounding the Bell Tower at the center of campus, and the walking paths through the wooded area between the Veitch Student Center (Health Services) and the Aberdeen-Inverness Residence Hall.

The Campus maintains approximately 275 acres of general open space for passive recreational use and 46 acres for active recreational facilities. In total, the Campus encompasses a total of 320 acres of land for recreational uses. The 2005 LRDP established an overall campus parkland goal of 3 acres per 1,000 persons. As of 2017, the campus population, made up of students, academic personnel, staff, and other individuals, was approximately 34,150 persons. The resulting ratio of parkland per 1,000 persons is approximately 9.4 acres, well over the campus goal.

In addition to parks and recreation areas managed by the university, UC Riverside students, faculty, and administrative staff have access to parks and recreation areas managed by the City of Riverside. The city-managed Highland Park is located approximately 1,000 feet north of the project site, and contains open fields, a play area, facilities, and picnic areas open to the public.

4.9.3 REGULATORY FRAMEWORK

There are no federal, state, or local regulations that are applicable to the provision of recreational opportunities at the UC Riverside campus.

4.9.4 IMPACT ANALYSIS

4.9.4.1 Methodology

Analysis of the NDD Plan's recreational impacts considers the project-level impacts associated with new demands on existing recreational facilities in the direct vicinity of the project site. The analysis compares the inventory of the existing recreational facilities in the vicinity of the project site with the planned recreational facilities as part of the NDD Plan. In addition, the analysis compares the existing housing capacity in the Canyon Crest Family Student Housing area with the planned housing capacity under the NDD Plan to understand the potential impact from a change in local demand for parks and recreation space.

The NDD Plan would not increase enrollment at UC Riverside, only provide additional on-campus housing. This analysis assumes that the NDD Plan would not have an effect on the overall regional demand for recreational facilities, only shift the demand for recreational facilities from the broader region to the immediate vicinity of the NDD Plan project site. It is reasonable to assume that, should the NDD Plan not proceed, the same number of students would be attending UC Riverside and the same demand for recreational facilities would exist; however, the demand for recreational facilities would be spread among regional recreational facilities from students living off-campus rather than focused around the NDD Plan project site on-campus.

The existing Canyon Crest Family Student Housing area was occupied by student families until summer 2017, and is currently vacant. The Canyon Crest Family Student Housing area provided two- and three-bedroom duplex homes that supported a total of 266 families.[2] According to UC Riverside's Family Housing Eligibility and Assignment Policy, Family Housing is reserved for couples, parents with children, or post-doctoral scholars in certain circumstances. Based on this policy, the analysis in this Draft EIR conservatively estimates that each housing unit in the Canyon Crest Family Student Housing area contained two adults for a total of 532 individuals.[3] Because the analysis compares the former localized housing capacity to the planned localized housing capacity, a lower estimation of the former housing capacity represents a more conservative estimate of potential impacts of the NDD Plan.

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2 University of California Riverside. *Canyon Crest Family Housing Handbook*. 2018. Available online at: http://housing.ucr.edu/assets/docs/pdf/familyhousinghandbook.pdf, accessed September 2018.

3 A limited number of young children would also have been housed at the complex, but for the purpose of this analysis it is assumed that the primary users of campus recreational facilities would be students (i.e. adults) living in the new NDD Plan buildings. In addition, as discussed above a lower population estimate represents a more conservative analysis of potential impacts.

The NDD Plan is anticipated to provide capacity for up to 5,200 new beds on the project site. The NDD Plan would provide a capacity of approximately 1,500 beds in apartments in the first phase of the NDD Plan (2021), and up to approximately 3,700 beds in subsequent phases.[4] Although the university may elect to provide fewer beds than the anticipated 5,200 bed capacity, the analysis in this Draft EIR assumes that the full capacity of beds would be provided in the NDD Plan to conservatively estimate the potential impact from increased local demand on recreational facilities. The potential increased local demand for recreational facilities on the UC Riverside campus is based on an assumption that the NDD Plan would result in approximately 4,668 more adult individuals living at the project site than the number of adult individuals that were previously supported by the currently vacant Canyon Crest Family Student Housing.

4.9.4.2 Significance Criteria

The criteria for analyzing the NDD Plan's impact on recreational facilities are based on Appendix G of the *State CEQA Guidelines*. The NDD Plan would result in a significant impact if it would:

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

2. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

4.9.4.3 Project Impacts and Mitigation Measures

Impact 4.9-1 The project-related increase in on-campus population would not increase the use of existing recreational facilities on campus such that substantial physical deterioration of the facilities would occur or be accelerated. (*Less than significant impact*)

As discussed in **Section 3.0, Project Description**, the NDD Plan advances UC Riverside's overall objectives to house up to 50 percent of enrolled students on-campus and to guarantee on-campus housing to all freshman and transfer students. The 2005 LRDP notes that significant additional field and facility space would be needed to serve the growing student population. The NDD Plan contributes to meeting the campus' need for additional recreational facilities by including a new athletic facility.

Under a future phase, the NDD Plan provides for the construction of an athletic facility, dedicating 5.7 acres for the construction and operation of an Athletics Event Center with a capacity of approximately 5,000 seats. The Athletics Event Center is anticipated to include a competition field, and an approximately 22,000 square foot Field House in addition to the stadium seating. While the NDD Plan would result in

[4] Approximately 1,200 of these beds in future phases would be provided within Residence Halls

up to 4,668 additional adult individuals living on campus compared to the number of adult individuals that were present when the Canyon Crest Family Student Housing area was operating, the construction and operation of a new athletics facility would contribute to meeting the increased demand for these types of facilities.

In addition, the new individuals living on campus under the NDD Plan do not represent an increase in enrollment, only a change in living location. Therefore, it is likely that a significant portion of the new individuals living on campus under the NDD Plan would have used the UC Riverside recreational facilities regardless of whether they lived on campus or off campus. This further reduces the NDD Plan's anticipated impact on existing recreational facilities. The potential impact of the NDD Plan would be less than significant and no project-level mitigation is required.

Impact 4.9-2 The project-related increase in on-campus population would not increase the use of existing off-campus neighborhood and regional parks or other recreational facilities such that substantial deterioration of the facilities would occur or be accelerated. (*Less than significant impact*)

UC Riverside maintains a variety of indoor and outdoor recreational facilities. The NDD Plan would increase the on-campus population, and according to the 2005 LRDP the existing on campus recreational facilities do not sufficiently meet the existing demand for recreational facilities. While UC Riverside manages existing facilities to optimize availability and meet recreational needs on campus, it is reasonable to assume that unmet campus demand for recreational facilities would lead to use of off-campus recreational facilities.

There are 14 parks within three miles of the UC Riverside campus that are owned or managed by the City of Riverside. These parks provide an array of active and passive recreational opportunities. These parks would absorb the incremental share of on-campus demand for recreational facilities that is not met by on-campus facilities. In addition, one of the primary objectives of providing on-campus housing for students is to decrease the volume of commuter activity and accompanying vehicle miles; it is anticipated that new residents in the NDD Plan area will use vehicles or cars at a lower frequency than the general public, and would be less likely to travel off campus to neighborhood or regional parks or recreation facilities.

The NDD Plan would not increase enrollment, and therefore would not have an effect on the demand for regional parks or recreational facilities. The NDD Plan would concentrate the demand for recreational facilities on the UC Riverside campus. However, unmet demand for recreational facilities could lead to use of off-campus facilities. As determined under *City of Hayward v. Trustees of the California State*

University (2015) 242 Cal.App.4th at 833 (*City of Hayward v. CSU*), is not UCR's responsibility to build new City recreational facilities, just to mitigate physical impacts of construction of such facilities if they are determined to be required by UCR actions. Therefore, if and when the City decides to construct any additional recreational facilities, UCR will negotiate its proportional share of funding for the mitigation of environmental impacts from the construction of the facilities. Therefore, the potential impact of additional users in the immediate vicinity of the project site would be less than significant and no project-level mitigation would be required.

Impact 4.9-3 Implementation of the NDD Plan includes recreational facilities that would not have adverse physical effects on the environment. (*Less than significant impact*)

The NDD Plan includes an Athletics Event Center for student use. Because the proposed athletic facility is a component of the overall NDD Plan, the potential impacts related to construction and operation of the Athletic Event Center are addressed under the individual sections of this Draft EIR related to Air Quality (**Section 4.2**), Greenhouse Gas Emissions (**Section 4.3**), Hazards and Hazardous Materials (**Section 4.4**), Land Use and Planning (**Section 4.5**), Noise (**Section 4.6**), and Transportation and Traffic (**Section 4.10**). These related impact analyses do not identify any potential for adverse physical effects on the environment resulting specifically from the proposed Athletic Event Center. This impact would be less than significant and no project-level mitigation would be required.

The discussion of Impact 4.9-1 and Impact 4.9-2 addresses the deficit in recreational facilities on the campus as well as the shifting of demand for recreational facilities from the region to the campus by providing more on-campus housing. Implementation of the NDD Plan would not increase the total demand for recreational facilities. A portion of the NDD Plan is designated for recreation, and this portion is anticipated to reduce the higher localized demand for recreational facilities in the immediate vicinity of the project site. Additional unmet demand is anticipated to be met by neighborhood and regional parks and recreational areas; however, expansion or construction of additional facilities is not within the control of UCR. As previously discussed, under *City of Hayward v. CSU*, is not UCR's responsibility to build new City recreational facilities, just to mitigate physical impacts of construction of such facilities if they are determined to be required by UCR actions. Therefore, if and when the City decides to construct any additional recreational facilities, UCR will negotiate its proportional share of funding for the mitigation of environmental impacts from the construction of the facilities. Therefore, the potential impact would be less than significant and no project-level mitigation would be required.

4.9.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative recreational impacts is the City and County of Riverside, including all cumulative growth therein, as represented by the County of Riverside General Plan, the City of Riverside General Plan, and development of the off-campus related projects, as discussed in **Section 4.0 (Introduction to Environmental Analysis)**.

The rationale for including the entire County is that a portion of the students, faculty, and staff who commute to UCR live off campus. Therefore, they may utilize a variety of recreational facilities and programs offered by the campus and/or the City or County of Riverside or other jurisdiction where they live if other than the City of Riverside. The increase in off-campus population would be limited to the approximately 70 new staff members and their families at buildout, rather than students, as no increase in the student population in the City is expected. As cumulative residential development in the City and/or County is approved in-lieu fees for parks or donation of parkland (pursuant to the Quimby Act) would be required as part of the individual projects. In addition, grants from State and county bond sources (e.g., Proposition 12) are available to fund additional park and recreational facilities in urban areas. These funding sources would provide additional sources of funding for parkland and recreational facilities in the City or County to satisfy demand from future population growth. Therefore, impacts on park and recreation facilities are not anticipated to be cumulatively considerable as a result. As described in Impact 4.9-2, a significant increase in the demand for off-campus recreational facilities is not anticipated as a result of implementation of the NDD Plan, and on-campus recreational facilities will continue to be provided for students, faculty, and staff. Since adequate facilities would be provided on campus, implementation of the NDD Plan would not increase demand for parkland and recreational facilities in the City or County of Riverside, and thus the contribution of the NDD Plan to cumulative impacts would not be cumulatively considerable.

It is further anticipated that in order to accommodate future cumulative demand for park and recreation facilities, additional facilities will be developed and constructed throughout the City of Riverside. Because the size, location, and type of these future facilities is not known at this time, it is impossible to assess the magnitude of cumulative impacts associated with the construction of these facilities. However, it is reasonable to expect that all of these facilities will undergo CEQA review and that project-specific impacts associated with development of each of' these facilities will be mitigated to the extent feasible and would not result in impacts beyond those identified in a project-specific CEQA review. Further, as previously discussed, UCR will negotiate its proportional share of funding for the mitigation of environmental impacts from the construction of the facilities. As a result, impacts associated with construction of future park and recreation facilities are not expected to be cumulatively considerable. The NDD Plan includes an athletic facility and impacts of the athletic facility construction are assessed as part

of overall project impacts. While construction of the proposed project as a whole is expected to have a number of impacts, a portion of which may be attributable to construction of the athletic facility, this construction activity is not anticipated to result in a cumulatively considerable impact when considered in conjunction with the construction of future park and recreation facilities elsewhere in the City of Riverside. As a result, the cumulative impacts from construction of park and recreational facilities countywide would not be significant.

4.10 TRANSPORTATION AND TRAFFIC

4.10.1 INTRODUCTION

This section describes the existing transportation and traffic conditions at the UCR campus and analyzes the potential for implementation of the proposed North District Development Plan (NDD Plan) to result in traffic and transportation impacts.

The information in this section is based on information in 2005 LRDP EIR, as amended, and the Transportation Impact Analysis (TIA) prepared for the North District Development Plan by Fehr & Peers, incorporated herein by reference and included as **Appendix 4.10** to this Draft EIR.

4.10.2 EXISTING CONDITIONS

4.10.2.1 Project Study Area

For the purposes of this analysis, the study area for the projects is considered to be the East Campus, which is roughly bounded by Blaine Street to the north, Watkins Drive to the northeast, Valencia Hill Drive to the east, and I-215/SR-60 to the south and west, as well as adjacent off-campus areas (see **Figure 4.10-1, Project Site and Study Intersections**). The proposed NDD Plan project site is located on the north side of Linden Street, south of Blaine Street, and is bounded by Canyon Crest Drive and Watkins Drive to the west and east, respectively. Driveways from Linden Street, Blaine Street and Watkins Drive will provide limited vehicle access to the parking areas on the site. At full buildout, pedestrian access points to the NDD Plan site from Linden Street, Canyon Crest Drive, Watkins Drive, and Blaine Street will also be designated as Class III bicycle facilities for shared use with bicyclists.

4.10.2.2 Project Study Intersections

Within the study area, the following intersections were selected as study intersections based on the likely approach and departure routes for the project traffic and their proximity to the proposed NDD Plan project site:

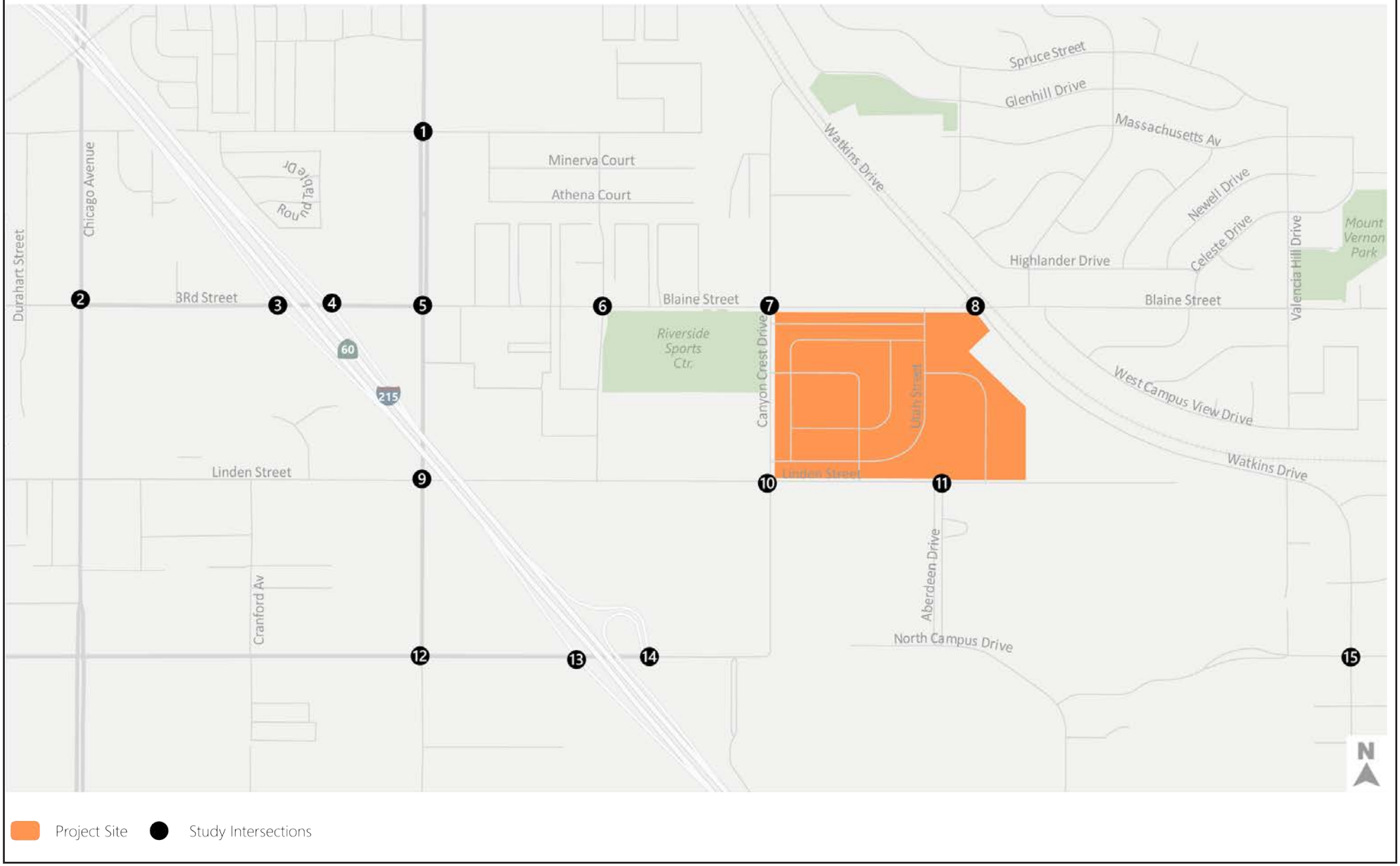
1. Iowa Avenue/ Massachusetts Avenue
2. Chicago Avenue & 3rd Street
3. I-215 SB & 3rd Street
4. I-215 NB & 3rd Street
5. Iowa Avenue & Blaine Street

6. Rustin Avenue & Blaine Street
7. Canyon Crest Drive & Blaine Street
8. Watkins Drive & Blaine Street
9. Iowa Avenue & Linden Street
10. Canyon Crest Drive & Linden Street
11. Aberdeen Drive & Linden Street
12. Iowa Avenue & University Avenue
13. I-215 SB & University Avenue
14. I-215 NB & University Avenue
15. Watkins Drive & Big Springs Road

The location of each study intersection is shown on **Figure 4.10-1, Project Site and Study Intersections**. With the exception of Aberdeen Drive/Linden Street, which is controlled by UC Riverside, all of the intersections are within the jurisdiction of the City of Riverside or the California Department of Transportation (Caltrans).

4.10.2.3 Analysis Methodologies

The evaluation presented below is based primarily on the TIA completed by Fehr and Peers in October 2018. The study used a methodology documented in the *City of Riverside Traffic Impact Analysis Preparation Guidelines* (2017). Information from the 2005 LRDP EIR was also used for comparison with current conditions as documented in the more recent traffic study.



SOURCE: Fehr & Peers, 2018

FIGURE **4.10-1**

IMPACT SCIENCES

Project Site & Study Intersections

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Signalized intersection operations were evaluated using the Trafficware Synchro 10 software package. Synchro calculates vehicle delay and level of service (LOS) based on procedures identified in Chapter 19 Section 3 Approach A of the Highway Capacity Manual, 6th Edition (HCM) (Transportation Research Board, 2016), which is considered the state-of-the-practice methodology for evaluating intersection operations and is consistent with the City of Riverside guidelines. These methodologies assess average control delays and then assign a corresponding letter grade that represents the overall condition of the intersection. These grades range from LOS A (minimal delay) to LOS F (excessive congestion). LOS E represents at-capacity operations.

Descriptions of the LOS letter grades for signalized intersections are provided in **Table 4.10-1, Signalized Intersection LOS Criteria**. Descriptions of the LOS letter grades for unsignalized intersections are provided in **Table 4.10-2, Unsignalized Intersection LOS Criteria**. The City of Riverside has adopted LOS "D" as the minimum acceptable standard for roadways classified as Collector and higher. Caltrans identifies a project as causing a significant impact when there is degradation in LOS "D" or better, or an increase in delay at an intersection operating at an unacceptable level.

Table 4.10-1
Signalized Intersection LOS Criteria

LOS	Description	Delay (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	< 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80.0

Source: Highway Capacity Manual (Transportation Research Board, 2016)

Table 4.10-2
Unsignalized Intersection LOS Criteria

LOS	Description	Delay (Seconds)
A	Little or no delays	< 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source:
Highway Capacity Manual (Transportation Research Board, 2016)

4.10.2.4 Existing Roadway Facilities

On-Campus Roadways

Linden Street

On the UCR campus, Linden Street is a two-lane undivided east-west roadway with bike lanes between Canyon Crest Drive and Pentland Way and a 25-miles-per-hour (mph) speed limit. No parking is allowed on this road.

Aberdeen Drive

Aberdeen Drive is a two-lane divided north-south campus roadway with bike lanes. No parking is allowed on this road, which is located on the north side of campus. It has a 25 mph speed limit.

Canyon Crest Drive

Canyon Crest Drive is a four-lane partially divided north-south roadway with a 25 mph speed limit. The portion of Canyon Crest Drive, located between Martin Luther King, Jr. Boulevard and West Campus Drive, is owned and maintained by the University.

Off-Campus Roadways

Blaine Street

Blaine Street is an east-west roadway extending from Downtown Riverside (as Third Street) to the UCR campus, forming a northern edge of the campus, ending at Watkins Drive. Blaine Street is constructed to

its General Plan cross-section as a Major Arterial, with four vehicle lanes, bike lanes, and no curbside parking within its 88-foot curb-to-curb width. The speed limit on Blaine Street is 40 mph. Blaine Street has a full diamond interchange with the I-215/SR-60 freeway.

University Avenue

University Avenue is a divided east-west roadway extending from Downtown Riverside to the UCR campus. University Avenue is constructed to its General Plan cross-section as a Major Arterial, with four vehicle lanes within its 88-foot curb-to-curb width. University Avenue has bike lanes along portions of its length. The speed limit on University Avenue is 35 to 40 mph. University Avenue has a modified diamond interchange with the I-215/SR-60 freeway. It has no curbside parking between Canyon Crest Drive and Downtown Riverside.

Iowa Avenue

Iowa Avenue is a north-south roadway extending from Martin Luther King, Jr. Boulevard (MLK) on the UCR West Campus to beyond Blaine Street. Through the UCR campus, between MLK and Everton Place, Iowa Avenue is a two-lane secondary street with a 45 mph speed limit and no bicycle lanes. North of Everton Place, Iowa Avenue is a Major Arterial with four vehicle lanes, bike lanes on some segments, and a median just north of University Avenue. Iowa Avenue has no freeway interchange in the vicinity of campus and no curbside parking in the vicinity of the campus.

Canyon Crest Drive

Canyon Crest Drive is one of the primary north-south access roadways in the City with a portion, not under the City's jurisdiction, going through the UCR campus, with West Campus Drive forming a link between the discontinuous north and south segments of the roadway. North of University Avenue, Canyon Crest Drive is a Major Arterial, with four undivided vehicle lanes, bike lanes, and curbside parking limited to north of Linden Street.

Watkins Drive

Watkins Drive is a northwest-southeast roadway forming the northeastern boundary of the UCR campus. Watkins Drive is constructed as an Arterial, with two divided vehicle lanes, bike lanes, and a 45 mph speed limit from north of Blaine Street to Valencia Hill Drive with curbside parking on the south side between Blaine Street and Valencia Hill Drive. Watkins Drive is a two-lane divided roadway south of Valencia Hill Drive, with bicycle lanes and a 35 mph speed limit. Parallel parking is allowed on both sides of the street east of Valencia Hill Drive. Watkins Drive is reduced to a two-lane undivided roadway in the

Box Springs area with bike lanes and no parking. Watkins has a full diamond interchange with the I-215/SR-60 freeway at Central Avenue, south of the UCR campus.

I-215/SR-60

Interstate 215/State Route 60 are two north-south freeways, which merge between their junction with SR-91 to the north and Box Springs Road to the south. I-215, which provides service to San Bernardino and San Diego counties, varies between a four- and eight-lane roadway, and terminates at I-15 to both the north in Devore and the south in Murrieta. SR-60 provides service to San Bernardino and Los Angeles counties, and terminates at I-10 in both Los Angeles to the west and Beaumont to the east. The roadway varies between four and eight lanes in width. Proximate to the campus, I-215 and SR-60 function as one freeway, with three travel lanes in each direction.

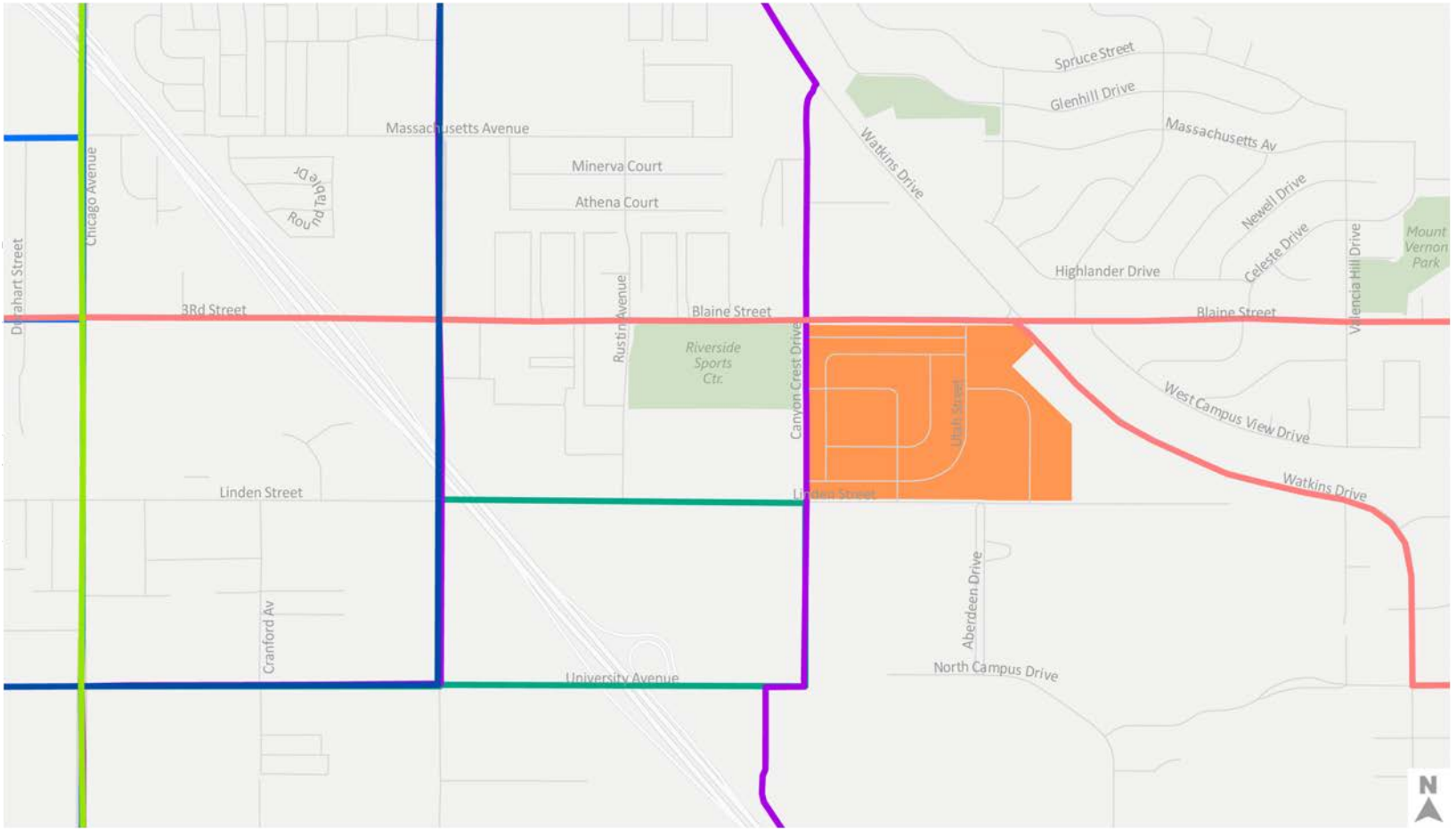
4.10.2.5 Existing Transit Facilities

Transit services are provided in the City of Riverside by Metrolink and Riverside Transit Agency (RTA). Metrolink operates seven commuter rail lines across Southern California and the UC Riverside/ Riverside Hunter Park Station is located approximately 1.6 miles north of the Campus. UC Riverside/ Riverside Hunter Park Station is served by the 91/Perris Valley Line, which links Perris-South to LA Union Station on weekdays, and on weekends from downtown Riverside to LA Union Station. RTA provides fixed route, commuter, and dial-a-ride bus service within western Riverside County. RTA routes that serve areas closest to the UC Riverside campus include the following: Route 10, 13, 14, 51, and 204. Refer to **Figure 4.10-2, RTA Transit Routes** for routing information.

4.10.2.6 Existing Bikeways

There are four main classifications of bikeways. Class I and II are bike paths, which are off-street and separated from vehicles and striped lanes next to a curb or parking lane, respectively. Class III bikeways are considered bike routes, where vehicles and bicyclists share the road and signage alerts motorists to share the roadway space. Class IV bikeways are cycle tracks, providing right-of-way designated exclusively for bicycle travel adjacent to a roadway and are protected from vehicles via separations such as a physical barrier or on-street parking. In the City of Riverside, most bikeways are Class II, placed along many major streets. As noted in the Riverside Bicycle Master Plan, there are 56.4 miles of existing bike lanes[1].

1 City of Riverside. 2007. *Riverside Bicycle Master Plan*. May.



SOURCE: Fehr & Peers, 2018

FIGURE **4.10-2**

RTA Transit Routes

IMPACT SCIENCES

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The University is currently preparing Bicycle Master Plan Study. The envisioned bicycle network will be composed of all four types of bikeways and increase accessibility across campus. Presently, Class II bikeways are located within the study area on both sides of the road on Blaine Street/3rd Street, Linden Street, University Avenue, Watkins Drive, Big Springs Road, Iowa Avenue, and Canyon Crest Road between Blaine Street and University Drive.

4.10.2.7 Existing Intersection Conditions

In November 2017, Fehr & Peers performed traffic counts during the AM (7:00-9:00) and PM (4:00-6:00) peak hours at the 15 study intersections to document Existing (2017) conditions. As shown in **Table 4.10-3, Intersection Levels of Service – Existing (2017) AM and PM Peak Hour**, most of the study intersections currently operate at LOS D or better during the AM and PM peak periods. The only intersection currently operating at a deficient LOS during one or more peak period is Watkins Drive/Big Springs Road (AM and PM peak hour).

Table 4.10-3
Intersection Levels of Service – Existing (2017) AM and PM Peak Hour

				AM Peak Hour		PM Peak Hour	
No.	**Intersection**	**Jurisdiction**	**Control**	**Delay**	**LOS**	**Delay**	**LOS**
1.	Iowa Avenue/Massachusetts Avenue	City of Riverside	Signalized	27.6	C	18.7	B
2.	Chicago Avenue/3rd Street	City of Riverside	Signalized	41.0	D	36.9	D
3.	I-215 SB/3rd Street	Caltrans	Signalized	28.7	C	11.8	B
4.	I-215 NB/3rd Street	Caltrans	Signalized	14.8	B	10.5	B
5.	Iowa Avenue/Blaine Street	City of Riverside	Signalized	33.9	C	26.8	C
6.	Rustin Avenue/Blaine Street	City of Riverside	Signalized	13.0	B	9.0	A
7.	Canyon Crest Drive/Blaine Street	City of Riverside	Signalized	10.8	B	13.7	B
8.	Watkins Drive/Blaine Street	City of Riverside	Signalized	25.9	C	36.2	D
9.	Iowa Avenue/Linden Street	City of Riverside	Signalized	21.3	C	17.7	B
10.	Canyon Crest Drive/Linden Street	City of Riverside	Signalized	19.3	B	21.4	C
11.	Aberdeen Drive/Linden Street	UC Riverside	AWSC	8.9	A	13.9	B
12.	Iowa Avenue/University Avenue	City of Riverside	Signalized	16.4	B	27.4	C
13.	I-215 SB/University Avenue	Caltrans	Signalized	20.4	C	12.2	B
14.	I-215 NB/University Avenue	Caltrans	Signalized	15.7	B	11.3	B
15.	Watkins Drive/Big Springs Road	City of Riverside	AWSC	**57.2**	**F**	**52.2**	**F**

Source: Fehr & Peers, 2018

1. ***Bold** indicates an unacceptable LOS based on the City's significance criteria.*
2. *Delay is calculated using Synchro HCM 6th Edition Methodology, except for Intersection 10 where HCM 2000 is used due to the presence of a pedestrian scramble phase.*
3. *AWSC indicates that this is an all-way stop control where all approaches have stop signs.*

4.10.2.8 Freeway Analysis

The operations analysis for the freeway facilities in the study area is summarized in **Table 4.10-4, Existing (2017) Freeway Operations**. Under Existing (2017) conditions, the following locations were found to operate at LOS E or LOS F:

- Northbound Diverge at University Avenue (AM peak hour)
- Northbound Merge at Blaine Street (AM peak hour)

Table 4.10-4
Existing (2017) Freeway Operations

Location	Segment Type	AM Peak Hour		PM Peak Hour	
		Density[1]	LOS	Density[1]	LOS
Northbound I-215					
Diverge at University Avenue	Weave	**37**	**E**	28	C
Merge at University Avenue	Weave	35	C	20	B
Diverge at Blaine Street	Weave	35	C	20	B
Merge at Blaine Street	Weave	--	**F**	25	C
Southbound I-215					
Diverge at Blaine Street	Weave	16	B	22	C
Merge at Blaine Street	Weave	11	B	24	C
Diverge at University Avenue	Weave	11	B	24	C
Merge at University Avenue	Weave	10	B	30	D

Source: Fehr & Peers, 2018

1. *Density is reported in vehicles per lane per mile.*
2. *The maximum density for ramp junctions and weaving sections under LOS E is not defined in the HCM.*
3. *The maximum density for basic segments of 45 vehicles per lane per mile (vplpm) was assumed to apply to ramp junctions and weaving sections.*

4.10.2.9 Site Plan Overview

This section provides an overview of the NDD Plan site plan, related to internal and external circulation for the NDD Plan. Considerations include site access, parking, and on-site circulation.

On-Site Circulation

On-site circulation will be provided by a series of multi-modal paths connecting the buildings located on the NDD Plan site to the internal parking structures and adjacent street network. Two paths will provide north/south circulation through the site, including access to the North Parking Area and Blaine Street

driveway. Another path will provide east/west connectivity across the site, including access to the South Parking Area and the Watkins Street driveway.

Project Site Access

Vehicle Access

Access to the NDD Plan site is provided by three full access driveways. The driveways will access the site from Linden Street, Blaine Street, and Watkins Drive. The driveways from Watkins Drive and Linden Street will provide access to the East Parking Area, while the Blaine Street driveway will provide access to the North Parking Area.

Emergency Vehicle Access

Another consideration related to the NDD Plan site plan review is the provision of adequate emergency vehicle access. Providing adequate emergency vehicle access ensures that these vehicles are able to quickly respond to service calls. Direct emergency access will be provided to all buildings. Emergency access will be provided by the surrounding streets and the multi-modal paths throughout the project site. All multi-modal paths will be designed to meet the requirements for emergency vehicle access.

Pedestrian Access

The NDD Plan provides pedestrian access to buildings on site, parking areas, and the Campus through a system of walkways and plazas to create a pedestrian friendly environment. The network of off-street paths will be designated as shared walkways and bikeways. Under Phase 1, one north/south walkway will be provided from the Blaine Street driveway to Linden Street and one east/west walkway will be provided from the Watkins Street driveway to the project boundary. Under Buildout conditions, the east/west walkway will be extended to Canyon Crest Drive and an additional north/south walkway will be added, providing a connection to the planned North Recreational Mall.

Bicycle Access

Along with pedestrian facilities, the NDD Plan will encourage the use of bicycling as an active and sustainable mode of transportation. Access to the Project site from surrounding streets is provided by shared facilities on the Blaine Street and Watkins Street driveways. Access from Campus is provided by the Class IV facility that will connect to the planned North Recreational Mall.

Transit Access

Transit facilities are currently located on Blaine Street and Canyon Crest Drive. UC Riverside is currently in the process, in partnership with RTA, of creating a Mobility Hub on Campus to provide a central location for all transit and other pick-up/drop-off trips to and from Campus. The planned Mobility Hub will be located on campus, east of the Canyon Crest Drive/University Avenue intersection and will be accessible from the NDD Plan area by the planned connection to the North Recreational Mall.

Parking

The NDD Plan will provide parking in two areas, the North Parking Area and the South Parking Area. Under Phase 1, both areas will be developed as surface parking providing approximately 695 total spaces. The North Parking Area will provide approximately 390 spaces under Phase 1, while the South Parking Area will provide approximately 225 parking spaces. Two other surface lots will also be provided to serve the UC Riverside Child Development Centers, which is located adjacent to the site (totaling approximately 80 parking spaces).

Under Buildout conditions, parking structures will be constructed on the surface parking lots to provide approximately 2,100 total spaces with no more than 1,200 spaces in either structure.

Bicycle parking will also be provided, including inside buildings and in secure outdoor parking facilities throughout the site.

4.10.3 REGULATORY FRAMEWORK

4.10.3.1 Federal and State

There are no federal or State transportation regulations applicable to the proposed projects or related projects.

4.10.3.2 Local

County of Riverside

The Riverside County General Plan (revised 2015) includes a number of policies related to transportation network design, LOS levels, street improvements, pedestrian circulation, alternative transportation, non-motorized transportation, and transportation systems management. Although not subject to local jurisdictional requirements, the proposed NDD Plan may use the following policy in assessing impacts:

Circulation Policy 2.1: Maintain the following countywide target Levels of Service: LOS "C" along all County-maintained roads and conventional State highways. As an exception, LOS "D" may be allowed in Community Development areas, only at intersections of any combination of Secondary Highways, Major Highways, Arterials, Urban Arterials, Expressways, conventional State highways, or freeway ramp intersections. LOS "E" may be allowed in designated community centers to the extent that it would support transit-oriented development and walkable communities.

The Riverside County Congestion Management Plan (CMP) was prepared by the Riverside County Transportation Commission (RCTC) in consultation with the County and the cities in Riverside County. The focus of the CMP is the development of an Enhanced Traffic Monitoring System in which real-time traffic count data can be accessed by RCTC to evaluate the condition of the Congestion Management System (CMS) as well as meet other monitoring requirements at the State and federal levels. Per the adopted Level of Service (LOS) standard of "E," when a CMS segment falls to "F," a deficiency plan must be required. Preparation of a deficiency plan is the responsibility of the local agency where the deficiency is located. Other agencies identified as contributors to the deficiency are also required to coordinate with the development of the plan. The plan must contain mitigation measures, including Transportation Demand Management (TDM) strategies and transit alternatives, and a schedule of mitigating the deficiency. To ensure that the CMS is appropriately monitored to reduce the occurrence of CMP deficiencies, it is the responsibility of local agencies, when reviewing and approving development proposals to consider the traffic impacts on the CMS.[2]

City of Riverside

The City of Riverside General Plan (2007) includes objectives aimed at maintaining an effective transportation system throughout the City. These objectives provide guidance for development in the City. Although not subject to local jurisdictional requirements, the proposed NDD Plan may use local objectives in assessing impacts, as such the following objectives identified as relevant to the NDD Plan :

Policy CCM-2.3: Maintain LOS D or better on Arterial Streets wherever possible. At key locations, such as City Arterials that are used by regional freeway bypass traffic and at heavily traveled freeway interchanges, allow LOS E at peak hours as the acceptable standard on a case-by-case basis.

2 Riverside County Transportation Commission, 2010. *Riverside County Congestion Management Plan*, March.

Policy CCM-2.8: Design street improvements considering the effect on aesthetic character and livability of residential neighborhoods, along with traffic engineering criteria.

Policy CCM-2.9: Design all street improvement projects in a comprehensive fashion to include consideration of street trees, pedestrian walkways, bicycle lanes, equestrian pathways, signing, lighting, noise and air quality wherever any of these factors are applicable.

Policy CCM-10.2: Incorporate bicycle and pedestrian trails and bicycle racks in future development projects

Policy CCM-10.5: Promote the health benefits of using a bicycle or walking as a means of transportation

Policy CCM-10.12: Encourage bicycling as a commute mode to school, work, etc.

Policy CCM-12.2: Ensure that new development projects provide adequate truck loading and unloading facilities.

Policy CCM-12.4: Strive to minimize through truck traffic in residential areas, and enforce City codes that restrict trucks on certain streets.

Policy CCM-13.1: Ensure that new development provides adequate parking.

4.10.4 IMPACTS AND MITIGATION MEASURES

4.10.4.1 Significance Criteria

The impacts on transportation and traffic from the implementation of the proposed projects and related projects would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines*:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Intersections

As the lead agency for the NDD Plan, the University has the authority to establish its own set of significance criteria. However, to maintain consistency with the City of Riverside, the City's significance criteria were used for intersections within the City's jurisdiction. For the campus intersection, the University of California used its own set of significance criteria. **Table 4.10-5, Intersection LOS Criteria** summarizes the significance criteria for City and University intersections.

Table 4.10-5
Intersection LOS Criteria

Level of Service	City Significance Criteria[1]	University Significance Criteria
A	>10.0 seconds increased delay	
B	>10.0 seconds increased delay	
C	>8.0 seconds increased delay	
D	>5.0 seconds increased delay	
E	>2.0 seconds increased delay	Significant Impact
F	>1.0 seconds increased delay	Significant Impact

Source: Fehr & Peers, 2018

[1] *Average delay is calculated for signalized and all-way stop controlled intersections. Worst approach delay is calculated for side street stop controlled intersections.*

As shown in **Table 4.10-5**, a significant impact at City intersections occurs when project traffic causes additional delay at an intersection above a certain threshold. For University intersections, a significant impact occurs when the intersection operations degrade to LOS E or F, regardless of the amount of new project trips that travel through the intersection.

CMP Facilities

The latest CMP document defines an acceptable LOS threshold for CMP facilities at LOS E. For purposes of this analysis, an impact to a freeway segment occurs if either:

- The LOS on a freeway segment decreases from LOS E to LOS F with the addition of project traffic; or
- For a freeway segment that operates at LOS F prior to addition of project traffic, the V/C ratio increases by 0.01 or more as a result of the addition of project traffic

Alternative Modes

Transit impacts are considered significant if:

- A project or project-related mitigation disrupts existing transit services or facilities. This includes disruptions caused by proposed-project driveways on transit streets and impacts to transit stops/shelters and impacts to transit operations from traffic improvements proposed or resulting from a project.
- A project interferes with planned transit services or facilities.
- A project creates demand for public transit services above the capacity which is provided, or planned.

Pedestrian impacts are considered significant if:

- A project interferes with existing or planned pedestrian routes.

4.10.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The analysis in the Initial Study prepared for the proposed NDD Plan circulated with the NOP concluded that further analysis of the following issue is not required in the EIR.

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

The Initial Study determined that the proposed NDD Plan would not affect the air traffic patterns at any of the regional airports. The NDD Plan does not include activities or structures that could hinder aviation activity. There would be no impact with regard to this criterion and further analysis is necessary.

4.10.4.3 Methodology

Trip Generation

The estimated project trips were obtained by applying trip generation rates from two sources: the 2005 UC Riverside LRDP Traffic Impact Study and the 10th edition of the Institute of Traffic Engineers Trip Generation Manual (ITE). To determine the appropriate source for trip generation rates for the new student housing, the trip generation rates collected as part of the 2005 UC Riverside LRDP Traffic Impact Study were compared to other data readily available. As the data was found to be reasonable and is the

best available local data, it was determined to be the most appropriate source for trip generation rates for the proposed NDD Plan.

Trips generated by the mixed-use space were estimated using the ITE trip generation rate for shopping centers. A trip credit was then applied to account for the mixed-use nature of the site and the proximity to the Campus for users traveling to the site using transit or active transportation (biking or walking). The National Household Travel Survey completed in 2009 and Campus Mode Split information from 2015 were used to determine the appropriate mode share percentages for trips in the area using transit and active transportation.

Waste haul trips from the project site would use internal campus roadways and would not add traffic to off-campus streets. The waste off-haul trips would be very infrequent (approximately 2 to 3 times per month) and would not add to peak hour traffic. The Athletics Event Center would host soccer competitions, convocations, and graduations and would not add to typical weekday peak hour traffic. The majority of trips to and from the project site would be student residents, although trips could also be generated by visitors to the mixed-use portion of the Plan.

The majority of vehicle trips associated with the proposed projects would consist of student's vehicles, mostly to and from the Student Apartments. However, trips would also be to and from the UCR Residence Halls and the shopping center. The trip generation estimates affiliated with the proposed NDD Plan are detailed below in **Table 4.10-6, North District Development Plan Trip Generation.**

Table 4.10-6
North District Development Plan Trip Generation

Land Use	Size	Units	ITE Code	Trip Generation Estimates						
					AM Peak Hour			PM Peak Hour		
				Daily Trips	In	Out	Total	In	Out	Total
Phase 1										
Student Apartments	1,500	Beds	[1]	6,006	58	74	132	145	185	330
Buildout										
UCR Student Apartments	3,000	Beds	[2]	12,012	116	148	264	296	376	672
UCR Residence Halls	1,500	Beds	[1]	3,230	32	39	71	79	101	180
Shopping Center	62.8	KSF	820	2,371	37	22	59	115	134	239
Total Buildout Project Trips (Unadjusted)				23,618	243	283	526	635	786	1,421
Bike/ Walk Reduction for Shopping Center [a]				187	3	2	6	6	9	17
Internalization for Mixed Housing/ Commercial Site				1,210	22	14	36	58	62	120

Land Use	Size	Units	ITE Code	Trip Generation Estimates						
					AM Peak Hour			PM Peak Hour		
				Daily Trips	In	Out	Total	In	Out	Total
Adjusted Vehicle Trips (Total Trips- Bike/Walk Internalization)				22,221	217	26	484	569	715	1,284
Pass-by for Shopping Center [b]				40	0	0	0	19	21	40
Net Total Trips at Buildout				22,181	217	267	484	550	694	1,244

Source: Fehr & Peers, 2018
Notes: [1] Source of Student Apartments trip rates: 2005 LRDP Traffic Impact Study
[2] Source of Residence Hall Housing trip rates: 2005 UCR LRDP Traffic Impact Study
[a] National Household Travel Survey 2009 used for walk/bike data
[b] Internalization is due to the mix of housing and commercial uses on site and calculated based on mixed-use trip generation.
[c] Pass-by trips is assumed to be 25% and applicable only for the PM Peak hour for the Shopping Center use.

Trip Distribution

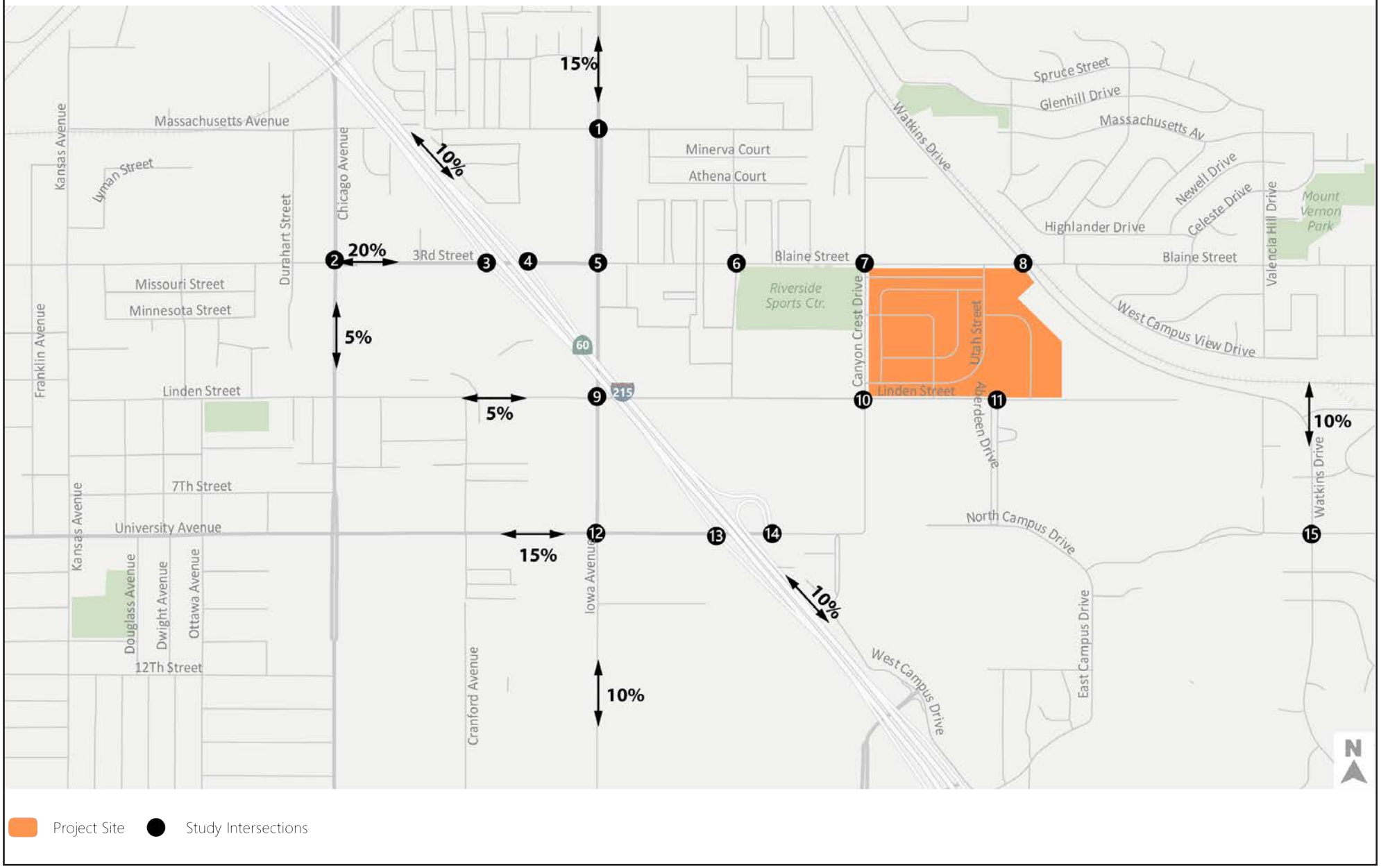
The project trip distribution reflects the regional distribution of trips traveling to and from the project site. To determine where trips traveling to and from the Project site would originate and end, a select zone analysis was performed for a traffic analysis zone (TAZ) near the proposed Plan area that had a similar land use mix to the NDD Plan. The results of the select zone analysis and local knowledge were combined to develop the regional distribution. As shown in **Figure 4.10-3, Project Trip Distribution**, the project trip distribution was determined to be:

- 20% - 3rd/Blaine Street
- 15% - University Avenue
- 10% - Watkins Drive
- 25 % - Iowa Avenue
- 5% - Chicago Avenue
- 10% - I-215 SB
- 10% - I-215 NB
- 5% - Linden Street

Given the mix of residential and retail land uses, some trips generated by the project would remain internal to the project site (i.e. a resident from the residence hall making a trip to the retail use). To determine the number of internal trips, the Mixed-Use Development (MXD) model was used to determine an appropriate internalization rate.

Trips related to NDD Plan traffic were assigned to the roadway network based on likely travel patterns. For purposes of analysis, it was conservatively assumed that all project-related traffic would access the project site via the I-215/SR-60 freeway. This is a conservative assumption that extends project trips through all of the intersections between the proposed NDD Plan Area and the freeway, although it is likely that some trips would begin at locations near the project site and would not pass through all intersections between the site and the freeway. From the I-215/SR-60 freeway, the project site can be accessed via the University Avenue interchange and on-campus streets such as Canyon Crest Drive and Linden Street, or via the Blaine Street interchange and off-campus streets including Blaine Street and Watkins Drive. For the purposes of this analysis, it is assumed that all trips would use the Blaine Street interchange; this represents a worst-case scenario as it adds all of the project-related peak hour traffic to off-campus intersections along the Watkins Drive/Blaine Street route.

Note that the Watkins Drive/Valencia Hill Drive intersection was not considered as a study intersection, as the Valencia Hill Drive intersection is a three-leg intersection and would not be utilized by project trips due to the fact that it does not connect to the south.



SOURCE: Fehr & Peers, 2018

FIGURE **4.10-3**

IMPACT SCIENCES

Project Trip Distribution

1031.004•11/18

4.10.4.4 Relevant LRDP Mitigation Measures, Planning Strategies, and Programs and Practices

The 2005 LRDP Amendment 2 EIR (2011) identifies a series of Planning Strategies (PS), Programs and Practices (PP), and Mitigation Measures (MM) that are relevant to traffic and transportation and includes Mitigation Measures to reduce impacts of buildout of the 2005 LRDP. These measures are considered part of the NDD Plan for purposes of this analysis. The full list of PSs, PPs, and LRDP Mitigation Measures is included in **Appendix 1.0** of this EIR, and those relevant to transportation and traffic for the proposed projects and related projects are provided in the impact discussion below.

4.10.4.5 Project Impacts and Mitigation Measures

Impact 4.10-1 **Implementation of the proposed NDD Plan would result in additional vehicular trips, which would increase traffic volume and degrade intersection levels of service. (*Significant and unavoidable*)**

As detailed above in **Table 4.10-6**, Phase 1 of the NDD Plan would result in approximately 6,006 daily trips, 145 AM peak hour trips and 330 PM peak hour trips. At buildout, the project will generate approximately 22,180 daily trips, 485 AM peak hour trips and 1,245 PM peak hour trips. However, as the NDD Plan will provide housing for 5,200 students at buildout, adjustments were made to the future traffic forecasts to account for a shift of students from commuter students (students living off campus and commuting to campus) to resident students (students living on campus at the Project site).

As shown in **Table 4.10-7, Existing Plus Phase 1 Impacts on LOS for Study Area Intersections**, the proposed NDD Plan would result in the degradation of the intersection at Big Springs Road and Watkins Drive under existing conditions plus the development of Phase 1 to LOS F. Although the intersection currently operates unacceptably, the delay caused by Phase 1 is more than 1.0 second and is considered a significant impact under City of Riverside thresholds. Reconfiguring the intersection to a single-lane roundabout would mitigate the impact from LOS F to LOS B during both AM and PM peak hours.

Table 4.10-7
Existing Plus Phase 1 Impacts on LOS for Study Area Intersections

Intersection	Jurisdiction	Control	Peak Hour	Existing (2017)		Existing Plus Phase I		Existing Plus Phase I Mitigation		Significant Impact
				Delay	LOS	Delay	LOS	Delay	LOS	
Watkins Drive & Big Springs Road	City of Riverside	AWSC	AM	57.2	F	60.2	F	13.0	B	**Yes**
			PM	52.2	F	52.2	F	12.0	B	No

Source: Fehr & Peers, 2018

Unfortunately, the intersection is under the jurisdiction of the City of Riverside and therefore UC Riverside does not have the control to make any physical improvements without an agreement from the City. As implementation of such mitigation cannot be guaranteed, the impact is found to be **significant and unavoidable**.

Future (2025) Conditions plus Project Buildout levels of service are detailed in **Table 4.10-8, Future (2025) Plus Project Buildout Impacts on LOS for Study Area Intersections.** Significant impacts related to LOS would occur at the intersections of Third Street & Chicago Avenue, Iowa Avenue & Blaine Street, Canyon Crest Drive & Blaine Street, Iowa Avenue & Linden Street, Canyon Crest Drive & Linden Street, Aberdeen Drive & Linden Street, University Avenue & Iowa Avenue, and Big Springs Road & Watkins Avenue.

Table 4.10-8
Future (2025) Plus Project Buildout Impacts on LOS for Study Area Intersections

Intersection	Jurisdiction	Control	Peak Hour	Existing (2017)		Existing Plus Phase I		Existing Plus Phase I Mitigation		Significant Impact
				Delay	LOS	Delay	LOS	Delay	LOS	
Chicago Avenue & Third Street	City of Riverside	Signal	AM	41.0	D	61.4	**E**	41.3	D	**Yes**
			PM	36.9	D	68.1	**E**	53.0	D	**Yes**
Iowa Avenue & Blaine Street	City of Riverside	Signal	AM	33.9	C	57.6	**E**	42.8	D	**Yes**
			PM	26.8	C	62.5	**E**	49.7	D	**Yes**
Canyon Crest Drive & Blaine Street	City of Riverside	Signal	AM	10.8	B	35.5	D	29.2	C	**Yes**
			PM	13.7	B	33.1	C	20.2	C	**Yes**
Iowa Avenue & Linden Street	City of Riverside	Signal	AM	21.3	C	27.4	C	32.8	C	No
			PM	17.8	B	24.4	C	24.5	C	**Yes**

Intersection	Jurisdiction	Control	Peak Hour	Existing (2017)		Existing Plus Phase I		Existing Plus Phase I Mitigation		Significant Impact
Canyon Crest Drive & Linden Street	City of Riverside	Signal	AM	19.3	B	23.7	C	9.6	A	No
			PM	21.4	C	44.1	D	17.4	C	**Yes**
Aberdeen Drive & Linden Street	UC Riverside	AWSC	AM	8.9	A	11.0	B	11.8	B	No
			PM	13.9	B	46.3	**E**	20.2	C	**Yes**
Iowa Avenue & University Avenue	City of Riverside	Signal	AM	16.4	B	19.7	B	9.6	A	No
			PM	27.4	C	60.1	**E**	17.4	C	**Yes**
Watkins Drive & Big Springs Road	City of Riverside	AWSC	AM	57.2	**F**	102.3	**F**	15.0	C	**Yes**
			PM	52.2	**F**	106.6	**F**	13.0	B	**Yes**

Source: Fehr & Peers, 2018

To help minimize traffic impacts under **Future plus Project Buildout** conditions, consistent with LRDP Amendment 2 MM 4.14-1(b) and 4.14-1(c), UCR will continue to implement and enhance its existing TDM program to reduce employee vehicle trips to the campus, including those associated with the proposed projects and related projects.

MM 4.14-1(b): *Travel Demand Management. To reduce on- and off-campus vehicle trips and resulting impacts, the University will enhance its Transportation Demand Management (TDM) program. TDM strategies will include measures to increase transit and Shuttle use, encourage alternative transportation modes including bicycle transportation, implement parking policies that reduce demand, and other mechanisms that reduce vehicle trips to and from the campus. The University shall monitor the performance of campus TDM strategies through annual surveys.*

MM 4.14-1(c): *Transit Enhancement. To enhance transit systems serving the campus, the University will work cooperatively with the RTA, and other local agencies to coordinate service routes with existing and proposed Shuttle and transit programs.*

The intersection of Aberdeen Drive & Linden Street is within the Campus and thus controlled by UC Riverside. With the addition of the Project under Buildout conditions, including construction of a parking structure east of this intersection, the intersection would operate at LOS B during the AM peak hour and LOS E during the PM peak hour. As the intersection is degraded from acceptable operations (LOS D or better) to unacceptable (LOS E) with buildout of the NDD Plan during the PM peak hour, an impact would occur based on the City's significance thresholds.

Mitigation Measure

MM TRA-1 The Campus shall review operations at the intersection of Aberdeen Drive & Linden Street following the completion of Phase 1 of the NDD Plan; should the intersection have degraded from acceptable operations, implement improvements, including but not limited to, a signal with a pedestrian/bike only phase during future phase(s) to return the intersection operation to an acceptable level.

This intersection is expected to experience high bicyclist and pedestrian volumes with buildout of the NDD Plan as well as other planned housing and campus growth expected by 2025 in the area. Based upon the site access assumed under Buildout conditions as part of this study, intersection signalization with a pedestrian only phase could be considered as an ultimate improvement at this intersection. With a traffic signal in place, the intersection operations would be improved to LOS C during the PM peak hour under Buildout conditions. This improvement would require the addition of marked crosswalks, pedestrian scramble markings and a four-phase signal. However, the traffic volumes and pedestrian flows at this intersection are highly dependent on the final site plan and site access configuration, as well as future traffic patterns and changes to other parking access and patterns. Therefore, the need for signalization should be reexamined once Phase 1 is complete and operational, and the remaining phases of the NDD Plan are under final design. The need for a traffic signal should be based on existing and projected traffic volumes and bicycle and pedestrian crossings during peak travel hours upon project Buildout.

A variety of mitigation measures to improve the LOS under **Future plus Project Buildout** conditions for the rest of the impacted intersections are available, such as reconfiguring intersections, creating roundabouts, adding signalization, and adding lanes. Unfortunately, the remaining intersections are under the jurisdiction of the City of Riverside, not UC Riverside, so the proposed mitigation cannot be guaranteed. As a result, the impact under **Future plus Project Buildout** remains **significant and unavoidable**.

Notwithstanding the above, if and when the City decides to undertake any improvements at the impacted intersections, UCR will undertake negotiations with the City to pay a proportional share of the actual cost of implementing improvements at the time of implementation. UCR's proportional share will be based on the North District Development Plan's total traffic contribution to the impacted intersections. The City has indicated concerns that some of the potential mitigation measures could conflict with existing or planned bicycle lanes, or that the potential mitigation measures would not alleviate traffic congestion based on prior studies conducted by the City. As such, UCR Transportation & Parking

Services is committed to working with the City to identify mitigations considered feasible for implementation at impacted intersections in the City of Riverside's jurisdiction.

Impact 4.10-2 **Implementation of the proposed NDD Plan would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections.** ***Potentially significant; Less than significant with mitigation.***

Construction at the project site would occur from 2019 through approximately 2025. Phase I would take place from 2019 to 2021 and includes the demolition of the existing Canyon Crest Family Student Housing complex and the new development of approximately 1,500 beds. The buildout of the NDD Plan would be completed sometime after 2025 although exact timing and phases have not been established at this time.

Construction would involve the removal of demolition debris, grading, and/or excavation of sites, as well as delivery of construction materials and trips associated with construction workers and equipment. Construction workers would access the site via Blaine Street and Watkins Drive and park on the north parking area, the east parking area, and/or west of the proposed new construction on the existing roadways that were part of the Canyon Crest housing development. Due to the project site's location on the edge of campus and immediate proximity to major roads, vehicles associated with construction would not generate problematic traffic on campus. Similarly, it is not expected that construction would temporarily impede or close on-campus pedestrian sidewalks. To minimize construction impacts on traffic and circulation, the following LRDP Programs and Practices (PP) would be implemented:

PP 4.14-2 *The campus will periodically assess construction schedules of major projects to determine the potential for overlapping construction activities to result in periods of heavy construction vehicle traffic on individual roadway segments, and adjust construction schedules, work hours, or access routes to the extent feasible to reduce construction-related traffic congestion.*

Even with the implementation of PP 4.14-2, the impact on vehicular circulation on roads leading to the project site would be potentially significant. To address this potentially significant impact, a project specific mitigation measure (**Mitigation Measure TRA-2**) is proposed that requires the Project Developer to prepare and implement a Construction Traffic Management Plan (CTMP) to manage the movement of construction vehicles in a safe and effective manner. The CTMP would include information such as the number and size of trucks per day, times of the day when truck movement is allowed, truck circulation patterns, location of staging areas, location/amount of construction employee parking, and the proposed

use of traffic control/partial street closures on public streets. The CTMP would also include both vehicular and pedestrian way-finding signage. The overall goal of the CTMP would be to minimize traffic impacts to campus and public streets and maintain a high level of safety for all vehicles and pedestrians. The implementation of **MM TRA-2** would reduce the impact of construction vehicles on traffic and circulation to a less than significant level.

Mitigation Measure

MM TRA-2: The University shall require the Project Developer to prepare and implement a Construction Traffic Management Plan that will include, but will not necessarily be limited to, the following elements:

- Identify proposed truck routes to be used.
- Specify construction hours, including limits on the number of truck trips during the AM and PM peak traffic periods (7:00 – 9:00 AM and 4:00 – 6:00 PM), if conditions demonstrate the need.
- Include a parking management plan for ensuring that construction worker parking results in minimal disruption to surrounding uses.
- Include a public information and signage plan to inform student, faculty and staff of the planned construction activities, roadway changes/closures, and parking changes.
- Store construction materials only in designated areas that minimize impacts to nearby roadways.
- To minimize disruption of emergency vehicle access, affected jurisdictions (Campus Police, City Police, County Sheriff, and City Fire Department) will be consulted to identify detours for emergency vehicles, which will then be posted by the construction contractor.
- Ensure that access to fire hydrants remains available at all times.

Significance of Impacts after Mitigation

Less than significant.

Impact 4.10-3 **Implementation of the proposed NDD Plan would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under 2025 conditions. (*Significant and unavoidable*)**

While buildout of the proposed NDD Plan would result in a reduction in campus-related vehicle trips, cumulative traffic would increase traffic volumes on the highway network. As discussed in **subsection 4.10.2, Existing Conditions** and shown in **Table 4.10-4**, six of the eight segments of I-215 operated at an acceptable level of service under current conditions, while two currently operate at an acceptable LOS during the AM peak period.

The Traffic Study for the proposed project conducted a freeway segment LOS analysis for the study freeway segments under both **Existing Plus Phase 1** and **Future (2025) Plus Buildout** conditions. The results of the analysis are provided below.

Table 4.10-9, Existing Plus Phase 1 Freeway Levels of Service, presents the LOS for the AM and PM peak hours. As indicated in **Table 4.10-9**, the following two segments would operate at a deficient Level of Service during the AM peak period:

- Northbound Diverge at University Avenue (AM peak hour)
- Northbound Merge at Blaine Street (AM peak hour)

Table 4.10-9
Existing Plus Phase 1 Freeway Levels of Service

Location	Segment Type	Existing				Existing + Phase 1			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Density[1]	LOS	Density[1]	LOS	Density[1]	LOS	Density[1]	LOS
Northbound I-215									
Diverge at University Avenue	Weave	**37**	**E**	28	C	37	**E**	28	D
Merge at University Avenue	Weave	25	C	20	B	25	C	20	C
Diverge at Blaine Street	Weave	25	C	20	B	25	C	20	C
Merge at Blaine Street	Weave	-	**F**	25	C	-	**F**	26	C
Southbound I-215									
Diverge at Blaine Street	Weave	16	B	22	C	16	B	22	C
Merge at Blaine Street	Weave	11	B	24	C	11	B	24	C
Diverge at University Avenue	Weave	11	B	24	C	11	B	24	C
Merge at University Avenue	Weave	10	B	30	D	11	B	31	D

Source: Fehr & Peers, 2018

1. *Density is reported in vehicles per lane per mile.*
2. *The maximum density for ramp junctions and weaving sections under LOS E is not defined in the HCM.*
3. *The maximum density for basic segments of 45 vehicles per lane per mile (vplpm) was assumed to apply to ramp junctions and weaving sections.*

Table 4.10-10, Future (2025) Plus Buildout Freeway Levels of Service, presents the LOS for the AM and PM peak hours. As indicated in **Table 4.10-10**, the following three segments would operate at a deficient Level of Service during the AM peak period under Future (2025) conditions:

- Northbound Diverge at University Avenue (AM and PM peak hour)
- Northbound Merge at Blaine Street (AM and PM peak hour)
- Southbound Diverge at Blaine Street (AM peak hour)

Table 4.10-10
Future (2025) Plus Buildout Freeway Levels of Service

Location	Segment Type	Future (2015)				Future + Buildout			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Density[1]	LOS	Density[1]	LOS	Density[1]	LOS	Density[1]	LOS
Northbound I-215									
Diverge at University Avenue	Weave	**-**	**F**	28	C	-	**F**	-	**F**
Merge at University Avenue	Weave	30	D	21	C	29	D	21	C
Diverge at Blaine Street	Weave	30	D	21	C	29	D	21	C
Merge at Blaine Street	Weave		**F**	27	C	-	**F**	-	**F**
Southbound I-215									
Diverge at Blaine Street	Weave	**-**	**F**	22	C	-	**F**	22	C
Merge at Blaine Street	Weave	17	B	25	C	17	B	25	C
Diverge at University Avenue	Weave	17	B	25	C	17	B	25	C
Merge at University Avenue	Weave	16	B	33	D	16	B	16	B

Source: Fehr & Peers, 2018

4. *Density is reported in vehicles per lane per mile.*
5. *The maximum density for ramp junctions and weaving sections under LOS E is not defined in the HCM.*
6. *The maximum density for basic segments of 45 vehicles per lane per mile (vplpm) was assumed to apply to ramp junctions and weaving sections.*

As shown in **Table 4.10-10**, the operating conditions of all freeway segments operating unacceptably under Future (2025) conditions would continue to do so with the addition of project traffic.

Mitigation Measures: No mitigation measures for the freeway segments impacted by the proposed NDD Plan are feasible for the following reasons:

- The freeway segments identified above are currently "built-out" and there are no plans to widen or improve these freeway segments; no programmed or funded improvements to widen I-215 beyond its current configuration are available.
- The cost and scale of freeway expansion is beyond the capacity of UCR or any other single project to fund and complete on its own.

As a result, the impact under Future plus Project Buildout remains **significant and unavoidable**.

Significance of Impacts after Mitigation

Significant and unavoidable.

Impact 4.10-4 **Implementation of the proposed NDD Plan could result in hazards due to design features or land use incompatibilities. (*Less than significant*)**

While the on-site roadway design has not yet been completed, it is anticipated that any new roadway segments would employ the use of standard engineering practices (e.g., use of standard road and driveway widths, provision of adequate sight lines, and avoidance of sharp turning radii) and traffic mitigation strategies (e.g., installation of control devices such as stop signs or signal lights as needed) to avoid design elements that could result in hazards due to features such as sharp curves or dangerous intersections. Further, the proposed NDD Plan would implement the following existing campus Program and Practice (PP) related to parking and roadway design.

PP 4.14-4 *The campus shall provide design architects for roadway and parking improvements with the Campus Design Guidelines and instructions to implement those elements of the guidelines relevant to parking and roadway design.*

In addition, implementation of the proposed project would not result in land use incompatibilities with either on-campus or off-campus land uses. Thus, no traffic hazards related to land use incompatibilities related to new development or redevelopment at the project sites would result. For the reasons listed above, the project would not generate new hazards due to design features or land use incompatibilities and the impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts after Mitigation

Less than significant.

Impact 4.10-5 **Implementation of the proposed NDD Plan could result in inadequate emergency access. (*Less than significant*)**

As previously discussed, during project construction, construction and waste hauling-vehicles would access the site via Blaine Street and Watkins Drive. Due to the large size of the project site, vehicles would be parked on-site and would therefore not result in lane closures or inhibit emergency access during project construction. Despite increased traffic to the site, development of the NDD Plan would not involve the closure of vehicular, bicycle, or pedestrian lanes or walkways, nor would it obstruct existing emergency access routes.

The project site has been designed with emergency access routes, giving responders full access to all buildings and undeveloped portions of the site. Emergency access would be provided via Blaine Street, Watkins Avenue, Linden Street, and Canyon Crest Drive. Within the project site, a north-south multi-modal path would transect the project site and with additional paths that loop around the proposed apartment buildings, to be utilized by emergency vehicles as necessary. All multi-modal paths would be designed to meet the requirements for emergency vehicle access including the 22,000 pounds per square inch (psi) loading and access to building facades. As such, the proposed NDD Plan would have a less than significant impact on emergency access.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts after Mitigation

Less than significant.

Impact 4.10-6 **Implementation of the proposed NDD Plan could conflict with adopted policies, plans, or programs supporting alternative transportation. (*Less than significant*)**

The City of Riverside contains the following policies regarding alternative transportation:

Policy CCM-10.2: Incorporate bicycle and pedestrian trails and bicycle racks in future development projects.

Policy CCM-10.5: Promote the health benefits of using a bicycle or walking as a means of transportation.

Policy CCM-10.6: Encourage pedestrian travel through the creation of sidewalks and street crossings.

Policy CCM-10.12: Encourage bicycling as a commute mode to school, work, etc.

As the Lead agency and a State entity, the University is not required to comply with City policies, however, the proposed NDD Plan is consistent with these policy statements through the implementation of facilities, which would contain pedestrian walkways and bicycle facilities. The proposed NDD Plan incorporates numerous measures, which support alternative transportation. For example, the Project proposes both extensive bicycle and pedestrian facilities. The Project also proposes to include bicycle racks, and bicycle storage in all buildings to promote active transportation. The project also restricts vehicular traffic within several areas of the Campus east of Canyon Crest Drive to promote pedestrian travel. With regard to public transit, the proposed Plan would develop beds on campus, transitioning students from commuter to resident status. As such, it is anticipated that the NDD Plan would contribute to a decrease in student commuters utilizing transit to travel to campus. As the proposed NDD Plan would not conflict with any campus programs related to alternative transportation and is consistent with City policies, the impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts after Mitigation

Less than significant.

4.10.4.6 Vehicle Miles of Travel (VMT)

As a result of Senate Bill 743 (SB 743), the new recommended metric in the draft *CEQA Guidelines* for transportation impacts is VMT per capita. Since the update to the *CEQA Guidelines* was not yet final at the time the traffic analysis was prepared, a traditional LOS analysis has been completed for the study area. The VMT assessment is provided for informational purposes to meet the intention of SB 743 guidelines.

The California Governor's Office of Planning and Research (OPR) Proposed *CEQA Guidelines* are documented below. Guidelines from the Proposed *CEQA Guidelines* Section 115064.3 are:

- Land Use Projects: Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a

less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be considered to have a less than significant transportation impact.

- Transportation Projects: Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, a lead agency may tier from that analysis as provided in Section 15152.

When a transportation impact is evaluated, the recommended significance criteria is:

- The project-generated VMT would be considered significant if the VMT per household, service population, or commuter student, as applicable, does not meet the state recommended threshold of 15% less than the existing regional or citywide VMT per household, service population or commuter student.

For both the Existing Plus Phase 1 and Existing Plus Buildout scenarios, the Project is expected to reduce VMT due to the fact that the new student housing would eliminate the "commute trip" because commuter students would instead reside on campus and be close to academic as well as other support uses. In addition, the mixed-use amenities on the Project site would provide local retail and dining options for the residents under Buildout conditions.

While a VMT impact is not expected and the Project could likely be screened out of requiring a VMT analysis under SB 743 guidance, VMT metrics were compiled with the RivTAM model to compare the Project to Citywide VMT characteristics in Riverside. The metric for assessing VMT impacts that was identified as most appropriate for this project is the Home-Based Work and the Home-Based Other production trip lengths.

Table 4.10-11, Project VMT Impact Assessment summarizes the VMT impact assessment and the comparison between the Citywide VMT per service population and the Project VMT per service population.

Table 4.10-11
Project VMT Impact Assessment

VMT per Service Population	2012 (Model Baseline)	Existing (2017)	Future (2025) Project Buildout
Riverside	7.7	7.4	7.0
NDD Plan	2.1	1.9	1.6

Source: Fehr & Peers, 2018

As shown, VMT per service population in 2025 for the Project is 77 percent lower than VMT per service population for the City of Riverside. As the threshold for a VMT impact is 15 percent lower than the citywide VMT, no impact would occur under 2025 conditions.

4.10.4.7 Cumulative Impacts and Mitigation Measures

Subsection 4.10.4.5, Project Impacts and Mitigation Measures, above, evaluates the potential traffic impacts from the development and buildout of the NDD Plan in terms of the increased traffic along roadways used by the campus-related population to access the site, and the impacts of this traffic on roadway intersections.

Impacts 4.10-1, and 4.10-3 evaluate the traffic that would result from growth in regional traffic through 2025 combined with the buildout of the NDD Plan. That analysis therefore presents the cumulative traffic impacts that were determined to be significant at certain intersections and freeway segments.

This analysis found that significant impacts related to LOS would occur at the intersections of Third Street & Chicago Avenue, Iowa Avenue & Blaine Street, Canyon Crest Drive & Blaine Street, Iowa Avenue & Linden Street, Canyon Crest Drive & Linden Street, Aberdeen Drive & Linden Street, University Avenue & Iowa Avenue, and Big Springs Road & Watkins Avenue. Three freeway segments would operate at a deficient Level of Service during the AM peak period, and two freeway segments would operate at a deficient Level of Service during the PM peak period under Future (2025) conditions

Mitigation measures are available to address the proposed project's contribution to the significant cumulative traffic impacts. However, because implementation of the intersection improvements determined necessary to reduce the project's impacts on off-campus intersections is outside the control of the University, Impact 4.10-1 would remain **significant and unavoidable** for seven intersections. Furthermore, because improvements to existing freeway segments are not feasible, Impact 4.10-3 is found to be **significant and unavoidable** for three freeway segments.

4.11 UTILITIES

4.11.1 INTRODUCTION

This section of the EIR describes the utilities and service systems that serve the UC Riverside campus, including water, wastewater, storm water, and solid waste disposal and evaluates the potential for significant impacts to utilities and services systems from the implementation of the proposed NDD Plan and the Phase 1 project.

4.11.2 EXISTING CONDITIONS

4.11.2.1 Domestic Water

The City of Riverside Public Utilities Department (RPU) supplies domestic water to UCR. RPU's water supply consists primarily of groundwater from the Bunker Hill Basin, Riverside North, and Riverside South sub-basins. Additional sources of water available to RPU include groundwater from the Rialto-Colton Basin, recycled water from the Riverside Water Quality Control Plant (RWQCP), and imported water from WMWD through a connection at the Metropolitan Water District of Southern California's (MWD) Henry J. Mills Treatment Plant (Mills WTP).

RPU plans to augment its existing water supplies through conjunctive use projects in the Bunker Hills and Riverside North Basins and recycled water infrastructure projects. The planned projects, which may be used to serve development associated with the NDD Plan, are summarized below in **Table 4.11-1, Expected Future Water Supply Projects.**

Table 4.11-1
Expected Future Water Supply Projects

Name of Future Projects or Programs	Planned Implementation Year	Expected Increase in Water Supply (AFY[1])
Seven Oaks Dam Conservation Project Enhanced Phase II	2020	1,000
Riverside North Aquifer Storage and Recovery	2020	2,000
Jackson Street and Arlington Avenue Pipelines	2020	4,970
Recycled Water Regional Concept Pipeline	2020	1,200
Bunker Hill Basin (BHB) Groundwater Banking	2025	2,000
Bunker Hill Basin Active Recharge Project	2025	1,500
Stormwater Recharge at Columbia, Marlborough, and Kansas Detention Basins	2025	1,500
Box Spring Local Stream Recharge and Direct Use	2030	2,800

Source: City of Riverside Urban Water Management Plan, 2015
1 Acre-feet per year

The anticipated water supplies available to RPU through 2040 are summarized in **Table 4.11-2, Actual and Planned Supplies.**

Table 4.11-2
Actual and Planned Supplies (Acre-feet per year)

Water Supply	Additional Detail on Water Supply	2015 Actual	2020	2025	2030	2035	2040
Groundwater	Bunker Hill	53,793	55,263	55,263	55,263	55,263	55,263
Groundwater	Banking BH Conjunctive Use	0	0	2,000	2,000	2,000	2,000
Groundwater	Seven Oaks Dam Phase II (Enhanced)	0	1,000	1,000	1,000	1,000	1,000
Groundwater	BH Active Recharge 2025	0	0	1,500	1,500	1,500	1,500
Groundwater	Riverside North	6,357	10,902	10,902	10,902	10,902	10,902
Groundwater	RNASR	0	2,000	2,000	2,000	2,000	2,000
Groundwater	Riverside South	13,571	16,880	16,880	16,880	16,880	16,880
Groundwater	Box Springs	0	0	0	2,800	2,800	2,800
Groundwater	Columbia, Etc. Stormwater	0	0	1,500	1,500	1,500	1,500
Groundwater	Rialto-Colton	1,205	2,728	2,728	2,728	2,728	2,728
Recycled Water	RWQCP	200	6,430	6,430	6,430	6,430	6,430
Purchased or Imported Water	From WMWD	0	21,700	21,700	21,700	21,700	21,700
	Total	75,126	116,903	121,903	124,703	124,703	124,703

Source: City of Riverside Urban Water Management Plan, 2015
Note: Imported water from WMWD is shown as a supply available to RPU. RPU intends to use this supply only if needed.

In 2015, RPU's total water demands were approximately 75,128 acre-feet per year (AFY). This amount includes potable water, raw water for non-potable uses, and recycled water. It includes water delivered to RPU's retail customers, as well as water delivered to other agencies. The projected water demands are summarized in **Table 4.11-3, Actual and Projected Demands.**

Table 4.11-3
Actual and Projected Demands
(Acre-feet per year)

Level of Treatment When Delivered	Use Type	2015	2020	2025	2030	2035	2040
Drinking Water	Single Family	26,897	29,931	31,064	32,241	33,462	34,720
Drinking Water	Multi-Family	4,821	5,365	5,568	5,779	5,998	6,225
Drinking Water	Commercial/Institutional	8,950	9,959	10,337	10,728	11,135	11,556
Drinking Water	Industrial	8,847	9,845	10,218	10,605	11,006	11,423
Drinking Water	Landscape	1,842	1,050	100	150	200	250
Drinking Water	Agricultural Irrigation	1,534	1,707	1,772	1,839	1,908	1,981
Drinking Water	Other	333	371	385	399	414	430
Drinking Water	Deliveries to WMWD	1,442	4,300	4,300	4,300	4,300	4,300
Drinking Water	Wholesale to HGCWD	180	0	0	0	0	0
Drinking Water	**UCR Demand Related to UCR Expansion**	0	3,300	3,300	3,300	3,300	3,300
Drinking Water	Cal Baptist University Additional Demand	0	150	150	150	150	150
Drinking Water	GCC (Upper)	5,783	6,000	6,000	6,000	6,000	6,000
Raw Water	GCC (Lower)	6,139	7,000	7,000	7,000	7,000	7,000
Raw Water	Overlying Uses	901	1,200	1,200	1,200	1,200	1,200
Raw Water	WMWD	662	2,500	2,500	2,500	2,500	2,500
Drinking Water	Potable Losses	6,302	5,278	5,375	5,559	5,750	5,948
Raw Water	Irrigation Water Loss	295	835	835	835	835	835
Total Raw and Potable		**74,928**	**88,791**	**90,104**	**92,585**	**95,159**	**97,827**
Recycled Water	Landscape Irrigation	200	260	260	260	260	260
Recycled Water	Jackson Street Pipeline	0	3,370	3,370	3,370	3,370	3,370
Recycled Water	Arlington Avenue Pipeline	0	1,600	1,600	1,600	1,600	1,600
Recycled Water	Regional Concept Pipeline	0	1,200	1,200	1,200	1,200	1,200
Total Recycled Water		**200**	**6,430**	**6,430**	**6,430**	**6,430**	**6,430**
Total Demand		**75,128**	**95,221**	**96,534**	**99,015**	**101,589**	**104,257**

Source: City of Riverside Urban Water Management Plan, 2015
Note: Overlying uses include local demand for irrigation water met with production from RPU wells.

Campus Water Demand and System

Current daily domestic water consumption for the Campus is approximately 1.6 million gallons per day (mgd) on average, which it receives from Riverside Public Utilities (RPU).[1] Indoor water use at UC Riverside consists of residential, instruction and research space uses, steam boilers and cooling towers,

1 Burleson, Steve. 2018. UC Riverside Plumbing Shop Supervisor. Personal communication with Tricia Thrasher, UC Riverside, April 27.

chillers, food facilities, restrooms, custodial uses, showers, and drinking fountains. The remaining water demand is generated by landscape irrigation.

The domestic water system at UCR consists of an underground distribution system, a pumping system, storage tanks, and connections to the City of Riverside's municipal water distribution system. The system on the East Campus is connected to the West Campus via the municipal system and a water line under the freeway that connects to Parking Lot No. 30 and the Agricultural Operations facility.[2]

Domestic water supply to the East Campus is provided via the City of Riverside's 5-million-gallon reservoir located south of University Avenue, just east of the I-215/SR-60 freeway. Water from this reservoir is pumped via a below-grade pumping station into the campus distribution system and two campus-owned storage tanks (one 1-million-gallon capacity and one 50,000-gallon capacity) in the southeast hills. These tanks are approximately 200 feet above the East Campus mean elevation, and provide storage for peak-hour and fire-fighting water demands. A second connection to the municipal distribution system, located at the intersection of Linden and Florida Streets, is only used for emergency fire protection and as a fail-safe backup to the 5-million-gallon reservoir connection.[3]

Domestic water is provided to the West Campus via connections to existing municipal water lines running east/west in University Avenue, Everton Place, and Martin Luther King Boulevard, Jr. (MLK), and north/south lines in Chicago Avenue, Iowa Avenue, and the Cranford Avenue street alignment.[4]

UCR also has rights to potable water in the Gage Canal, which is used to irrigate the agricultural teaching and research fields via 12-inch and 8-inch distribution lines from the canal. The Campus also has a right to purchase "extra" water from the Gage Canal, which is occasionally used to supplement the irrigation of the agricultural teaching and research fields. The Campus also has groundwater rights; however, these rights are currently not exercised.[5]

4.11.2.2 Wastewater

The Sewerage Systems Services Program and its Treatment Services unit, administered by the RPU, collects, treats, and disposes of all wastewater generated within the City of Riverside and is responsible for compliance with State and federal requirements governing the treatment and discharge of wastewater. The City's collection system consists of approximately 800 miles of gravity sewers ranging

2 UC Riverside. 2005. *2005 Long Range Development Plan Draft EIR*.

3 Ibid.

4 Ibid.

5 Ibid.

from 6 to 48 inches in diameter and 18 wastewater pump stations. Treatment is provided at the City of Riverside Regional Water Quality Control Plant (RWQCP), which has a rated capacity of approximately 40 million gallons per day (average annual basis).[6]

Campus Wastewater Generation

Wastewater generation on the UCR Campus is currently estimated 0.64 mgd of wastewater.[7] Wastewater is collected in the sanitary sewer system on campus, which consists of a network of 4-, 6-, and 8-inch-diameter lines owned and maintained by UCR. These underground gravity flow sewer lines are interconnected and flow in a general east to west and southeast to northwest direction to points of connection to sanitary sewer lines owned and maintained by the City of Riverside.[8] The City also operates the 18-inch gravity sewer in University Drive.[9]

The City and UCR have a wastewater discharge agreement that allows the Campus to discharge 1.55 cubic feet per second (cfs) (approximately 1-mgd) into the portion of the City trunk line within the East Campus between Valencia Hills Drive and Canyon Crest Drive.[10]

4.11.2.3 Storm Water Drainage

The existing storm drain system on the East Campus consists of reinforced concrete pipe ranging in size from 18 to 75 inches in diameter and aboveground conveyance ways. A 72-inch pipe follows the general alignment of Big Springs Road and North Campus Drive through the East Campus and discharges into the Gage Detention Basin north of University Avenue at Canyon Crest. An additional seven-foot box culvert runs parallel to the 72-inch pipe from east of Aberdeen Drive also discharging into the Gage Detention Basin. Excess flow follows a similar alignment but discharges into the Glade Detention Basin at Aberdeen Drive. The Botanical Garden Basin collects additional storm water runoff flows in the southeast corner of the East Campus and feeds into the system described above.[11]

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6 Riverside, City of. 2008. *Wastewater Collection and Treatment Facilities Integrated Master Plan*. February.

7 Based on LRDP Amendment 2 EIR factors that states wastewater generation would be 40 percent of domestic water demand.

8 UC Riverside. 2005. *2005 Long Range Development Plan Draft EIR.*

9 Charles Marr Consulting. 2018. *Sewer System Study for the North District Development Project.* November.

10 UC Riverside. 2005. *2005 Long Range Development Plan Draft EIR.*

11 UC Riverside. 2005. *2005 Long Range Development Plan Draft EIR.*

4.11.2.4 Solid Waste

Waste generated at UC Riverside is hauled from campus through a contract with Athens to be recycled or brought to the Robert A. Nelson Transfer Station, at 1830 Agua Mansa Road in the City of Riverside. The transfer station is owned by the Riverside County Waste Management Department and operated by Burrtec Waste Industries. Waste is eventually brought to the Badlands Class III landfill, located just east of Moreno Valley at 31125 Ironwood Avenue.[12] The landfill has 15,748,799 cubic yards/4,724,640 tons[13] total remaining disposal capacity and expected to close in 2024.[14]

In addition to Badlands landfill there are six other active landfills in Riverside County, Blythe, Desert Center, El Sobrante, Lamb Canyon, Mecca II, and Oasis. The largest, El Sobrante, has a remaining capacity of 1,293,600,000 cubic yards/388,080,000 tons and a closure horizon of 2045.[15]

4.11.2.5 Energy

The UC Riverside campus meets its energy needs by utilizing electricity and natural gas. The Campus contracts its electricity from the RPU and uses approximately 125 million kWh of electricity annually. Natural gas is used for heating and some cooling needs and is provided by the Southern California Gas Company (SCGC). The demand for natural gas is approximately 45,458 therms per day.

4.11.3 REGULATORY FRAMEWORK

4.11.3.1 Water

Federal

There are no laws at the federal level related to water supply that are relevant to the proposed project.

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12 Ibid.

13 Calculated as 600 pounds per cubic yard per guidance from Bolton on Landfill Management: Converting Cubic Yards to Tons, https://www.solidwaste.com/doc/bolton-on-landfill-management-converting-cubi-0001, accessed November 12, 2018.

14 CalRecycle SWIS Facility Detail, website: https://www2.calrecycle.ca.gov/swfacilities/Directory/33-AA-0006, accessed November 12, 2018.

15 County of Riverside, Rio Vista Draft EIR, March 2018, https://planning.rctlma.org/Portals/0/Postings/RioVista%20EIR%20550/DEIR%20Rio%20Vista%20March%202018%20Volume%201%60.pdf?ver=2018-03-22-145410-040, accessed November 15, 2018.

State

The Riverside Public Utilities Department (RPU) is responsible for meeting federal and State laws and regulations regarding water supply and water quality. Such regulations include water supply treatment system testing and monitoring, as specified in Title 23, Division 4, Chapter 1, Article 4 of the California Code of Regulations (CCR), and federal regulations promulgated by the Environmental Protection Agency.

Peter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Act provides the basis for water quality regulation in California, and establishes the authority of the State Water Resources Control Board (State Water Board) and the nine Regional Water Quality Control Boards. The Act also authorizes waste discharge requirements for municipal wastewater treatment facilities through the NPDES program. The State Water Board grants and administers NPDES permits under a provision of the Act, which established effluent limitations and water quality requirements for wastewater plant discharges.

Urban Water Management Planning Act

The Urban Water Management Planning Act (California Water Code, Division 6, Part 2.6, Section 10610 et seq.) was developed due to concerns for potential water supply shortages throughout the State of California. It requires information on water supply reliability and water use efficiency measures. Urban water suppliers, including the City of Riverside, are required, as part of the Act, to develop and implement Urban Water Management Plans to describe their efforts to promote efficient use and management of water resources.

Senate Bills 610 and 221

In 2001, the California Legislature passed Senate Bill 610 (Water Code Section 10910 et seq.) and Senate Bill 221 (Water Code Section 66473.7) to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 and SB 221 were companion measures, which sought to promote more collaborative planning between local water suppliers and cities and counties.

SB 610 requires the preparation of a water supply assessment (WSA) for large developments (i.e., more than 500 dwelling units or business establishments employing 1,000 persons or 500,000 feet of floor space). SB 221 prohibits approval of subdivisions consisting of more than 500 dwelling units unless there is verification of sufficient water supplies for the project from the applicable water supplier(s) and only

applies to residential projects. SB 610 requires cities and counties to prepare a WSA for large developments. SB 221 requires a verification of an adequate water supply for large residential subdivisions before a final subdivision map may be recorded. Additionally, when a city or county determines that a "project" as defined by SB 610 (Water Code Section 10912) is subject to CEQA, the city or county must comply with the provisions of SB 610; this information must be included in environmental review under CEQA.

SB 610 and SB 221 apply only to cities and counties, and not to the University of California, a constitutionally established public entity.

Local

There are no local laws related to water supply that are applicable to UCR. However, the Campus complies with the following policies and programs aimed at sustainable development, including minimization of water use on campus.

UC Policy on Sustainable Practices

As with all UC campuses, UCR is required to implement the Policy on Sustainable Practices. The following are specific policies listed in the UC Policy on Sustainable Practices.

- Locations will reduce growth-adjusted potable water consumption 20% by 2020 and 36% by 2025, when compared to a three-year average baseline of FY2005/06, FY2006/07, and FY2007/08. Locations that achieve this target early are encouraged to set more stringent goals to further reduce potable water consumption. Each Campus shall strive to reduce potable water used for irrigation by converting to recycled water, implementing efficient irrigation systems, drought tolerant planting selections, and/or by removing turf.

- Each location will develop and maintain a Water Action Plan that identifies long term strategies for achieving sustainable water systems. The next update of the plan shall be completed in December 2016.

UCR complies with the UC policy. In addition, the Campus has several ongoing programs and policies (PPs) related to water conservation, as described later in this section.

UCR Sustainability Action Plan

UCR recently completed a draft Sustainability Action Plan (SAP) for its campus. The SAP provides a detailed road map to sustainability that builds on the Campus's successes and presents opportunities to

develop new initiatives. Recommendations made in the SAP are designed to facilitate the achievement of goals set forth in the UC Policy on Sustainable Practices. The following are Short-Term, Intermediate, and Long-term goals in the SAP designed to address water conservation.

Short-Term Goals

Goal 1	Set a per capita water use goal for 2015
Goal 2	Reduce potable water used to irrigate landscape by 10 percent
Goal 3	Conduct building water audits
Goal 4	Establish minimum flow standards for all water-using fixtures
Goal 5	Pilot high-efficiency and dual flush toilet fixtures
Goal 6	Design an educational component to water conservation efforts
Goal 7	Apply for water rebates through the Save A Buck program
Goal 8	Develop a water efficiency retrofit program

Intermediate Goals

Goal 1	Reduce potable water use per square foot of building space
Goal 2	Reduce potable water used to irrigate landscape by 20 percent
Goal 3	Install sub-metering for irrigation water
Goal 4	Pilot water-saving urinals
Goal 5	Formally adopt water-saving toilet specifications
Goal 6	Demonstrate best practices in landscape water conservation
Goal 7	Commit to a minimum point threshold in the LEED Water Efficiency Credit Category
Goal 8	Pilot gray water technology

Long-Term Goals

Goal 1 Achieve the per capita water use 2015 goal set in the short term goals

Goal 2 Reduce potable water used to irrigate landscape by 50 percent on the East Campus, and irrigate 100 percent of the West Campus with non-potable water

Goal 3 Require water sub-metering in all new construction projects

Goal 4 Expand use of gray water

4.11.3.2 Wastewater

Federal

The major piece of federal legislation dealing with wastewater is the Federal Water Pollution Control Act, which is designed to restore and preserve the integrity of the nation's waters. In addition to the Federal Water Pollution Control Act, other federal environmental laws have a bearing on the location, type, planning, and funding of wastewater treatment facilities. As the provider of wastewater service to the UCR campus, the Sewerage Systems Services Program, administered by the City of Riverside Public Works Department, is responsible for compliance with these regulations.

State

The quality of effluent that the City of Riverside Regional Water Quality Control Plant can discharge is established by the Santa Ana Regional Water Quality Control Board (SARWQCB) through an NPDES permit that specifies Waste Discharge Requirements (WDRs). Operation of the RRWQCP is subject to regulations set forth by the California Department of Health Services (DHS) and State Water Resources Control Board (SWRCB).

4.11.3.3 Stormwater Drainage

Local

The City of Riverside Public Works Department is responsible for directing the planning, designing, construction, and maintenance of all streets, sewers, and storm drains within the City's jurisdiction. The department is also responsible for enforcement of the municipal codes and advance planning for public works-related projects. The primary goals of the City Engineering Services are to design for transportation, parking, and drainage facilities, and protect private and public improvements from flood damage. This program provides administrative and technical support services; design and construction

of the various street, sewer, and storm drain projects undertaken by the City; coordination of the off-site improvements installed by private developers; and long-range planning of Public Works facilities.

As a State entity, the University of California is not subject to local land use regulations; however, the UCR Campus works with the City of Riverside, as appropriate, to implement drainage improvements and to coordinate efforts related to stormwater quality.

4.11.3.4 Solid Waste

Federal

With the exception of disposal site siting and operational standards, there are no applicable federal laws, regulations, or policies that pertain to solid waste generation.

State

At the state level, the management of solid waste is governed by regulations established by the California Integrated Waste Management Board (CIWMB), which delegates local permitting, enforcement, and inspection responsibilities to Local Enforcement Agencies. In 1997, some of the regulations adopted by the State Water Quality Control Board pertaining to landfills (Title 23, Chapter 15) were incorporated with CIWMB regulations (Title 14) to form Title 27 of the California Code of Regulations.

California Integrated Waste Management Act

In 1989, the Legislature adopted the California Integrated Waste Management Act of 1989 (AB 939), which established an integrated waste management hierarchy that consists of the following in order of importance: source reduction, recycling, composting, and land disposal of solid waste. Under the provisions of this statute, the University of California is not subject to the act, but is encouraged to adopt reduction measures similar to local jurisdictions.

Local

UC Policy on Sustainable Practices

The following are specific policies within the UC Policy on Sustainable Practices designed to address solid waste recycling and waste management.

1. The University prioritizes waste reduction in the following order: reduce, reuse, and then recycle and compost.

2. The University supports the integration of waste, climate and other sustainability goals, including the reduction of embodied carbon in the supply chain through the promotion of a circular economy and the management of organic waste to promote atmospheric carbon reduction. In support of this goal, waste reporting will include tracking estimated scope 3 greenhouse gas emissions.

3. The University will reduce per capita total municipal solid waste generation at all locations other than health locations as follows:

    a. Reduce waste generation per capita to FY2015/16 levels by 2020

    b. Reduce waste generation by 25% per capita from FY2015/16 levels by 2025

    c. Reduce waste generation by 50% per capita from FY2015/16 levels by 2030

4. The University will achieve zero waste by 2020 at all locations other than health locations. Minimum compliance for zero waste is 90% diversion of municipal solid waste from landfill.

5. By 2020, the University will prohibit the sale, procurement or distribution of Expanded Polystyrene (EPS) other than that utilized for laboratory supply or medical packaging and products.

    a. By 2018, no EPS shall be used in foodservice facilities for takeaway containers.

The University seeks to reduce, reuse and find alternatives for EPS and laboratory and medical packaging products.

UCR Sustainability Action Plan

The following are Short-Term, Intermediate, and Long-Term goals in the UCR SAP designed to address solid waste recycling and waste management.

Short-Term Goals

Goal 1	Develop a written comprehensive recycling and waste management plan
Goal 2	Develop a marketing program for the recycling and waste management plan
Goal 3	Implement uniform outdoor cluster recycling
Goal 4	Create a recycling webpage as part of the larger UCR sustainability website
Goal 5	Adopt the Environmental Protection Agency's (EPA) Recycling Measurement tool
Goal 6	Develop a construction waste management plan

Goal 7	Require all new construction and renovation projects to divert at least 75 percent of waste from landfill disposal
Goal 8	Create a construction and demolition material hauler/processor database
Goal 9	Create a battery recycling program
Goal 10	Divert 25 percent of food waste
Goal 11	Achieve a 50 percent waste diversion rate by FY08/09

Intermediate Goals

Goal 1	Work with vendors to reduce unnecessary packaging
Goal 2	Perform waste audits for five buildings
Goal 3	Provide support for zero waste events
Goal 4	Establish a toner cartridge take-back program
Goal 5	Divert 90 percent of construction waste
Goal 6	Divert 75 percent of food waste
Goal 7	Achieve a 75 percent waste diversion rate by FY11/12

Long-Term Goals

Goal 1	Require all events to be zero waste
Goal 2	Divert 100 percent of construction waste
Goal 3	Divert 100 percent of food waste
Goal 4	Achieve zero waste by 2020

4.11.3.5 Energy

Federal

No federal policies related to energy would apply to the proposed project.

State

California Code of Regulations Title 24

New buildings in California are required to conform to energy conservation standards specified in Title 24 of the California Code of Regulations (CCR). The standards establish "energy budgets" for different types of residential and nonresidential buildings, with which all new buildings must comply. The energy budget has a space-conditioning component and a water-heating component, both expressed in terms of energy (BTU) consumed per year. The regulations allow for trade-offs within and between the components to meet the overall budget.

Energy consumption of new buildings in California is regulated by the State Building Energy Efficiency Standards, embodied in Title 24 of the CCR. The efficiency standards apply to new construction of both residential and nonresidential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building or individual agency permit and approval processes.

Local

UC Policy on Sustainable Practices

The following are specific policies within the UC Policy on Sustainable Practices designed to address energy conservation.

Green Building Design

1. All new building projects, other than acute care facilities, shall be designed, constructed, and commissioned to outperform the CBC energy-efficiency standards by at least 20% or meet the whole-building energy performance targets listed in Table 1 of Section V.A.3. The University will strive to design, construct, and commission buildings that outperform CBC energy efficiency standards by 30% or more, or meet the stretch whole-building energy performance targets listed in Table 1 of Section V.A.3, whenever possible within the constraints of program needs and standard budget parameters.

2. Acute care/hospital facilities and medical office buildings shall be designed, constructed, and commissioned to outperform ASHRAE 90.1 - 2010 by at least 30% or meet the whole-building energy performance targets listed in Table 2 in Section V.A.3.

3. No new building or major renovation that is approved after June 30, 2019 shall use onsite fossil fuel combustion (e.g., natural gas) for space and water heating (except those projects connected to an existing campus central thermal infrastructure). Projects unable to meet this requirement shall document the rationale for this decision as described in Section V.A.4.

4. All new buildings will achieve a USGBC LEED "Silver" certification at a minimum. All new buildings will strive to achieve certification at a USGBC LEED "Gold" rating or higher, whenever possible within the constraints of program needs and standard budget parameters.

5. The University of California will design, construct, and commission new laboratory buildings to achieve a minimum of LEED "Silver" certification as well as meeting at least the prerequisites of the Laboratories for the 21st Century (Labs21) Environmental Performance Criteria (EPC). Laboratory spaces in new buildings also shall meet at least the prerequisites of Labs21 EPC. Design, construction, and commissioning processes shall strive to optimize the energy efficiency of systems not addressed by the CBC energy efficiency standards.

Clean Energy

1. Energy Efficiency

   Each location will implement energy efficiency actions in buildings and infrastructure systems to reduce the location's energy use intensity by an average of least 2 percent annually.

2. On-campus Renewable Electricity

   Campuses and health locations will install additional on-site renewable electricity supplies and energy storage systems whenever cost-effective and/or supportive of the location's Climate Action Plan or other goals.

3. Off-campus Clean Electricity

   By 2025, each campus and health location will obtain 100% clean electricity. By 2018, the University's Wholesale Power Program will provide 100% clean electricity to participating locations.

4. On-campus Combustion

   By 2025, at least 40% of the natural gas combusted on-site at each campus and health location will be biogas.

UCR Sustainability Action Plan

The following are Short-Term, Intermediate, and Long-Term goals in the UCR SAP designed to address energy conservation.

Short-Term Goals

Goal 1	Hire an Energy and Utilities Manager
Goal 2	Require all new construction projects to surpass California Energy Code Title 24 by 30 percent or better
Goal 3	Assemble a Climate Neutrality team responsible for managing implementation of the Climate Action Plan
Goal 4	Perform monitoring-based commissioning (MBCx) on 10 state-funded buildings
Goal 5	Implement heat recovery projects in six State-funded buildings
Goal 6	Launch fume hood sash management campaign Goal
Goal 7	Procure 20 percent of electricity from renewable sources by 2010 per UC policy
Goal 8	Increase campus participation with the UC Systemwide Sustainability Working Group for Climate Change
Goal 9	Participate in the UC Energy Manager's monthly conference call
Goal 10	Involve UCR alumni in renewable energy installations
Goal 11	Develop a reference resource for energy efficiency incentives

Intermediate Goals

Goal 1	Perform monitoring-based commissioning on the six remaining state-funded buildings identified in the SEP
Goal 2	Increase on-site renewable energy capacity to one megawatt (MW) by 2014
Goal 3	Purchase renewable geothermal power
Goal 4	Investigate energy-saving information technology (IT) projects
Goal 5	Require that eligible projects utilize the Savings by Design and Labs 21 programs
Goal 6	Develop behavioral/education programs that promote energy conservation
Goal 7	Develop and implement a campus standard retro-commissioning (RCx) protocol

Goal 8 Pursue funding from the University of California/California State University/Investor-Owned Utility (UC/CSU/IOU) Energy Efficiency Partnership Program

Goal 9 Reduce greenhouse gas emissions to 2000 levels by 2014

Goal 10 Revise the Climate Action Plan

Long-Term Goals

Goal 1 Complete monitoring-based commissioning on all buildings that are not State funded

Goal 2 Develop student residence hall energy competitions

Goal 3 Develop energy intensity standards for the campus's major space usage types

Goal 4 Adopt a consistent integrative approach to project delivery

Goal 5 Investigate emerging technologies

Goal 6 Establish a climate-friendly investing policy

Goal 7 Reduce greenhouse gas emissions to 1990 levels by 2020

4.11.4 IMPACTS AND MITIGATION MEASURES

4.11.4.1 Significance Criteria

The impacts on utilities from the implementation of the North District Development Plan would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *State CEQA Guidelines*:

Water Supply

- Require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed

Wastewater

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board
- Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects

- 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 providers existing commitments

Stormwater

- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects

Solid Waste

- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs

- Fail to comply with federal, state, and local statutes and regulations related to solid waste

Energy

- Require or result in the construction or expansion of electrical and natural gas facilities, which could cause significant environmental impacts

- Encourage the wasteful or inefficient use of energy

4.11.4.2 CEQA Checklist Items Adequately Addressed in the Initial Study

The Initial Study (IS) found that the proposed project would not require the expansion of existing storm water facilities. Under the NDD Plan, the amount of impervious surfaces at the site would decrease and runoff would not increase compared to existing conditions. On-site storm drain improvements are included in the NDD Plan infrastructure. Therefore, implementation of the NDD Plan, including the Phase 1 project, would not substantially impact storm water facilities and no impact would occur. No further analysis of this issue is required in the EIR.

4.11.4.3 Methodology

The analysis of impacts to utilities and service systems is based on a comparison of the projected demand of the proposed project to available supplies, and the resulting need, if any, for new, expanded, or modified facilities to meet the increased demand. Under CEQA, a project's impacts would be considered significant if the project would require new or expanded utility service facilities, the construction of which would result in significant environmental impacts.

4.11.4.4 Project Impacts and Mitigation Measures

Water Supply

Impact 4.11-1 **Development under the proposed NDD Plan would generate an additional demand for water. However, the proposed project includes relevant Programs and Practices that will be implemented as individual development projects are proposed on the campus and will ensure that new or expanded water supply entitlements will not be required. (*Less than Significant*)**

Development of the proposed NDD Plan would increase water demand on Campus. Although the Canyon Crest Family Student Housing Complex is currently vacant, the low density housing once necessitated approximately 52,000 gallons per day. Total average NDD Plan water demand would be substantially higher, estimated at approximately 624,474 gpd or 700 AFY as detailed by **Table 4.11-4, NDD Project Water Demands**, 11 acres of open space may utilize recycled water sources.

Table 4.11-4
NDD Project Water Demands

Proposed Land Use	Building Area (sf)	Acres[2]	Quantity[1]	Average Demand (gpd)
Student Residential 1	15,000	2.125	1,000 beds	80,000
Mixed-use District 1	15,000	2.125	1,000 beds	6,375
Student Residential 2	22,000	3.075	1,300 beds	104,000
Mixed-use 2	22,000	3.075	1,300 beds	9,225
Dining Commons	22,000	[4]	1,300 beds	--
Student Residential 3	50,000	2.725	1,400 beds	112,000
Mixed-use Residential 3	50,000	2.725	1,400 beds	8,175
Student Residential 4	70,000	4.2	2,600 beds	208,000
Mixed-use Residential 4	70,000	4.2	1,000 beds	12,600
Student Residential 5	--	1.7	7,000 seats	80,000
Mixed-use Residential 5	--	1.7	--	5,100
Events Center	--	5.7	--	9,973
Open Space	--	11.6	--	41,426
Parking 1	--	2.15	--	--
Parking 2	--	4.05	--	--
Total Proposed	**157,000**	**51.5**	**7,300 beds**	**676,874**
	Net Average Domestic Water Demand			**624,474**
	Net Average Domestic Water Demand			**700 AFY**

Source: Charles Marr Consulting, 2018.
Notes:
1 Taken from NDDP Initial Study, June 2018. Based on maximum proposed buildout density.
2 Assumes 'residential' and 'mixed-use' split the total segment acreage equally.
3 Water demand for dining commons is included in the unit factor per student.

To minimize impacts on water utilities, the proposed NDD Plan would follow water conservation policies listed in the UC Policy on Sustainable Practices and would implement the following LRDP Programs and Practices (PPs).

PP 4.15-1(a) *Improvements to the campus water distribution system, including necessary pump capacity, will be made as required to serve new projects. Project-specific CEQA analysis of environmental effects that would occur prior to project-specific approval will consider the continued adequacy of the domestic/fire water systems, and no new development would occur without a demonstration that appropriate domestic/fire water supplies continue to be available.*

PP 4.15-1(b) *To further reduce the campus' impact on domestic water resources, to the extent feasible, UCR will*

(i) Install hot water recirculation devices (to reduce water waste)

(ii) Continue to require all new construction to comply with applicable State laws requiring water-efficient plumbing fixtures, including but not limited to the Health and Safety Code and Title 24, California Code of Regulations, Part 5 (California Plumbing Code)

(iii) Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time

(iv) Install recovery systems for losses attributable to existing and proposed steam and chilled-water systems

(v) Prohibit using water as a means of cleaning impervious surfaces

(vi) Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time

PP 4.15-1(c) *The Campus shall promptly detect and repair leaks in water and irrigation pipes.*

PP 4.15-1(d) *The Campus shall avoid serving water at food service facilities except upon request.*

Table 4.11-5, Projected Water Demand and Supply for RPU Service Area, shows the demand and supply data for current (2015) and projected water demand and supply for the Riverside Public utilities, including additional demand that the NDD Plan would require through 2040. As shown below, the RPU anticipates meeting future water demands, including those generated by the proposed NDD Plan, through 2040.

Table 4.11-5
Project Water Demand and Supply for RPU Service Area

	(AFY)	Projected (AFY)				
	2015	**2020**	**2025**	**2030**	**2035**	**2040**
Demand						
Raw and Potable	74,928	88,791	90,104	92,585	95,159	97,827
Recycled	200	6,430	6,430	6,430	6,430	6,430
Total Water Demand	75,128	95,221	96,534	99,015	101,589	104,257
Supply						
Local Groundwater Production	74,926	88,773	93,773	96,573	96,573	96,573
Import- WMWD	21,700	21,700	21,700	21,700	21,700	21,700
Total Raw and Potable Supply	96,626	110,473	115,473	118,273	118,273	118,273
Recycled Supply	200	6,430	6,430	6,430	6,430	6,430
Total Water Supply	**96,826**	**116,903**	**121,903**	**124,703**	**124,703**	**124,703**
Potable Water Supply Surplus	**21,498**	**15,252**	**18,939**	**19,258**	**16,684**	**14,016**
Total Water Supply Surplus	**21,698**	**21,682**	**25,369**	**25,688**	**23,114**	**20,446**

Source: Charles Marr Consulting, 2018

The RPU has a sufficient water supply to provide water services to its service area, including UC Riverside through 2040. As such, new or expanded water supplies would not be necessary and the impact would be less than significant.

Wastewater

Impact 4.11-2 **Development under the proposed NDD Plan would generate additional wastewater on the campus, which could require the construction of new or expanded wastewater treatment facilities. (*Potentially Significant; Less than Significant with Mitigation)***

Wastewater generated at the campus is discharged into the City's sewer system. Two sewer system studies have been performed to evaluate current wastewater flows and to estimate future flows generated by the proposed NDD Plan, one by Carollo, submitted to the City of Riverside in October 2018 (included as **Appendix 4.11b** to this Revised Draft EIR), and a second, supplemental sewer study (SSS) provided to UCR by Charles Marr Consulting dated February 26, 2019 (included as **Appendix 4.11c** to this Revised Draft EIR). It is estimated that at buildout the proposed NDD Plan would generate 1,365 gpm of wastewater under maximum flow/ peak scenarios. Sewers at Linden Street, Canyon Crest Drive,

and University Avenue would be utilized to manage wastewater flow from the project site. Based on field flow monitoring, the SSS concluded that each sewer currently flows at the maximum flow characteristics under dry-weather conditions as shown in **Table 4.11-6**:

Table 4.11-6
Sewer Flow Monitoring Results

Sewer	Diameter	Max Flow	Max Velocity	Level	d/D ratio
Linden Street	8 in	63 gpm	2.48 fps	1.89 in	0.236
Canyon Crest Drive	8 in	96 gpm	4.24 fps	1.96 in	0.245
University Avenue	18 in	661 gpm	4.23 fps	5.11 in	0.284

in = inches gpm = gallons per minute fps = feet per second d/D ratio = maximum depth of flow to diameter of pipe ratio
Source: Charles Marr Consulting, February 2019

The peak wastewater flow contribution from the NDD Plan is estimated at 277 gpm for Phase 1, and 1,365 gpm including future NDDP development under maximum proposed density. The peak wastewater flow contribution from the NDD Plan under minimum proposed density is estimated at 190 gpm for Phase 1, and 833 gpm at buildout. The SSS estimates current operating peak depth ratios in the three sewers at approximately 23.6 to 28.4 percent (**Table 4.11-6**). It is estimated that adequate capacity is available within the 18-inch University Drive sewer for Phase 1 and buildout of the NDD Plan plus current dry weather flow, which confirms the findings of the October 2018 Carollo report. Estimated ultimate dry-weather flows could generate depth-to-diameter ratios within the 18-inch University Avenue sewer up to 51 percent at buildout of maximum Project density, and 43 percent at buildout of minimum Project density. Very conservative rain-dependent inflow and infiltration (RDII) assumptions at 150 percent of peak flow would increase these ratios to 65 percent and 55 percent. Depth ratios for Phase 1 would be significantly lower. These estimated depth ratios are within recommended operating standards for existing 18-inch gravity sewers.

Existing Linden Street and Canyon Crest Drive sewer capacities would be sufficient for Phase 1 NDD Plan flows. Under project buildout, and depending on on-site sewer collection design, the Linden Street 8-inch sewer may require upsizing beyond Phase 1. In like manner, the 8-inch sewer in Canyon Crest Drive north of Linden Street may also require upsizing beyond Phase 1. The Canyon Crest Drive sewer south of Linden Street will require upsizing or paralleling prior to ultimate buildout of the NDD Plan.

The proposed NDD Plan would implement water conservation policies from the UC Policy on Sustainable Practices and adhere to goals listed in the water section of the SAP. Implementation of LRDP **PP 4.15-5** would further minimize wastewater impacts.

PP 4.15-5 *The Campus will continue to comply with all applicable water quality requirements established by the SARWQCB.*

To minimize the impacts of the proposed NDD Plan on the Linden Street and Canyon Crest Drive sewers, **Mitigation Measures UTL-1** and **UTL-2** would be implemented. Due to its size, the University Avenue sewer has adequate capacity to manage potential future peak flows, estimated at maximum of 1,365 gpm.

MM UTL-1 The on-site wastewater system should be designed to limit flows to the Linden Street sewer. Conveyance of dry-weather flow from the NDD Plan site should be limited to 333 to 400 gpm.

MM UTL-2 Following the completion of Phase 1 of the NDD Plan, the Campus shall perform new sewer monitoring to determine the existing flows. The Canyon Crest sewer shall be paralleled or upsized to meet the wastewater utilities demands generated by the proposed NDD Plan at Buildout. The upgrades would consider wet weather flows, peaks that may not coincide with existing flows, and flow attenuation.

Additionally, point source flow generated from the Athletic Events Center during sold out events (5,000 to 7,000 seats) could be a critical sizing condition for the sewer. However, these events would likely not coincide with all other peak flows served by the system. Potential peak flows generated by the Athletic Events Center would be evaluated upon the completion of the structural/plumbing design to thoroughly assess wastewater impacts. With the implementation of the LRDP **PP 4.15-5** and mitigation measures **MM UTL-1** and **MM UTL-2**, the sewer system would be able to manage wastewater flows generated by the proposed NDD Plan. The impact would be less than significant.

Solid Waste

Impact 4.11-3 **Development under the proposed NDD Plan would generate solid waste, but not enough to require the expansion of the permitted capacity of a regional landfill. (*Less than significant*)**

At buildout, the proposed NDD Plan would generate approximately 1,244,025 tons/year.[16] Under the requirements of the Zero Waste 2020 as of the 2015/16 fiscal year (the most recently reported) UC

[16] Calculated using an annual generation rate of 0.675 ton per 1,000 gross square foot (gsf), with buildout assumed to be approximately 1,843,000 gsf.

Riverside has achieved a 78 percent diversion rate,[17] which would bring the annual disposal rate at buildout to 273,685.5 tons. As noted above, the Badlands landfill has a capacity of 4,724,640 tons, and the El Sobrante landfill has a remaining capacity of 388,080,000 tons, thus there is sufficient space to accommodate the increase in solid waste generated by the NDD Plan. As such, the proposed NDD Plan would not require the development of a new landfill or the expansion of the current facilities. The impact would be less than significant.

Energy

Impact 4.11-4 **Implementation of the proposed NDD Plan could increase the demand for electricity, but would not require or result in the construction of significant new distribution facilities, the construction of which could cause significant environmental impacts. (*Less than significant*)**

The addition of about 1.843 million gsf of building space associated with the NDD Plan would result in an increase in electricity demanded on campus. Phase 1 of the NDD Plan would use approximately 3.2 million kilowatt-hours (kWh) of electricity annually; at buildout the NDD Plan would use approximately 18.5 million kWh of electricity annually.[18]

The RPU currently provides electricity to the UCR campus. In 2011, the Campus used approximately 124 million kWh of electricity annually.[19] The energy is received through a 69 kilovolt (kV) line at a substation west of I-215/SR-60. From this point, the power is reduced to a usable voltage and then distributed to individual buildings and transformers. In 2013, the Campus approved the West Campus Solar Farm project, which allowed the energy company to construct, operate, and maintain a photovoltaic (PV) facility or solar farm on a 10.92-acre site on the West Campus. The PV system generates 6.6 million kilowatts (kWh) direct current (DC) of electricity which provides for approximately 38 percent of the base electrical demand on the campus. In addition, the RPU does or will have adequate infrastructure to serve remaining and new development on campus as needed based upon specific timing of development

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17 University of California – Solid Waste & Recycling Working Group Fiscal Year 2015–2016, website https://www.ucop.edu/sustainability/policy-areas/waste-reduction-and-recycling/index.html, accessed November 15, 2018.

18 American Campus Communities. 2019. Personal communication via electronic mail with Impact Sciences, February 21.

19 UCR Physical Plant. 2011. Personal communication via electronic mail with Impact Sciences, July 20.

and/or load additions; as such, the RPU does not anticipate any problems in providing electricity to new development on campus.[20]

As with all future development at the UC Riverside campus, the proposed NDD Plan would comply with the UC Policy on Sustainable Practices, as well as any future conservation goals or programs enacted by the University of California. The NDD Plan would be designed utilizing best practices and energy-saving measures to the extent feasible, as it would be required to minimize energy use in order for the campus to attain the GHG reduction goals listed in the Campus CAP. In addition, campus development would comply with any future conservation goals or programs enacted by the University of California.

With adherence to energy conservation policies listed in the UC Policy on Sustainable Practices and efforts to reach GHG reduction goals in the CAP, development that would occur under the NDD Plan would not require the construction or expansion of electrical facilities, which could cause significant environmental effects. Therefore, the impact related to new distribution facilities would be less than significant.

Impact 4.11-5 **Implementation of the proposed NDD Plan would not increase the demand for natural gas, and thus would not require or result in the construction of new gas production or transmission facilities, the construction of which could cause significant environmental impacts. (*Less than Significant*)**

Despite the addition of approximately 1.843 million gsf of building space associated with the NDD Plan, there would be no increase in natural gas demand on campus as the NDD Plan would solely use electricity for space and water heating. Total campus natural gas demand at the present time is approximately 45,458 therms per day.

As stated above, development that would occur under the NDD Plan would be required to follow energy conservation policies listed in the UC Policy on Sustainable Practices and minimize energy use in order for the campus to attain the GHG reduction goals listed in the Campus CAP. In addition, campus development would comply with any future conservation goals or programs enacted by the University of California.

While the SCGC has indicated that it could provide gas service to the campus under the NDD Plan, and that service would be in accordance with the Company's policies and extension rules on file with the California Public Utilities Commission, given the all-electric design of the NDD Plan, no modifications or

[20] McKown, Jeff. 2011. City of Riverside Public Utilities. Personal communication via electronic mail with Impact Sciences, July 21.

extensions of existing natural gas distribution infrastructure on the campus would be required to serve new development, and this impact would be less than significant.

Impact 4.11-6 **Implementation of the proposed NDD Plan would not result in the wasteful, inefficient, or unnecessary use of energy by UCR. (*Less than significant*)**

Buildout of the NDD Plan would result in the addition of about 1.84 million gsf of building space to the campus, increasing the amount of electricity used on the campus.

As previously discussed, UC Riverside has determined that the 2005 LRDP Planning Strategies (PS), Planning Principles (PP) and Mitigation Measures (MM) that have been incorporated into projects proposed under the 2005 LRDP are important to the Campus and so they will also be incorporated into all development under the NDD Plan. Further, as described above, the campus would be required to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with the current UC Policy on Sustainable Practices, as well as any future conservation goals or programs enacted by the University of California. Compliance with these regulations and policies would include energy conservation measures that would reduce electricity consumption rates. Additionally, the recent expansion of the campus's thermal energy storage (TES) system allows for increased generation of chilled water during off-peak energy use periods for use during peak periods and would also allow the distribution of chilled water for cooling systems through a gravity-feed system, which would result in further energy conservation.

As the NDD Plan would be designed with a focus on energy efficiency, implementation of the proposed NDD Plan would not encourage the wasteful use of energy and the impact would be less than significant.

4.11.4.5 Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative impacts on utilities and service systems includes the UC Riverside campus and the City of Riverside.

Impact 4.11-7 **Cumulative development, including the proposed project and related projects, would not necessitate the expansion of current utility facilities or the development of new water, wastewater, stormwater, solid waste, or energy facilities. The contribution of the proposed project to this cumulative impact would not be cumulatively considerable.**

As described above in Impact 4.11-1, the Campus has enough water supply to satisfy future demands, including the development of the NDD Plan and other foreseeable projects as described in the 2005 LRDP. Existing stormwater facilities are also adequate to manage demand increases affiliated with

cumulative growth in the future. The implementation of **MM UTL-1** and **MM UTL-2** would ensure that the sewers serving the project site would be upgraded and/or expanded to accommodate the future demand on wastewater services under the development of the NDD Plan. As discussed under Impact 4.11-3 there is enough landfill capacity in the County of Riverside to satisfy projected solid waste disposal needs of the NDD Plan at buildout.

As discussed under Impact 4.11-4, the existing electrical infrastructure is sufficient to serve the NDD Plan and no upgraded or expanded facilities would be necessary to serve the project.

It would be speculative to assume that cumulative development would generate the need for new electricity generation facilities, or where new generation facilities would be located, or to evaluate environmental impacts resulting from the construction and operation of new facilities. Furthermore, before new production and transmission facilities to serve the growth in the service area are approved by the Southern California Edison or RPU, an environmental document would be prepared that analyzes and discloses environmental impacts from the construction and operation of new facilities and imposes mitigation measures as conditions of project approval to address significant impacts. Therefore, the cumulative impact on electricity production and transmission facilities is not considered further in this Revised Draft EIR. In addition, the amended 2005 LRDP includes sustainability goals to substantially reduce the Campus's energy use. The extensive programs focused on demand reduction would minimize the project's contribution to cumulative impacts.

Cumulative development within the service area of the SCGC would increase demand for natural gas and could result in the need for new gas production and transmission facilities, the construction of which could cause a significant environmental impact. However, because natural gas can be transmitted for long distances, it can be obtained from a wide range of sources, both in and out of California. As a result of this characteristic, it would be speculative to assume cumulative development would generate the need for new natural gas production facilities, or where new facilities would be located, or to evaluate environmental impacts resulting from the construction and operation of new facilities in California. In addition, before new production and transmission facilities are approved in California, an environmental document would be prepared that analyzes and discloses environmental impacts from the construction and operation of new facilities and imposes mitigation measures as conditions of project approval to address significant impacts. Therefore, the cumulative impact on natural gas production and transmission facilities is not considered further in this Revised Draft EIR. Furthermore, while the NDD Plan would not utilize natural gas as an energy source, UCR would continue to implement sustainability goals to substantially reduce the Campus's natural gas use. These extensive programs focused on demand reduction would minimize the UCR's contribution to cumulative impacts.

5.0 OTHER CEQA CONSIDERATIONS

Section 15126 of the *California Environmental Quality Act (CEQA) Guidelines* state that an Environmental Impact Report (EIR) must include a discussion of the following three topics:

- significant environmental effects which cannot be avoided if the proposed project is implemented,
- significant irreversible environmental changes which would be involved in the proposed project should it be implemented, and
- growth-inducing effects of the proposed project.

In addition, Section 15128 of the *State CEQA Guidelines* requires a brief statement of the reasons that various possible effects of a project have been determined not to be significant and, therefore, are not evaluated in the EIR. The following sections address each of these types of impacts.

5.1 SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE PROJECT

Table 2.0-3, Summary of Impacts and Mitigation Measures, which is contained in **Section 2.0** of this EIR, and **Sections 4.1** through **4.11** of this EIR provide a comprehensive identification of the environmental effects of the proposed North District Development Plan (NDD Plan), including the level of significance both before and after mitigation.

5.2 SIGNIFICANT AND UNAVOIDABLE EFFECTS

An EIR must identify significant impacts associated with a proposed agency action that could not be mitigated to a less than significant level. As part of the certification process, the Board of Regents of the University of California (The Regents) or its delegate will make a final decision as to the significance of impacts and the feasibility of mitigation measures in this EIR. As detailed in **Section 4.0**, implementation of the proposed NDD Plan would result in the following significant impacts that could not be mitigated to a less than significant level:

Air Quality

Impact 4.2-2: **Construction and operation of the proposed project could result in emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation.**

Impact 4.2-4: **Implementation of the proposed project could result in a cumulatively considerable net increase of a criteria pollutant for which the project region is**

nonattainment under an applicable federal or State ambient air quality standard.

Noise

Impact 4.6-4 **Construction associated with the proposed project would expose persons on- or off-campus to excessive groundborne vibration levels.**

Impact 4.6-5 **Cumulative development would cause a significant cumulative impact related to substantial permanent increases in ambient noise levels. The contribution of the proposed projects and related projects to this cumulative impact would be cumulatively considerable.**

Traffic

Impact 4.10-1 **Implementation of the proposed NDD Plan would result in additional vehicular trips, which would increase traffic volume and degrade intersection levels of service.**

Impact 4.10-3 **Implementation of the proposed NDD Plan would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under 2025 conditions.**

All other environmental impacts (project-specific and cumulative) are either less than significant or can be mitigated to a less than significant level.

5.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 15126.2(c) of the *State CEQA Guidelines* states that an EIR must include a discussion of any significant irreversible environmental changes that would be caused by a proposed project. Generally, a project would result in significant irreversible environmental changes if:

- the primary and secondary impacts would generally commit future generations to similar uses;
- 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; or

- the project involves uses in which irreversible damage could result from any potential environmental accidents associated with the project.

Development of the proposed NDD Plan would result in the continued commitment of the project site to University-related uses, thereby precluding any other uses for the lifespan of the campus. The Regents' ownership of the campus represents a long-term commitment of the campus lands to University use. As with the restoration of the campus as a whole to pre-developed conditions, restoration of the project site and related project sites would not be feasible given the degree of disturbance, the urbanization of the area, and the level of capital investment.

Resources that would be permanently and continually consumed by project implementation include water, electricity, natural gas, and other fossil fuels used in the generation of electricity. In addition, construction activities related to the proposed projects and related projects 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. However, the consumption of these resources during construction and operation of campus facilities would not represent unnecessary, inefficient, or wasteful use of resources.

All phases of the NDD Plan would be designed to meet provisions of the University Policy on Sustainable Practices and consider the UC Carbon Neutrality Initiative by targeting Leadership in Energy and Environmental Design (LEED) certification at a Silver level for individual buildings using the framework of the LEED rating system.

With respect to operational activities on campus, compliance with all applicable building codes, as well as the Campus's continued commitment to the 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures would ensure that all natural resources are conserved to the maximum extent feasible. It is also possible that new technologies or systems will emerge, or will become more cost-effective or user-friendly, to further reduce the Campus' reliance on nonrenewable natural resources. Overall, the consumption of natural resources would increase at a lesser rate than the projected population increase due to the variety of energy conservation measures that the Campus has and will continue to implement.

As previously discussed, the Campus has instituted lighting and other energy conservation measures and has been replacing in-building lighting systems with up-to-date energy-saving equipment when appropriate. 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, the Campus would implement the NDD Plan in accordance with specifications

contained in Title 24 of the California Building Code. Through the efficient use of electricity on Campus, the use of natural gas on the Campus would also be reduced.

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 UCR campus uses, transports, stores, and disposes of hazardous wastes, as described in **Section 4.4, Hazards and Hazardous Materials**, the Campus complies 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. In the history of UC ownership of the campus, there have been no accidents resulting in irreversible environmental damage, indicating that current practices with respect to hazardous materials handling are adequate, and thus the potential for the proposed projects and related projects to cause irreversible environmental damage from an accident or upset of hazardous materials is considered low.

5.4 GROWTH-INDUCING IMPACTS

This section evaluates the potential for the NDD Plan to induce growth in the Riverside area. 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 under 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.

For the purposes of this analysis, the NDD Plan would be considered growth-inducing if it met either of the following criteria:

- Implementation of the NDD Plan causes economic expansion and population growth through employment expansion and/or the construction of new housing, or

- Implementation of the NDD Plan removes an obstacle to population growth (for example, through the expansion of public services or utilities into an area that does not presently receive these services), or through the provision of new access to an area, or a change in a restrictive zoning or General Plan land use designation.

An evaluation of the proposed NDD Plan against these criteria is provided below.

5.4.1 Economic Expansion

Direct Growth

The proposed NDD Plan includes the development of up 5,200 beds to meet the needs of the 25,000 students projected to attend the University under growth already projected by the 2005 LRDP. The proposed NDD Plan is intended to meet the needs of projected campus enrollment and would not, in itself, increase the enrollment at UC Riverside. New employment opportunities generated by the NDD Plan would not be considered sufficient to include employment generating uses that would result in unplanned population growth due to the small number of jobs (approximately 70) added.

Indirect Economic Growth

The NDD Plan would not result in growth inducement as a result of economic expansion or population growth. The addition of population in an area has the potential to increase the amount of spending, thereby stimulating the economic activity of the area. Increased future employment generated by resident and employee spending can ultimately result in the physical development of space or the need for services to accommodate additional employees to serve the new population. However, the additional on-campus population associated with the project would create minimal demand for additional goods and services. Therefore, apart from the direct jobs on the campus, the NDD Plan would result in minimal creation of new indirect and induced jobs. (Indirect jobs are those that are created or sustained when the Campus purchases goods and services from businesses in the region, and induced jobs are created or sustained when wage incomes of those employed in direct and indirect jobs are spent on the purchase of goods and services in the region.)

Indirect Population Growth

The indirect and induced employment that would result from growth in direct employment on campus could in turn result in additional population growth as individuals move into the study area to fill these jobs. However, the proposed NDD Plan would create a very small number of new jobs on the campus, and these have already been accounted for in the 2005 LRDP as amended and regional growth forecasts.

The indirect population growth that could be generated in association with the NDD Plan would be negligible.

5.4.2 Removal of Impediment to Growth or Urbanization in a Remote Location

Growth in an area may result from the removal of physical impediments or restrictions to growth, as well as the removal of planning impediments resulting from land use plans and policies. In this context, physical growth impediments may include non-existent or inadequate access to an area or the lack of essential public services (e.g., water services), and planning impediments may include restrictive zoning and/or general plan designations.

As discussed in section 4.11, Utilities, existing utility systems would be extended slightly, and in the case of some sewer lines need to be upsized, to serve the NDD Plan at full buildout. The necessary infrastructure currently exists adjacent to the proposed project site to serve Phase 1, and all utility connections would be made within the campus boundaries. Because campus utilities do not serve off-campus areas, utility extensions and expansions would not result in the removal of existing impediments to growth off campus or lead to urban growth outside the boundary of the campus. In addition, the proposed NDD Plan is located within the existing developed areas of the campus and is not in a remote location where the provision of infrastructure could enable additional development. The physical environmental effects of utility installation within the confines of the campus due to the NDD Plan are analyzed in the other sections of this EIR.

5.4.3 Precedent Setting Action

A decision by The Regents of the University of California or its delegate to approve the NDD plan would not be considered a precedent-setting action. Approval of campus projects would continue to be considered on a case-by-case basis and project approval would not necessarily mean that other development approvals in the area would follow.

Due to the limited increase in population and employment and the fact that major infrastructure extensions would not occur, the proposed NDD Plan is not considered growth-inducing. While the City of Riverside as a whole could exceed SCAG projections for the City (based on the 2014 Housing Element) the projected growth is expected to be accommodated by existing or planned facilities and services.

5.5 MITIGATION MEASURES PROPOSED TO MINIMIZE SIGNIFICANT EFFECTS OF THE PROPOSED PROJECT

Table 2.0-3, Summary of Impacts and Mitigation Measures, which is contained in **Section 2.0** of this EIR, provides a comprehensive identification of the environmental effects of the proposed projects and related projects, along with proposed mitigation measures.

5.6 EFFECTS FOUND NOT TO BE SIGNIFICANT

Section 15128 of the *State CEQA Guidelines* requires an EIR to briefly describe any potential environmental effects that were determined not to be significant during the Initial Study and EIR scoping process and were, therefore, not discussed in detail in the EIR. All impacts found less than significant are described in the Initial Study or in the sections of the EIR.

5.7 ALTERNATIVES TO THE PROPOSED PROJECT

Alternatives to the proposed projects are presented in **Section 6.0, Alternatives** of this EIR.

6.0 ALTERNATIVES

6.1 INTRODUCTION

The California Environmental Quality Act (CEQA) requires an Environmental Impact Report (EIR) to describe and evaluate a range of alternatives to the proposed project or alternatives to the location of the proposed project. The purpose of the alternatives analysis is to explore ways that the objectives of the proposed project could be attained while reducing or avoiding significant environmental impacts of the project as proposed. This process is intended to foster informed decision making in the environmental process. This section presents the alternatives to the proposed North District Development Plan (NDD Plan) evaluated for their ability to reduce or avoid the proposed NDD Plan's significant impacts.

6.2 PROJECT OBJECTIVES

The objectives of the North District Development Plan are to:

- Support the Campus goal to house up to 50 percent of enrolled students on-campus and to guarantee on-campus housing to all freshman and transfer students;
- Enhance the student experience by integrating the principles of residential and academic life;
- Promote environmental and sustainability goals by reducing vehicular trips to and from the campus;
- Provide affordable on-campus student housing;
- Develop and operate approximately 4,000 to 5,200 beds of student housing for first year, second year, transfer, upper division undergraduate students and graduate students, along with adequate support spaces, multi-functional spaces, amenities and associated infrastructure while maximizing the building height and density of the entire project site;
- Provide an approximately 600-seat dining facility by delivery of a Future Phase of the project;
- Complete and open the student housing component of the first phase of approximately 1,500 beds by 2021;
- Complete and open the Athletics Event Center as soon as feasible;
- Establish a new iconic gateway to the Campus on the northwest corner of the project site;
- Provide adequate parking to support all phases of development through delivery of the Future Phase(s).

6.3 RANGE OF ALTERNATIVES CONSIDERED

The range of alternatives studied in the EIR must be broad enough to permit a reasoned choice by decision-makers when considering the merits of the project. The analysis should focus on alternatives that are feasible, i.e., that may be accomplished in a successful manner within a reasonable period of time, and that take economic, environmental, social, and technological factors into account. Alternatives that are remote or speculative need not be discussed. Furthermore, the alternatives analyzed for a project should focus on reducing or avoiding significant environmental impacts associated with the project as proposed.

Implementation of the proposed North District Development Plan (NDD Plan) would result in potentially significant project-level environmental impacts to air quality associated with off-site motor vehicle emissions during operations, exceedance of UC policy thresholds for greenhouse gas emissions due to mobile sources, groundborne vibration levels during construction, cumulative environmental impacts to air quality associated with off-site motor vehicle emissions, cumulative impacts from an increase in ambient noise levels at on- and off-campus sensitive receptors due to project construction, and cumulative impacts resulting from project operational traffic. These impacts cannot be reduced to a less than significant level through incorporation of mitigation measures, and would remain significant and unavoidable.

The analysis below presents both the alternatives that were considered but not carried forth for detailed evaluation and alternatives that were evaluated in detail. As required by the *State CEQA Guidelines*, a No Project Alternative is also analyzed. Each alternative that was evaluated in detail was examined for feasibility of implementation, ability to meet project objectives, and ability to reduce significant environmental impacts of the proposed projects.

6.4 ALTERNATIVES CONSIDERED BUT NOT EVALUATED IN DETAIL

This section discusses alternatives that were considered but were not carried forth for detailed evaluation because they did not meet project objectives or were found to be infeasible for technical, environmental, or social reasons.

6.4.1 University Purchase of Local Existing Housing Stock

Under this alternative, UCR considered but rejected the possibility of purchasing sufficient residential property off-campus to meet the need for approximately 1,500 additional apartment-style beds as impractical given the local real estate market and the number of units that would be required. Due to UCR having an abundant amount of land adjacent to the core of campus, pursuing opportunities to

purchase properties in proximity to the core of campus is not considered a financially prudent option, since the campus would have to pay the full improvement value (plus land) for any asset purchased in the market. Further, at this time, there are no known opportunities to secure existing developments or potential redevelopment sites that would be large enough to satisfy the campus demand for housing. Most of the available apartment inventory adjacent to the campus was constructed more than 30 years ago, was developed to low-density zoning standards in the City of Riverside, and is already mostly populated by UCR students.

6.5 ALTERNATIVES EVALUATED IN DETAIL

This section presents an evaluation of the following alternatives to the proposed NDD Plan project: a No Project Alternative, the West Campus Site Alternative, and the Reduced Project Alternative. For each alternative, a brief description is first presented, followed by a summary impact analysis relative to the proposed projects, and an assessment of the degree to which the alternative would meet project objectives.

6.5.1 Alternative 1: No Project

Description

Under the No Project Alternative, the proposed NDD Plan would not be developed. However, the Campus would still be able to complete the buildout of the LRDP; given the land use designations of *Family, Apartment Housing and Related Support*, *Residence Hall and Related Support*, *Athletics and Recreation*, and *Parking* for the proposed project site, development of the project site with other uses could still occur in the future, which could result in impacts generally similar to those from the NDD Plan; however no other plans are currently under consideration for the site.

Impact Analysis

Aesthetics

The No Project Alternative would avoid the less than significant aesthetic impacts identified in **Section 4.1, Aesthetics** of this EIR because no buildings or parking structures would be developed on the NDD Plan site and the site would remain in its existing physical condition.

Agricultural and Forest Resources

No important farmland is located on the sites of the NDD Plan, and the site is not used or designated for agriculture. As with the NDD Plan, the No Project Alternative would not affect agricultural resources and there would be no impact. Similarly, there would be no impact on forest lands.

Air Quality

The No Project Alternative would avoid the significant impacts identified in **Section 4.2, Air Quality** of this EIR because the NDD Plan site would remain in its existing physical condition. There would be no construction or new or increased operational emissions.

Biological Resources

The No Project Alternative would avoid the less than significant impacts to biological resources identified in the Initial Study (**Appendix 1.0** of this EIR) because the NDD Plan site would remain in its currently existing physical condition.

Cultural Resources

The No Project Alternative would avoid the less than significant impacts to cultural resources identified in the Initial Study (**Appendix 1.0** of this EIR) because the NDD Plan site would remain in its existing physical condition.

Geology and Soils

The No Project Alternative would avoid the less than significant impacts related to geology and soils identified in the Initial Study (**Appendix 1.0** of this EIR) because the NDD Plan site would remain in its existing physical condition. There would be no ground-disturbing activities or new occupants at the proposed project site.

Greenhouse Gas Emissions

The No Project Alternative would avoid the significant greenhouse gas emission impacts identified in **Section 4.3, Greenhouse Gas Emissions** of this EIR because the NDD Plan site would remain in its existing physical condition. There would be no construction or new operational GHG emissions.

Hazards and Hazardous Materials

The No Project Alternative would avoid the less than significant impacts identified in **Section 4.4, Hazards and Hazardous Materials** of this EIR because the NDD Plan site would remain in its existing physical condition, including vacant, deteriorating housing stock, and contaminated soil conditions. There would be no construction or new operational impacts. However, under this alternative, because the housing would remain, the existing impacts related to hazards and hazardous materials could therefore be greater under the No Project Alternative than for the proposed projects.

Hydrology and Water Quality

The No Project Alternative would avoid the less than significant impacts related to hydrology and water quality in the Initial Study (**Appendix 1.0** of this EIR) because the NDD Plan site would remain in its existing physical condition. There would be no ground-disturbing activities or construction at the proposed project site.

Land Use

The No Project Alternative would avoid the less than significant impacts identified in **Section 4.5, Land Use and Planning**, of this EIR because the NDD Plan site would remain in its existing physical condition, there would be no changes to the 2005 LRDP Land Use designations, and there would be no new uses on the project site.

Mineral Resources

No mineral resources are known to be located on the NDD plan site. As with the NDD Plan, the No Project Alternative would not affect mineral resources and there would be no impact.

Noise

The No Project Alternative would avoid the significant construction vibration impacts and the significant cumulative operational noise impact identified in **Section 4.6, Noise** of this EIR because the proposed NDD Plan project site would remain in its existing physical condition. There would be no construction or new uses on the project site and thus no increase in construction vibration or operational noise.

Population and Housing

The No Project Alternative would avoid the less than significant impacts related to population and housing identified in **Section 4.7, Population and Housing**, of this EIR because the NDD Plan site would

remain in its existing physical condition. There would be no new housing or increased employment at the proposed project site.

Public Services

The No Project Alternative would avoid the less than significant impacts related to public services identified in the Initial Study (**Appendix 1.0** of this EIR) and in **Section 4.8, Public Services**, of this EIR because the NDD Plan site would remain in its existing physical condition. There would be no new housing, commercial or recreational uses, or employment at the proposed project site.

Recreation

The No Project Alternative would avoid the less than significant impacts related to recreation identified in **Section 4.9, Recreation**, of this EIR because the NDD Plan site would remain in its existing physical condition. There would be no new athletic facility built, and no new residents at the NDD Plan site who could create demand for increased recreational facilities.

Transportation and Traffic

The No Project Alternative would avoid the significant impacts identified in **Section 4.10, Transportation and Traffic** of this EIR because the NDD Plan site would remain in its existing physical condition. There would be no construction or new uses on the NDD Plan site and no increase in construction or operational traffic.

Utilities

The No Project Alternative would avoid the significant impacts identified in **Section 4.11, Utilities** of this EIR because the NDD Plan site would remain in its existing physical condition. There would be no new construction at the NDD Plan site and the current operations at the sites surrounding the NDD Plan site would be unchanged.

Ability to Accomplish Project Objectives

The No Project Alternative would not achieve any of the project objectives. Under this alternative, Phase 1, the development of 1,500 student housing beds and student support space, and the future phases of the NDD Plan which would develop up to 3,700 additional new housing beds (including small-scale commercial space, a new dining facility and student support space), an athletic facility, and two parking structures, would not occur. This alternative would not allow the Campus to provide additional

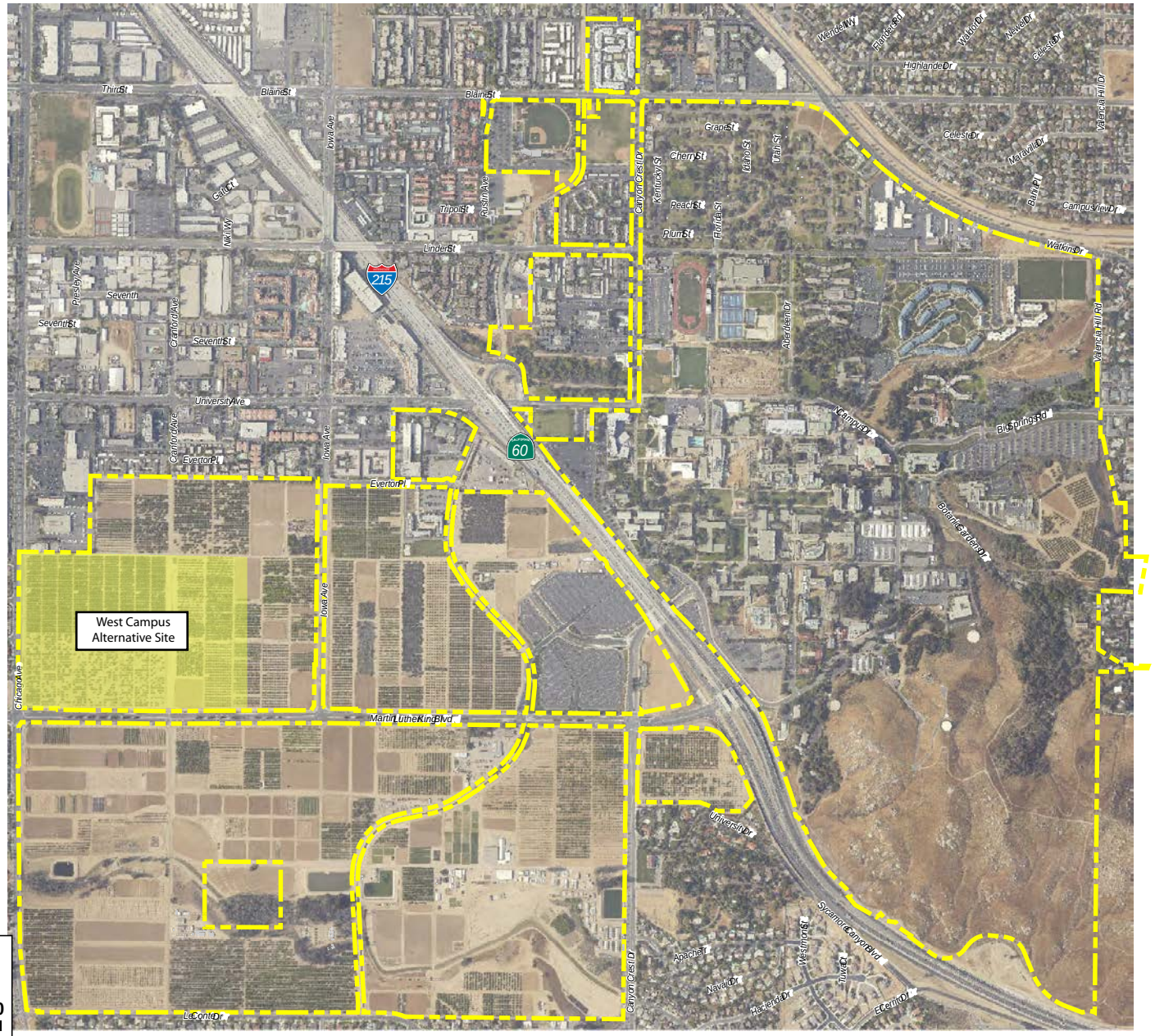
affordable on-campus student housing in support of the 2005 LRDP goal to house up to 50 percent of enrolled students on-campus and to guarantee on-campus housing to all freshman and transfer students.

6.5.2 Alternative 2: West Campus Site

Description

Under this alternative, the proposed NDD Plan would be developed on approximately 55 acres of campus land east of Chicago Avenue, west of Iowa Avenue, and north of Martin Luther King (MLK) Boulevard on the West Campus. As such, the Alternative 2 site would fully accommodate a development similar in size and density to the NDD Plan. The site is currently designated in the 2005 LRDP (as amended) for *Family, Apartment Housing and Related Support (including Child Care), Athletics and Recreation, and Open Space.*

The Alternative 2 site consists of the eastern portion of a site that is currently in use as agricultural teaching and research fields, used primarily by the College of Natural and Agricultural Sciences. The site is bordered by commercial development, campus-owned land in use as agricultural teaching and research fields, and a 19-acre parcel of land transferred to the California Air Resources Board for a research and testing facility that is also Board's Southern California headquarters to the north, commercial uses, including a plant nursery, an assisted living facility (Grandview Manor), and vacant land to the west, and campus-owned land in use as agricultural teaching and research fields to the south (across MLK Boulevard) and east. Refer to **Figure 6.0-1, West Campus Alternative Site**.



Legend:

Campus Boundary

950 475 0 950

APPROX. SCALE IN FEET

SOURCE: UCR – 2010, Impact Sciences, Inc – January 2011

FIGURE **6.0-1**

West Campus Alternative Site

IMPACT SCIENCES

1031-004•11/18

Impact Analysis

Aesthetics

Development of the West Campus alternative would result in changes to the visual character on the proposed site similar to those of the NDD Plan and would result in new buildings, exterior lighting, and vehicles that would create new sources of light and glare. Alternative 2 would have similar, less than significant impacts to on scenic vistas, visual quality, including light and glare impacts with implementation of 2005 LRDP PSs, PPs, and MMs.

Agricultural and Forest Resources

Development on the West Campus Alternative site would result in the conversion of approximately 55 acres of Important Farmland to non-agricultural uses. This would be a **significant and unavoidable impact**.

Air Quality

Under Alternative 2, the proposed NDD Plan would be developed at an alternative site and would involve construction and operational emissions equivalent to those of the proposed project. The less than significant air quality impacts of the proposed project, including impacts related to compliance with applicable air quality plans, exposure of sensitive receptors to substantial pollutant concentrations, or creation of objectionable odors would be similar to the NDD Plan, and the violation of air quality standards, and cumulative impact related to cumulatively considerable increases in criteria pollutants for which the Air Basin is in nonattainment, would be significant under Alternative 2, similar to the NDD Plan.

It should be noted that locating housing proximate to on-going agricultural uses may expose sensitive receptors to objectionable odors due to the use of chemicals used as fertilizers, herbicides, and pesticides.

Biological Resources

The Alternative 2 site is currently in use as agricultural teaching and research fields does not support any sensitive biological resources. As with the NDD Plan, Alternative 2 would have less than significant impacts to biological resources, including impacts related to special status species, riparian habitat or sensitive natural communities, wetlands, wildlife migration, or conflicts with policies protecting biological resources or with a habitat conservation plan. Implementation of Alternative 2 would involve the removal of a number of mature citrus trees, however, similar to the NDD Plan every effort would be made to preserve as many existing on-site trees as possible.

Cultural Resources

The Alternative 2 site is currently in use as agricultural teaching and research fields and is not known to contain any cultural resources. As with the proposed project, Alternative 2 would have less than significant impacts to cultural resources, including impacts related to historic resources, archaeological resources, paleontological or geologic resources, or human remains.

Geology and Soils

Under Alternative 2, there would be grading and construction of new buildings similar to that under the NDD Plan and the same increase in site population. According to the 2005 LRDP EIR the Alternative 2 site has geologic and soil conditions similar to those of the NDD Plan site (the underlying soil consists of older (Pleistocene) alluvium on both sites[1]) and any new construction under Alternative 2 would be subject to compliance with the same seismic safety code requirements and 2005 LRDP PSs, PPs, and MMs. Alternative 2 thus would have similar, less than significant impacts related to geology and soils, including impacts related to seismic activity, ground failure, landslides, erosion, unstable soils, expansive soils, or septic systems. Under Alternative 2, operations would be the same as those under the NDD Plan and there would be no change to the less than significant geology and soils impacts.

Greenhouse Gas Emissions

Implementation of Alternative 2 would generate greenhouse gas (GHG) emissions, either directly or indirectly. These would be equivalent to those of the NDD Plan and the impact would likewise be significant, largely due to mobile source emissions. However, similar to the NDD Plan, implementation of

Hazards and Hazardous Materials

Under Alternative 2, the deteriorating former student family housing bungalows would remain on the Canyon Crest site.

The Alternative 2 site is currently in use as agricultural teaching and research fields and as such the potential exists for agricultural chemicals to remain in on-site soils. Higher concentrations of chemicals in soils are generally associated with storage and mixing operations and localized to long-term farm staging areas. Several areas of this kind potentially exist on the Alternative 2 site. Residual concentrations of agricultural chemicals tend to be relatively uniform, low in concentration, and confined to the upper two feet of soil (the typical depth of agricultural disturbance) over areas of routine application. Even low, uniform concentrations may exceed regulatory guidelines for certain land uses. Given the potential for

1 UCR 2005 LRDP EIR, *Figure 4.6-1 Generalized Map of Soils on the UCR Campus.*

chemical contamination of site soils, impacts related to existing site conditions would be potentially significant. However, conducting a Phase I Environmental Site Assessment and a human health risk evaluation (HHRE) in a manner consistent with the "*Preliminary Endangerment Assessment (PEA) Guidance Manual*," prepared by the DTSC dated January 1994 (revised October 2015), the "*Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), Interim Final*" (RAGS Part A) prepared by the United Stated Environmental Protection Agency (US EPA) dated December 1989, followed by the design and implementation of an appropriate remediation plan should any areas of recognized environmental concern (REC) be identified, would ensure that any hazardous materials in the soil identified above DTSC screening levels would be appropriately removed and disposed of. As such, similar to the NDD Plan, the potential impact for Alternative 2 to create a significant hazard through the accidental release of hazardous materials would be less than significant.

All other impacts related to hazards and hazardous materials would remain unchanged under Alternative 2. Under Alternative 2, the operations at the West Campus site would be the same as those discussed in **Section 4.4, Hazards and Hazardous Materials** of this EIR and there would be no change to the less than significant hazards and hazardous materials impacts.

It should be noted that the nearby off-site use of agricultural chemicals used as fertilizers, herbicides, and pesticides due to the on-going agricultural uses may expose sensitive receptors to chemicals deemed by the State of California to be hazardous to human health; however the Campus would continue to implement all federal and State regulations related to the use and application of agricultural chemicals and impacts would be less than significant.

Hydrology and Water Quality

The Alternative 2 site is located in an area with similar hydrologic and groundwater conditions as the NDD Plan site and would involve a similar type and scale of development. The same regulatory controls and requirements, compliance with the NPDES Phase I and Phase II requirements such as preparation of a SWPPP, would apply to this alternative and would avoid potentially significant water quality impacts.

Alternative 2 would have an increased area of new impervious surfaces in comparison to the NDD Plan, and would have the potential for significant runoff-related impacts. However, implementation of 2005 LRDP Planning Strategies and Programs and Practices identified in the Initial Study (**Appendix 1.0** of this EIR) would reduce this impact to less than significant.

Alternative 2 would therefore, like the NDD Plan, result in less than significant impacts with respect to hydrology and water quality issues, including water quality impacts and groundwater deficits and there would be no change to the less than significant hydrology and water quality impacts.

Land Use

The Alternative 2 site is located in an area of the West Campus currently in use as agricultural teaching and research fields and has a 2005 LRDP Land Use Designation primarily of *Family, Apartment Housing and related Support,* and *Athletics and Recreation*, with some smaller areas of *Open Space*. Development of a the site with a student housing complex, commercial uses and an athletic facility under this alternative thus would be generally consistent with applicable land use plans and policies because it would be generally consistent with the LRDP land use designations, though some minor adjustments would be required. In addition, because Alternative 2 would require additional internal roadways, it would impede implementation of the adopted land use plan for the West Campus. Alternative 2 would therefore result in land use impacts greater than those analyzed for the NDD Plan.

Implementation of Alternative 2 would result in the development of approximately 55 acres of an approximately 117-acre area currently managed by UCR Agricultural Operations for agricultural teaching and research, resulting in a reduction of the area available for agricultural research and teaching. For this reason, Alternative 2 would have a significant impact related to land use. No mitigation is feasible, and the impact would remain significant and unavoidable.

Development of the student housing complex and athletic facility at this site would not divide an established community and land use impacts from this alternative would, like those of the NDD Plan, be less than significant with regard to this criterion. Under Alternative 2, the operations would be the same as those discussed in **Section 4.5, Land Use and Planning** of this EIR and there would be no change to the less than significant land use impacts.

Mineral Resources

No mineral resources are known to be located on the Alternative 2 site. As with the NDD Plan, Alternative 2 would not affect mineral resources and there would be no impact.

Noise

The NDD plan would result in significant noise impacts from construction vibration. Under Alternative 2, the proposed student housing complex would be built at a location where nearby land uses would include an assisted living facility. However, because these sensitive receptors are more distant from the site (across Chicago Avenue) than those under the NDD Plan site (most specifically the UCR Child Development Centers), the significant impact related to construction vibration would be reduced under Alternative 2 as compared to the NDD Plan and mitigation would not be required. Given the redistribution of project traffic and the currently undeveloped nature of the Alternative 2 site, the

operational traffic noise impacts of this alternative would be similar as compared to the NDD Plan and there would be no change to the significant cumulative noise impacts under Alternative 2.

Population and Housing

Development of Alternative 2 would result in a long-term increase of approximately 70 employees on campus, the same as under the NDD Plan. As such, implementation of Alternative 2 would not induce substantial population growth in an area, either directly or indirectly and population and housing impacts would remain less than significant.

Public Services

Alternative 2 would involve the development of a new student housing complex identical to that under the NDD Plan and, like the NDD Plan as discussed in **Section 4.8, Public Services,** of this EIR, would cause less than significant impacts related to the provision of fire and law enforcement services. Similar to the NDD Plan, this alternative would not contribute to a need for the provision of new or altered fire or police protection facilities, and there would be no change to the less than significant public services impacts.

Recreation

Alternative 2 would involve the development of a new student housing complex identical to that under the NDD Plan including an athletic facility, and, as discussed in **Section 4.9, Recreation,** of this EIR there would be no change to the less than significant recreation impacts.

Transportation and Traffic

Alternative 2 would involve the same number of new operational vehicle trips as the NDD Plan, but would result in different traffic circulation patterns due to the location of the Alternative 2 site on the West Campus. Relocating the project site to Chicago Avenue and Martin Luther King, Jr. Boulevard would not result in a change to project trip generation or regional trip distribution. However, the alternative site would change the intensity of project trips utilizing local roads near campus. Under the NDD Plan, the majority of project trips would utilize Blaine Street, Canyon Crest Drive, and Linden Street on the northern edge of Campus. The alternative site would likely result in all project trips utilizing Martin Luther King Jr. Boulevard and Chicago Avenue to the south of Campus.

The 2005 Long Range Development Plan (LRDP) Amendment #2 traffic study identified significant impacts under the Existing Plus Project and Cumulative With Project scenarios for study intersections along Martin Luther King Jr. Boulevard from Chicago Avenue to the 215 Southbound Ramps. Given the

number of impacts identified along Martin Luther King Jr. Boulevard as part of the LRDP analysis, it is anticipated that similar project impacts would occur at those intersections under Alternative 2. While some impacts along 3rd Street/Blaine Street would likely be eliminated under Alternative 2 given the redistribution of project traffic, the overall number of impacts is expected to be similar under Alternative 2, including additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under 2025 conditions, causing a significant and unavoidable impact.

Alternative 2 would also limit bicycle and pedestrian access to the Campus when compared to the proposed project site. While access to Campus is provided by Class II facilities on Martin Luther King Jr. Boulevard, the site analyzed under the proposed project would provide more direct access for bicyclists and pedestrians with the planned North Recreational Mall. The proposed retail land uses would also likely attract more multi-modal trips on the NDD Plan site than under Alternative 2 given the access to multiple transit routes and direct access to Campus.

Utilities

Alternative 2 would require provision of utilities similar to that of the NDD Plan, and the alternative site is located in an area where extension of utilities could occur from existing infrastructure and within existing roadways, however, due to the agricultural nature of the Alternative 2 project site, the provision of on-site utilities would require a greater amount of disturbance, as compared to the previously developed Canyon Crest Family Housing site. However, similar to the NDD Plan, Alternative 2 would implement **LRDP PP 4.15-5**, as well as project-specific mitigation measures **UTL-1** and **UTL-2** related to sewer infrastructure and impacts related to the provision of utilities would be less than significant.

Under Alternative 2, operations would be the same as those discussed in in **Section 4.11, Utilities,** of this EIR, and there would be no change to the less than significant utilities impacts.

Ability to Accomplish Project Objectives

Alternative 2 would meet the prime project objective of providing more affordable on-campus housing, along with a new dining facility and an athletics event center.

Alternative 2 would only partially meet the project objective of enhancing the student experience by integrating the principles of residential and academic life as the Alternative 2 site is located on the West Campus, on the opposite side of the freeway from most campus academic and recreational locations on the East Campus. In addition, this location may increase travel on public roadways, as students and staff travel to classes and other student activities.

Alternative 2 would not meet the project objective of establishing a new iconic gateway to the Campus on the corner of Blaine Street and Canyon Crest Drive. This alternative would not be entirely consistent with the existing land use designation, and as such, it would require an LRDP amendment in order to be approved and implemented. Implementation of this alternative would result in the conversion of approximately 55 acres of Important Farmland to non-agricultural uses. This would be a significant and unavoidable impact, which was already acknowledged in the 2005 LRDP EIR.

6.5.3 Alternative 3: Reduced Project

Description

Under the Reduced Project Alternative, Phase 1 would develop the initial 1,501 beds. The future phases would develop 25 percent fewer beds, reducing the number of student beds from the proposed approximately 3,700 beds to approximately 2,775 student beds under this alternative. Therefore, this alternative would provide a total of approximately 4,275 student beds, 925 fewer beds than the proposed NDD Plan. No change would be made to the proposed mixed-use, competition field or the parking structure components of the future phase.

The site plan for this alternative would continue to provide buildings along the northern edge of campus, however, the heights would be reduced, ranging from 4- to 5-stories for the apartment buildings, 4- to 5-stories for residence halls, 1- to 2-stories for mixed use buildings, a 2-story dining facility, and parking structures would be up to 7-levels.

Impact Analysis

Aesthetics

This alternative would allow for the development of a reduced NDD Plan by reducing the number of beds and developing smaller buildings. Therefore, less construction activity would be involved for this alternative. Similar to the proposed project, this alternative would not substantially degrade the visual character or quality of the campus and its surrounding areas with implementation of the 2005 LRDP Planning Strategies and continued implementation of campus Programs and Practices. As this alternative would result in less construction and a reduced development footprint, it would somewhat reduce the less than significant aesthetic impacts as compared to the NDD plan. No new or increased visual resource impacts are anticipated under this alternative.

Agricultural Resources

No important farmland is located on the site of the NDD Plan, and the site is not used or designated for agriculture. As with the NDD Plan, the Reduced Project Alternative would not affect agricultural resources and there would be no impact. Similarly, there would be no impact on forest lands.

Air Quality

The decreased building space associated with the Reduced Project Alternative would result in reduced construction-related impacts associated with the already less than significant impact. The NDD Plan would exceed the air district's project level thresholds for NO_x during operations; operational emissions under the buildout of the NDD Plan would result in a significant and unavoidable air quality impact that would also be cumulatively considerable. This alternative would reduce the impact, but not to a less than significant level because the impact is primarily as a result of mobile emissions and the reduction of buildings that are included under this alternative contribute a relatively small part of the total.

With respect to toxic air contaminants (TACs), as these are usually a product of mobile source diesel emissions, and the NDD Plan would not generate a substantial number of truck trips, long term operational impacts would be less than significant. Over all, no new or increased air quality impacts are anticipated under this alternative.

Biological Resources

As with the NDD Plan, Alternative 3 would have less than significant impacts to biological resources, including impacts related to special status species, riparian habitat or sensitive natural communities, wetlands, wildlife migration, or conflicts with policies protecting biological resources or with a habitat conservation plan.

Cultural Resources

As with the NDD Plan, Alternative 3 would have less than significant impacts to cultural resources, including impacts related to historic resources, archaeological resources, paleontological or geologic resources, or human remains.

Geology and Soils

Under Alternative 3, there would be grading and construction of new buildings similar to that under the NDD Plan with a lower increase in site population. As with the NDD Plan, any new construction under Alternative 3 would be subject to compliance with the same seismic safety code requirements and LRDP

PSs, PPs, and MMs. Alternative 3 thus would have similar, less than significant impacts related to geology and soils, including impacts related to seismic activity, ground failure, landslides, erosion, unstable soils, expansive soils, or septic systems. Under Alternative 3, operations would be the same as those under the NDD Plan and there would be no change to the less than significant geology and soils impacts.

Greenhouse Gas Emissions

Implementation of the NDD Plan would generate greenhouse gas (GHG) emissions, either directly or indirectly. The GHG reduction measures shown in **Tables 4.3-6** and **4.3-7** would significantly lower emissions resulting from operation of both the NDD Phase 1 and NDD Plan. However, many of these emission reduction strategies are difficult to quantify. To be conservative, it was assumed that although emissions would be reduced as compared to the emissions shown in **Table 4.3-5**, they would remain above SCAQMD service population thresholds and impacts would be significant. The Reduced Project Alternative would result in less development in comparison to the NDD Plan as the number of student housing beds would be reduced by 25 percent. While the alternative would reduce the project's significant impact, because the largest portion of GHG emissions are generated from mobile sources, and traffic would not be meaningfully reduced under this alternative, impacts would remain significant. However, similar to the proposed project, implementation of LRDP mitigation measure **MM 4.3-1** and project specific mitigation measure **MM GHG-1**, would reduce impacts to less than significant.

Hazards and Hazardous Materials

As with the NDD plan, Alternative 3 would implement the same regulatory controls and requirements, and there would be no change to the less than significant hazards and hazardous materials impacts.

Hydrology and Water Quality

The NDD Plan would result in less than significant with respect to all hydrology and water quality issues, including water quality impacts and groundwater deficits. The Reduced Project Alternative would have the same amount of impervious surfaces in comparison to the NDD Plan, and would have the same runoff-related impacts. The same regulatory controls and requirements, compliance with the NPDES Phase I and Phase II requirements such as preparation of a SWPPP, would apply to this alternative and would avoid potentially significant water quality impacts. No new or increased hydrology and water quality impacts are anticipated under this alternative.

Land Use

This alternative would not result in any changes to the land use impacts as analyzed for the NDD Plan because the Reduced Project Alternative would be developed on the same site. No new or increased land use impacts are anticipated under this alternative.

Mineral Resources

No mineral resources are known to be located on the Canyon Crest site. As with the NDD Plan, Alternative 3 would not affect mineral resources and there would be no impact.

Noise

The NDD Plan would result in significant noise impacts from construction vibration sources. Under the Reduced Project Alternative, there would be less building space constructed. Therefore, the noise impacts related to construction vibration would be incrementally reduced under the alternative. However, like the NDD Plan, construction noise impacts would not be reduced to less than significant under this alternative. The cumulative operational noise impacts of this alternative would be somewhat reduced as compared to the NDD Plan because there would be a reduction in vehicular noise on account of the smaller population associated with this alternative; however, these impacts would remain significant. No other new or increased noise impacts are anticipated under this alternative.

Population and Housing

As discussed above, the population associated with this alternative would be reduced by approximately 25 percent as compared to the NDD Plan, and would therefore result in lower number of units being constructed; however the alternative is expected to generate the need for the same number of new employees (approximately 70). The population and housing impacts would be similar to the NDD Plan and would remain less than significant. No new or increased population and housing impacts are anticipated under this alternative.

Public Services

This alternative would further reduce the less than significant impacts related to the provision of fire and police protection services associated with the NDD Plan because it would have a smaller population. Similar to the NDD Plan, this alternative would not contribute to a need for the provision of new or altered fire or police protection facilities. No new or increased public services impacts are anticipated under this alternative.

Recreation

Alternative 3 would involve the development of a new student housing complex identical to that under the NDD Plan including an athletic facility, and, as discussed in **Section 4.9, Recreation,** of this EIR there would be no change to the less than significant recreation impacts.

Transportation and Traffic

Alternative 3 would reduce the amount of housing by 25 percent. For the Buildout scenario, the overall number of trips generated by the project would be reduced by slightly less than 25 percent as Alternative 3 does not include changes to non-residential uses. However, the number of students converted from commuter students to residents would also be decreased, resulting in slightly higher increases in traffic traveling to and from the Campus. The overall trip distribution and assignment would not be changed by the reduction in student housing when compared to the full NDD Plan. Sensitivity testing for this alternative indicates that while two intersections (3rd Street/Chicago Avenue & Canyon Crest Drive/Blaine Street) identified as being impacted during both the AM and PM peak hours under the NDD Plan, would not be impacted during the AM peak hour, the PM peak hour impacts would still occur under buildout of Alternative 2 and impacts would remain significant.

Under Alternative 3, bicycle and pedestrian access to the surrounding roadway network and Campus would remain unchanged when compared to the NDD Plan and impacts would be less than significant.

Utilities

This alternative would further reduce the less than significant impacts related to the provision of utilities associated with the NDD Plan because it would have a smaller population and building space. Similar to the NDD Plan, this alternative would contribute to a need for the provision of new or altered utilities but the contribution would be smaller. No new or increased utility impacts are anticipated under this alternative.

Ability to Accomplish Project Objectives

Alternative 3 would meet the prime project objective of providing more affordable on-campus housing, along with a new dining facility and an athletics event center, albeit to a lesser degree given the 25 percent reduction in student housing, which would increase, rather than relieve, the already existing shortfall in provision of on-campus student housing. Alternative 3 would meet the project objectives of enhancing the student experience by integrating the principles of residential and academic life and would

meet the project objective of establishing a new iconic gateway to the Campus on the corner of Blaine Street and Canyon Crest Drive.

6.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Table 6.0-1, Summary Comparison of Project Alternatives, presents a summary comparison of the alternatives with the proposed projects with the purpose of highlighting whether the alternative would result in similar, greater, or lesser environmental impacts than the proposed projects**.**

The No Project Alternative would avoid the significant environmental impacts of the NDD plan related to air quality, GHG emissions, noise and vibration, and traffic because it would not result in new construction. This alternative would therefore be the environmentally superior alternative. However, it would not meet any of the NDD Plan objectives.

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

Alternative 2 (the West Campus Alternative) would slightly reduce the proposed projects' significant impacts related to vibration. However, it would have significant and unavoidable impacts on agricultural resources and land use that would be greater than that of the NDD Plan and Alternative 3. For this reason, and because Alternative 3 would meet most, but not all, of the NDD Plan's objectives, it would be the environmentally superior alternative.

Table 6.0-1
Summary Comparison of Project Alternatives

Impact	Proposed Project Impact (Significant)	No Project Alternative	West Campus Alternative[1]	Reduced Project Alternative
Air Quality 4.2-2	Construction and operation of the proposed project could result in emissions that violate an air quality standard or contribute substantially to an existing or projected air quality violation.	Impact Less than Proposed Project	Impact Equal to Proposed Project	Impact Slightly Less than Proposed Project
Air Quality 4.2-4	Implementation of the proposed project would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard.	Impact Less than Proposed Project	Impact Equal to Proposed Project	Impact Equal to Proposed Project
Noise 4.6-4	Construction associated with the proposed project would expose persons on- or off-campus to excessive groundborne vibration levels.	Impact Less than Proposed Project	Impact Less than Proposed Project	Impact Equal to Proposed Project
Noise 4.6-5	Cumulative development would cause a significant cumulative impact related to substantial permanent increases in ambient noise levels. The contribution of the proposed projects and related projects to this cumulative impact would be cumulatively considerable.	Impact Less than Proposed Project	Impact Equal to Proposed Project	Impact Slightly Less than Proposed Project
Transportation and Traffic 4.10-1	Implementation of the proposed NDD Plan would result in additional vehicular trips, which would increase traffic volume and degrade intersection levels of service.	Impact Less than Proposed Project	Impact Equal to Proposed Project	Impact Slightly Less than Proposed Project
Transportation and Traffic 4.10-3	Implementation of the proposed NDD Plan would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program under 2025 conditions.	Impact Less than Proposed Project	Impact Equal to Proposed Project	Impact Slightly Less than Proposed Project

Note:

1. *Alternative 2, the West Campus Alternative, would have significant and unavoidable impacts to agricultural resources, which were already acknowledged in the 2005 LRDP EIR.*

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