CHAPTER 4.0
ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION

Chapter 4.0 contains a discussion of the potential environmental effects of implementation of the proposed Area 9/2 Housing Project, including information related to existing site conditions, analyses of the type and magnitude of individual and cumulative environmental impacts, and potential feasible mitigation measures that could reduce or avoid environmental impacts.

SCOPE OF THE ENVIRONMENTAL IMPACT ANALYSIS

This document provides a project-level environmental assessment that evaluates the effects of implementation of the Area 9/2 Housing Project. Volume I of this EIR contains a program-level environmental assessment that evaluates the effects of implementation of the entire 2007 LRDP. Where appropriate, the general information and analyses provided in Volume I are incorporated by reference into this document. The 1989 LRDP EIR, and its appendices, are also incorporate by reference. The scope of the analysis in this document is based on the scope of analysis defined for the proposed 2007 LRDP in accordance with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. As a result, potential environmental effects of the proposed Area 9/2 Housing Project are analyzed for the following environmental issue areas:

- Aesthetics
- Air Quality
- Biological Resource
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation, Traffic, and Parking
- Utilities and Service Systems

Based upon the analysis provided in the Initial Study for the 2007 LRDP, impacts to Agricultural Resources and Mineral Resources from development on the UCI campus and, therefore, also from development of the Area 9/2 Housing Project , were determined to be “Effects Not Found to be Significant” according to Section 15128 of the CEQA Guidelines. These issues are discussed further in Chapter 5.

FORMAT OF THE ENVIRONMENTAL ANALYSIS

Environmental Setting

According to Section 15125 of the CEQA Guidelines, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project to provide the "baseline condition" against which project-related impacts are compared. Definition of the "baseline condition" is discussed in greater detail in Volume I, Chapter 4.

Regulatory Framework

The Regulatory Framework provides a summary of regulations, plans, policies, and laws that are relevant to each issue area at the federal, state, and local levels.

Project Impacts and Mitigation

This section describes the potential environmental impacts of the Area 9/2 Housing Project and, based upon the standards of significance, concludes whether the environmental impacts would be considered potentially significant, or less than significant. Each resource that is analyzed is divided into issues, based on potential impacts. Each issue is addressed in its own subsection. For each issue, applicable standards of significance are identified and potential impacts are discussed in the impact analysis section. Mitigation measures are also included and discussed when applicable. Standards of significance, methodology to analyze impacts, and assignment of mitigation measures are described in greater detail in Volume I, Chapter 4.

The EIR utilizes the following terms to describe the level of significance of impacts identified during the course of the environmental analysis:

- **Less than Significant**: "Less than significant" is used for referring to two conditions: 1) Impacts resulting from implementation of the proposed Area 9/2 Housing Project that are not likely to exceed defined standards of significance; and 2) Impacts that do not exceed the defined standards of significance after the implementation of applicable mitigation measures, either from the LRDP or designed for the Area 9/2 Housing Project.
- **Significant**: Impacts resulting from implementation of the Area 9/2 Housing Project that may exceed defined standards of significance before mitigation is considered.
- **Significant and Unavoidable**: Significant impacts resulting from implementation of the Area 9/2 Housing Project that cannot be eliminated or reduced to a less than significant level through implementation of mitigation measures.

Cumulative Impacts and Mitigation

The cumulative impacts analysis in Volume I, and incorporated herein by reference, is sufficient for the Area 9/2 Housing Project because the analysis for the 2007 LRDP encompasses similar or greater areas of geographical influence and includes all of the past, present, and future reasonably foreseeable projects that are applicable to the analysis. The following sections in this chapter expand on the discussion in Volume I, where applicable to the Area 9/2 Housing Project.

CEQA Checklist Items Adequately Addressed in the 2007 LRDP Initial Study

Certain environmental impacts were determined to be "CEQA Checklist Items Adequately Addressed in the Initial Study" based upon the analysis provided in the Initial Study for the 2007 LRDP. Because the analysis provided in the Initial Study for the 2007 LRDP covered the general development of the campus, it is applicable to the Area 9/2 Housing Project.

References

This section identifies sources relied upon for each environmental topic area analyzed in this document (Sections 4.1 through 4.14).

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4.1 AESTHETICS

4.1.1 ENVIRONMENTAL SETTING

Volume I, Section 4.1 presents the aesthetic setting for the entire UCI campus and is applicable to the proposed Area 9/2 Housing Project.

The proposed project site is located in UCI's South Campus on undeveloped land that slopes from north to south towards Bonita Canyon Drive. The land is generally covered by annual grasses with intermittent clearings of exposed soil. To the north and west are University Hills faculty and staff housing development Areas 9/1 and 9/3, currently under construction; to the east are undeveloped areas of campus property with rolling topography; and to the south, off-campus development along Bonita Canyon Road comprising Turtle Ridge Apartment Homes, Mariners Church and Community Center, and the Tarbut V'Torah school. Undeveloped rolling topography covered with annual grasses separates Bonita Canyon Road from existing campus uses and provides natural scenery by breaking up the continuity of the urban development.

People potentially affected by changes in the campus's visual environment include those directly affiliated with UCI such as students, faculty, and staff that study, work, and, in some cases, live on-campus; members of the community, who live nearby or might visit the campus for any number of reasons; and motorists who use roads and highways adjacent to the campus.

Photographs of the project site were taken from Bonita Canyon Road, as shown in Volume I, Figures 4.1-1 and 4.1-3. The project site is also visible from California Avenue and Anteater Drive.

4.1.2 REGULATORY FRAMEWORK

Volume I, Section 4.1 discusses the UCI policies and programs applicable to the proposed project. These include the UCI Campus Standards and Design Criteria and the Campus Lighting Policy. No other regulations apply to the aesthetics analysis of this project.

4.1.3 PROJECT IMPACTS AND MITIGATION

4.1.3.1 ISSUE 1 – SCENIC VISTAS AND VISUAL CHARACTER AND QUALITY

Aesthetics Issue 1 Summary

Would the proposed project have a substantial adverse effect on a scenic vista or substantially degrade the existing visual character or quality of the site and its surroundings?

Impact: Implementation of the Area 9/2 Housing Project would substantially degrade the existing visual character and quality of the South Campus as viewed from Bonita Canyon Drive.

Mitigation: Review of design elements by UCI Design Review Team and preserving and enhancing views with design features (LRDP-MM Aes-1).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than Significant.

Standards of Significance

Refer to Volume I, Section 4.1 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Views looking north towards the South Campus from and along Bonita Canyon Drive are characterized by steep slopes and rolling hills, as shown in Volume I, Figure 4.1-3 (Photo 4). The topography gradually levels as it descends in elevation near Bonita Canyon Road. The designated land use for the South Campus is faculty/staff housing which consists of the existing University Hills community and future faculty/staff housing. The majority of the community has been implemented with the exception of land areas located between Bonita Canyon Drive and California Avenue, as shown in Volume 1, Figure 4.1-1 (Photo 4 of the LRDP). The proposed project retains a landscaped buffer along Bonita Canyon Drive from SR-73 to Newport Coast Drive.

As shown in Volume 1, Figure 4.1-3, implementation of the proposed project would significantly alter the existing visual character of the area. Residential and institutional uses adjacent to the South Campus currently have unobstructed views of the rolling hills in the south campus. Development of single and multi-family homes under the proposed project would substantially impact the views from these off-campus areas looking north. Although the off-campus community has long been aware of this land use designation and its compatibility with off-campus adjacent land uses since the initial UCI LRDP in 1965, campus residential development will change the existing visual quality and character of the area for those viewers. Therefore, implementation of the Area 9/2 Housing Project would result in a significant impact to this viewshed.

Mitigation Measures

Implementation of LRDP mitigation measure Aes-1A would reduce the significant impacts associated with altering the visual character of views to the project site from Bonita Canyon Drive to a less than significant level.

LRDP MM

Aes-1A Prior to project design approval for future projects that implement the 2007 LRDP and are located in the South Campus, in the vicinity of Bonita Canyon Drive, UCI shall ensure that the projects include design features to minimize visual impacts from off-campus areas. These design features shall include, but are not limited to, the following:

i. Establish a 50-foot wide (minimum) landscaped buffer along the edge of the campus along the project frontage;

ii. Building mass and/or proportions, and exterior treatments and/or colors, that are compatible with the surrounding development and visual character; and

iii. Project landscape design that reduces visual impacts and integrates the project into the visual landscape.

4.1.3.2 ISSUE 2 – LIGHTING AND GLARE

Aesthetics Issue 2 Summary

Would the proposed project create a new source of substantial light or glare on campus or in the immediate vicinity that would adversely affect day or nighttime views?

Impact: Implementation of the Area 9/2 Housing Project would create new sources of light which could adversely affect nighttime views within the project area or the immediate vicinity.

Mitigation: Development and implementation of an exterior lighting plan (LRDP-MM Aes-2B)

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than Significant.

Standards of Significance

Refer to Volume I, Section 4.1 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential lighting and glare impacts associated with the development of the UCI campus are discussed in Volume I, Section 4.1. Of relevance to the proposed Area 9/2 Housing Project, new sources of glare could result from reflective building surfaces. During the day, lighting has limited potential to impact views; however, glare from the sun reflecting from reflective building surfaces could impact views. Daytime views that are subject to a substantial amount of new glare may be significantly impacted. However, the proposed project would be of similar character, colors, fenestration, and scale as neighboring projects on the campus and surrounding community and would not include large uninterrupted expanses of glass and/or any other highly reflective material. Therefore, the project would not result in substantial glare which would adversely affect daytime views in the area.

The proposed project could also increase night lighting in the vicinity of the project site. Sensitive views of the night sky could be impacted from new light generated by the project including street lighting, common area lighting, and lighting from individual homes, which could result in a significant impact to surrounding residences. However, the proposed project would be designed in compliance with *UCI's Campus Standards and Design Criteria* for indoor and outdoor lighting. As a result, spillover onto adjacent residential land uses

would be limited by focusing lighting only on the area to be illuminated. Nonetheless, the proposed project may result in significant nighttime light impacts.

Mitigation Measures

Implementation of mitigation measure Aes-2B would reduce significant nighttime impacts from new lighting to a less than significant level.

LRDP MM

Aes-2B Prior to approval of construction documents for future projects that implement the 2007 LRDP, UCI shall approve an exterior lighting plan for each project. In accordance with *UCI's Campus Standards and Design Criteria* for outdoor lighting, the plan shall include, but not be limited to, the following design features:

i. Full-cutoff lighting fixtures to direct lighting to the specific location intended for illumination (e.g., roads, walkways, or recreation fields) and to minimize stray light spillover into adjacent residential areas, sensitive biological habitat, and other light-sensitive receptors;

ii. Appropriate intensity of lighting to provide campus safety and security while minimizing light pollution and energy consumption; and

iii. Shielding of direct lighting within parking areas, parking structures, or roadways away from adjacent residential areas, sensitive biological habitat, and other light-sensitive receptors through site configuration, grading, lighting design, or barriers such as earthen berms, walls, or landscaping.

4.1.4 CUMULATIVE IMPACTS AND MITIGATION

Aesthetics Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to aesthetics?

Cumulative Impact	Significance	Project Contribution
Scenic Views and Visual Character: Development of the Area 9/2 Housing Project would not significantly alter the visual character within the UCI Campus because the propose project would be similar to existing development.	Less than significant.	N/A
Lighting and Glare: Because light pollution is not regulated within either the City of Irvine or the County of Orange, additional development may result in significant regional light pollution.	Significant.	Not cumulatively considerable with implementation of LRDP MM Aes-2B.

4.1.4.1 SCENIC VIEWS AND VISUAL CHARACTER

The geographic context for the analysis of cumulative impacts for scenic vistas and visual character and quality is limited to the vicinity of the UCI Campus. Specifically, the area of consideration is in the City of Irvine and extends from SR-73 to south of Bonita Canyon Drive to east of Culver Drive, along University Drive to east of Campus Drive to the intersection of Campus Drive and MacArthur Boulevard, along MacArthur Boulevard to SR-73, as shown in Volume 1, Figure 4.1-1.

As shown on Volume 1, Figure 4.1-1, the area surrounding the main portion of the campus is developed with an office complex and SR-73 to the west, residential areas to the south and east, and a mixed-use area to the north. Because the area surrounding the main portion of the campus is already developed, the development of additional projects in these areas would not alter the existing visual character. Therefore, the cumulative impact to scenic vistas and visual character is less than significant.

4.1.4.2 LIGHTING AND GLARE

The geographic area of consideration for cumulative effects for the 2007 LRDP EIR analysis was limited to the vicinity of the UCI Campus. Specifically, the area of consideration is in the City of Irvine and extends from SR-73 to south of Bonita Canyon Drive to east of Culver Drive, along University Drive to east of Campus Drive to the intersection of Campus Drive and MacArthur Boulevard, along MacArthur Boulevard to SR-73 (Volume I, Figure 4.1-1).

The City of Irvine and the University are both highly developed urban areas with substantial existing amounts of ambient light. Currently, there are no known sensitive areas that would be affected by off-campus and on-campus light pollution, such as a large observatory that conducts research and services the county. The University does own and operate a small observatory that is primarily used for introductory instruction purposes by the Department of Physics and Astronomy. However, this facility is located on campus as an interim use and will be removed as part of future campus residential development.

At this time, neither the County nor the City has a regional light pollution policy in place to determine if the cumulative adverse impact of development in the Orange County region on the nighttime sky has or may become significant. Therefore, the cumulative impact of development on lighting and glare is considered significant. With implementation of mitigation measure Aes-2B, future development under the 2007 LRDP would conform to the *UCI Campus Standards and Design Criteria*, which requires that direct lighting be shielded from sensitive light receptors, such as sensitive biological habitat, and that lighting is directed to a specific location intended illumination such as sports fields, roads, or walkways. Therefore, because mitigation measure Aes-2B would regulate the use of outdoor lighting, implementation of the Area 9/2 Housing Project would not have a cumulatively considerable contribution to regional light pollution.

4.1.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

As discussed in Volume I, Section 4.1, the initial study for the 2007 LRDP indicated that development on the UCI campus would not substantially damage scenic resources such as trees, rock outcroppings, or historic buildings within a state scenic highway; therefore, it is considered not to be significant and additional analysis is not required in this EIR or the 2007 LRDP.

4.1.6 REFERENCES

Refer to Volume I, Section 4.1 for references relevant to this section.

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4.2 AIR QUALITY

4.2.1 ENVIRONMENTAL SETTING

Volume I, Section 4.2 presents the air quality environmental setting for the entire UCI campus. It describes climate and the existing air quality with regard to criteria air pollutants (those for which ambient standards have been established) and toxic air contaminants. As discussed, the South Coast Air Basin (the Basin), with respect to federal air quality standards, is classified by the Environmental Protection Agency (EPA) as nonattainment for ozone (O_3), nitrogen oxides (NO_X), carbon monoxide (CO), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). Impacts associated with emissions of greenhouse gasses are discussed in Volume 1, Section 5.3, Climate Change.

The Basin is in compliance with the California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS) for CO, NO_2, and SO_2. However, in the vicinity of UCI ozone exceeded state standards in 2004 and 2005 and PM_{10} exceeded state standards in 2004 and 2006. Volume I also includes the projected calculated maximum cancer risk for several off-campus locations.

4.2.2 REGULATORY FRAMEWORK

The major air quality planning programs applicable to the UCI campus and the Orange County region in general are the federal Clean Air Act (CAA) and the California Clean Air Act (CCAA). In the Basin, air quality is monitored, evaluated, and controlled by the EPA, the California Air Resources Board (ARB), and the South Coast Air Quality Management District (SCAQMD). More detailed explanations of the air quality regulatory framework and function are in Volume I, Section 4.2.

4.2.3 PROJECT IMPACTS AND MITIGATION

4.2.3.1 ISSUE 1 – CONSISTENCY WITH APPLICABLE AIR QUALITY PLAN

Air Quality Issue 1 Summary

Would the proposed project result in a conflict with or obstruct implementation of the applicable air quality plan?

Impact: The proposed project would not conflict with, or obstruct implementation of, the 2007 AQMP or the SIP.

Mitigation: No mitigation is necessary.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.2 for a discussion of standards of significance relevant to this issue.

Impact Analysis

The population growth associated with the Area 9/2 Housing Project is included in the projected growth for the UCI campus identified in the 2007 LRDP.

Because the AQMP and the SIP are based on population growth projections and the 2007 LRDP is consistent with SCAG projections for regional growth as described in Volume I (Section 4.2.3.1), implementation of the Area 9/2 Housing Project would not conflict with, or obstruct implementation of, the AQMP or the SIP.

Mitigation Measures

No mitigation measures are required.

4.2.3.2 ISSUE 2 – CONSISTENCY WITH AIR QUALITY STANDARDS

Air Quality Issue 2 Summary

Would the proposed project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Impact: Construction emissions from the proposed project would exceed significance thresholds for NO_x. Operational emissions are not expected to exceed significance thresholds.

Mitigation: Implement a construction emissions mitigation plan in conformance with LRDP MM Air-2B

Significance Before Mitigation: Significant for construction emissions. Less than significant for operational emissions.

Significance After Mitigation: Significant, unavoidable.

Standards of Significance

Refer to Volume I, Section 4.2 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Volume I, Section 4.2 analyzes operational and construction emissions in relation to air quality standards for the entire 2007 LRDP. Air quality impacts associated with the proposed Area 9/2 Housing Project are included in those analyses. The Area 9/2 Housing Project, however, would be a minor component in the overall impacts that are discussed.

Construction Emissions

The total structural footprint would be up to approximately 150,000 square feet. Construction emissions associated with implementation of the 2007 LRDP, including the Area 9/2 Housing Project, are provided in Volume I, Table 4.2-5 (Estimated (Peak Daily) Construction Emissions). Table 4-1 shows the anticipated construction phases and equipment needs of the proposed project and Table 4-2 is a summary of estimated air pollution emissions during construction. Construction of the proposed project would primarily result in NO_x emissions from equipment fuel combustion. Fugitive dust emissions generated from earth disturbance during site grading, as well as from vehicles traveling on dirt roads would also occur. Operation of heavy equipment and vehicles during the construction phase would generate exhaust emissions due to fuel combustion, and paving activities would generate certain amounts of VOC emissions. Table 4-2 indicates that the significance threshold for the maximum daily emissions of NO_x would be exceeded for the early phase of construction due to the amount of grading equipment needed. The impact would be short term and dependent on the construction schedule and level of activity on a maximum daily basis. Therefore, implementation of the Area 9/2 Housing Project would result in a significant impact to air quality due to construction emissions.

Table 4-1 Construction Phases and Equipment

Phase	Equipment	Number	Duration
Grading	Discing Tractor	2	6 months
	Water trucks	2	
	Wheeled Dozer	1	
	Scraper	8	
Construction	Fork Lift	2	9 months
	Tracked loader	1	
	Wheeled Dozer	2	

Table 4-2. Summary of Estimated Air Pollutant Emissions

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	pounds per day					
Grading						
Mass Grading Fugitive Dust	-	-	-	-	3.62	0.76
Mass Grading Off-Road Diesel	19.78	185.90	86.93	0.00	7.82	7.20
Mass Grading On-Road Diesel	0.00	0.04	0.02	0.00	0.00	0.00
Mass Grading Worker Trips	0.11	0.21	3.40	0.00	0.03	0.01
Total Mass Grading	19.89	186.15	90.35	0.00	11.46	7.97
Significance Criteria	75	100	550	150	150	55
Significant?	No	**Yes**	No	No	No	No
Building Construction						
Building Off-Road Diesel	0.48	3.64	1.87	0.00	0.22	0.20
Building Vendor Trips	0.40	4.98	3.56	0.01	0.24	0.20
Building Worker Trips	0.63	1.18	19.59	0.02	0.16	0.08
Architectural Coating	66.12	-	-	-	-	-
Architectural Coating Worker Trips	0.11	0.21	3.40	0.00	0.03	0.01
Asphalt Off-Gas	0.33	-	-	-	-	-
Paving Off-Road Diesel	2.99	17.76	9.40	0.00	1.54	1.41
Paving On-Road Diesel	0.17	2.40	0.89	0.00	0.11	0.10
Paving Worker Trips	0.07	0.14	2.27	0.00	0.02	0.01
Total Simultaneous Building Construction	71.30	30.32	41.02	0.03	2.31	2.02
Significance Criteria	75	100	550	150	150	55
Significant?	No	No	No	No	No	No

Operational Emissions

Operational emissions are described as the combination of area and vehicular sources. The Area 9/2 Housing Project would contribute to fuel combustion emissions from energy use, including space and water heating; fuel combustion emissions from landscape maintenance equipment; and consumer product VOC emissions. Vehicular sources that could be attributable to the Area 9/2 Housing Project would be those from faculty and staff that live within the residential development, and their visitors. However, vehicular emissions would be reduced because faculty and staff are located on campus; therefore, residents would not need to use a vehicle to reach the Academic Core area of campus, or their vehicular trips to and from the Academic Core would be short.

Volume I, Section 4.2.3.2, concludes that the maximum daily and annual operational emissions associated with implementation of the 2007 LRDP would be above the SCAQMD's daily significance thresholds for CO, VOCs, NO_x, PM_{10}, and $PM_{2.5}$ and above the annual significance thresholds for CO, VOCs, NO_X, and $PM_{2.5}$. However, operational air emissions attributable to the Area 9/2 Housing Project would be substantially less than those described in Volume I, Section 4.2.3.2, and federal or state standards are not expected to be exceeded. Therefore, impacts to air quality resulting from operational emissions associated with the Area 9/2 Housing Project would be less than significant.

Mitigation Measures

Impacts associated with operational emissions are considered less than significant and, therefore, do not require mitigation. However, impacts associated with short-term construction activities of the project would be significant for NO_x emissions. Mitigation for this impact would require limiting the number of scrapers to between 3 and 5, depending on the availability and practicability of diesel particulate catalysts and alternative fuels. However, site grading could not be accomplished within the necessary project schedule with this limitation on the number of scrapers; therefore, this is not a feasible mitigation measure. Implementation of Best Management Practices (BMPs) xii, xiii and xiv from LRDP mitigation measure Air-2B restated below would reduce this impact to the extent feasible, but not to a level of Less than Significant. Therefore, due to exceedance of the SCAQMD threshold for NO_x emissions, the Area 9/2 Housing Project would result in a direct air quality impact that would remain significant following mitigation.

LRDP MM

Air-2B Prior to initiating on-site construction for future projects that implement the 2007 LRDP, UCI shall ensure that the project construction contract includes a construction emissions mitigation plan, including measures compliant with SCAQMD Rule 403 (Fugitive Dust), to be implemented and supervised by the on-site construction supervisor, which shall include, but not be limited to, the following BMPs:

i. During grading and site preparation activities, exposed soil areas shall be stabilized via frequent watering, non-toxic chemical stabilization, or equivalent measures at a rate to be determined by the on-site construction supervisor.

ii. During windy days when fugitive dust can be observed leaving the construction site, additional applications of water shall be required at a rate to be determined by the on-site construction supervisor.

iii. Disturbed areas designated for landscaping shall be prepared as soon as possible after completion of construction activities.

iv. Areas of the construction site that will remain inactive for three months or longer following clearing, grubbing and/or grading shall receive appropriate BMP treatments (e.g., revegetation, mulching, covering with tarps, etc.) to prevent fugitive dust generation.

v. All exposed soil or material stockpiles that will not be used within 3 days shall be enclosed, covered, or watered twice daily, or shall be stabilized with approved non-toxic chemical soil binders at a rate to be determined by the on-site construction supervisor.

vi. Unpaved access roads shall be stabilized via frequent watering, non-toxic chemical stabilization, temporary paving, or equivalent measures at a rate to be determined by the on-site construction supervisor.

vii. Trucks transporting materials to and from the site shall allow for at least two feet of freeboard (i.e., minimum vertical distance between the top of the load and the top of the trailer). Alternatively, trucks transporting materials shall be covered.

viii. Speed limit signs at 15 mph or less shall be installed on all unpaved roads within construction sites.

ix. Where visible soil material is tracked onto adjacent public paved roads, the paved roads shall be swept and debris shall be returned to the construction site or transported off site for disposal.

x. Wheel washers, dirt knock-off grates/mats, or equivalent measures shall be installed within the construction site where vehicles exit unpaved roads onto paved roads.

xi. Diesel powered construction equipment shall be maintained in accordance with manufacturer's requirements, and shall be retrofitted with diesel particulate filters where available and practicable.

xii. Heavy duty diesel trucks and gasoline powered equipment shall be turned off if idling is anticipated to last for more than 5 minutes.

xiii. Where feasible, the construction contractor shall use alternatively fueled construction equipment, such as electric or natural gas-powered equipment or biofuel.

xiv. Heavy construction equipment shall use low NO_x diesel fuel to the extent that it is readily available at the time of construction.

xv. To the extent feasible, construction activities shall rely on the campus's existing electricity infrastructure rather than electrical generators powered by internal combustion engines.

xvi. The construction contractor shall develop a construction traffic management plan that includes the following:

- Scheduling heavy-duty truck deliveries to avoid peak traffic periods
- Consolidating truck deliveries

xvii. Where possible, the construction contractor shall provide a lunch shuttle or on-site lunch service for construction workers.

xviii. The construction contractor shall, to the extent possible, use pre-coated architectural materials that do not require painting. Water-based or low VOC coatings shall be used that are compliant with SCAQMD Rule 1113. Spray equipment with high transfer efficiency, such as the high volume-low pressure spray method, or manual coatings application shall be used to reduce VOC emissions to the extent possible.

xix. Project constructions plans and specifications will include a requirement to define and implement a work program that would limit the emissions of reactive organic gases (ROG's) during the application of architectural coatings to the extent necessary to keep total daily ROG's for each project to below 75 pounds per day, or the current SCAQMD threshold, throughout that period of construction activity to the extent feasible. The specific program may include any combination of restrictions on the types of paints and coatings, application methods, and the amount of surface area coated as determined by the contractor.

xx. The construction contractor shall maintain signage along the construction perimeter with the name and telephone number of the individual in charge of implementing the construction emissions mitigation plan, and with the telephone number of the SCAQMD's complaint line. The contractor's representative shall maintain a log of any public complaints and corrective actions taken to resolve complaints.

4.2.3.3 ISSUE 3 – SENSITIVE RECEPTORS

Air Quality Issue 3 Summary

Would the proposed project expose sensitive receptors to substantial pollutant concentrations?

Impact: Implementation of the Area 9/2 Housing Project may expose sensitive receptors to substantial pollutant concentrations.

Mitigation: No mitigation required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.2 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Volume I, Section 4.2.3.3 discusses air quality impacts to sensitive receptors that could result from the complete implementation of the 2007 LRDP in terms of non-cancer health risk, cancer risk, and local carbon monoxide impacts at congested intersections. Non-cancer and cancer health risks are based on toxic air contaminant emissions from operations such as those related to laboratories, energy generation, and hazardous materials handling. The Area 9/2 Housing Project's only anticipated contribution to these sources is a proposed increased demand for electricity. An analysis of the potential cancer risks was conducted and the results are presented in Volume I, Table 4.2-11, Summary of Individual Cancer and Non-cancer Risks. Risks to on-campus residents, including children, students, and adults, are shown in Table 4-3, below.

Table 4-3. Summary of Individual Cancer and Non-cancer Risks for On-campus Residents

Receptor	Incremental Cancer Risk	Non-Cancer Hazard Index (HI)	
		Acute	Chronic
Maximally Exposed On-site Adult Resident	6.56 in one million	0.0534	0.00752
Maximally Exposed On-site Student Resident	0.931 in one million	0.0534	0.00752
Maximally Exposed On-Site Child Resident	1.26 in one million	0.0534	0.00752
Significance Threshold	**10 in one million**	**1.0**	**1.0**

As shown in Table 4-1, the incremental cancer risks are below the SCAQMD significance level of 10 in one million for all receptors and all exposure scenarios; therefore, no significant impact would occur.

Local carbon monoxide impacts occur at congested intersections, which result in elevated ambient CO levels. Traffic impacts are discussed in greater detail in Volume I, Section 4.13.3.1. To estimate the worst-case local CO impacts, the CO modeling analyses focused on numerous intersections that would be most affected by the 2007 LRDP traffic volumes and would operate at the worst congested traffic levels (LOS E or F) in 2025-26 among all affected intersections, including the Bonita Canyon Drive and Newport Coast Drive Intersection located on the proposed project site. As shown in Volume I, Table 4.2-13, the predicted CO concentrations would be substantially below significance thresholds. Implementation of the 2007 LRDP would not violate the NAAQS and CAAQS for CO or expose receptors to substantial CO concentrations associated with vehicle traffic on roadways. The estimated CO concentrations for the most congested intersections associated with 2007 LRDP traffic volumes (under year 2025 and post-2025 conditions) were predicted to be well below the applicable NAAQS and CAAQS for CO; therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

4.2.3.4 ISSUE 4 – OBJECTIONABLE ODORS

Air Quality Issue 4 Summary

Would the proposed project create objectionable odors affecting a substantial number of people?

Impact: Implementation of the proposed project is not likely to produce objectionable odors affecting a substantial number of people.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.2 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Volume I, Section 4.2.3.4 discusses impacts from objectionable odors associated with the development of the campus. It concludes that the institutional, residential, and recreational land uses such as those that occupy the majority of the UCI campus are not considered to generate significant odor impacts. Because the proposed

Area 9/2 Housing Project does not contain any unique uses related to odor generation, it is considered consistent with this analysis, and impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

4.2.4 CUMULATIVE IMPACTS AND MITIGATION

Air Quality Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to cumulative air quality?

Cumulative Impact	Significance	Project Contribution
Consistency with Applicable Air Quality Plan: Because the proposed project would not conflict with the 2007 AQMP or the SIP, there is no analysis of cumulative impacts.	N/A	N/A
Construction and Operational Emissions: Air quality impacts from construction activities, area sources, new stationary sources and increased vehicular emissions that would exceed air quality standards for CO, VOCs, NO_x, PM_{10} and $PM_{2.5}$.	Significant.	Cumulatively considerable, following implementation of mitigation measure Air-2B.
Sensitive receptors: Exposure of people to substantial carcinogenic, non-carcinogenic, and localized CO pollutant concentrations.	Significant (carcinogenic, non-carcinogenic pollutants); significant (CO "hot spots").	Cumulatively considerable for carcinogenic, non-carcinogenic pollutants, but mitigated with implementation of UC Policy for Green Building Design and Clean Energy Standard; not cumulatively considerable for CO "hot spots".
Objectionable Odors: Because the 2007 LRDP would not generate objectionable odors, there is no analysis of cumulative impacts.	N/A	N/A

4.2.4.1 CONSISTENCY WITH APPLICABLE AIR QUALITY PLAN

Section 4.2.3.1 above concluded that the proposed project would not conflict with the 2007 AQMP or the SIP. Therefore, this issue is not addressed in this cumulative analysis pursuant to Section 15130(a)(1) of the CEQA Guidelines, which states that "an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR."

4.2.4.2 CONSTRUCTION AND OPERATIONAL EMISSIONS

The geographic context for the analysis of cumulative impacts for construction and operational emissions is the Basin. This analysis accounts for all anticipated cumulative growth within this geographic area, along with full implementation of the 2007 LRDP. Because the Basin is considered a nonattainment area for O_3,

CO, PM_{10}, and $PM_{2.5}$, cumulative development could violate an air quality standard or contribute to an existing or projected air quality violation. This condition is considered to be a significant Basin-wide cumulative impact. For the purposes of this analysis, if the contribution of the Area 9/2 Housing Project to any of these nonattainment pollutant emissions exceeds the SCAQMD thresholds, then the project contribution would be cumulatively considerable. Therefore, because grading associated with the Area 9/2 Housing Project would result in NO_x emissions (an O_3 precursor) above the SCAQMD threshold, the proposed project's contribution to significant air quality impacts would be cumulatively considerable.

Mitigation for this impact would require limiting the number of scrapers to between 3 and 5, depending on the availability and practicability of diesel particulate catalysts and alternative fuels. However, site grading could not be accomplished within the necessary project schedule with this limitation on the number of scrapers; therefore, this is not a feasible mitigation measure. Implementation of BMPs xii, xiii and xiv from LRDP mitigation measure Air-2B would reduce the project's cumulatively considerable contribution to this impact to the extent feasible, but not to a level of Less than Significant. Therefore, due to exceedance of the SCAQMD threshold for NO_x emissions, the Area 9/2 Housing Project would result in a cumulative air quality impact that would remain significant following mitigation.

4.2.4.3 SENSITIVE RECEPTORS

The geographic context for the analysis of cumulative impacts for exposure of sensitive receptors to substantial carcinogenic and non-carcinogenic pollutant concentrations is the Basin. This analysis accounts for all anticipated cumulative growth within this geographic area, along with full implementation of the 2007 LRDP. The cancer risk in the Basin exceeds the significance threshold of ten in one million; therefore, a significant cumulative impact exists. For the purposes of this analysis, any contribution to the cancer risk in the Basin by individual projects, such as the Area 9/2 Housing Project, would be cumulatively considerable. Therefore, because the Area 9/2 Housing Project would result in some amount of cancer and non-cancer risk, the proposed project's contribution to significant air quality impacts would be cumulatively considerable.

As discussed in Section 4.14 (Utilities, Service Systems, and Energy) of the LRDP EIR (Volume I), UCI implements the energy-saving projects and programs that reduce carcinogenic and non-carcinogenic pollutant emissions associated with energy production. The program that is applicable to the Area 9/2 Housing Project includes the following:

- The UC Policy for Green Building Design and Clean Energy Standard guides the design of green buildings and the use of clean energy.

Implementation of this energy-saving program would reduce the project's cumulatively considerable contribution to these impacts to a level of Less than Significant. In accordance with Section 15130(a)(3) of the CEQA Guidelines, these mitigation measures are consistent with the 2007 AQMP strategies that are designed to alleviate Basin-wide air quality impacts by controlling pollution from all sources, including stationary sources, on-road and off-road mobile sources, and area sources.

The geographic context for the analysis of cumulative impacts for exposure of sensitive receptors to substantial CO pollutant concentrations encompasses the on- and off-campus intersections listed in Volume I, Table 4.2-13, CO "Hot Spots" Evaluation Predicted CO Concentrations, ppm. Certain receptors near these intersections may be sensitive to CO "hot spots"; therefore, a significant cumulative impact exists. The "hot spots" evaluation summarized in Volume I, Section 4.2.3.3 above takes into account cumulative traffic generated due to implementation of the 2007 LRDP and other projects considered in the cumulative traffic projections. As shown in Volume I, Table 4.2-13, project-related traffic would not result in an exceedance in an ambient air quality standard when added to background CO concentrations of the analyzed intersections.

Thus, localized CO cumulative impacts associated with the LRDP would not result in a cumulatively considerable contribution to this significant cumulative air quality impact.

4.2.4.4 OBJECTIONABLE ODORS

Section 4.2.3.4 above concluded that development of the Area 9/2 Housing Project would not generate objectionable odors. Therefore, this issue is not addressed in this cumulative analysis pursuant to Section 15130(a)(1) of the CEQA Guidelines, which states that "an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR."

4.2.5 REFERENCES

Refer to Volume I, Section 4.2 for references relevant to this section.

4.3 BIOLOGICAL RESOURCES

4.3.1 ENVIRONMENTAL SETTING

Volume I, Section 4.3 presents the biological setting for the entire UCI campus based on a *General Biological Resources and Sensitive Species Update for the UCI Long Range Development Plan*, (prepared by Michael Brandman and Associates, 2007). Volume I discusses topography and soils, the methods used to conduct biological surveys on the campus, vegetation communities that have been mapped for the campus, areas subject to Army Corps of Engineers (ACOE) and California Department of Fish and Game (CDFG) jurisdictions, and sensitive plant and animal species that have been observed or have the potential to occur on campus.

As shown in Volume I, Figure 4.3-2D, the Area 9/2 Housing Project site is comprised of non-native grassland, including stands of ruderal forbs dominated by mustard (*Brassica* spp. and *Hirschfeldia* spp.) or artichoke thistle (*Cynara cardunculus*), as well as areas dominated by annual grasses and scattered patches of native grasses and occasional native shrubs. A small area of mule fat scrub is located at the southern portion of the project site along Bonita Canyon Drive. Southern tarplant (*Centromadia parryi* ssp. *australis*), a sensitive species (List-1B), has the potential to occur on the project site.

4.3.2 REGULATORY FRAMEWORK

Refer to Volume I, Section 4.3 for a discussion of relevant regulations.

4.3.3 PROJECT IMPACTS AND MITIGATION

4.3.3.1 ISSUE 1 – CANDIDATE, SENSITIVE, OR SPECIAL STATUS PLANT SPECIES

Biological Resources Issue 1 Summary

Would the proposed project result in a substantial adverse effect, either directly or through habitat modifications, on any plant species identified as a candidate, sensitive, or special status species?

Impact: The Area 9/2 Housing Project is unlikely to impact sensitive plant species as none have been observed on or adjacent to the project site, although there is potential for southern tarplant (List-1B) to occur in these areas.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.3 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts to sensitive plant species that could result from development on the UCI campus are described in Volume I, Section 4.3. As indicated above, sensitive plant species have not been observed on or

near the project site; however, southern tarplant is considered potentially present in the vicinity of the proposed Area 9/2 Housing Project. Impacts to southern tarplant associated with development of Area 9/2 would be considered adverse; however, the impacts would not be expected to reduce regional populations to less than a self-sustaining level. Therefore, impacts to this species are considered less than significant.

The closest locations of sensitive vegetation communities are southeast of the intersection of Anteater Drive and Bonita Canyon Drive, which is approximately 0.5 mile away to the east, where a patch of coastal sage scrub and an herbaceous wetland are found. Due to the distance between the proposed project site and these sensitive areas, indirect impacts such as the propagation of non-native species in native plant communities, edge effects, and human activity that disturbs native communities are unlikely to occur as a result of the project.

Mitigation Measures

No mitigation measures are required.

4.3.3.2 ISSUE 2 – CANDIDATE, SENSITIVE, OR SPECIAL STATUS ANIMAL SPECIES

Biological Resources Issue 2 Summary

Would the proposed project result in a substantial adverse effect, either directly or through habitat modifications, on any animal species identified as a candidate, sensitive or special status species?

Impact: The Area 9/2 Housing Project has the potential to impact sensitive animal species due to suitable western burrowing owl habitat on site. In addition, raptor nests could occur within 500 feet of project related construction activities and in such case would be indirectly impacted.

Mitigation: Western burrowing owls survey (LRDP MM Bio-2A) and raptor nest surveys and avoidance (LRDP MM Bio-2B).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Refer to Volume I, Section 4.3 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts to sensitive animal species that could result from development on the UCI campus are described in Volume I, Section 4.3. Sensitive animal species have not been observed on the project site; although, suitable habitat (i.e., large open areas of non-native grassland, ruderal (weedy) areas, and scrub habitat) exists for the western burrowing owl. The Area 9/2 Housing Project could also result in significant indirect impacts to raptor nests, if any were to occur within 500 feet of project related construction activity. Therefore, the Area 9/2 Housing Project could result in direct and indirect disturbance to sensitive animal species or their habitat. If such an impact should occur, it would be significant.

Mitigation Measures

Impacts to the western burrowing owl would be avoided or mitigated to a level less than significant by implementation of the LRDP MM Bio-2A. Impacts to nesting raptors and migratory birds would be avoided or mitigated to a level less than significant by implementation of the LRDP MM Bio-2B.

LRDP MM

Bio-2A Prior to initiating on-site construction for future projects in the east campus and west campus that implement the 2007 LRDP and that involve land clearing, grading, or similar land development activities adjacent to suitable habitat for the western burrowing owl (i.e., large open areas of non-native grassland, ruderal (weedy) areas, and scrub habitat), UCI shall retain a qualified biologist to conduct a burrowing owl survey of the respective habitat areas within 300 feet of the approved limits of disturbance. If occupied burrows are detected from the survey, then they shall not be disturbed during the nesting season (February 1 through August 31) until the biologist verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. If owls must be moved away from the disturbance area, passive relocation is preferable to trapping. A time period of at least one week is recommended to allow the owls to move and acclimate to alternate burrows. When destruction of occupied burrows is unavoidable, relocation burrows shall be created (by installing artificial burrows) at a ratio of 1:1 in suitable foraging habitat. The biologist shall document all findings and results in a report submitted to UCI.

Bio-2B Prior to initiating on-site construction for future projects that implement the 2007 LRDP and that involve land clearing, grading, or similar land development activities adjacent to habitat areas identified as suitable for sensitive wildlife species, UCI shall retain a qualified biologist to conduct a sensitive wildlife survey of the respective areas within 150 feet of the approved limits of disturbance. If sensitive wildlife species are detected from the survey, then UCI shall approve contractor specifications that include measures to reduce indirect construction and post-construction impacts to the identified species, to the maximum extent feasible. These measures shall include, but are not limited to, the following:

i. A pre-construction meeting shall be held to ensure that construction crews are informed of the sensitive wildlife and habitats in the vicinity of the construction site. Prior to commencement of clearing or grading activities, a biologist (or other qualified person) shall supervise the installation of temporary construction fencing along the approved limits of disturbance to discourage errant intrusions into the identified sensitive wildlife habitats by construction vehicles or personnel. All construction access and circulation shall be limited to designated construction zones. This fencing shall be removed upon completion of construction activities.

ii. If suitable habitat for raptors or protected bird species is present and raptors or protected bird species are observed in the vicinity, the pre-construction surveys for active nests shall be performed within 30 calendar days prior to commencement of clearing or grading activities during the breeding season for raptors and protected bird species (generally February 1 through August 31) at locations where suitable nesting habitat exists within 500 feet of the approved limits of disturbance. Construction activities within 500 feet of active raptor nests (300 feet for protected bird species) shall be monitored by the biologist and modified as directed by the biologist until the biologist determines that the nest is no longer

active. Construction activity may encroach into the 500-foot buffer area only at the discretion of the biologist.

iii. Refer to mitigation measure Noi-2A for noise abatement measures during construction.

iv. Storm water treatment and erosion control measures or facilities shall be maintained in a manner that avoids the discharge of polluted runoff and erosion impacts to the identified sensitive plants.

v. Refer to mitigation measure Air-2B for dust control measures during construction.

vi. Night lighting shall be avoided during construction. Any necessary lighting shall be shielded to minimize temporary lighting of the surrounding habitat.

vii. A biological monitor shall be present on-site on at least a weekly basis during rough grading to ensure that the fenced construction limits are not exceeded.

viii. Permanent lighting adjacent to natural habitat areas shall be selectively placed, shielded and directed to minimize impacts to sensitive wildlife.

4.3.3.3 ISSUE 3 – RIPARIAN HABITAT AND OTHER SENSITIVE NATURAL COMMUNITIES

Biological Resources Issue 3 Summary

Would the proposed project have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS?

Impact: The Area 9/2 Housing Project would directly impact remnant areas of mule fat scrub located on the southern border of the project site, but would not indirectly impact any sensitive habitats.

Mitigation: Survey (LRDP MM Bio-3A), avoid if possible (LRDP MM Bio-3B), prepare and implement a habitat restoration plan (LRDP MM Bio-3C), and incorporate a 50-foot buffer (LRDP MM Bio-3D).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Refer to Volume I, Section 4.3 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts to sensitive natural vegetation communities that could result from development on the UCI campus are described in Volume I, Section 4.3.

Natural vegetation communities that occur in the proposed project area are described in Volume I, Section 4.3.1, and mapped in Volume I, Figure 4.3-2D. The vast majority of the vegetation in the project area consists of non-native grasslands, which are not considered sensitive vegetation communities. Development of the proposed site would result in direct significant impacts to sensitive species that use or have the potential to occur in the non-native grasslands, such as western burrowing owl and raptors; however, these impacts are addressed in Section 4.3.3.2, above.

Small remnants of mule fat scrub are located along the southern boundary of the project area, which would also be directly impacted by implementation of the proposed project. Mule fat scrub is not covered by the NCCP; therefore, direct impacts to these sensitive vegetation communities would be significant.

The areas surrounding the project site include development to the north, west, and south and non-native grassland to the east. Therefore, because there is no sensitive habitat in the immediate vicinity of the project area, the proposed Area 9/2 Housing Project would not indirectly impact sensitive habitats.

Mitigation Measures

The following LRDP mitigation measures would reduce the direct impacts to sensitive vegetation and mule fat scrub to a less than significant level.

LRDP MM

Bio-3A For future projects that implement the 2007 LRDP and are located on sites containing mule fat scrub or herbaceous wetland habitats, UCI shall retain a qualified biologist to conduct a survey of these habitats. If project-level surveys determine that mule fat scrub riparian habitat and/or herbaceous wetland habitat may be impacted by the project, then mitigation measures Bio-3B and 3C shall be implemented.

Bio-3B For future projects that implement the 2007 LRDP and could impact mule fat scrub riparian habitat and/or herbaceous wetland habitats as determined by mitigation measure Bio-3A, design features shall be considered to avoid and/or minimize direct impacts to these sensitive vegetation communities, to the extent feasible. If it is not feasible to avoid these impacts, then mitigation measure Bio-3C shall be implemented.

Bio-3C For future projects that implement the 2007 LRDP and would impact mule fat scrub riparian habitat and/or herbaceous wetland habitat, if these areas contain jurisdictional wetlands, all necessary regulatory permits shall be obtained and impacts shall be mitigated through implementation of Mitigation Measure Bio 4A. If no jurisdictional wetlands are present, impacts to mulefat scrub riparian habitat and/or herbaceous wetland habitat of greater than 0.1 acre shall be mitigated at ratios of 1:1 through habitat creation, restoration, or enhancement. Mitigation shall occur within dedicated campus open space areas where feasible, or at off-campus locations if on-site mitigation is not feasible. A qualified biologist shall assist in preparation, implementation, and monitoring of a habitat restoration plan, identifying the site preparation and installation requirements, establishment, monitoring, and long term management of the mitigation areas. Impacts to less than 0.1 acre of these habitat types, where no jurisdictional wetlands are present, would not require mitigation.

Bio-3D As early as possible in the planning process for future projects that implement the 2007 LRDP and are adjacent to designated campus open space areas containing riparian or wetland vegetation, UCI shall ensure that the projects include a 50-foot setback from the flow line, to the extent practicable.

Implementation of mitigation measure Bio-1A would reduce the indirect impacts to sensitive vegetation communities to a level of Less than Significant.

4.3.3.4 ISSUE 4 – WETLANDS

Biological Resources Issue 4 Summary

Would the proposed project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act?

Impact: The Area 9/2 Housing Project would directly impact remnant areas of mule fat scrub located on the southern border of the project site, which is protected under the Clean Water Act.

Mitigation: Determine extent of jurisdictional area and acquire permits, if necessary (LRDP MM Bio-4A).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Refer to Volume I, Section 4.3 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Portions of a natural drainage area that could be subject to USACE, CDFG, or Regional Water Quality Control Board (RWQCB) jurisdiction is located within the project area. Implementation of the proposed project would include portions of a seasonal drainage course that contains scattered patches of mule fat scrub, and a remnant swale extending west of Anteater Road that contains alkali meadow. Jurisdictional delineations would be required for future projects that would directly impact jurisdictional areas. Direct impacts to jurisdictional areas would require permits from the USACE, as well as the CDFG and RWQCB. In addition to direct impacts, all future development on campus that would be adjacent to these areas could result in indirect impacts to jurisdictional resources. Therefore, direct impacts to jurisdictional areas within the project area would be significant.

Mitigation Measures

The following LRDP mitigation measure would reduce direct impacts to jurisdictional areas to a less than significant level.

LRDP MM Bio-4A For future projects that implement the 2007 LRDP and are located on sites containing (or within 50 feet of) wetlands or other jurisdictional areas, or on sites containing (or within 25 feet of) a natural drainage course, UCI shall retain a qualified biologist to prepare a jurisdictional delineation. The jurisdictional delineation shall identify the presence of any areas that are subject to USACE, CDFG, or RWQCB jurisdiction, and the potential for the project to adversely affect these jurisdictional areas. If there is potential for the project to adversely affect jurisdictional areas all necessary regulatory permits shall be obtained and impacts shall be avoided or mitigated through implementation of mitigation measures established through consultation with regulatory agencies and as specified in the final regulatory permits and conditions.

4.3.3.5 ISSUE 5 — WILDLIFE MOVEMENT CORRIDORS

Biological Resources Issue 5 Summary

Would the implementation of the 2007 LRDP interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident migratory corridors, or impede the uses of native wildlife nursery sites?

Impact: Implementation of the Area 9/2 Housing Project would not interfere with wildlife movement corridors or impede movement of native species.

Mitigation: No mitigation required.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.3 for a discussion of standards of significance relevant to this issue.

Impact Analysis

The LRDP Open Space Element identifies designated open space corridors, including the UCI NCCP Reserve Area, between developed and planned for development areas. These corridors facilitate wildlife movement between the campus and the SJFWM. However, because the proposed project is located in an area that is surrounding by development on three sides, the project area most likely is not used as a wildlife corridor. Therefore, the proposed project would not impede or impact any wildlife movement corridors.

Mitigation Measures

Because impacts are less than significant, no mitigation measures are required.

4.3.4 CUMULATIVE IMPACTS AND MITIGATION

Biological Resources Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to biological resources?

Cumulative Impact	Significance	Project Contribution
Candidate, Sensitive, or Special Status Plant Species: Regional loss of southern tarplant.	Significant.	Not cumulatively considerable.
Candidate, Sensitive, or Special Status Animal Species: Regional loss of western burrowing and foraging habitat for raptors.	Significant.	Not cumulatively considerable with implementation of LRDP mitigation measures Bio-2A and Bio-2B.
Riparian Habitat and Other Sensitive Natural Communities: Regional loss of sensitive habitats.	Significant.	Not cumulatively considerable with implementation of LRDP mitigation measures Bio-3A, Bio-3B, Bio-3C, Bio-3D, and Bio-4A.
Wetlands: Regional loss of wetlands.	Significant.	Not cumulatively considerable with implementation of mitigation measure Bio-4A.
Wildlife Movement Corridors: Because the project would not impact wildlife corridors, there is no analysis of the cumulative impact.	N/A	N/A

4.3.4.1 CANDIDATE, SENSITIVE, OR SPECIAL STATUS PLANT SPECIES

The geographic context for the analysis of cumulative impacts to sensitive plant species associated with the Area 9/2 Housing Project includes (1) the subregional NCCP Reserve System for the sensitive plant species covered under the NCCP/HCP for the County of Orange Central and Coastal sub-region and (2) the Orange County region for the sensitive plant species that are not covered under the NCCP. Because sensitive plant species are identified due to their scarcity (e.g., threatened and endangered) throughout their range, impacts to these species are considered to be significant cumulative impacts. As evaluated in Volume I, Section 4.3.3.1 and in Section 4.3.3.1 above, the proposed project would potentially impact one sensitive plant species: southern tarplant. This plant is not covered under the NCCP. However, because this species occurs in large numbers within the local vicinity, the permanent loss of plants associated with the Area 9/2 Housing Project would not reduce regional populations to less than a self-sustaining level. Therefore, the proposed project would not result in a cumulatively considerable contribution to a significant cumulative impact to southern tarplant.

4.3.4.2 CANDIDATE, SENSITIVE, OR SPECIAL STATUS ANIMAL SPECIES

The geographic context for the analysis of cumulative impacts to sensitive animal species associated with the 2007 LRDP implementation includes: (1) the subregional NCCP Reserve System for the sensitive animal species covered under the NCCP/HCP for the County of Orange Central and Coastal sub-region; and (2) the Orange County region for the sensitive animal species that are not covered under the NCCP. Because sensitive animal species are identified due to their scarcity (e.g., threatened and endangered) throughout their

range, impacts to these species are considered to be significant cumulative impacts. As evaluated in Volume I, Section 4.3.3.2 and in Section 4.3.3.2 above, the proposed project would potentially impact sensitive animal species: western burrowing owl and raptors. The western burrowing owl is not covered under the NCCP and only two raptors are covered under the NCCP: northern harrier (*Circus cyaneus*) and sharp-shinned hawk (*Accipiter striatus*). Due to UCI's continued participation in the NCCP, any impact to sensitive animal species covered by the NCCP, but located outside the UCI NCCP Reserve Area, would not result in a cumulatively considerable contribution to a significant cumulative impact. With regard to raptors which are not covered under the NCCP, any trees with active raptor nests cannot be removed inside the breeding season, as required by LRDP mitigation measure Bio-2B. Therefore, impacts to raptors would not result in a cumulatively considerable contribution. Further, with implementation of LRDP mitigation measure Bio-2A, impacts to the western burrowing owl, which is also not covered by the NCCP, would not result in a cumulatively considerable contribution. Therefore, with implementation of LRDP mitigation measures Bio-2A and Bio-2B, the proposed project's contribution would not be cumulatively considerable.

4.3.4.3 RIPARIAN HABITAT AND OTHER SENSITIVE NATURAL COMMUNITIES

The geographic context for the analysis of cumulative impacts to mule fat scrub habitats associated with development of the Area 9/2 Housing Project includes the Orange County region. Sensitive habitats are identified due to the scarcity of the sensitive species which inhabit these communities; therefore, because impacts to sensitive habitats would also impact sensitive species, impacts to these communities are considered to be significant cumulative impacts. As discussed in Volume I, Section 4.3.3.3 and Section 4.3.3.3 above, mule fat scrub is not "covered" habitats under the NCCP/HCP for the County of Orange Central and Coastal sub-region. Therefore, direct impacts to this sensitive riparian habitat due to development of the Area 9/2 Housing Project would result in a cumulatively considerable contribution to a significant cumulative impact. However, with implementation of LRDP mitigation measures Bio-3A through Bio-3D and Bio-4A, the proposed project contribution would be reduced and would not result in a cumulatively considerable contribution.

4.3.4.4 WETLANDS

Please refer to the discussion of riparian habitats (i.e., mulefat scrub) in Section 4.3.4.3 above.

4.3.4.5 WILDLIFE MOVEMENT CORRIDORS

Volume I, Section 4.3.3.5 concluded that the 2007 LRDP would not interfere with wildlife corridors or impede movement by native species. Therefore, this issue is not addressed in this cumulative analysis pursuant to Section 15130(a)(1) of the CEQA Guidelines, which states that "an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR."

4.3.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

All checklist items under the category of biological resources were evaluated in Volume I, Section 4.3 for the 2007 LRDP and, therefore, all are also evaluated for the proposed Area 9/2 Housing Project in this document.

4.3.6 REFERENCES

Refer to Volume I, Section 4.3 for references relevant to this section.

4.4 CULTURAL RESOURCES

4.4.1 ENVIRONMENTAL SETTING

Volume I, Section 4.4 presents the cultural resources setting for the entire UCI campus, including the project site based on a 1988 report by RMW Paleo Associates and describes archeological, historical, and paleontological resources that have been identified on campus or have potential to occur on campus. These reports can be found in Volume II, Appendices F-H of the 1989 LRDP EIR.

Lithic scatters are the primary archeological resources found on campus. Recorded prehistoric resources located within the UCI campus are summarized in Volume I, Table 4.4-1. Eight archaeological sites have been discovered in the South Campus. Data and artifacts from several of these sites, including CA-Ora-123, CA-Ora-179, CA-Ora-181, CA-Ora-218, CA-Ora-1119, and ST-1, have been recovered and several have been damaged by illegal collecting. Only one site remains with potential to contain additional artifacts. This site is located within the NCCP Reserve.

No historic resources are located in the project site.

With regard to paleontological resources, as discussed in Volume I, the potential for their presence is typically determined based on geologic formations. The Topanga Formation in the Santa Ana Mountains has recently been recognized as a major fossil bearing rock unit. Exposures of the Topanga Formation exist along Bonita Canyon Road are located on the South Campus, in the vicinity of the proposed project. The Topanga formation is considered to have a high paleontological sensitivity, which means that this formation has a high potential for the discovery of significant fossils.

4.4.2 REGULATORY FRAMEWORK

Significant historic and prehistoric resources are protected under the National Historic Preservation Act of 1966, the California Register of Historic Resources, and the Native American Historic Resource Protection Act. These regulations are discussed in more detail in Volume I, Section 4.4.

4.4.3 PROJECT IMPACTS AND MITIGATION

4.4.3.1 ISSUE 1 – ARCHEOLOGICAL RESOURCES

Cultural Resources Issue 2 Summary

Would the proposed project cause a substantial adverse change in the significance of an archeological resource?

Impact: While no resources are know to occur on-site, unrecorded subsurface archaeological resources have the potential to occur.

Mitigation: Monitoring when unexpected resources are discovered (LRDP-MM Cul-1C).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Refer to Volume I, Section 4.4 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts to archeological resources that could result from development on the UCI campus are described in Volume I, Section 4.4. No archeological resources are known to exist on or adjacent to the area that would be affected by the construction of the Area 9/2 Housing Project. However, because the project site is currently undeveloped, the proposed project would have the potential to impact archeological resources during construction. Therefore, the Area 9/2 Housing Project would have the potential to significantly impact unknown archeological resources.

Mitigation Measures

As described in section 4.4.3.4 below, a qualified Archeologist/Paleontologist would be on-site during grading and excavation activities. If the archeologist observes any unrecorded archeological resources during project grading LRDP Mitigation Measure Cul-1C would be implemented, provided below, to address impacts to unrecorded subsurface archeological resources that could potentially be unearthed during grading and trenching activities.

LRDP MM

Cul-1C In the event of an unexpected archeological discovery during grading, the on-site construction supervisor shall redirect work away from the location of the archaeological find. A qualified archaeologist shall oversee the evaluation and recovery of archaeological resources, in accordance with mitigation measures Cul-1A and Cul-1B, after which the on-site construction supervisor shall be notified and shall direct work to continue in the location of the archaeological find. A record of monitoring activity shall be submitted to CEP each month and at the end of monitoring.

4.4.3.2 ISSUE 2 – HISTORICAL RESOURCES

Cultural Resources Issue 1 Summary

Would the proposed project cause a substantial adverse change in the significance of a historical resource?

Impact: There are no historical resources on the project site.

Mitigation: No mitigation is necessary.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.4 for a discussion of standards of significance relevant to this issue.

Impact Analysis

No historical resources exist on or adjacent to the project site; therefore, construction of the Area 9/2 Housing Project would not result in impacts to historical resources.

Mitigation Measures

No mitigation measures are required.

4.4.3.3 ISSUE 3 – HUMAN REMAINS

Cultural Resources Issue 3 Summary

Would the proposed project disturb any human remains, including those interred outside of formal cemeteries?

Impact: Human remains are unlikely to occur under the project site; however, because human remains have been discovered in the vicinity of UCI, the project may uncover unknown remains.

Mitigation: No mitigation is necessary.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.4 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts to human remains that could result from development on the UCI campus are described in Volume I, Section 4.4. No human remains have been recorded on or adjacent to the project site. Furthermore, no archeological or historic resources have been recorded on the site and the nearest recorded archeological and historic resources to the site did not include human remains. However, because human remains are usually found buried beneath the surface and human remains have been found in the UCI vicinity, implementation of the Area 9/2 Housing Project may result in the disturbance of human remains during construction activities. If the human remains are disturbed during grading or excavation, UCI will comply with existing laws including CHSC Section 7.50.5 and CEQA Guidelines 15064.5(e), As a result, these impacts would be considered less than significant unless the appropriate procedures were implemented.

Mitigation Measures

The proposed project would not result in significant impacts to human remains. Therefore, no mitigation is necessary.

4.4.3.4 ISSUE 4 – PALEONTOLOGICAL RESOURCES

Cultural Resources Issue 4 Summary

Would the proposed project directly or indirectly destroy, disturb, or remove a unique paleontological resource, site, or geologic feature?

Impact: Implementation of the proposed project has the potential to impact unique paleontological resources during construction activities.

Mitigation: Monitor and implement data recovery upon discovery of resources (LRDP MM Cul-4A, Cul-4B, Cul-4C).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Refer to Volume I, Section 4.4 for a discussion of standards of significance relevant to this issue.

Impact Analysis

The Topanga Formation geologic units under the campus are considered to be of high paleontologic sensitivity for the region. The majority of the campus, including the South Campus and the proposed project area, is rated as High Sensitivity for vertebrate and invertebrate fossils. The 1988 Paleontological Assessment for the UCI campus noted that one of the most unique features of the campus is the micro-paleontological resources found along Bonita Canyon Road. These resources are microscopic fossils of single-celled animals that inhabited the sea floor. The fossils contained in these exposures are of regional and interregional significance, because they provide the basis for comparisons between the depositional histories of various parts of the Los Angeles Basin. Additionally, the information preserved in these exposures can be used for comparisons between the depositional histories of the Los Angeles Basin with other sedimentary basins of the West coast.

Exposures along Bonita Canyon Road are located on the South Campus in the vicinity of the proposed project. Development of the proposed project may expose fossil remains due to excavation operations which cut into geologic formations, trenching and tunneling activities, or by natural erosion processes. According to the 2007 LRDP EIR, any project involving excavation into either the Topanga Formation or the terrace deposits would have an adverse effect on paleontological resources. Therefore, development of the proposed Area 9/2 Housing Project would have the potential to significantly impact paleontological resources.

Mitigation Measures

Implementation of LRDP mitigation measures Cul-4A to Cul-4B for the proposed Area 9/2 Housing Project would reduce significant impacts to paleontological resources to a level that is less than significant.

LRDP MM

Cul-4A Prior to grading or excavation for future projects that implement the 2007 LRDP and would excavate sedimentary rock material other than topsoil, UCI shall retain a qualified paleontologist to monitor these activities. In the event fossils are discovered during grading, the on-site construction supervisor shall be notified and shall redirect work away from the location of the discovery. The recommendations of the paleontologist shall be implemented with respect to the evaluation and recovery of fossils, in accordance with mitigation measures Cul-4B and Cul-4C, after which the on-site construction supervisor shall be notified and shall direct work to continue in the location of the fossil discovery. A record of monitoring activity shall be submitted to UCI each month and at the end of monitoring.

Cul-4B If the fossils are determined to be significant, then mitigation measure Cul-4C shall be implemented.

Cul-4C For significant fossils as determined by mitigation measure Cul-4B, the paleontologist shall prepare and implement a data recovery plan. The plan shall include, but not be limited to, the following measures:

a. The paleontologist shall ensure that all significant fossils collected are cleaned, identified, catalogued, and permanently curated with an appropriate institution with a research interest in the materials (which may include UCI);

b. The paleontologist shall ensure that specialty studies are completed, as appropriate, for any significant fossil collected; and

c. The paleontologist shall ensure that curation of fossils are completed in consultation with UCI. A letter of acceptance from the curation institution shall be submitted to UCI.

4.4.4 CUMULATIVE IMPACTS AND MITIGATION

Cultural Resources Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to cultural resources?

Cumulative Impact	Significance	Project Contribution
Archaeological Resources: Regional loss of archeological resources.	Significant.	Not cumulatively considerable with implementation of LRDP mitigation measure Cul-1C.
Historic Resources: Regional loss of historical resources.	Significant.	Not cumulatively considerable.
Human Remains: Regional disturbance of human remains.	Significant.	Not cumulatively considerable with implementation of LRDP mitigation measure Cul-3A.
Paleontological Resources: Regional loss of paleontological resources.	Less than significant.	N/A

4.4.4.1 ARCHEOLOGICAL RESOURCES

The geographic context for the analysis of cumulative impacts for archaeological resources encompasses the Orange County Region. Development of Newport Beach and Irvine under each city's General Plan would include excavation and grading that would potentially impact archaeological resources. Therefore, future development in these cities, and throughout Orange County, would have the potential to impact archaeological resources, which could lead to a significant cumulative impact.

A large area of the campus is developed with the exception of a few undeveloped land areas located on the East, South and North Campuses. Archeological resources that were once present in the area have been destroyed, damaged, or lost; however, the potential for intact artifacts exists. Therefore, future development of undeveloped areas in the South Campus, such as for the Area 9/2 Housing Project, may uncover and impact unrecorded resources, which could have a cumulatively considerable contribution to the cumulative impact of archeological resources. However, with the implementation of LRDP mitigation measure Cul-1C, the project's contribution would be fully mitigated and would be reduced to a level that is not cumulatively considerable.

4.4.4.2 HISTORICAL RESOURCES

The geographic context for the analysis of cumulative impacts for historic cultural resources encompasses the Orange County region and future development in Orange County would have the potential to impact historic resources, which could lead to a significant cumulative impact. No historical resources exist on or adjacent to the project site; therefore, construction of the Area 9/2 Housing Project would not result in a cumulatively considerable impact.

4.4.4.3 HUMAN REMAINS

The geographic context for the analysis of cumulative impacts to human remains encompasses the Orange County Region. Development of Newport Beach and Irvine under each city's General Plan would include excavation and grading that would potentially unearth human remains. Therefore, future development in these cities, and throughout Orange County, would have the potential to disturb human remains, which would lead to a significant cumulative impact. A large area of the campus is developed with the exception of a few undeveloped areas located on the East, South and North Campuses. While there is no past evidence of human remains found on the UCI campus, the potential for unearthing unrecorded and unknown human remains exists. Therefore, future development in undeveloped areas, such as for the Area 9/2 Housing Project, may uncover and impact unrecorded human remains, which would have a cumulatively considerable contribution to the impact of archeological resources. However, with the implementation of LRDP mitigation measure Cul-3A, the project's contribution would not be cumulatively considerable.

4.4.4.4 PALEONTOLOGICAL RESOURCES

The geographic context for the analysis of cumulative impacts to paleontological resources encompasses the Orange County Region. As previously described, the geologic units that occur under the UCI campus are also present in many other areas of the Orange County region. Development of the Orange County region has resulted in disturbance to these geologic units and the fossils that they contain. However, development has also led to the discovery of many fossil sites that have been documented and which have added to the natural history record for the region. Development of the Orange County area will continue and would have the potential to continue to disturb these geologic units; however, monitoring for paleontological resources is now typically required for projects that require significant earthwork in geologic units with higher paleontological sensitivities, such as the UCI campus. Therefore, because paleontological monitoring is required throughout Orange County and the monitoring enables the discovery of additional resources, the cumulative impact to paleontological resources is less than significant.

4.4.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

As discussed in Volume I, Section 4.4, the initial study for the 2007 LRDP indicated that all checklist items under the category of cultural resources should be evaluated in the EIR; therefore, they are also all evaluated for the proposed Area 9/2 Housing Project in this document.

4.4.6 REFERENCES

Refer to Volume I, Section 4.4 for other references relevant to this section.

4.5 GEOLOGY AND SOILS

4.5.1 ENVIRONMENTAL SETTING

Volume I, Section 4.5 presents the geology, soils, and seismicity setting for the entire UCI campus based on a Fault Investigation Study prepared by Petra International (1991) and a Geologic and Soil Reconnaissance Study prepared by Geolabs, Inc (1968). Volume I provides a discussion of regional geology; identifies and describes the soils and geologic formations that underlie the UCI campus; describes potential existing hazards relating to faulting, seismicity, and landslides; and provides general discussions of topographical conditions for the campus. Information specific to the Area 9/2 Housing project is available in a geotechnical investigation report, *Preliminary Geologic/Geotechnical Evaluation Irvine Campus Housing Authority Planning Area 9* (Neblett & Associates, Inc., 2005).

The Area 9/2 Housing Project site is underlain predominately by the Topanga Formation-Los Trancos Member (Ttl), which is generally gray, olive and brown and consists of well-bedded to locally massive, moderately hard to hard siltstone and claystone with local beds of sandstone and siliceous mudstone. According to the preliminary geologic/geotechnical evaluation, alluvium, colluvium, and undocumented artificial fill are present on the project site but the Topanga Formation bedrock is below these materials and underlies the majority of the site with isolated areas of Alluvium (Qal) on the southern portion of the site.

UCI is located in a region of historic seismic activity. The Alquist-Priolo Earthquake Fault Zoning Act defines active faults as those with evidence of displacement during the Holocene epoch (roughly the past 11,000 years). The San Andreas fault located approximately 35 miles northeast of the campus is capable of producing earthquakes up to 8.0 on the Richter Scale; the San Jacinto fault located 30 miles to the northeast is capable of generating earthquakes up to 7.5 in magnitude; the Newport-Inglewood fault that runs along the coast below Newport Bay and Balboa Island is located 4.5 miles southwest of the campus and is capable of producing earthquakes up to 7.5 in magnitude.

In addition to the active faults mentioned above, there are also several potentially active faults found near the campus and one located on the campus. Potentially active faults are those that show evidence of displacement or activity with the last 400,000 years (Quaternary period) but which cannot be traced forward to the last 11,000 years. San Gabriel, Whittier-Elsinore, and Pelican Hill faults are all potentially active faults within the general area of the UCI campus. The Whittier-Elsinore fault located approximately 18 miles northeast of campus is considered potentially active and capable of producing magnitudes of up to 7.5. The UCI Campus Fault extends from beyond the southeast region of the campus northwest across the Central campus, as shown in Volume I, Figure 4.5-1; however, the Area 9/2 Housing Project is not located on or adjacent to it. A study conducted by Petra Geotechnical, Inc in 1991 concluded that the fault is potentially active and significant from an engineering design standpoint. Furthermore, Petra concluded that although no evidence was found to support recent activity of the fault, sufficient evidence was not found to definitely preclude Holocene activity.

No landslides have been recorded in the area of the project site and the project site is considered to be stable. With regard to groundwater and liquefaction, as discussed in the geotechnical evaluation for Area 9, groundwater was not encountered during field investigations. Soil liquefaction occurs within relatively loose, cohesionless sands located below the water table that are subject to ground accelerations from earthquakes. Due to the relatively great distance to reach groundwater at the project site and dense nature of the formational materials in the area, the potential for liquefaction occurring at the project site is considered low.

4.5.2 REGULATORY FRAMEWORK

Refer to Volume I, Section 4.5 for a discussion of relevant regulations.

4.5.3 PROJECT IMPACTS AND MITIGATION

4.5.3.1 ISSUE 1 – EXPOSURE TO SEISMIC-RELATED HAZARDS

Geology and Soils Issue 1 Summary

Would the proposed project expose people or structures to potential substantial adverse effects of a rupture of a known earthquake fault, strong seismic groundshaking, seismic related ground failure, liquefaction or landslides?

Impact: The Area 9/2 Housing Project site is considered to be prone to seismic hazards and would comply with the California Building Code and UC Seismic Safety Policy to reduce seismic related hazards to people and structures.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.5 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts associated with seismic-related hazards to which development on the UCI campus could be exposed are described in Volume I, Section 4.5. The project site is not considered prone to hazards such as seismic-related ground failure, liquefaction, and landslides. Further, the project would be implemented in compliance with the California Building Code (CBC) and the UC Seismic Safety Policy; therefore, impacts associated with seismic hazards are considered to be less than significant.

Mitigation Measures

No mitigation measures are required.

4.5.3.2 ISSUE 2 – SOIL EROSION OR TOPSOIL LOSS

Geology and Soils Issue 2 Summary

Would the proposed project result in substantial soil erosion or the loss of top soil?

Impact: Because of CBC and NPDES permit requirements, the Area 9/2 Housing Project would not likely result in increased erosion associated with construction activities.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.5 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts associated with soil erosion or topsoil loss that could result from development on the UCI campus are described in Volume I, Section 4.5. Earth-disturbing activities associated with construction would be temporary and erosion effects would depend largely on the areas disturbed, the quantity of disturbance, and the length of time soils are subject to conditions that would be affected by erosion processes. All construction activities would comply with Chapter 29 of the CBC, which regulates excavation activities and the construction of foundations and retaining walls, and Chapter 70 of the CBC, which regulates grading activities, including drainage and erosion control.

Furthermore, as described in Volume I, Section 4.2 (Air Quality) and 4.7 (Hydrology and Water Quality), the Area 9/2 Housing Project would comply with the National Pollutant Discharge Elimination System (NPDES) general permit for construction activities which requires that construction Best Management Practices (BMPs) be implemented to control site erosion and sedimentation. Such BMPs would include silt fences, watering for dust control, straw-bale check dams, and hydroseeding. The project would also implement UCI's campus-wide runoff management program, which includes implementation of additional BMPs to control erosion and sedimentation. With the continued implementation of these measures, substantial erosion or topsoil loss is unlikely to occur during construction activities associated with implementation of the Area 9/2 Housing Project and the associated impacts would be less than significant

Mitigation Measures

No mitigation measures are required.

4.5.3.3 ISSUE 3 – SOIL STABILITY

Geology and Soils Issue 3 Summary

Would the proposed project be located on a geologic unit or soil that is unstable or that would become unstable and potentially result in a landslide, lateral spreading, subsidence, liquefaction or collapse?

Impact: Due to unsuitable soils for structures, the Area 9/2 Housing Project could result in impacts due to soils instability.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.5 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts associated with seismic related hazards such as landslides, collapse, and liquefaction are discussed in Section 4.5.3.1. Other soil stability issues that could result from development on the UCI campus are described in Volume I, Section 4.5.3.3.

In compliance with CBC, a geotechnical evaluation was conducted for the project area. The evaluation determined that, in general, alluvium, colluvium, and undocumented artificial fill are considered unsuitable for the support of structures. However, the Topanga Formation bedrock below these materials is considered suitable for support of proposed development. The report further recommends removing the unsuitable materials prior to construction of structures. The project proposes removing approximately 55,000 cubic yards of material. Therefore, because the project would comply with the recommendations of the geotechnical investigation, impacts resulting from unstable soils would be less than significant.

The geotechnical investigation also reviewed literature and the latest Seismic Hazard Zones map produced by the California Geologic Survey. This research indicated that slopes within the project site were not located in zones with increased potential for landslides. Further, with regard to slope instability, the site neither contains nor is near slopes that are greater than 25 degrees, which are considered to be more susceptible to instability. Therefore, impacts resulting from unstable slopes would be less than significant.

Mitigation Measures

No mitigation measures are required.

4.5.3.4 ISSUE 4 – EXPANSIVE SOILS

Geology and Soils Issue 4 Summary

Would the proposed project be constructed on expansive soils?

Impact: Expansive soils are located throughout the project area and would be removed during site preparation.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.5 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts associated with expansive soils that could result from development on the UCI campus are described in Volume I, Section 4.5. Expansive soils have high concentrations of expansive clays or silts that swell when wet and shrink upon drying. Colluvium, which covers the majority of the site, and alluvium, which fills drainage bottoms and lower elevations of the site, both have the potential for shrinking and swelling. This shrinking and swelling can be detrimental to foundations, concrete slabs, flatwork, and pavement. As recommended in the geotechnical investigation, the project proposes to remove approximately 55,000 cubic yards of these soils from the project area. These materials would be blended with non-expansive materials and placed in deeper fill areas and would not be placed at finished pad grade elevations. Therefore, implementation of the recommendations from the geotechnical investigation concerning site preparation would reduce potential impacts to less than significant.

Mitigation Measures

No mitigation measures are required.

4.5.4 CUMULATIVE IMPACTS AND MITIGATION

Geology and Soils Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to geology and soils?

Cumulative Impact	Significance	Project Contribution
Seismic Related Hazards: Cumulative development in the region would expose a greater number of people and structures to seismic-related hazards.	Significant.	Not cumulatively considerable.
Soil Erosion and Topsoil Loss: Cumulative development at UCI and throughout the City of Irvine could result in excessive erosions; however, development projects are subject to numerous regulations to prevent soil erosion..	Less than significant.	N/A
Soil and Slope Instability: Development occurring on unstable soils and slopes requires specific site preparation measures be applied to reduce hazards associated with unstable soils and slopes.	Less than significant.	N/A
Expansive Soils: Development occurring on expansive soils require specific site preparation measures be applied to reduce hazards associated with expansive soils.	Less than significant.	N/A

4.5.4.1 SEISMIC RELATED HAZARDS

The geographic context for the analysis of impacts resulting from seismic ground shaking is generally site-specific, rather than cumulative in nature, because each development site has unique geologic considerations that would be subject to uniform site development and construction standards. In this way, potential cumulative impacts resulting from geological, seismic, and soil conditions would be minimized on a site-by-site basis to the extent that modern construction methods and code requirements provide. Nevertheless, even though adequate study, design, and construction measures can be taken to reduce potential impacts, cumulative development in the region would contribute to the cumulative increase in the number of persons exposed to these hazards (e.g., the general seismic risk that exists throughout southern California). Therefore, there is an existing significant cumulative impact in terms of exposure of persons to seismic hazards. However, as described in Volume I, Section 4.5 and unlike some other areas within the region, the UCI campus is not located within an Earthquake Fault Zone as defined by the Alquist-Priolo Earthquake Fault Zoning Act. The Earthquake Fault Zone accounts for active faults. The UCI Campus Fault is classified as a potentially active fault. All development on campus would continue to comply with the CBC and UC Seismic Safety Policy, which requires the use of the most stringent seismic safety standards, consistent with all applicable regulations. The contribution of the Area 9/2 Housing Project to impacts associated with exposing people and property to ground shaking effects is, therefore, not considered to be cumulatively considerable.

4.5.4.2 EROSION AND TOPSOIL LOSS

The geographic context for the analysis of erosion and topsoil loss impacts is the San Diego Creek and Bonita Creek subwatersheds because impacts from erosion and loss of topsoil from site development and operation

can be cumulative in effect within a watershed. Development at UCI and throughout the City of Irvine is subject to state and local runoff and erosion prevention requirements, including the applicable provisions of the general construction permit, BMPs, and Phases I and II of NPDES, as well as implementation of fugitive dust control measures required by the South Coast Air Quality Management District. These measures are implemented as conditions of approval for development projects and are subject to continuing enforcement. As a result, it is anticipated that cumulative impacts on the San Diego Creek and Bonita Creek subwatersheds due to runoff and erosion from cumulative development activity would be less than significant.

4.5.4.3 SOIL AND SLOPE INSTABILITY

The geographic context for the analysis of impacts of soil and slope instability on development is generally site specific. Nevertheless, when considering the impacts in a larger geographic context, all development on the UCI campus and in the surrounding jurisdictions is required to undergo analysis of the geologic and soil conditions applicable to the development site in question. The analysis provides recommendations to prepare the site for development to avoid the hazards associated with unstable soils. Typical measures to treat unstable soils involve removal and replacement with properly compacted fill, compaction grouting, or deep dynamic compaction. Because restrictions on development would be applied in the event that soil or slope conditions pose a risk to safety, it is anticipated that cumulative impacts from development on soil subject to soil instability, liquefaction, and subsidence would be less than significant.

4.5.4.4 EXPANSIVE SOILS

The geographic context for the analysis of impacts of expansive soils is generally site specific. Nevertheless, when considering the impacts in a larger geographic context, all development on the UCI campus and in the surrounding jurisdictions is required to undergo analysis of the soil conditions applicable to the development site in question. The analysis provides recommendations to prepare the site for development to avoid the hazards associated with expansive soils. Typical measures to treat expansive involve removal, proper fill selection, and compaction. Because restrictions on development would be applied in the event that expansive soils are located on any development site, it is anticipated that cumulative impacts from development on expansive soils would be less than significant.

4.5.6 REFERENCES

Neblett & Associates, Inc. 2005. *Preliminary Geologic/Geotechnical Evaluations Irvine Campus Housing Authority Planning Area 9 University of California, Irvine*. May 12, 2005.

Refer to Volume I, Section 4.5 for other references relevant to this section.

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4.6 HAZARDS AND HAZARDOUS MATERIALS

4.6.1 ENVIRONMENTAL SETTING

Volume I, Section 4.6 discusses the use and disposal of hazardous materials at UCI, transportation of hazardous materials, hazardous material sites on and adjacent to the campus, physical hazards related to wildland fires and aircraft accidents, and UCI safety plans and policies pertaining to hazards and hazardous materials.

Hazardous materials used on the campus fall within four general categories: general chemicals, radioactive materials, biohazardous materials, and hazardous materials associated with infrastructure. On-campus activities can also generate hazardous byproducts that must be disposed of as hazardous wastes. Radioactive and biohazards are associated with academic uses, which are not proposed by the Area 9/2 Housing Project. Most activities related to hazardous materials occur inside research buildings; therefore, exposure to the environment is more likely to occur during their delivery to or removal from campus research facilities. The potential for releases of hazardous materials related to the Area 9/2 project is considered in this section, with the exception of the potential impacts from toxic air emissions (Section 4.2, Air Quality) and water quality issues associated with sewer disposal (Section 4.14, Utilities, Service Systems, and Energy).

Volume I, Section 4.6 identifies hazardous materials sites on and adjacent to the campus that could affect campus development. No recorded hazardous materials sites are located on or within the immediate vicinity of the Area 9/2 Housing Project site. The site is currently undeveloped and records maintained by Campus and Environmental Planning, including historical aerial photos and topographical maps, show no indication of any previous land uses within the project site that generated, stored, or disposed of hazardous materials.

With regard to wildland fire hazards, also discussed in Volume I, Section 4.6, the project site is primarily surrounded by developed areas and is not substantially prone to the spread of large wildland fires. However, the eastern portion of the project area is adjacent to an undeveloped area covered with non-native grasses, as shown in Figure 4-1. This area, which is a future LRDP development area, could be susceptible to wildland fire, especially during the summer and early fall. Proposed and existing homes within the University Hills Housing Area could be threatened in the event of a wildfire.

To protect the University Hills Housing Area from wildland fire, a 100-foot "Defensible Space" zone has been established. The Defensible Space Zone is maintained by the Irvine Campus Housing Authority in cooperation with UCI Facilities Management and consistent with OCFA standards for this type of development interface. High fuel vegetation and other combustible materials are prohibited from the Defensible Space zone. Fire protection at UCI is discussed in greater detail in Volume I, Section 4.6.3.7, Wildland Fires, and Section 4.11, Public Services.

4.6.2 REGULATORY FRAMEWORK

Applicable federal and state laws and regulations governing the generation, handling, transportation, and disposal of hazardous materials are described in Volume I, Section 4.6.

4.6.3 PROJECT IMPACTS AND MITIGATION

4.6.3.1 ISSUE 1 – TRANSPORT, USE, AND DISPOSAL OF HAZARDOUS MATERIALS

Hazards and Hazardous Materials Issue 1 Summary

Would the proposed project result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Impact: The Area 9/2 Housing Project would result in minimal transport, use, or disposal of hazardous materials.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

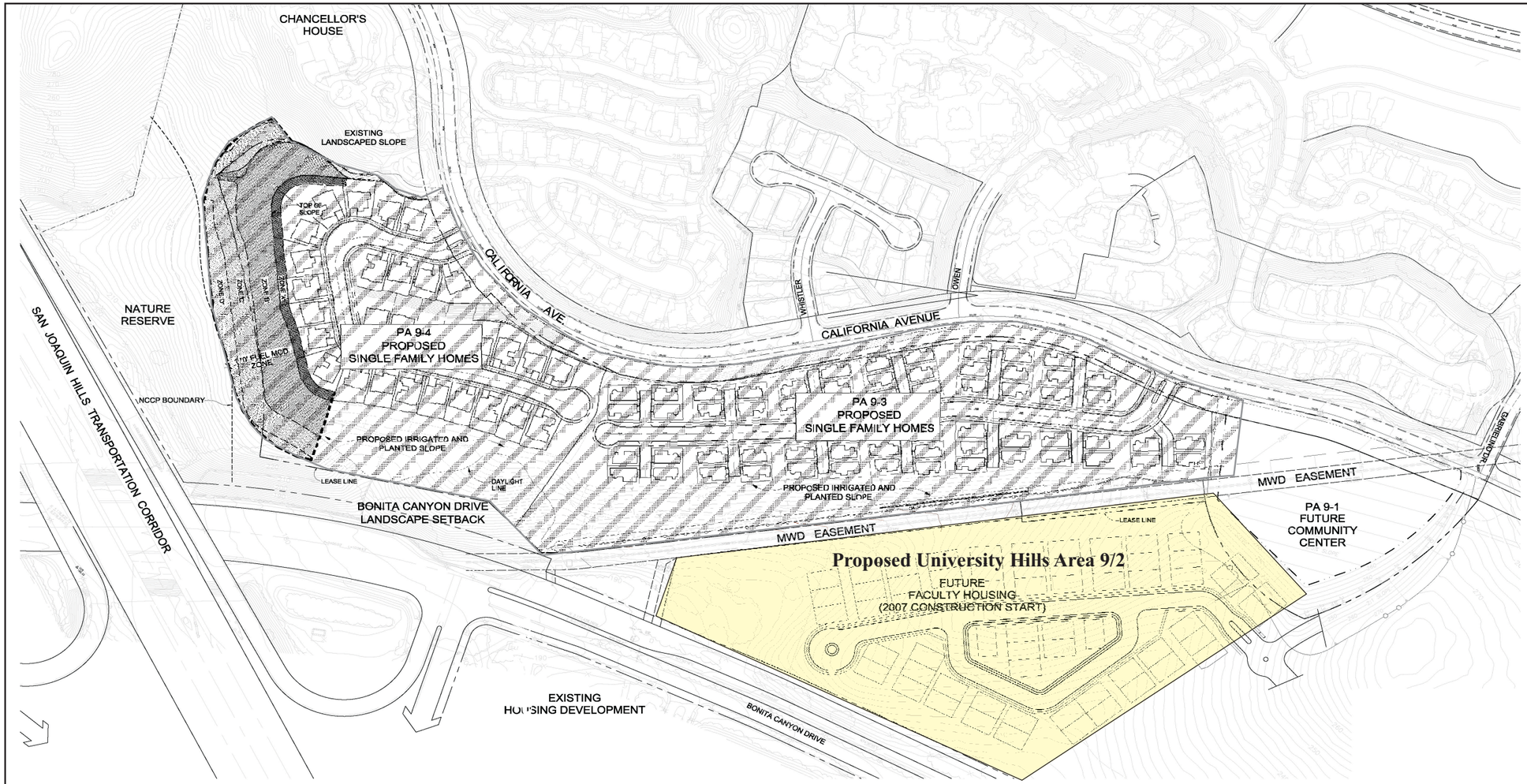
Refer to Volume I, Section 4.6 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Volume I, Section 4.6 discusses the general hazards associated with the use, disposal, and transport of the four types of hazardous materials that are associated with campus developments: general chemicals, radioactive, biohazardous materials, and hazardous materials associated with infrastructure. Because the Area 9/2 Housing Project is a residential development, only general chemicals and hazardous materials associated with infrastructure are relevant to this analysis. Radioactive and biohazardous materials would not be associated with the residential development.

As discussed in Volume I, chemicals (some hazardous) are used in a variety of instructional, research, and maintenance activities. Some janitorial and office supplies, as well as diesel fuel for the emergency generator, are considered "hazardous materials" under regulatory definitions; however, these products would not be used in the Area 9/2 Housing Project .

Volume I, Section 4.6 indicates that some buildings and structures on-campus could contain hazardous materials such as asbestos, lead, and mercury, and that renovation, demolition, and other construction activities could result in releases of these substances and exposure to construction workers and nearby uses. The Area 9/2 Housing Project would not require the demolition of any existing building. As a result, the implementation of the project would not disturb any structures or buildings that could contain hazardous materials. Petroleum products such as fuels and oils would be the predominant hazardous materials used on-site during construction. The main hazardous wastes produced by construction activity would be waste oil and oil-saturated materials from construction equipment. Hazardous materials and waste would be managed and used in accordance with all applicable federal, state, and local laws and regulations. There would be no routine transport, storage, use, or disposal of significant amounts of hazardous materials. Minimal amounts of hazardous materials may be transported to and from the site during construction, but the transport of such materials would be temporary and subject to applicable regulation. Further, hazardous materials used during project operation would be those typically found around residential development such as pesticides, fertilizers, and cleaning supplies. Therefore, any impacts resulting from the use, transport, to disposal of hazardous materials would be less than significant.



FUEL MODIFICATION LEGEND

ZONE 'A'
- 20' WIDE IRRIGATED SETBACK ZONE
- NO CUMBUSTIBLE CONSTRUCTION
- LEVEL GRADED AREA
- REMOVAL OF FIRE PRONE SPECIES
- FIRE RESISTANT PLANTS FROM OCFA APPROVED PLANT PALETTE
- NO TREES WITHIN 10' OF STRUCTURES
- THINNING AND REMOVAL OF COMBUSTIBLE VEGETATION
- ONGOING MAINTENANCE OF IRRIGATION SYSTEM AND REGULAR PRUNING AND THINNING

ZONE 'B'
- 50' WIDE MINIMUM PERMANENTLY IRRIGATED ZONE; WIDTH VARIES TO MATCH LIMIT OF GRADING (NEWLY GRADED SLOPE WILL REQUIRE IRRIGATION AND PLANTING FOR EROSION CONTROL)
- GROUNDCOVER MAINTAINED AT 18" HT. MAX.
- PLANTING IN ACCORDANCE WITH PLANTING GUIDELINES AND SPACING STANDARDS OF OCFA FUEL MODIFICATION GUIDELINES
- TREES TO BE PRUNED
- REMOVAL OF FIRE PRONE SPECIES

ZONE 'C'
- 50' WIDE MAX. NON-IRRIGATED ZONE
- 50% THINNING & REMOVAL OF ALL DEAD & DYING VEGETATION; ALL FINE FUELS REDUCED TO A MAX. OF 8-12 INCHES IN HEIGHT
- TREES AND SHRUBS SHALL BE SPACED IN CONFORMANCE WITH OCFA FUEL MODIFICATION GUIDELINES

ZONE 'D'
- 50' WIDE MAX. NON-IRRIGATED ZONE
- 30% THINNING & REMOVAL OF ALL DEAD & DYING VEGETATION; ALL FINE FUELS REDUCED TO A MAX. OF 8-12 INCHES IN HEIGHT
- TREES AND SHRUBS SHALL BE SPACED IN CONFORMANCE WITH OCFA FUEL MODIFICATION GUIDELINES

EXISTING VEGETATION

THE EXISTING VEGETATION WITHIN THE REQUIRED FUEL MODIFICATION AREA IS DOMINATED BY DISTURBED NON-NATIVE GRASSLAND WITH RUDERAL (WEEDY) ELEMENTS. SEE PHOTOS FROM SITE SURVEY BELOW.

FIRE PRONE PLANT SPECIES AS LISTED IN THE OCFA FUEL MODIFICATION PLANS AND MAINTENANCE PROGRAM, ATTACHMENT 7, 'UNDESIRABLE PLANT SPECIES' WILL BE REMOVED. REMOVAL OF UNDESIRED PLANT MATERIAL WILL BE PERFORMED WITH A MECHANICAL TRIMMER AND / OR BY HAND.

PROPOSED VEGETATION

THE PLANTING PROPOSED IN ZONE 'B' IS IN COMPLIANCE WITH APPROVED OCFA PLANT PALETTE AND WOULD INCLUDE:

TREES
- Quercus agrifolia / Coast Live Oak
- Populus fremontii / Western Cottonwood

SHRUBS AND GROUNDCOVERS
- Acacia redolens / Desert Carpet
- Achillea tomentosa / Woolly Yarrow
- Anigozathos flavidus / Kangaroo Paw
- Agave spp. / Agave
- Aloe vera / Medicinal Aloe
- Arctostaphylos uva-ursi / Bearberry
- Baccharis p. consanguinea / Chaparral Bloom
- Ceanothus g. horizontalis / Carmel Creeper
- Cistus salvifolius / Sageleaf Rockrose
- Hesperaloe parviflora / Red Yucca
- Heteromeles arbutifolia / Toyon
- Kniphofia uvaria / Red Hot Poker
- Lantana montevidensis / Trailing Lantana
- Leymus condensatus / Giant Wild Rye
- Pyracantha spp. / Firethorn
- Rhus integrifolia / Lemonade Berry
- Sambucus mexicana / Mexican Elderberry
- Westringia fruticosa / Coast Rosemary
- Xylosma congestum / Shiny Xylosma
- Hydroseed Nursecrop - To Be Determined (all species to be on approved OCFA Plant Palette)

TREES AND SHRUBS 4' AND TALLER WILL BE PLANTED AS SINGLE SPECIMENS OR IN MAXIMUM GROUPINGS OF THREE PLANTS. GROUPINGS SHALL BE SEPARATED BY A DISTANCE OF THREE TIMES THE DIAMETER OF THE LARGEST INDIVIDUAL MATURE CROWN OR 30 FEET, WHICHEVER IS GREATER.

WITHIN THE FUEL MODIFICATION ZONES, PLANT SPECIES WILL BE SELECTED FROM THE OCFA APPROVED PLANT PALETTE.

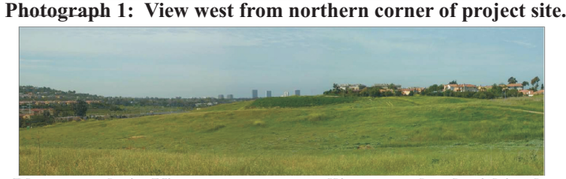
MAINTENANCE RESPONSIBILITY

MAINTENANCE OF THE FUEL MODIFICATION ZONE WILL BE THE RESPONSIBILITY OF IRVINE CAMPUS HOUSING AUTHORITY. MAINTENANCE WILL BE IN ACCORDANCE WITH OCFA FUEL MODIFICATION PLANS AND MAINTENANCE PROGRAM (SEE SHEET 5 FOR PERTINENT SECTIONS 4-6 AND ATTACHMENTS 6 AND 7).

HABITAT

WE HAVE CHECKED WITH THE NECESSARY AGENCIES AND THERE ARE NO RARE OR ENDANGERED PLANT OR ANIMAL SPECIES EXISTING WITHIN THE 170 WIDE FUTURE APPROVED ZONES AND THERE WILL BE NO RESTRICTIONS OF THINNING OR PLANT REMOVAL WITHIN THE FUEL MODIFICATION ZONES.

Photograph 1: View west from northern corner of project site.



Photograph 4: View west across rolling grassland within the project site. Fashion Island high rise structures are visible.

Photograph 5: View north through middle of project site.

Photograph 6: View north across grassland-covered, gentle slopes within the project site. This area is immediately east of the view in the above photo.

Not to Scale

SOURCE: Ridge Landscape Architect, 2007

CONCEPTUAL FUEL MODIFICATION PLAN

FIGURE 4-1

Mitigation Measures

No mitigation measures are required.

4.6.3.2 ISSUE 2 – ACCIDENTAL RELEASES

Hazards and Hazardous Materials Issue 2 Summary

Would the proposed project result in the release of hazardous materials into the environment through reasonably foreseeable accidents?

Impact: The Area 9/2 Housing Project could use minimal hazardous materials and the potential for an accidental release is low.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.6 for a discussion of standards of significance relevant to this issue.

Impact Analysis

The potential for the release of hazardous materials into the environment from the UCI campus is discussed in Volume I, Section 4.6. As discussed in that section, the campus complies with numerous regulations and has developed substantial safeguards to prevent releases of hazardous materials and guidelines to respond to a release in the event that one were to occur. Compliance with all applicable federal and state laws, as well as campus programs, practices, and procedures related to the transportation, storage, and use of hazardous materials would continue with the implementation of the 2007 LRDP, minimizing the potential for a release, and providing for prompt and effective cleanup should an accidental release occur. As such, impacts related to an accidental release due to the increased transportation, storage, or use of hazardous materials with the 2007 LRDP would be less than significant. Some hazardous material, such as paint and petroleum based predicts, would be used during the construction of the proposed project; however, applicable laws and regulations would be followed. Therefore, because minimal amounts of hazardous materials would be used on the Area 9/2 Housing Project site, impacts resulting from accidental release would be less than significant.

Mitigation Measures

No mitigation measures are required.

4.6.3.3 ISSUE 3 – HAZARDS TO NEARBY SCHOOLS

Hazards and Hazardous Materials Issue 3 Summary

Would the proposed project result in activities that emit hazardous emissions or handle hazardous materials within one-quarter mile of an existing or proposed school?

Impact: Although the project site is within one-quarter mile of existing schools; no activities that involve hazardous materials would be associated with the Area 9/2 Housing Project.

Mitigation: No mitigation is required.

Significance Before Mitigation: No impact

Significance After Mitigation: No impact.

Standards of Significance

Refer to Volume I, Section 4.6 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As discussed in Section 4.6 of Volume I, five schools are located on or within one-quarter mile of campus: the UCI Farm School, the Tarbut v' Torah School, Vista Verde Elementary School, Turtle Rock Elementary School, and University High School. There are six daycare/pre-schools located on campus and several additional schools that are located within one mile of the campus but are greater than one-quarter mile from campus.

As discussed in Issues 1 and 2, the Area 9/2 Housing Project would not emit or handle hazardous materials that pose a substantial risk to occupants of a school or the campus community, or the Area 9/2 Housing Project. As such, the Area 9/2 Housing Project would not create an impact to those attending existing or proposed schools from the hazardous emissions or handling of hazardous materials within one-quarter mile of an existing or proposed school.

Mitigation Measures

No mitigation measures are required.

4.6.3.4 ISSUE 4 – LISTED HAZARDOUS MATERIALS SITES

Hazards and Hazardous Materials Issue 4 Summary

Would the proposed project create a significant hazard to the public or environment by locating activities on a listed hazardous materials site ?

Impact: No closed or active hazardous material sites are located on or near the project site and there is a low potential for unrecorded contamination to occur on the project site.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.6 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts associated with hazardous materials sites are discussed in Volume I, Section 4.6. As previously mentioned, no recorded hazardous materials sites are located on or within the immediate vicinity of the Area 9/2 Housing Project site. The site is currently undeveloped and historical records maintained by the Campus and Environmental Planning, including historical aerial photos and topographic maps, show no indication of any previous land uses that generated, stored, or disposed of hazardous materials within the project site. If hazardous materials are encountered during construction, standard procedures required by state and federal regulations for their handling and disposal will be followed; therefore, implementation of the Area 9/2 Housing Project would result in a less than significant impact related to hazardous materials or contaminated sites.

Mitigation Measures

No mitigation measures are required.

4.6.3.5 ISSUE 5 – HAZARDS FROM NEARBY AIRPORTS

Hazards and Hazardous Materials Issue 5 Summary

Would the proposed project result in an aircraft safety hazard?

Impact: Activities from John Wayne Airport are not likely to pose safety hazards to development of the Area 9/2 Housing Project.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.6 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Hazards from John Wayne Airport (JWA), the nearest airport to the project site, are discussed in Volume 1, Section 4.6. JWA has established Runway Protection Zones (RPZ), also called Accident Potential Zones (APZ), which define those surrounding areas that are more likely to be affected if an aircraft-related accident were to occur. The UCI campus is located 1.5 miles east of the airport and is not located within a RPZ or APZ. Therefore, potential impacts associated with aircraft safety hazards on campus, including the Area 9/2 Housing Project, are considered less than significant.

Mitigation Measures

No mitigation measures are required.

4.6.3.6 ISSUE 6 – EMERGENCY RESPONSE AND EVACUATION PLANS

Hazards and Hazardous Materials Issue 6 Summary

Would the proposed project impair implementation of or physically interfere with an adopted emergency response or evacuation plan?

Impact: Temporary road closures or detours associated with construction of the proposed Area 9/2 Housing Project could require alternate emergency response or evacuation routes.

Mitigation: Notification of emergency response providers (LRDP MM Haz-6A).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Refer to Volume I, Section 4.6 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts from campus development on emergency response and evacuation plans are discussed in Volume I, Section 4.6. This section indicates that construction-related road closures could interfere with emergency response and evacuation on the campus. Due to the location of the Area 9/2 Housing Project site on the periphery of campus, substantial construction-related road closures are not anticipated, but lane closures and intermittent road closures may occur. Under current campus procedures, multiple emergency access or evacuation routes are provided to ensure emergency response services are not impaired or interfered with in the event of a temporary roadway closure and/or changes in campus traffic patterns. If determined necessary, UCI would also initiate notification of local emergency services, including the UCI Police Department, OCFA, and appropriate ambulance services to the campus. Because these procedures are not mandated by law, a significant impact to emergency response and evacuation plans could result due to lane closures.

Mitigation Measures

Implementation of 2007 LRDP mitigation measure Haz-6A (reiterated below) would reduce the potentially significant impacts associated with construction-related road closures to a less than significant level.

LRDP MM

Haz-6A Prior to initiating on-site construction for future projects that implement the 2007 LRDP and would involve a lane or roadway closure, the construction contractor and/or UCI Design and Construction Services shall notify the UCI Fire Marshal. If determined necessary by the UCI Fire Marshal, local emergency services shall be notified of the lane or roadway closure by the Fire Marshal.

4.6.3.7 ISSUE 7 – WILDLAND FIRES

Hazards and Hazardous Materials Issue 7 Summary

Would the proposed project expose people or structures to a significant risk of loss injury or death involving wildland fires?

Impact: The Area 9/2 Housing Project would employ fire protection measures to reduce the impact of wildland fire.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.6 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Volume I, Section 4.6 discusses potential impacts on the UCI campus pertaining to wildland fires. The proposed project site would be located next to undeveloped campus property covered with non-native grasses to the northeast. A fuel buffer is currently maintained between these grassland areas and existing campus development. Development of the project area could expose people or structures to increased risks associated with wildland fires on this undeveloped property until such time as this property is developed with residential uses, as proposed in the LRDP. Existing neighborhoods within the University Hills residential community are located adjacent to the project site on the west and north. In order to reduce the possible threat of wildfire to the community, the Area 9/2 Housing Project would comply with wildland fire buffer requirements such as Fuel Modification Zones, Defensible Space Zones, firebreaks, or other measures as determined by the Campus Fire Marshall in consultation with the Orange County Fire Authority. These measures would be included in project grading and landscape plans, which would be approved by the UCI Fire Marshall prior to project approval. Therefore, with these measures in place, the threat of a wildland fire would be minimal and the impact resulting form wildfires would be less than significant.

Mitigation Measures

No mitigation measures are required.

4.6.4 CUMULATIVE IMPACTS AND MITIGATION

Hazards and Hazardous Materials Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact resulting from hazards and hazardous materials?

Cumulative Impact	Significance	Project Contribution
Transport, Use, and Disposal of Hazardous Materials: Increased regional development that increases the amount of hazardous materials transported, used, and disposed would be subject to laws and regulations.	Less than significant.	N/A
Accidental Releases: Increased regional development may increase the amount of hazardous materials transported in the region; however, laws and regulations would reduce the potential for accidental release.	Less than significant.	N/A
Hazards to Nearby Schools: Laws and regulations would reduce or eliminate potential impacts to nearby schools associated with hazardous materials.	Less than significant.	N/A
Listed Hazardous Materials Sites: Future development would comply with laws and regulations regarding hazardous materials sites.	Less than significant.	N/A
Hazards from nearby airports: Future developments would be reviewed and regulated through the Land Use Plan for John Wayne Airport and the Airport Land Use Commission.	Less than significant.	N/A
Emergency Response and Evacuation Plans: Future developments would undergo CEQA review and be required to implement measures to mitigate impacts.	Less than significant.	N/A
Wildland Fires: Increased development in fire prone areas would subject additional structures and people to risks associated with wildland fires.	Significant.	Not cumulatively considerable.

4.6.4.1 TRANSPORT, USE, AND DISPOSAL OF HAZARDOUS MATERIALS

The geographic context for the analysis of cumulative impacts from the transport, use, and disposal of hazardous materials ranges from the immediate surrounding area to the City of Irvine region. It is anticipated that future growth in the Irvine region would result in an incremental increase in the amount of hazardous materials transported, used, treated, and disposed area-wide. Although each development site has potentially unique hazardous materials considerations, it is expected that future growth would comply with federal and State statutes and regulations applicable to hazardous materials and would be subject to existing and future plans or programs of enforcement by the appropriate regulatory agencies. Further, it is possible that future development in the City of Irvine would involve significant renovation and demolition activities, which would potentially subject construction workers to health and safety risks through exposure to hazardous materials, although the individual workers potentially affected would vary from project to project. It is anticipated that future development projects would adhere to the applicable requirements that regulate worker

safety and exposure. For these reasons, cumulative impacts resulting from the transport, use, and disposal of hazardous materials would be less than significant.

4.6.4.2 ACCIDENTAL RELEASES

The geographic context for the analysis of cumulative impacts from accidental releases of hazardous materials ranges from the immediate surrounding area to the City of Irvine region. It is anticipated that future growth in the Irvine region would result in an incremental increase in the amount of hazardous materials transported, used, treated, and disposed area-wide, which could result in a higher risk of accidental release. However, the U.S. Department of Transportation, Office of Hazardous Materials Safety prescribes strict regulations for the transportation of hazardous materials. Therefore, it is anticipated that future projects within the City of Irvine involving hazardous materials would comply with applicable hazardous materials safety requirements during use and transport of materials to reduce the potential for an accidental release to occur. For these reasons, cumulative impacts resulting from the accidental release of hazardous materials would be less than significant.

4.6.4.3 HAZARDS TO NEARBY SCHOOLS

The geographic context for the analysis of cumulative impacts of hazards to nearby schools encompasses the City of Irvine region. Future development in the City of Irvine may also involve hazardous emissions or the handling of acutely hazardous materials, substances, or wastes within one-quarter mile of an existing or proposed school. It is anticipated that future development would comply with applicable laws and regulations pertaining to hazardous wastes, and that risks associated with hazardous emissions or materials to existing or proposed schools located within one-quarter mile of future development would be eliminated or reduced through proper handling, disposal practices, and/or clean-up procedures. Therefore, cumulative impacts on schools associated with hazardous emissions or handling of hazardous materials would be less than significant.

4.6.4.4 LISTED HAZARDOUS MATERIALS SITES

The geographic context for the analysis of cumulative impacts from listed hazardous materials sites encompasses the City of Irvine region. Future development in the City of Irvine would potentially expose residents and construction workers to contaminated soil or groundwater, including on or near sites included on a list of hazardous materials sites compiled pursuant to government code Section 65962.5. However, development projects would adhere to the applicable laws and regulations that govern underground storage tanks and pesticide use, as well as requirements applicable to disposal and cleanup of contaminants. In addition, it is anticipated that risk associated with identified hazardous materials sites would be eliminated or reduced through proper handling, disposal practices, and/or clean-up procedures. Pursuant to law, most sites affected by hazardous materials cannot be developed unless adequate clean-up or treatment is achieved. Therefore, cumulative impacts on the public or environment associated with development on or near hazardous materials sites would be less than significant.

4.6.4.5 HAZARDS FROM NEARBY AIRPORTS

The geographic context for the analysis of impacts from nearby airports generally site-specific, rather than cumulative in nature, because the risk posed to each future development project is based on location. Future development in the City of Irvine and surrounding communities will also be located in the vicinity of John Wayne Airport (JWA). The risk posed to each future development project is based on location, and is therefore unique. It is likely that such risk would be a factor in any decision to approve or deny future development proposals. All land uses that may be impacted by JWA are reviewed and regulated through the

Land Use Plan for John Wayne Airport, the City of Santa Ana, and the Airport Land Use Commission. As a result, cumulative risks to future development associated with proximity to JWA would be less than significant.

4.6.4.6 EMERGENCY RESPONSE AND EVACUATION PLANS

The geographic context for the analysis of cumulative impacts to emergency response and evacuation plans encompasses the City of Irvine region. Construction and operation associated with future development in the City of Irvine could result in activities that could interfere with adopted emergency response or evacuation plans, such a temporary construction barricades or other obstructions that could impede emergency access. It is anticipated that future development projects in the area would undergo CEQA review of potential impacts on adopted emergency response or evacuation plans, and would be required to implement measures necessary to mitigate potential impacts. As a result, cumulative impacts related to interference with adopted emergency response or evacuation plans would be less than significant.

4.6.4.7 WILDLAND FIRES

The geographic context for the analysis of cumulative impacts from wildland fires encompasses the Orange County region. Because the prevalent vegetation communities in Orange County are prone to wildfires, a significant risk of wildland fires exists in the City of Irvine. Although the City and the Orange County Fire Authority (OCFA) have developed policies to manage the fire risk by enforcing fuel modification zones and defensible space zones, existing and future residents and structures will continue to be at risk. Therefore, the continued development of residential areas in wildland prone areas would result in a significant cumulative impact. The Area 9/2 Housing Project is located adjacent to an undeveloped area; however, the project would comply with wildland fire buffer requirements such as Fuel Modification Zones, Defensible Space Zones, firebreaks, or other measures as determined by the Campus Fire Marshall in consultation with the Orange County Fire Authority. Therefore, the contribution of the Area 9/2 Housing Project is not considered to be cumulatively considerable.

4.6.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

The 2007 LRDP Initial Study indicated that all checklist items related to hazards and hazardous materials should be evaluated in the EIR.

4.6.6 REFERENCES

Refer to Volume I, Section 4.6 for references relevant to this section.

4.7 HYDROLOGY AND WATER QUALITY

4.7.1 ENVIRONMENTAL SETTING

Volume I, Section 4.7 presents the existing regional and campus hydrology, quality of the runoff discharged from UCI, and the measures the campus is implementing to prevent or reduce the pollutant content in its runoff. Existing and future water supply sources and wastewater treatment are described and analyzed in Section 4.14, Utilities, Service Systems, and Energy.

Surface Water Drainage

The UCI campus is located within the San Diego Creek and Bonita Creek subwatersheds of the Santa Ana River Hydrologic Unit (HU). The San Diego Creek subwatershed includes the majority of the UCI campus and its surrounding areas and consists primarily of commercial, industrial, institutional, and residential development. The Area 9/2 Housing Project, as well as the southern part of the campus, is located within the Bonita Creek subwatershed which consists of undeveloped land uses.

Water Quality

As summarized in Volume I, Table 4.7-1, Potential Pollutant Activity or Sources List, the UCI campus includes a variety of uses and activities that have the potential to produce pollutants that could negatively affect water quality. Improperly managed, these pollutants can be deposited on streets, parking lots, and walkways, and when exposed to precipitation or non-stormwater runoff (such as landscape watering) can be washed downstream to the receiving waters. The Area 9/2 Housing Project site is currently an undeveloped open space area and therefore is not expected to contribute to any current water quality impacts.

4.7.2 REGULATORY FRAMEWORK

A number of federal, state, and regional regulatory programs are applicable to hydrology and water quality and to the proposed development of the Area 9/2 Housing Project. See Volume I, Section 4.7 for a listing and explanation of these programs.

4.7.3 PROJECT IMPACTS AND MITIGATION

4.7.3.1 ISSUE 1 – SITE DRAINAGE AND HYDROLOGY

Hydrology and Water Quality Issue 1 Summary

Would the proposed project alter the existing drainage or hydrology of a site or area in a manner which would result in flooding, exceed the capacity of storm water drainage systems, or result in substantial erosion or siltation?

Impact: Implementation of the Area 9/2 Housing Project would have the potential to substantially alter drainages and hydrology which could increase runoff volumes, but compliance with NPDES requirements would reduce impacts from flooding and erosion. In addition, estimated runoff volumes would not exceed the capacity of the existing storm water drainage system.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than Significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.7 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Construction and post-construction drainage and hydrology impacts that could occur during and after development of the UCI campus are discussed in Volume I, Section 4.7. Land disturbing construction activities associated with implementation of the 12-acre Area 9/2 Housing Project area, such as grading and excavation, construction of new building foundations, roads, driveways, and trenches for utilities could result in the localized alteration of drainage patterns. These alterations may result in the capacity of the storm drain facilities temporarily exceeding capacity, if substantial drainage is rerouted. Temporary ponding and/or flooding could also result from such activities, from temporary alterations of the drainage system (reducing its capacity of carrying runoff), or from the temporary creation of a sump condition due to grading. Alterations may temporarily result in erosion and siltation if flows were substantially increased or routed to facilities or channels without capacity to carry the flow. However, as explained in Volume I, Section 4.7, any construction affecting more than one acre, such as the Area 9/2 Housing Project, is required to comply with the National Pollutant Discharge Elimination System (NPDES) permit program and implement best management practices (BMPs) to reduce flooding, erosion and sedimentation impacts. Therefore, short-term impacts resulting from alterations of drainage and hydrology during construction would be less than significant.

Development of the Area 9/2 Housing Project would also result in permanent alterations to the project site affecting drainage and hydrology. The project would replace the existing pervious open space with impervious surfaces (streets, hardscape, and roofed areas). Storm runoff would be clarified on site with a "CDS"-style system. The clarified water would then be directed into an existing storm drain facility in Bonita Canyon Drive, owned by the City of Irvine. No Campus storm drain system will be used for the Project. Preliminary hydrologic analyses show that the additional water from the Area 9/2 Housing Project will have no negative impact on the Bonita Canyon Drive storm drain facility since the facility currently has sufficient

capacity to handle peak storm flows from the Project. Coordination with the City of Irvine will insure that all City requirements for discharge into the Bonita Canyon Drive system will be achieved. The coordination process is envisioned to closely follow that used for the previous neighborhood in University Hills Areas 9/3 and 9/4.

Mitigation Measures

No mitigation measures are required.

4.7.3.2 ISSUE 2 – WATER QUALITY

Hydrology and Water Quality Issue 2 Summary

Would the proposed project violate any water quality standards, waste discharge requirements, or otherwise substantially degrade water quality?

Impact: Implementation of the proposed project would generate urban runoff pollutants that could violate waste discharge requirements.

Mitigation: Implementation of site design and treatment control design measures to reduce pollutants of concern in runoff (LRDP MM Hyd-2B).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Refer to Volume I, Section 4.7 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Various pollutants potentially generated by the Area 9/2 Housing Project could adversely affect water quality: sediment, organic matter, green waste, pesticides, fertilizers, cleaning products, oil and grease, and coliform bacteria. A more detailed summary of impacts from these potential pollutants is provided in Volume I, Section 4.7. As previously discussed, runoff from the Area 9/2 Housing Project site and surrounding area drains south toward Bonita Canyon Drive and ultimately into San Diego Creek.

Construction activities associated with the Area 9/2 Housing Project could result in substantial additional sources of polluted runoff which could have short-term impacts on surface water quality through activities such as demolition, clearing and grading, stockpiling of soils and materials, concrete pouring, painting, and asphalt surfacing. Pollutants associated with these construction activities that could result in water quality impacts include debris, other materials generated during demolition and clearing, fuels and other fluids associated with the equipment used for construction, paints, other hazardous materials, concrete slurries, and asphalt materials. As discussed in Volume I, these pollutants would impact water quality if they are washed off site by storm water or non-storm water, or are blown or tracked off site to areas susceptible to wash off by storm water or non-storm water.

The discharge of pollutants from the Area 9/2 Housing Project construction site would be reduced through implementation of a Storm Water Pollution Prevention Plan (SWPPP). The Area 9/2 Housing Project covers approximately 12 acres, and as previously discussed, any construction affecting more than one acre is required to comply with the NPDES permit program and implement BMPs to reduce erosion and sedimentation impacts, as well as pollutant discharges. Therefore, short-term impacts resulting from runoff pollutants during construction would be less than significant.

Following construction, the development of the project site with structures, concrete, asphalt and landscaping would reduce the potential for erosion and sediment discharges. Post-construction activities of the Area 9/2 Housing Project would generate pollutants in runoff that could impact water quality. The proposed project consists of residential homes, driveways, streets, landscaped areas, and infrastructure improvements. Potential urban runoff pollutants from these areas include: sediments, nutrients, organic compounds, oxygen demanding substances, and pesticides from the landscaped areas; oil, grease, hydrocarbons, litter, and heavy metals from the driveways and streets; and trash, debris, oil and grease from the residences. However, non-stormwater discharges, accidental spills, and other operational impacts would be reduced through continued implementation of the UCI Storm Water Management Plan (SWMP). The analysis for the 2007 LRDP in Volume I concluded that projects with the potential to generate substantial pollutants could result in significant long-term water quality impacts. Like other campus development, the Area 9/2 Housing Project would have the potential to generate substantial pollutants and therefore could result in significant long-term water quality impacts.

Mitigation Measures

Implementation of LRDP Mitigation Measure Hyd-2B (reiterated below) from Volume I, Section 4.7, would reduce long-term water quality impacts from urban runoff pollutants generated from the Area 9/2 Housing Project to a level of Less than Significant.

LRDP MM

Hyd-2B Prior to design approval for the Area 9/2 Housing Project, UCI shall ensure that the project includes the design features listed below, or their equivalent. Equivalent design features may be applied consistent with applicable MS4 permits (UCI's SWMP) at that time. All applicable design features shall be incorporated into project development plans and construction documents; shall be operational at the time of project occupancy; and shall be maintained by UCI.

i. All new storm drain inlets and catch basins within the project site shall be marked with prohibitive language and/or graphical icons to discourage illegal dumping per UCI standards.

ii. Outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system shall be covered and protected by secondary containment.

iii. Permanent trash container areas shall be enclosed to prevent off-site transport of trash, or drainage from open trash container areas shall be directed to the sanitary sewer system.

iv. At least one treatment control is required for new parking areas or structures, or for any other new uses identified by UCI as having the potential to generate substantial pollutants. Treatment controls include, but are not limited to, detention basins, infiltration basins, wet ponds or wetlands, bio-swales, filtration devices/inserts at storm drain inlets, hydrodynamic separator systems, increased use of street sweepers, pervious pavement, native California plants and vegetation to minimize water usage, and climate controlled irrigation systems to minimize overflow. Treatment controls shall incorporate volumetric or flow-based design standards to mitigate (infiltrate, filter, or treat) storm water runoff, as appropriate.

4.7.3.3 ISSUE 3 – SEICHES, TSUNAMIS, AND MUDFLOWS

Hydrology and Water Quality Issue 3 Summary

Would the proposed project expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?

Impact: Implementation of the proposed project would not expose people or structures to tsunami because of the project site's distance and elevation from the coastline .

Mitigation: No mitigation is required.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.7 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Potential impacts from tsunami, seiche, and mudflows are discussed in Volume I, Section 4.7. The proposed Area 9/2 Housing Project is located on the South Campus, about 6 miles from the coast and approximately 240 feet above mean sea level. Because of its location and elevation, it is unlikely that the proposed project would be impacted by tsunami. In addition, due to organizational and scientific advances, it is likely that if a tsunami did occur, there would be sufficient notice to evacuate people from this relatively small area of concern. The West Coast and Alaska Tsunami Warning Center (WCATWC) monitors earthquakes and if the location and magnitude of an earthquake meet the known criteria for generation of a tsunami, a tsunami warning is issued; therefore, no impacts resulting from a tsunami are anticipated.

Inundation by mudflows across the developed portion of the majority of the campus is unlikely. This is due to the urbanized location, and the fact that most of the campus is located sufficiently away from the base of surrounding foothills. Therefore, it is considered unlikely for inundation by mudflows to occur as result of the proposed project and the impact is less than significant. Therefore, no impacts from tsunami, seiche, or mudflow are expected to occur.

Mitigation Measures

No mitigation measures are required.

4.7.4 CUMULATIVE IMPACTS AND MITIGATION

Hydrology and Water Quality Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to drainage/hydrology and water quality?

Cumulative Impact	Significance	Project Contribution
Drainage and Hydrology: Increased development within the San Diego Creek Watershed would result in an increase of impervious surfaces and a potential increase of flooding and erosions.	Significant.	Not cumulatively considerable with implementation of LRDP MM Hyd-1A.
Water Quality: Increased development within the San Diego Creek Watershed would result in increases in pollutant sources that could adversely affect receiving waters.	Significant.	Not cumulatively considerable with implementation of LRDP MM Hyd-2A and Hyd-2B.
Seiches, Tsunamis, and Mudflows: These events are not likely to occur in the vicinity of the UCI campus and increased development in this area would not increase the likelihood of such events.	Less than significant.	N/A

4.7.4.1 DRAINAGE AND HYDROLOGY

The geographic context for the cumulative impact analysis concerning drainage and hydrology is the San Diego Creek Watershed, within which the proposed project is located. Urban development within the San Diego Creek Watershed would increase impervious areas and consequently increase storm water runoff. These increases could result in flooding, over capacity of drainage systems, and erosion problems throughout the watershed. However, development in the City of Irvine would be subject to NPDES Phase I and II regulations, which require that changes to hydrologic regime and associated mitigation measures be addressed.

No severe flooding issues were identified to which drainage from the Area 9/2 Housing Project would contribute cumulatively within the San Diego Creek Watershed. Similarly, drainage from the Area 9/2 Housing Project would also not contribute to erosion problems within the downstream watershed because the projected runoff volumes would not exceed the storm drain capacity in Bonita Canyon Road. Therefore, implementation of the proposed project would not result in a cumulatively considerable contribution to significant cumulative drainage or hydrology impacts.

4.7.4.2 WATER QUALITY

The geographic context for the cumulative impact analysis concerning water quality is the San Diego Creek Watershed, within which the proposed project is located. Urban development within the San Diego Creek Watershed would increase impervious areas and activities that generate pollutants, and consequently could result in additional impacts to receiving waters in the watershed. Development within Orange County is subject to NPDES Phase I and II regulations, which require that source control and non-point source BMPs be employed to control potential effects on water quality. Nevertheless, increased development that would generate pollutants in the San Diego Watershed would result in a significant cumulative impact. However,

with implementation of the LRDP Mitigation Measure Hyd-2B, it is anticipated that the Area 9/2 Housing Project would not result in a cumulatively considerable contribution to water quality impairment in the watershed.

4.7.4.3 SEICHES, TSUNAMIS, AND MUDFLOWS

The geographic context for the cumulative impact analysis concerning seiches, tsunamis, and mudflows is the local area around the UCI campus, because these events are usually localized events. Development in the vicinity of the UCI campus would not increase the likelihood of an occurrence of a seiche, tsunami, or mudflow; and would not likely result in increased exposure to the events. Therefore, exposure to such incidents is not considered a cumulative effect of implementation of the LRDP and other development in the area.

4.7.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

As discussed in Volume I, Section 4.7, the initial study for the 2007 LRDP indicated that development on the UCI campus would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that a net deficit in aquifer volume occurred; place housing within a 100-year flood hazard area; place structures within a 100-year flood hazard area that would impede or redirect flood flows; or expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. Therefore, these topics are considered not to be significant and additional analysis in this EIR is not required for the 2007 LRDP or the proposed Area 9/2 Housing Project.

4.7.6 REFERENCES

Refer to Volume I, Section 4.7 for references relevant to this section.

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4.8 LAND USE AND PLANNING

4.8.1 ENVIRONMENTAL SETTING

Volume I, Section 4.8 presents the existing land uses on the UCI campus and the surrounding community, local land use plans and policies, and analyzes the compatibility of development proposed under the 2007 LRDP with current land uses and local land use plans and policies. The Area 9/2 Housing Project is located in the South Campus, which is bounded by East Peltason Avenue on the north, Anteater Drive to the east, Bonita Canyon Road to the south, and Los Trancos Drive to the west. The South Campus is approximately 323 acres and houses the University Hills faculty/staff housing neighborhood, an area for campus support services, and open space areas including the Natural Community Conservation Plan (NCCP) ecological reserve which contains sensitive biological communities. The Area 9/2 Housing Project is bordered by the University Hills 9/3 and 9/4 residential housing projects to the north and west, the Area 9/1 community center project to the north, open space to the east, and Bonita Canyon Drive to the south. The proposed project site is designated as Faculty/Staff Housing in the 2007 LRDP.

4.8.2 REGULATORY FRAMEWORK

Refer to Volume I, Section 4.8 for a discussion of relevant regulations.

4.8.3 IMPACTS AND MITIGATION

4.8.3.1 ISSUE 1 – APPLICABLE LAND USE PLANS, POLICIES, AND REGULATIONS

Land Use and Planning Issue 1 Summary

Would the proposed project result in a conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project?

Impact: Implementation of the Area 9/2 Housing Project would not result in inconsistencies with applicable land use plans, policies, or regulations.

Mitigation: No mitigation is required.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.8 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As previously identified, UCI is part of the UC system, a constitutionally created entity of the State of California. As a constitutional entity, UC is not subject to municipal regulations such as the City of Irvine General Plan. The applicable land use plan is the campus LRDP. The proposed 2007 LRDP, if adopted, would become the applicable campus land use plan. UC is the only agency with local land use jurisdiction over campus projects. The Area 9/2 Housing Project would be consistent with the 2007 LRDP because it

proposes a residential development consistent with the land use prescribed in the 2007 LRDP and therefore would not have a land use impact with regard to applicable land use plans, policies, and regulations.

Mitigation Measures

No mitigation measures are required.

4.8.3.2 ISSUE 2 – INCOMPATIBILITIES WITH ADJACENT LAND USES

Land Use and Planning Issue 2 Summary

Would the proposed project result in land use incompatibilities between campus development and adjacent community land uses?

Impact: Implementation of the Area 9/2 Housing Project would not result in incompatibilities between campus development and adjacent community land uses.

Mitigation: Mitigation is not required.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.8 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As discussed in Volume I, Section 4.8, the South Campus contains existing and future faculty/staff housing neighborhoods and a portion of the UCI NCCP Ecological Reserve. The development concept for the South Campus focuses on establishing an informal residential character. Street patterns, community development, and landscaping reflect the rolling topography and adjacent open space resources to achieve a quality residential character for families. The University Hills residential community provides a mix of for-sale and rental housing for University faculty and staff. The area south of University Hills in the City of Irvine is designated as medium and medium-high density residential. The NCCP reserve, to the west of the proposed project site, would continue to be managed as a habitat resource including management, restoration, monitoring, and field research activities.

The residential character of the faculty and staff housing neighborhoods in the South Campus are compatible with adjacent medium and medium-high density residential development to the south, which consists of the Bonita Village and Turtle Ridge residential communities. In addition, the Bonita Canyon riparian corridor borders the entire southern edge of campus adjacent to UCI NCCP reserve areas, which serves as a contiguous part of the regional open space network. Therefore, these two land uses would not be incompatible. Thus, the Area 9/2 Housing Project would be compatible with adjacent land uses.

Mitigation Measures

No mitigation measures are required.

4.8.4 CUMULATIVE IMPACTS AND MITIGATION

Land Use and Planning Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to land use and planning?

Cumulative Impact	Significance	Project Contribution
Applicable Land Use Plans, Policies, and Regulations: Future development project would be evaluated for consistency with applicable plans and policies; however, some future development projects may not be consistent.	Less than significant.	N/A
Incompatible with Adjacent Land Uses: Development of mixed, urban, and industrial uses of the North Campus may be incompatible with the San Joaquin Freshwater March.	Significant.	Not cumulatively considerable

4.8.4.1 APPLICABLE LAND USE PLANS, POLICIES, AND REGULATIONS

The geographic context for the analysis of cumulative impacts to applicable land use plans, policies, and regulations is the City of Irvine and City of Newport Beach General Plans. It is anticipated that development of future related projects, and regional growth in general, would be reviewed for consistency with adopted land use plans and policies by the City of Irvine and the City of Newport Beach. Likewise, UCI would evaluate projects for consistency with the adopted LRDP and discuss consistency with nearby General Plans. Therefore, it is assumed that future development would be consistent with applicable plans or polices, which would result in a less than significant cumulative impact.

4.8.4.2 INCOMPATIBILITIES WITH ADJACENT LAND USES

The geographic context for the analysis of cumulative impacts resulting from incompatibilities with adjacent land uses is the immediate vicinity of the UCI Campus as shown in Volume I, Figure 4.1-1 (Photo Locations and Cumulative Impact Area). Volume I, Section 4.8.4.42 concluded that any development occurring in the San Joaquin Freshwater Marsh would result in a significant cumulative impact to the compatibility of adjacent land uses. The proposed project is located in the South Campus and is not located near the Marsh. Further, the Area 9/2 Housing Project is compatible with the adjacent surrounding land uses within the vicinity of the UCI campus. The project is located in the southern portion of campus, which has been designated a residential area. Therefore, the Area 9/2 Housing Project would not contribute to cumulative land use impacts resulting from incompatibilities with adjacent land uses.

4.8.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

As discussed in Volume I, Section 4.8, the initial study for the 2007 LRDP indicated that development on the UCI campus would not physically divide an established community or conflict with any applicable habitat conservation plan or natural community conservation plan. Therefore, these items are considered not to be significant and additional analysis in this EIR is not required for the 2007 LRDP or the proposed Area 9/2 Housing Project.

4.8.6 REFERENCES

Refer to Volume I, Section 4.8 for references relevant to this section.

4.9 NOISE

4.9.1 ENVIRONMENTAL SETTING

An explanation of the fundamentals of environmental noise and vibration, including noise characteristics and descriptive terms, is in Volume I, Section 4.9. Similar terms are used in this section. The terms used in this section include the following:

- dB(A), or A-weighted decibel(s);
- CNEL, or Community Noise Equivalent Level;
- VdB, or vibration velocity level or the vibration decibel;
- L_{dn}, or Day-Night Noise Level; and
- In/sec PPV, or inches per second of peak particle velocity, a measure of vibration.

Ambient noise levels on the UCI campus vary with location, but measured noise levels range from 48 dBA to 70 dB(A) CNEL, as shown in Volume I, Table 4.9-2 (Short-Term Ambient Sound Level Measurements) and 4.9-3 (Summary of Long-Term Ambient Sound Level Measurements). Noise at the project site is typical of areas internal to the campus, with no dominant major noise source. The measured sound levels were influenced by vehicular traffic, periodic aircraft overflights, distant construction, and pedestrian passbys.

4.9.2 REGULATORY FRAMEWORK

Refer to Volume I, Section 4.9 for a discussion of relevant regulations.

4.9.3 PROJECT IMPACTS AND MITIGATION

4.9.3.1 ISSUES 1 – EXPOSURE TO PERMANENT AMBIENT NOISE

Noise Issue 1 Summary

Would the proposed project result in a substantial permanent increase in ambient noise levels or expose persons to noise in excess of standards?

Impact: Project-generated traffic would not subject residents of the proposed project nor residents of the surrounding area to substantial increase in ambient noise levels and noise from future traffic volumes on Bonita Canyon Drive would not significantly impact the proposed project.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.9 for a discussion of standards of significance relevant to this issue.

Impact Analysis

The Area 9/2 Housing Project would result in the addition of up to 120 residential units for faculty and staff. The only post-construction source of noise attributable to the proposed project would be traffic generated by the project. Traffic noise is typically sustained and permanent. It may contain infrequent loud noise events, as from occasional heavy trucks making deliveries to residences, but in general, such brief increases in the background level are accounted for in the noise calculations. The proposed project is expected to add up to 1,200 average daily trips (ADT) to the project vicinity. This increase in traffic would increase the existing noise level of the area by approximately one dBA. Increases in noise level by less than 3 dBA are not perceptible to humans. Therefore, noise impacts resulting from project-generated traffic would be less than significant.

The primary noise source that would affect the proposed homes would be traffic noise along the adjacent roadways, especially along the nearby segment of Bonita Canyon Drive. Projected horizon year (2025) noise levels reaching the subject site from each of these transportation sources were calculated by Mestre Greve Associates in a noise analysis conducted for the University Hills Areas 9/3 and 9/4 in December of 2005. The projected 65 dBA CNEL contour nearest the project site is associated with traffic noise from Bonita Canyon Drive and falls along the southern portion of the property adjacent to Bonita Canyon Drive, outside of the proposed building pad area and would not significantly affect any potential homes on that pad (Figure 4-2). Therefore, noise impacts to new residents from future traffic sources are expected to be less than significant.

Mitigation Measures

No mitigation measures are required.

4.9.3.2 ISSUE 2 – TEMPORARY INCREASES IN AMBIENT NOISE

Noise Issue 2 Summary

Would the proposed project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity?

Impact: Construction activities associated with development of the Area 9/2 Housing Project would result in temporary increases in ambient noise levels.

Mitigation: Construction noise mitigation program (LRDP MM Noi-2A).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Refer to Volume I, Section 4.9 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Construction of the Area 9/2 Housing Project would generate noise that could expose nearby receptors to elevated noise levels and possibly disrupt routine activities. As discussed in Volume I, Section 4.9.3.2, elevated noise levels would primarily be experienced close to the noise source and the magnitude of the impact would depend on the type of activity generating the noise, the duration of the activity, and the distance between the source and the receiver and any intervening structures. Construction of the Area 9/2 Housing Project would use conventional construction techniques and equipment, including scrapers, loaders, dozers,

and miscellaneous trucks. Specialized construction activities such as pile driving are not anticipated to be necessary to construct the Area 9/2 Housing Project.

Volume I, Section 4.9 defines on-campus noise-sensitive receptors as campus housing, classrooms, libraries, and clinical facilities. Residences are present in, or adjacent to, the project site, including the existing University Hills Areas 9/4 and 9/3. Significant impacts from construction noise would occur, according to Volume I, Section 4.9, when sensitive receptors are affected by noise levels of 75 dBA or more averaged over a 12-hour period between 7:00 a.m. and 7:00 p.m.

Since construction noise is subject to many variables, a 12-hour average is difficult to accurately predict. Construction noise from the Area 9/2 Housing Project has the potential to significantly impact uses in and around the existing University Hills community. Therefore, construction of the Area 9/2 Housing Project has the potential to be a significant impact.

Mitigation Measures

Implementation of LRDP Mitigation Measure Noi-2A, reiterated below, would reduce temporary noise impacts from construction activities to below a level of significance.

LRDP MM

Noi-2A Prior to initiating on-site construction for future projects that implement the 2007 LRDP, UCI shall approve contractor specifications that include measures to reduce construction/demolition noise to the maximum extent feasible. These measures shall include, but are not limited to, the following:

i. Noise-generating construction activities occurring Monday through Friday shall be limited to the hours of 7:00 am to 7:00 pm, except during summer, winter, or spring break at which construction may occur at the times approved by UCI.

ii. Noise-generating construction activities occurring on weekends in the vicinity of (can be heard from) off-campus land uses shall be limited to the hours of 9:00 am to 6:00 pm on Saturdays, with no construction occurring on Sundays or holidays.

iii. Noise-generating construction activities occurring on weekends in the vicinity of (can be heard from) on-campus residential housing shall be limited to the hours of 9:00 am to 6:00 pm on Saturdays, with no construction on Sundays or holidays. However, as determined by UCI, if on-campus residential housing is unoccupied (during summer, winter, or spring break, for example), or would otherwise be unaffected by construction noise, construction may occur at any time.

iv. Construction equipment shall be properly outfitted and maintained with manufacturer recommended noise-reduction devices to minimize construction-generated noise.

v. Stationary construction noise sources such as generators, pumps or compressors shall be located at least 100 feet from noise-sensitive land uses (i.e., campus housing, classrooms, libraries, and clinical facilities), as feasible.

vi. Laydown and construction vehicle staging areas shall be located at least 100 feet from noise-sensitive land uses (i.e., campus housing, classrooms, libraries, and clinical facilities), as feasible.

vii. All neighboring land uses that would be subject to construction noise shall be informed at least two weeks prior to the start of each construction project, except in an emergency situation.

viii. Loud construction activity such as jackhammering, concrete sawing, asphalt removal, pile driving, and large-scale grading operations occurring within 600 feet of a residence or an academic building shall not be scheduled during any finals week of classes. A finals schedule shall be provided to the construction contractor.

4.9.3.3 ISSUE 3 – EXPOSURE TO AIRCRAFT NOISE

Noise Issue 3 Summary

Would the proposed project expose people residing or working in the project area to excessive noise levels resulting from aircraft?

Impact: Implementation of the Area 9/2 Housing Project would not expose people residing or working in the project area to noise from aircraft.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

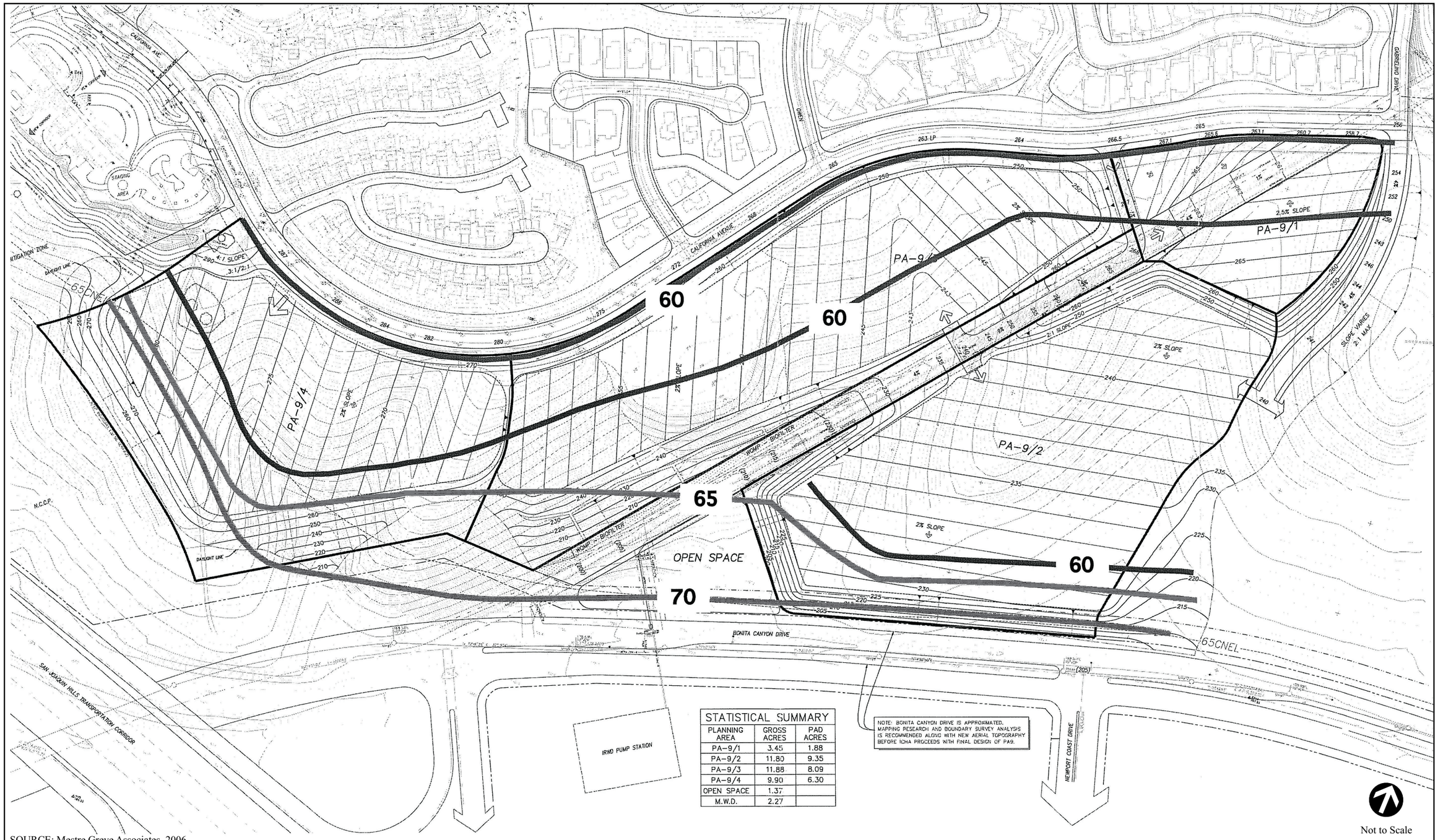
Refer to Volume I, Section 4.9 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As discussed in Volume I, Section 4.9.3.3, the UCI campus is located approximately 1.5 miles southeast of John Wayne Airport. The airport's 60 CNEL contour does not extend to the UCI campus; however, overflights over the campus occur. Because the campus is not within JWA's 60 CNEL noise contour, the Area 9/2 Housing Project would not be subject to aircraft noise in excess of regulatory limits. Therefore, noise impacts due to aircraft noise would be less than significant.

Mitigation Measures

No mitigation measures are required.



STATISTICAL SUMMARY		
PLANNING AREA	GROSS ACRES	PAD ACRES
PA-9/1	3.45	1.88
PA-9/2	11.80	9.35
PA-9/3	11.88	8.09
PA-9/4	9.90	6.30
OPEN SPACE	1.37	
M.W.D.	2.27	

SOURCE: Mestre Greve Associates, 2006

UNIVERSITY HILLS AREA 9/2 NOISE CONTOURS **FIGURE 4-2**

4.9.3.4 ISSUE 4 – EXCESSIVE GROUNDBORNE VIBRATION OR NOISE

Noise Issue 4 Summary

Would the proposed project result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Impact: Implementation of the Area 9/2 Housing Project could result in groundborne vibration from construction activities that might affect residences and sensitive equipment.

Mitigation: Develop and implement a construction vibration mitigation program (LRDP MM Noi-4A).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Refer to Volume I, Section 4.9 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Heavy equipment used during the construction of the Area 9/2 Housing Project could produce groundborne vibration. As discussed in Volume I, Section 4.9.3.4, construction-related vibration impacts could include human annoyance and structural damage. Vibration-sensitive buildings and those housing vibration-sensitive equipment and operations may require special consideration during construction. The Federal Transit Administration Manual states that the threshold for buildings where vibration would interfere with interior operations is 65 VdB. As a guide, major construction activity within 200 feet and pile driving within 600 feet may be potentially disruptive to sensitive operations. Although no pile driving is anticipated for this project, major construction activity would occur within 200 feet of future and existing residential communities to the north. Therefore, exposure of persons or structures to excessive groundborne vibration from construction in support of the Area 9/2 Housing Project could result in a potentially significant impact.

Mitigation Measures

Implementation of LRDP mitigation measure Noi-4A would reduce vibration impacts and reduce temporary impacts from construction activities to a less than significant level.

LRDP MM Noi-4A Prior to initiating on-site construction for future projects that implement the 2007 LRDP and are located within 100 feet of vibration-sensitive uses (i.e., buildings containing vibration-sensitive instruments or operations, or buildings that are considered vibration sensitive due to their age, construction type and/or fragile condition), UCI shall approve a construction vibration mitigation program as part of the contractor specifications that includes measures to reduce vibration resulting from construction activities to the maximum extent practicable. The program shall include measures to establish baseline vibration conditions, vibration monitoring, work methods or equipment necessary to reduce vibration, and a pre-construction notification process for impacted building occupants (six-month and one-month interval prior to construction).

If pile driving is proposed, building occupants within 600 feet of the pile-driving site shall be notified of construction at six-month and one-month intervals prior to the start of construction.

4.9.4 CUMULATIVE IMPACTS AND MITIGATION

Noise Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to noise?

Cumulative Impact	Significance	Project Contribution
Roadway Noise: Permanent traffic noise impacts along on- and off-campus roads due to increased traffic volumes.	Significant.	Not cumulatively considerable.
Operational Noise: Permanent noise impacts at noise-sensitive land uses on and adjacent to the campus from new stationary noise sources in both locations.	Less than significant.	N/A
Temporary Noise: Temporary noise impacts at noise-sensitive land uses on and adjacent to the campus from construction activities in both locations, including the possible increase of outdoor events at UCI.	Less than significant.	N/A
Airport Noise: Because noise-sensitive land uses on campus would not be affected by airport noise, there is no analysis of cumulative impacts.	N/A	N/A
Ground-Borne Vibration: Temporary ground-borne vibration impacts at vibration-sensitive land uses on and adjacent to the campus from construction activities in both locations.	Less than significant.	N/A

4.9.4.1 Roadway Noise

The geographic context for the analysis of cumulative impacts for permanent (long-term) roadway noise encompasses the on- and off-campus circulation network shown in Volume I, Figure 4.13-1, Project Site and Study Area. The proposed project would contribute to transportation noise both on- and off-campus. Volume I, Section 4.9, of this EIR considered the cumulative effects of transportation noise of projects implemented under the 2007 LRDP and in the surrounding communities. The evaluation found that no substantial permanent increase in transportation-related noise would occur as part of the 2007 LRDP. With the inclusion of future traffic volumes, the noise levels on Bonita Canyon Drive, within the vicinity of the proposed project would exceed state noise standards. Therefore, a significant cumulative impact would occur in this area. However, LRDP contribution would be less than 2 dBA and changes in nose levels of less that 3 dBA are typically not perceptible. In addition, the Area 9/2 Housing Project's portion of this increase is less than 1 dBA. Therefore, the proposed project's contribution to a significant cumulative noise impact would not be cumulatively considerable.

4.9.4.2 Operational Noise

The geographic context for the analysis of cumulative impacts for permanent (long-term) operational noise encompasses the on- and off-campus land uses immediately adjacent to the UCI boundaries. Noise levels generated by stationary sources are localized and drastically reduce in magnitude as distance from the source increases. Consequently, only new development or redevelopment in the immediate community areas surrounding UCI would contribute to cumulative operational noise impacts. However, because noise levels rapidly decrease as distance increases, any new stationary noise sources along the campus perimeter are not

expected to contribute to the higher ambient noise levels within these adjacent off-campus commercial and industrial areas. Therefore, cumulative impacts in the areas surrounding the campus would be less than significant.

4.9.4.3 Temporary Noise

The geographic context for the analysis of cumulative impacts for temporary (short-term) construction is the same as that described in section 4.9.4.2 above. Future construction in areas adjacent to UCI would not be expected to result in a significant cumulative noise impact causing substantial temporary or periodic increases in ambient noise levels in the vicinity of the campus boundaries because construction-related noise levels are temporary and localized in nature, and decrease substantially with distance; the campus is separated from adjacent land uses by major roadways and landscaped setbacks, which provide a noise buffer between on-campus activities and off-campus land uses, it is unlikely that noise levels from the 2007 LRDP construction activities would be loud enough to make a cumulative contribution to ambient levels in the adjacent areas; and implementation of mitigation measure Noi-2A, as well as campus policies and practices relating to construction noise management, would further reduce noise levels associated with on-campus construction near campus boundaries. Therefore, cumulative impacts in the areas surrounding the campus would be less than significant.

4.9.4.4 Airport Noise

Section 4.9.3.3 above concluded that implementation of the 2007 LRDP would not expose new noise-sensitive land uses to airport noise in excess of regulatory limits. Therefore, this issue is not addressed in this cumulative analysis pursuant to Section 15130(a)(1) of the CEQA Guidelines, which states that "an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR."

4.9.4.5 Ground-Borne Vibration

The geographic context for the analysis of cumulative impacts for temporary (short-term) ground-borne vibration is the same as that described in Section 4.9.4.2 above. Future construction in areas adjacent to UCI would not be expected to result in a significant cumulative noise impact causing the exposure of people to, or the generation of, excessive ground-borne vibration and/or noise levels in the vicinity of the campus boundaries for the same reasons as given in Section 4.9.4.3 above. Therefore, the impact from ground-borne vibrations due to construction activities would be less than significant.

4.9.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

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

As discussed in Volume I, Section 4.9, the initial study for the 2007 LRDP indicated that there are no private airstrips in the vicinity of the UCI campus. Therefore, potential impacts are considered not to be significant and additional analysis in this EIR is not required for the 2007 LRDP or the proposed Area 9/2 Housing Project.

4.9.6 REFERENCES

Mestre Greve Associates. 2005. Noise Analysis University Hills Area 9/3 and 9/4 letter report. Prepared for Irvine Campus Housing Authority. December 13, 2005.

Refer to Volume I, Section 4.9 for other references relevant to this section.

4.10 POPULATION AND HOUSING

4.10.1 ENVIRONMENTAL SETTING

Volume I, Section 4.10 presents the existing and projected households and housing units in the City of Irvine, UCI campus, and adjacent cities. The data were obtained from the Center of Demographic Research and are presented in Volume I, Table 4.10-4 (Local Community Population and Household Statistics (Total by Area)). Orange County's housing supply is keeping pace with the growth in households, which are both projected to increase by 15 percent by 2030. At the local level, the City of Irvine's housing supply is forecasted to trail behind growth in households by 3 percent, in comparison to the City of Newport Beach, where the number of housing units is trailing the number of households by 8 percent.

The proposed 2007 LRDP, as well as past LRDPs, responds to the demand for higher education due to current and projected population growth in the State of California and Orange County region. Projected populations are typically based on statewide trends. UCI population numbers include all students, faculty, and staff.

UCI provides a substantial amount of housing on campus to serve the campus population. This housing consists of residence halls, undergraduate and graduate student apartments, and family housing. The number of beds currently available in UCI-owned housing for students is 10,822. UCI is proposing to increase the number of beds to 17,637 by 2025. The University Hills area currently has 1,108 dwelling units available for faculty and staff. The 2007 LRDP proposes to increase the number of dwelling units to 1,250 by 2025. An additional 35-acre area is designated as Housing Reserve. Up to 450 dwelling units could be constructed in this area.

4.10.2 REGULATORY FRAMEWORK

Refer to Volume I, Section 4.10 for a discussion of relevant regulations.

4.10.3 PROJECT IMPACTS AND MITIGATION

4.10.3.1 ISSUE 1 – INDUCEMENT OF SUBSTANTIAL POPULATION GROWTH

Population and Housing Issue 1 Summary

Would the proposed project directly induce substantial population growth in an area?

Impact: The Area 9/2 Housing Project is part of UCI's response to statewide population growth, and is part of the 2007 LRDP's planned growth of the campus.	**Mitigation:** No mitigation is required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Not applicable.

Standards of Significance

Refer to Volume I, Section 4.10 for a discussion of standards of significance relevant to this issue.

Impact Analysis

In the discussion of growth generation in Volume I, Section 4.10, implementation of the 2007 LRDP was characterized as resulting in population growth on the campus and in the surrounding region by increasing student enrollment and creating new jobs for faculty and staff. Growth expected under the 2007 LRDP is within regional projections and planning, and therefore, is not considered to be adverse.

The Area 9/2 Housing Project would provide up to 120 single-family residences for UCI faculty and staff to accommodate growth planned under the 2007 LRDP. Based on the 2000 Census and California Department of Finance, the average number of persons per household in Irvine is 3.0, which is higher than the state wide average of 2.87. Therefore, the Area 9/2 Housing Project could accommodate approximately 360 people. The 2005 population in the City of Irvine was 182,890, as shown in Volume I in Table 4.10-2 (Current and Projected Population in Orange County by City). The proposed project would increase the City of Irvine's population by approximately 0.2 percent. Because the amount is small, the Area 9/2 Housing Project would not directly induce substantial population growth in the area. Therefore, the proposed project would have a less than significant impact on population growth in the area.

Mitigation Measures

No mitigation measures are required.

4.10.3.2 ISSUE 2 – INDIRECT INDUCEMENT OF SUBSTANTIAL POPULATION GROWTH

Population and Housing Issue 2 Summary

Would the proposed project indirectly induce substantial population growth in an area?

Impact: The Area 9/2 Housing Project would result in immeasurable or no indirect inducement of population growth beyond the campus.	**Mitigation:** No mitigation is required.
Significance Before Mitigation: No impact.	**Significance After Mitigation:** Not applicable.

Standards of Significance

Refer to Volume I, Section 4.10 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Growth can be triggered if the infrastructure to serve the proposed project is constructed with excess capacity, or if the lack of infrastructure is an obstacle to growth and that obstacle is removed by the project. The proposed project would accommodate population growth planned by the 2007 LRDP. Specifically, the project would accommodate approximately 360 people, 120 of which would be UCI faculty and staff and the remainder would be their families. The project is an appropriate size for incremental growth of the campus population in accordance with the 2007 LRDP.

As discussed in Volume I, Section 4.10, utility systems would be expanded and extended to new areas on campus to serve the implementation of the 2007 LRDP. Likewise, the proposed project would construct on-site utilities that would connect to existing systems; would not construct utilities systems larger than what would be required to accommodate the project's demand; and would not construct utilities to serve off-

campus areas. Therefore, the proposed project would not significantly indirectly induce substantial population growth.

Mitigation Measures

No mitigation measures are required.

4.10.3.3 ISSUE 3 – DISPLACEMENT OF HOUSING

Population and Housing Issue 3 Summary

Would the proposed project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Impact: The Area 9/2 Housing Project would not displace existing housing.

Mitigation: No mitigation is required.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.10 for a discussion of standards of significance relevant to this issue.

Impact Analysis

The Area 9/2 Housing Project would provide up to 120 single-family residences for UCI faculty and staff as a planned component of the LRDP housing program. The project would be built on existing open space within the campus; therefore, the Area 9/2 Housing Project would have no impact related to housing displacement.

Mitigation Measures

No mitigation measures are required.

4.10.3.4 ISSUE 4 – DISPLACEMENT OF PEOPLE

Population and Housing Issue 4 Summary

Would the proposed project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Impact: The Area 9/2 Housing Project would not displace people living on or off campus.

Mitigation: No mitigation is necessary.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.10 for a discussion of standards of significance relevant to this issue.

Impact Analysis

The Area 9/2 Housing Project would not displace any housing or people because the site is currently undeveloped and uninhabited; therefore, the Area 9/2 Housing Project would have no impact related to the displacement of people.

Mitigation Measures

No mitigation measures are required.

4.10.4 CUMULATIVE IMPACTS AND MITIGATION

Population and Housing Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to population growth and housing demand?

Cumulative Impact	Significance	Project Contribution
Direct Inducement of Substantial Population Growth: The population in Orange County is forecasted to increase by approximately 9.5 percent.	Significant.	Not cumulatively considerable.
Indirect Inducement of Substantial Population Growth: Much of the Orange County region is developed; therefore, it is unlikely that the future development would indirectly induce population growth.	Less than significant.	N/A
Displacement of Housing: Increases in infill and redevelopment projects may result in the displacement of existing housing.	Significant.	Not cumulatively considerable.
Displacement of People: Increase in infill and redevelopment projects may result in the displacement of people.	Significant.	Not cumulatively considerable.

4.10.4.1 DIRECT INDUCEMENT OF SUBSTANTIAL POPULATION GROWTH

The geographic context for the analysis of cumulative impacts resulting from the direct inducement of substantial population growth is the Orange County region. Based on information presented in Table 4.10-3, the population in Orange County is forecasted to increase approximately 9.5 percent from approximately one million people in 2025 to 1.1 million people by 2025. It can be assumed that the future development in the area would directly induce and contribute to the growth of the regional population. Therefore, future development in Orange County would result in a direct significant cumulative impact to population growth. However, as discussed in Section 4.10.3.1 above, the Area 9/2 Housing Project would result in a very small increase to the overall regional population growth. Further, a majority of the residents that would live in this community are most likely faculty and staff currently on waiting lists for housing and would already be living in the Orange County region. Therefore, the project would not result in a cumulatively considerable contribution to a significant impact resulting from population inducement.

4.10.4.2 Indirect Inducement of Substantial Population Growth

The geographic context for the analysis of cumulative impacts resulting from the direct inducement of substantial population growth is the Orange County region. Much of the Orange County region is developed. The undeveloped areas consist of regional parks, the Cleveland National Forest, State Parks, and closed military bases. It is not anticipated that additional infrastructure beyond the needs of individual development and infill projects would be constructed into these areas. Therefore, future development in the Orange County region would most likely result in an indirect less than significant cumulative impact to population growth.

4.10.4.3 Displacement of Housing

The geographic context for the analysis of cumulative impacts to the displacement of housing is the Orange County region. Much of the Orange County region is developed. As space for additional development becomes less available, infill and redevelopment projects will become more likely. Therefore, future redevelopment projects may displace existing housing which could result in a significant cumulative impact to displaced housing. The Area 9/2 Housing Project proposes to construct additional student and faculty/staff housing on undeveloped land. Therefore, because the proposed project would not displace existing housing, the project's contribution to a significant cumulative impact to displaced housing is not considered to be cumulatively considerable.

4.10.4.4 Displacement of People

The geographic context for the analysis of cumulative impacts to the displacement of housing is the Orange County region. Much of the Orange County region is developed. As less undeveloped land is available for housing development infill and redevelopment projects will become more likely. Redevelopment of older student housing units built in the 1960s and 70s may occur as a part of LRDP implementation and may require temporary displacement of students. However, the campus would take measures to house any displaced students and any displacement would be short term as redevelopment would result in a net increase in on-campus housing. Therefore, future redevelopment projects may displace existing housing which could displace the people living there, which would result in a significant cumulative impact to displaced people. However, the Area 9/2 Housing Project proposes to construct additional student and faculty/staff housing on undeveloped land. Therefore, because the proposed project would not displace people, the project's contribution to a significant cumulative impact to displaced housing is not considered to be cumulatively considerable.

4.10.5 CEQA Checklist Items Adequately Addressed in the 2007 LRDP Initial Study

The 2007 LRDP Initial Study indicated that all checklist items should be evaluated in the EIR.

4.10.6 References

Refer to Volume I, Section 4.10 for references relevant to this section.

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4.11 PUBLIC SERVICES

4.11.1 ENVIRONMENTAL SETTING

Volume I, Section 4.11 includes a discussion of the existing fire protection and police services for the UCI campus and the surrounding community. Fire protection and emergency response services are provided by the Orange County Fire Authority (OCFA); however, UCI does employ a Fire Marshal and staff who are responsible for campus-wide fire prevention and related services such as plan review and construction inspections. Plan review and construction inspections are performed in accordance with current California building and fire codes.

The existing University Hills development area is adjacent to the NCCP reserve. A 100-foot "Defensible Space" zone has been established. The Defensible Space Zone is maintained by the Irvine Campus Housing Authority in cooperation with UCI Facilities Management and is consistent with OCFA standards for this type of development interface. Current projects within the University Hills area that abut open space areas, specifically Planning Area 9, follow current OCFA Fuel Modification Zone guidelines which include graduated zones of fuel reduction. UCI, ICHA, and OCFA staff meet periodically to review maintenance of the Defensible Space zone and the Fuel Modification areas.

UCI provides its own police service for the campus, including the Area 9/2 Housing Project site, which handles all patrol, investigation, crime prevention education, and related law enforcement duties for the campus. The department operates 24 hours a day, seven days a week and provides immediate response to all police, fire, and medical emergencies. The UCI Police Department is located in the Public Services building on the East Campus. The Irvine Police Department is responsible for police protection services in the communities surrounding the UCI campus and provides backup support when requested by the UCI Police Department.

Volume I, Section 4.11 also addresses school services to the communities surrounding UCI within the City of Irvine. The Irvine Unified School District (IUSD) provides kindergarten through grade 12 (K-12) school services to the City of Irvine. The demand for grade K-12 public education facilities generated by the UCI on-campus population is associated primarily with married student households, faculty/researcher households, and staff households. UCI shares planning data f family on-campus housing with IUSD. The Area 9/2 Housing Project would pay IUSD school fees to support public school facilities serving the project.

4.11.2 REGULATORY FRAMEWORK

Refer to Volume I, Section 4.11 for a discussion of relevant regulations.

4.11.3 PROJECT IMPACTS AND MITIGATION

4.11.3.1 ISSUE 1 – FIRE PROTECTION

Public Services Issue 1 Summary

Would the proposed project have a substantial adverse physical impact on maintaining acceptable service ratios, response times, or other performance objectives for fire protection that would require the provision of new or altered facilities, the construction of which could cause an adverse physical environmental effect?

Impact: Implementation of the Area 9/2 Housing Project is not likely to result in increased demand for fire service which could contribute to the need for new or physically altered fire protection facilities, the construction of which could cause an adverse physical environmental effect.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.11 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As discussed in Volume I, Section 4.11.3.1, demands on fire protection services for UCI are likely to increase with the growth in campus population. However, implementation of the 2007 LRDP is not anticipated to increase demand at the Fire Station #4 to a level that would require new facilities or substantial alterations to existing facilities that would result in adverse impacts on the physical environment. Further, the campus Fire Marshal reviews and approves all development plans to ensure adequate fire access, as well as fire prevention, for each new project in accordance with California building and fire codes. Therefore, impacts to the physical environment associated with providing these fire services would be less than significant. Thus, implementation of the Area 9/2 Housing Project is anticipated to result in a less than significant impact to fire protection services.

Further, as discussed in Section 4.6.3, Hazards and Hazardous Materials, the project area is located adjacent to an undeveloped area of campus which has the potential for wildland fires. In order to reduce the possible threat of wildfire to the proposed project, the Area 9/2 Housing Project would comply with wildland fire buffer requirements such as Fuel Modification Zones, Defensible Space Zones, firebreaks, or other measures as determined by the Campus Fire Marshall in consultation with the Orange County Fire Authority, which would reduce the threat to the community to less than significant.

Mitigation Measures

No mitigation measures are required.

4.11.3.2 ISSUE 2 – POLICE PROTECTION

Public Services Issue 2 Summary

Would the proposed project impact maintenance of acceptable service ratios, response times, or other performance objectives for police protection that would require the provision of new or altered facilities, the construction of which could cause an adverse physical environmental effect?

Impact: Implementation of the Area 9/2 Housing Project is not likely to result in increased demand for police service that would require new facilities that could result in a significant physical impact to the environment.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.11 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As discussed in Volume I, Section 4.11, demands on police protection services for UCI are likely to increase with the growth in campus population. The Area 9/2 Housing Project would contribute incrementally to this demand. As a 120-unit residential housing project for faculty and staff, the Area 9/2 Housing Project would not increase demand in a manner that would require new UCI Police Department or Irvine Police Department (IPD) facilities or substantial alterations to existing UCI or IPD facilities that could result in adverse physical effects to the environment. Therefore, impacts to off-campus police services associated with the proposed project would be less than significant.

Mitigation Measures

No mitigation measures are required.

4.11.3.3 ISSUE 3 – PUBLIC SCHOOLS

Public Services Issue 3 Summary

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered public schools or the need for new or physically altered public schools, the construction of which could cause significant environmental impacts in order to maintain performance objectives for public schools?

Impact: Implementation of the Area 9/2 Housing Project could contribute to demand for local public schools; however, it is unlikely that new or altered school facilities would be necessary.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.11 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As discussed in Volume I, Section 4.11.3.3, an increase in campus population may increase the number of school-age children that would enroll in regional public schools. The Area 9/2 Housing Project would construct up to 120 new faculty and staff housing units on the campus. Using data for the number of school-age children living in University Hills Phases 1 through 8 (383 children in 838 dwelling units), which is equivalent to a student generation rate of 0.46, the approximate increase in UCI employees with school-age children attributable to the Area 9/2 Housing Project would be 55 children. School-age children of these new UCI faculty and staff may enroll in regional K-12 public schools, creating additional demands for public school seating capacity. The proposed project would pay development fees at the time of project approval to support public school facilities that serve campus residents.

When compared to the over 24,000 students which already attend schools in the IUSD, the additional 55 students generated by the Area 9/2 Housing Project is a less than significant number of new students that may not even be perceivable within the yearly fluctuations of total IUSD student enrollment. In addition, two elementary schools and two middle schools in IUSD are planned over the next several years. Thus, the proposed project would not require substantial alterations that would result in adverse physical impacts. Therefore, the impact to regional and local public schools attributable to the Area 9/2 Housing Project would be less than significant.

Mitigation Measures

No mitigation measures are required.

4.11.4 CUMULATIVE IMPACTS AND MITIGATION

Public Services Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to public services?

Cumulative Impact	Significance	Project Contribution
Fire Protection: Increased need for fire protection services would require new facilities potentially resulting in adverse physical impacts.	Less than significant.	N/A
Police Protection: Increased need for police protection services would require new facilities potentially resulting in adverse physical impacts.	Less than significant.	N/A
Public Schools: Need for new public schools would result in adverse physical impacts.	Less than significant.	N/A

4.11.4.1 FIRE PROTECTION

The geographic context for the analysis of cumulative impacts resulting from demand for fire protection services is the City of Irvine region that includes the UCI campus, Irvine Business Complex (IBC), and John Wayne Airport (JWA) area, where the fire protection facilities that may serve the campus are located. As discussed in Volume I, Section 4.11.4.1, regional projects that would impact OCFA's ability to adequately serve this area include an expansion at JWA, numerous residential development projects proposed in the IBC, implementation of UCI's 2007 LRDP, and other regional development. This development would result in a substantial increase in demand for fire protection. As a result, OCFA is conducting planning and feasibility studies for a new fire station in the vicinity. Physical adverse impacts associated with the construction of a fire station would short term construction-related noise, air quality, and water quality impacts and long term operational impacts such as water quality, utility demand, and other physical impacts. As with other development projects and public service improvements in the region, the construction of a new fire station would be subject to CEQA review and compliance with local, state and federal environmental requirements related to water quality, noise, and other factors. OCFA would conduct its own environmental analysis and require appropriate mitigation measures to reduce impacts to the physical environment. As a result, the adverse physical impacts resulting from construction and operation of a new fire station to serve cumulative regional demand would be less than significant.

4.11.4.2 POLICE PROTECTION

The geographic context for the analysis of demand for police protection service cumulative impacts is the City of Irvine near the UCI campus, where the facilities that may serve the campus are located. Due to a projected increase in population growth, it can be assumed that additional police officers and police stations would be required to serve the growing Orange County population, the development of which could result in significant adverse physical impacts to the environment. However, as with other development projects and public service improvements in the region, the construction of new police service facilities would be subject to CEQA review and compliance with local, state and federal environmental requirements related to construction and operational impacts to the physical environment. As a result, the adverse physical impacts

resulting from construction and operation of new police service facilities to serve cumulative regional demand would be less than significant.

4.11.4.3 PUBLIC SCHOOLS

The geographic context for demand for schools is the IUSD, which provides public school service for the UCI campus. Increased regional growth could result in increased demand for public schools, the development of which could result in adverse physical impacts to the environment. However, as with other development projects and public service improvements in the region, the construction of new public schools would be subject to CEQA review and compliance with local, state and federal environmental requirements related to construction and operational impacts to the physical environment. As a result, the adverse physical impacts resulting from construction and operation of new public schools to serve cumulative regional demand would be less than significant.

4.11.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

The 2007 LRDP Initial Study indicated that all checklist items should be evaluated in the EIR.

4.11.6 REFERENCES

Refer to Volume I, Section 4.11 for references relevant to this section.

4.12 RECREATION

4.12.1 ENVIRONMENTAL SETTING

Volume I, Section 4.12 includes a discussion of the existing on- and off-campus recreational opportunities for the UCI community. The UCI campus provides extensive access to a broad range of recreational facilities, activities and services that reflect the varied recreational and leisure needs of students, faculty, and staff. Recreational facilities include existing outdoor playing fields, running tracks, courts (i.e., tennis and basketball), swimming pools, and turf areas. Indoor facilities for multi-purpose sports and fitness training, gymnastics, dance and other cultural activities are also provided. Such areas and facilities include Aldrich Park, the Anteater Recreation Center (ARC), and the Crawford Athletics Complex. Off-campus recreational opportunities are also available, including the numerous City, County, and state parks and private health clubs located in the vicinity of the campus, as well as throughout the City of Irvine and Orange County.

4.12.2 REGULATORY FRAMEWORK

Refer to Volume I, Section 4.12 for a discussion of relevant regulations.

4.12.3 PROJECT IMPACTS AND MITIGATION

4.12.3.1 ISSUE 1 – DETERIORATION OF PARKS AND RECREATIONAL FACILITIES

Recreation Issue 1 Summary

Would the proposed project increase the use of existing recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Impact: The Area 9/2 Housing Project would increase use of on- and off- campus recreational facilities. However, substantial deterioration of the facilities is not anticipated.	**Mitigation:** No mitigation is required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Not applicable.

Standards of Significance

Refer to Volume I, Section 4.12 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As discussed in Volume I, Section 4.12, the increased campus population would proportionally increase demand for on- and off-campus recreational facilities. Residents of the proposed project would have access to Anteater Recreation Center (ARC), which is available to the general UCI population. The 2007 LRDP analysis assumed that the current level of maintenance of the facility would continue and that substantial deterioration of the ARC would not occur as a result of implementation of the 2007 LRDP. Further, other recreational opportunities are available to the residents of the proposed project. Several parks are located within the University Hills Housing Area and the ICHA has proposed the construction of a community center in Area 9/1. The University Hills Housing Area also has access to bicycle and pedestrian paths and trails, parks and other general campus open space resources. Therefore, with proper maintenance of the ARC and

the availability of parks and trails in the South Campus, the increase of approximately 360 persons to the campus community due to the Area 9/2 Housing Project would result in a less than significant impact to existing on-campus recreational facilities.

Use of off-campus public recreational facilities in the surrounding neighborhoods by UCI faculty, staff, and their families could increase as a result of the proposed project. However, such use is expected to be limited based on the recreational opportunities currently provided within the South Campus and the University Hills Housing Area. Thus, implementation of the 2007 LRDP is not anticipated to result in a significant increase in demand for use of off-campus public recreational facilities.

Mitigation Measures

No mitigation measures are required.

4.12.3.2 ISSUE 2 – CONSTRUCTION OF NEW RECREATIONAL FACILITIES

Recreation Issue 2 Summary

Would the proposed project involve the construction of recreational facilities that might have an adverse physical effect on the environment?

Impact: The Area 9/2 Housing Project would construct connections to existing trails and bicycle paths which would not have an adverse physical effect on the environment.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.12 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As discussed in Volume I, Section 4.12, the 2007 LRDP proposes to expand existing recreational facilities. The proposed Area 9/2 Housing Project proposes to construct connections to existing pedestrian trails and bicycle paths. These connections would be within the proposed project area. Physical impacts that would be associated with the construction of these projects are addressed in other sections of this EIR. Therefore, impacts resulting from the construction of recreational facilities as proposed by the Area 9/2 Housing Project would be less than significant.

Mitigation Measures

No mitigation measures are required.

4.12.4 CUMULATIVE IMPACTS AND MITIGATION

Recreation Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to recreation?

Cumulative Impact	Significance	LRDP Contribution
Deterioration of Parks and Recreational Facilities: Future development would increase the amount of recreational facilities in the local area through in-lieu fees or through the donation of parkland**.**	Less than significant.	N/A
Construction of New Recreational Facilities: Future development of recreational facilities could result in significant unavoidable impacts.	Less than significant.	N/A

4.12.4.1 DETERIORATION OF PARKS AND RECREATIONAL FACILITIES

The geographic context for the analysis of cumulative recreational impacts is the City of Irvine because future UCI population housing related growth is expected to occur in this area. Deterioration of parks and recreational facilities within the region as a result of regional population growth would be repaired and replaced with funding from various sources. As future residential developments are approved in the local off-campus community, in-lieu fees for parks or donation of parkland (pursuant to the Quimby Act) would be required as part of the individual projects. Therefore, this cumulative impact would be considered less than significant

4.12.4.2 CONSTRUCTION OF NEW RECREATIONAL FACILITIES

The geographic context for the analysis of cumulative recreational impacts is the City of Irvine because future UCI population housing related growth is expected to occur in this area. Due to a projected regional population growth, it can be assumed that the demand for public parks and recreational areas would also increase, the development of which could result in significant adverse physical impacts to the environment. However, because UCI would accommodate all on-campus recreational demand with on-campus facilities, implementation of the 2007 LRDP would not contribute to these impacts. As discussed in the previous portions of this section, UCI provides substantial recreational opportunities on the campus for faculty, students, staff, and the community which reduces the overall need for off-campus recreational facilities. Further, any physical impacts to the environment have been evaluated in this EIR and all significant impacts resulting from such construction would be mitigated to reduce impacts. As a result, the adverse physical impacts resulting from the construction of additional recreational facilities to serve cumulative regional demand would be less than significant.

4.12.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

The 2007 LRDP Initial Study indicated that all checklist items should be evaluated in the EIR.

4.12.6 REFERENCES

Refer to Volume I, Section 4.12 for references relevant to this section.

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4.13 TRANSPORTATION, TRAFFIC, AND PARKING

4.13.1 ENVIRONMENTAL SETTING

Volume I, Section 4.13 presents the transportation, traffic, and parking setting for the entire UCI campus. It evaluates the existing regional and surrounding traffic conditions, circulation, parking supply, and alternative transportation programs, practices, and procedures. Traffic conditions are described by Level of Service (LOS), which is the qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort and convenience, and safety. LOS is expressed as a letter designation from A through F, with A representing the best operating conditions and F representing the worst. These letter designations are further described in Volume I, Table 4.12-1. LOS standards for roadways, intersections, and freeways are provided in the CMP. Data utilized in Volume I, Section 4.12 was based upon a technical report prepared by Austin-Foust Associates, Inc. (2007), which primarily addresses impacts to city streets and freeways in the vicinity of the campus.

The Area 9/2 Housing Project would be accessed through California Avenue via an extension of Gabrielino Drive that is proposed as part of the project. No vehicular access to the site is anticipated from Bonita Canyon Drive.

All campus access points are signalized and six on-campus intersections are currently under signal control. The remainder of the campus intersections operates under stop sign control. The LOS at most of the study area intersections under the 2007 LRDP is D or better during both peak hours under existing conditions. Three of the 66 intersections studied were found to operate at LOS E during the PM peak hour: MacArthur Boulevard at Ford Road, Jamboree Road at I-405 Southbound Ramp, and Jamboree Road at MacArthur Boulevard.

UCI serves all parking demand on-campus. No off-campus parking is required to serve existing campus development.

4.13.2 REGULATORY FRAMEWORK

Refer to Volume I, Section 4.12 for a discussion of relevant regulations.

4.13.3 PROJECT IMPACTS AND MITIGATION

4.13.3.1 ISSUE 1 - INCREASES IN TRAFFIC

Transportation, Traffic, and Parking Issue 1 Summary

Would the proposed project cause a substantial increase in traffic?

Impact: Implementation of the Area 9/2 Housing Project would generate traffic consistent with overall campus-wide growth as discussed in the 2007 LRDP EIR. Construction could affect local street traffic near the site.

Mitigation: No mitigation required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.13 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Construction

Traffic generated by the construction of the Area 9/2 Housing Project would consist of trips by workers, vehicles delivering construction material and equipment, and large trucks exporting excavated material. Most construction traffic would be expected to use Anteater Drive northwest of the site, entering and leaving the campus from Bonita Canyon Drive Road. Parking for workers would be provided on-site within the campus.

Construction of the Area 9/2 Housing Project could potentially affect traffic on California Avenue and at the intersection of California Avenue and Anteater Drive. The construction activity would potentially interfere with through traffic requiring lane closures from time to time, which could result in a significant impact. However, with implementation of LRDP mitigation measure Haz-6A, this impact would be reduced below a level of significance.

Operation

Volume I, Section 4.13.3.1 discusses on-campus trip generation and traffic impacts that could occur to roadway segments and intersections from implementation of the 2007 LRDP. Off-campus impacts are addressed in the Volume I of the LRDP EIR. As identified in Table 4.13-16, On-Campus Intersection Analysis Summary, all on-campus intersections would operate at LOS D or better under the 2007 LRDP and impacts to the on-campus circulation system due to 2007 LRDP traffic would be less than significant. Therefore, because no impact would occur with full build-out of the 2007 LRDP, the Area 9/2 Housing Project would also result in a less than significant impact.

Mitigation Measures

No mitigation measures are required.

4.13.3.2 ISSUE 2 – PARKING CAPACITY

Transportation, Traffic, and Parking Issue 2 Summary

Would the proposed project result in inadequate parking capacity?

Impact: Implementation of the proposed project would not result in the elimination of parking and or impact parking capacity on or off-campus.

Mitigation: No mitigation is required.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.12 for a discussion of standards of significance relevant to this issue.

Impact Analysis

The 2007 LRDP parking space program would accommodate all campus parking needs on site and would not rely on off-campus locations to meet campus parking demand. Areas adjacent to the campus consist of master planned communities**,** which include residential and commercial retail areas. Parking within these off-campus areas is controlled by permit or other regulation, and there is no significant on-street parking allowed in the campus vicinity. The proposed project is a residential development which would supply sufficient on-site parking for the residents and their guests. Therefore, no significant on-campus parking impact is anticipated.

Mitigation Measures

No mitigation measures are required.

4.13.3.3 ISSUE 3 – ALTERNATIVE TRANSPORTATION PLANS, POLICIES, AND PROGRAMS

Transportation, Traffic, and Parking Issue 3 Summary

Would the proposed project conflict with applicable policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Impact: Implementation of the Area 9/2 Housing Project is not likely to conflict with adopted policies, plans, or programs supporting alternative transportation.

Mitigation: No mitigation is required

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.12 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As discussed in Volume I, Section 4.13.1.3, UCI administers an extensive program of Transportation Demand Management (TDM) measures that have been successful in achieving an Average Vehicle Ridership of 1.9, which exceeds the AQMD regional standard of 1.7. UCI would continue to operate and expand its TDM program to encourage commuters to use alternate modes of transportation, including walking, bicycling, carpooling, vanpooling, and riding the UCI shuttle, other local shuttle systems, train, or bus. Further, the Area 9/2 Housing Project is located on-campus which is expected to minimize drive-alone vehicle commuter trips for the residents of the proposed project. Lastly, the proposed project would comply with the UC Sustainable Transportation Policy. As described in Volume I, 4.13.2.2, implementation of campus-wide TDM programs would be enforced and monitored through LRDP mitigation measures Tra-1A, Tra-1B, Tra-1C, and Tra-1I. Therefore, no significant impact would occur.

Mitigation Measures

No mitigation measures are required.

4.13.4 CUMULATIVE IMPACTS AND MITIGATION

Transportation, Traffic, and Parking Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to traffic, transportation, and parking?

Cumulative Impact	Significance	Project Contribution
Traffic Increases: Regional decreases in traffic LOS.	Significant.	Not cumulatively considerable with implementation of LRDP MM Tra-1A through Tra-1J.
Parking Capacity: Because the 2007 LRDP would not result in inadequate parking capacity in the surrounding vicinity, there is no analysis of cumulative impacts.	N/A	N/A
Alternative Transportation Programs: Because the 2007 LRDP would not result in regional conflicts with alternative transportation plans and policies, there is no analysis of cumulative impacts.	N/A	N/A

4.13.4.1 TRAFFIC INCREASES

The geographic context for the analysis of cumulative traffic impacts includes the LRDP Traffic Study Area (Volume I, Figure 4.13-1), which receives traffic volumes resulting from buildout of the cities of Irvine and Newport Beach. In addition, cumulative impacts are based on the future traffic volumes estimated by SCAG, which includes population and socio-economic projections for all of Orange County. Under the 2007 LRDP, the increase in traffic to the surrounding area would result in a significant cumulative impact. Project-generated vehicular traffic could contribute to this significant impact. However, with implementation of LRDP mitigation measures Tra-1A through Tra-1J, the Area 9/2 Housing Project's contribution would not be cumulatively considerable.

4.13.4.2 PARKING CAPACITY

Section 4.13.3.2 above concluded that implementation of the 2007 LRDP would not impact the on-campus parking supply. Therefore, this issue is not addressed in this cumulative analysis pursuant to Section 15130(a)(1) of the CEQA Guidelines, which states that "an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR."

4.13.4.3 ALTERNATIVE TRANSPORTATION PROGRAMS

Section 4.13.3.3 above concluded that implementation of the 2007 LRDP would not impact the on-campus alternative transportation programs. Therefore, this issue is not addressed in this cumulative analysis pursuant to Section 15130(a)(1) of the CEQA Guidelines, which states that "an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR."

4.13.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

Would the project 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?

Development of the Area 9/2 Housing Project will not change existing air traffic volumes nor affect existing air traffic patterns in any measurable way. No impact would occur and no further analysis is required.

Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Implementation of the 2007 LRDP including the Area 9/2 Housing Project is anticipated to increase vehicular traffic on-and off-campus. However, design features would be compatible with existing campus transportation plans and adjacent land uses. Therefore, no impacts would occur from hazards due to design features or incompatible land uses.

Would the project result in inadequate emergency access?

Development such as the Area 9/2 Housing Project, associated with implementation of the 2007 LRDP is subject to review by the UCI Fire Marshal. Prior to final plan approval, the Fire Marshal reviews all projects to ensure among other things, that adequate fire and emergency access is designed into the project. Projects cannot be bid for construction until the Fire Marshal signs off on the plans. Therefore, no impact would occur and no further analysis is required; however, emergency access is addressed further in Section 4.6 of this EIR, and in Volume III, Section 4.6.

4.13.6 REFERENCES

Refer to Volume I, Section 4.12 for references relevant to this section.

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4.14 UTILITIES, SERVICE SYSTEMS, AND ENERGY

4.14.1 ENVIRONMENTAL SETTING

Volume I, Section 4.14 describes the existing on-campus utility systems that service the campus which include water supply, wastewater, solid waste, and energy. Storm water and associated drainage facilities were addressed in Section 4.7, Hydrology and Water Quality.

Wastewater

The UCI campus consists of two wastewater collection systems, the Irvine Ranch Water District (IRWD) collection system and the County Sanitation District of Orange County (CSDOC). The North Campus is the only portion of the campus that is served by CSDOC. The rest of the campus, including the proposed project site, is served by IRWD. The UCI's main campus wastewater collection system provides sewage disposal and consists of approximately 30,000 linear feet of gravity sewer line with pipe sizes ranging from 8 to 18-inches. Generally, campus wastewater flows toward the north connecting to the IRWD collection system at the intersection of Campus Drive and West Peltason Drive.

Water Supply

The IRWD provides water to UCI's distribution system from its potable water transmission system through 8-, 10-, and 12-inch water mains to five metered connections. The distribution system consists of two primary pressure zones which are directly served by IRWD Zones I and III. Zone 1 serves the majority of the campus with the exception of the south and east campuses. Zone III would serve the project site and is served by one 10-inch IRWD metered connection adjacent to the east campus and one 8-inch IRWD metered connection adjacent to the south campus.

Solid Waste

Solid waste on campus, including University Hills, is removed by a private refuse collection service for disposal at the Frank R. Bowerman (FRB) Landfill, which is one of three municipal solid waste facilities managed by the Integrated Waste Management Department of Orange County (IWMD). The FRB landfill is approximately 725 acres; 341 acres are currently permitted for waste disposal. The FRB landfill serves the central portion of Orange County and also receives solid municipal waste from southeastern Los Angeles County.

Electricity

UCI owns and operates a 13 megawatt combined power and heat (cogeneration) plant which generates the base load of electrical needs on site. UCI also receives electricity from Southern California Edison (SCE) in a 66-kilovolt (KV) sub-transmission line from a utility substation adjacent MacArthur Boulevard. The line crosses over Bonita Canyon Road, connects to a power pole at the edge of the University's property, and is then directed underground to UCI's 66/12KV main substation, known as the University Substation. The University Substation then provides electricity to campus facilities through underground 12KV circuits and switching stations. This electrical system is known as the UCI campus 12KV electrical distribution system.

Natural Gas

Southern California Gas Company (SCG), owned by Sempra Energy Utilities, supplies the UCI campus with natural gas via three lines which branch from two 12" high pressure gas mains running under Campus and University Drives. One line provides service to the Health Sciences Complex via a 4" high pressure gas line that extends from University Drive to California Avenue. The second line, an 8" medium pressure line, starts at Campus Drive and proceeds along West Peltason Road where it is reduced to a 6" medium pressure line providing service to the majority of the campus and a portion of University Hills. A 6" medium pressure line runs south on East Peltason Drive from Campus Drive, then south on Gabrielino Drive. This pipeline provides service to the East Campus would most likely serve the proposed Area 9/2 Housing Project.

4.14.2 REGULATORY FRAMEWORK

Refer to Volume I, Section 4.14 for a discussion of relevant regulations.

4.14.3 PROJECT IMPACTS AND MITIGATION

4.14.3.1 ISSUE 1 –WASTEWATER TREATMENT

Utilities, Service Systems, and Energy Issue 1 Summary

Would the proposed project result in an exceedence of the Santa Ana Regional Water Quality Control Board's wastewater treatment requirements or the IRWD's treatment capacity to serve the project's projected demand?

Impact: Because the Area 9/2 Housing Project is under the 2007 LRDP, the proposed project would not result in impacts to wastewater treatment.

Mitigation: No mitigation required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.14 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Implementation of the Area 9/2 Housing Project would increase the amount of on-campus building space and residential population, resulting in the generation of additional wastewater for treatment at the IRWD's wastewater reclamation facility. The discussion in Volume I, Section 4.14.3.1 determined that the amount of wastewater flows resulting from full build-out of the 2007 LRDP would not result in significant impacts to wastewater treatment requirements. Therefore, because the Area 9/2 Housing Project is within the 2007 LRDP and because the proposed project would result in a substantially smaller demand for wastewater treatment services than the 2007 LRDP, the proposed project would also not result in significant impacts to wastewater treatment requirements.

Mitigation Measures

No mitigation measures are required.

4.14.3.2 ISSUE 2 –NEW WATER OR WASTEWATER FACILITIES

Utilities, Service Systems, and Energy Issue 2 Summary

Would the proposed project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities?

Impact: The proposed Area 9/2 Housing Project would not result in the development of new water and wastewater facilities.

Mitigation: No mitigation is required.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.14 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Water and wastewater infrastructure would be constructed on-site to serve the Area 9/2 Housing Project area. The new infrastructure would connect to existing distribution systems. Potable and reclaimed water service to the UCI campus would be provided by the IRWD. The proposed project includes development of a 120-unit residential area with the potential to house up to approximately 360 people. The 2007 LRDP includes long range forecasts for utility demand, including the Area 9/2 Housing Project area. The demand projections would not exceed the IRWD long range capacity forecasts for water and sewer capacity and would not result in the need to construct additional water or sewer facilities. Therefore, it is not likely that additional water and wastewater facility would be required. If such facilities were required, the projects would be subject to CEQA review prior to their approval, and physical impacts that associated with the construction of expanded facilities would be analyzed in subsequent CEQA analyses. However, the proposed Area 9/2 Housing Project is not likely to trigger the need for additional facilities; therefore, there would be no the impact to the physical environment outside of the proposed project area.

Mitigation Measures

No mitigation measures are required.

4.14.3.3 ISSUE 3 – IMPACTS FROM NEW STORM WATER FACILITIES

Utilities, Service Systems, and Energy Issue 3 Summary

Would the proposed project require or result in the construction of new storm water drainage facilities or expansion of existing facilities?

Impact: Implementation of the proposed project could cause the capacity of storm water facilities to be exceeded and result in the need to construct or expand existing facilities.

Mitigation: Project specific drainage studies including implementation of site design and flow control if necessary (LRDP MM Hyd-1A).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Refer to Volume I, Section 4.14 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Implementation of the Area 9/2 Housing Project would replace the existing pervious open space with impervious surfaces (streets, hardscape, and roofed areas) which could increase the volume of storm water discharged from the project site. Storm runoff would be collected on-site, be directed towards the western boundary of the site, and drain into proposed storm drain(s) associated with Area 9/3, located north and northwest of Area 9/2. These increases may overflow capacities of existing storm water facilities requiring construction of detention basins or larger conveyance facilities, which could result in a significant adverse impact to the physical environment. However, implementation of Mitigation Measure Hyd-1A, which would require a drainage study and incorporation of flow control measures, would reduce the potential for storm water facilities to exceed capacity and eliminate a potential need to expand existing facilities. Therefore, with implementation of Mitigation Measure Hyd-1A, the impact would be reduced to below a level of significance.

Mitigation Measures

Implementation of 2007 LRDP mitigation measure Hyd-1A, discussed above in Section 4.7.3.1would reduce the potentially significant impacts associated with storm water facility capacity to a less than significant level.

4.14.3.4 ISSUE 4 – WATER SUPPLY AVAILABILITY

Utilities, Service Systems, and Energy Issue 4 Summary

Would the proposed project result in insufficient availability of water supplies to serve the project from existing entitlements and resources, or the need for new or expanded entitlements?

Impact: The IRWD's UWMP can accommodate campus growth.

Mitigation: No mitigation required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.14 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Implementation of the Area 9/2 Housing Project would increase the amount of on-campus building space and residential population, resulting in an increased demand for domestic and reclaimed water. The discussion in Volume I, Section 4.14.3.4 determined that the demand for potable and reclaimed water under full build-out of the 2007 LRDP was accommodated in the IRWD's Urban Water Management Plan (UMWP) and would not result in significant impacts to water supply availability. Therefore, because the Area 9/2 Housing Project and water demand assumptions are within the 2007 LRDP, the proposed project would also not result in significant impacts to water supply availability.

Mitigation Measures

No mitigation measures are required.

4.14.3.5 ISSUE 5 – LANDFILL CAPACITY

Utilities, Service Systems, and Energy Issue 5 Summary

Would the proposed project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Impact: Solid waste disposal needs would be served by adequate existing and planned future landfill capacity in the County of Orange.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.13 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Solid waste disposal associated with the development of the UCI campus is discussed in Volume I, Section 4.13.3.5 and states that because UCI would continue to administer its recycling program and because an expansion of the Frank R. Bowerman (FBR) Landfill is likely, solid waste generated by UCI, including the 2007 LRDP, would not be expected to result in a significant impact with regard to landfill capacity. Therefore, the proposed project would result in a less than significant impact.

Mitigation Measures

No mitigation measures are required.

4.14.3.6 ISSUE 6 – APPLICABLE SOLID WASTE REGULATIONS

Utilities, Service Systems, and Energy Issue 6 Summary

Would the proposed project fail to comply with federal, state, and local statutes and regulations related to solid waste?

Impact: Implementation of the proposed project would not result in UCI's failure to comply with relevant regulations regarding solid waste.

Mitigation: No mitigation is required.

Significance Before Mitigation: No impact.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.14 for a discussion of standards of significance relevant to this issue.

Impact Analysis

As an entity created by the State Constitution, the UC is not subject to AB 939 or other local regulations pertaining to solid waste. However, according to the bill, the UC is encouraged to adopt reduction measures similar to those imposed on local agencies and the University adopted a sustainability policy as described in Volume I, Section 4.14.1.3 that requires UC campuses to reduce solid waste generation and disposal. In adherence to this UC policy and other campus sustainability goals, UCI implements a campus-wide comprehensive waste prevention and recycling program (UCI Facilities Management Recycling Program) which works in collaboration with multiple campus entities including the UCI Student Organization "Anteaters for Conservation and Recycling" and campus internship programs to promote and implement recycling. Further, private vendors that serve the University Hills area are subject AB 939.

As discussed in Volume I, Section 4.14.3.5, in 2005, UCI generated 4,960 tons of solid waste and recycled approximately 50 percent of this solid waste. In the future, UCI will continue to implement, promote and improve the campus-wide comprehensive waste prevention and recycling program. UCI will continue to implement the UC Policy on Sustainable Practices in the future. Thus, the project is not expected to have an impact with regard to applicable regulations.

Mitigation Measures

No mitigation measures are required.

4.14.3.7 ISSUE 7 – ENERGY CONSUMPTION

Utilities, Service Systems, and Energy Issue 7 Summary

Would the proposed project require or result in the construction or expansion of electrical, natural gas, chilled water, or steam facilities, or result in the wasteful, inefficient or unnecessary use of energy?

Impact: Implementation of the proposed project would create additional demand for energy which would likely require development of new facilities, but would not result in the wasteful, inefficient, or unnecessary use of energy.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Not applicable.

Standards of Significance

Refer to Volume I, Section 4.13 for a discussion of standards of significance relevant to this issue.

Impact Analysis

Development of the Area 9/2 Housing Project would result in the consumption of additional energy from sources such as, electricity, natural gas, and other fossil fuels. The project proposes to construct connections to existing campus utility facilities, such as power lines and substations, and would not construct new facilities outside of the project area or expand existing facilities. With regard to the development of the proposed project, UCI would continue to implement energy-saving projects that conserve energy, improve efficiency, and reduce energy costs through campus-wide implementation of energy conservation measures and the UC Policy on Sustainable Practices. Although the project is a single family for-sale housing development and not required to conform to this policy, the project would be designed to meet or exceed State Title 24 energy conservation requirements. This policy provides information and guidance to the UC campuses for implementing policies and standards for the design of green buildings and the use of clean energy. The continued implementation of these energy-efficient programs and policies would ensure that the UCI campus would not result in wasteful, inefficient, or unnecessary use of energy. Further, UCI recently completed the construction of a cogeneration facility which would reduce UCI's reliance on a regional electricity grid. Therefore, development of the proposed project would result in a less than significant impact on energy supplies.

Mitigation Measures

No mitigation measures are required.

4.14.4 CUMULATIVE IMPACTS AND MITIGATION

Utilities, Service Systems, and Energy Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a significant cumulative impact to utilities, service systems, and energy?

Cumulative Impact	Significance	Project Contribution
Wastewater Treatment: Proposed expansion of IRWS facilities would accommodate projected population growth.	Less than significant.	N/A
New Water or Wastewater Facilities: Installation and construction of additional facilities could result in adverse physical impacts to the environment.	Significant.	Not cumulatively considerable.
Impacts from New Storm Water Facilities: The construction of additional storm water facilities could result in adverse physical impacts to the environment.	Significant.	Not cumulatively considerable, with implementation of LRDP MM Hyd-1A.
Water Supply Availability: IRWD's recently adopted Urban Water Management Plan is projected to accommodate future growth and water demand.	Less than significant.	N/A
Landfill Capacity: A recently approved project will extend the life of the FRB landfill to 2053.	Less than significant.	N/A
Applicable Solid Waste Regulations: Previous difficulties in complying with AB 939 are likely to continue as population levels increase in Orange County.	Significant.	Not cumulatively considerable.
Energy Consumption: Increasing population would increase the demand for energy and energy facilities which would result in adverse physical impacts to the environment.	Significant.	Not cumulatively considerable.

4.14.4.1 WASTEWATER TREATMENT

The geographic context for the analysis of cumulative impacts for wastewater treatment facility capacities is the Irvine Ranch Water District (IRWD) service area. As discussed in Volume I, Section 4.14.1.2, overall demand within the IRWD service area is expected to double by 2025 and plans to expand the MWRP would be able to accommodate the projected increase in sewage. The expansion would increase the plant's capacity to 33 mgd and would be completed in 2025. Therefore, because the proposed expansion would accommodate projected demand, the cumulative impact to wastewater treatment facility capacities would be less than significant.

4.14.4.2 NEW WATER OR WASTEWATER FACILITIES

The geographic context for the analysis of cumulative impacts for new water or wastewater facilities is the IRWD service area. As of June 2007, IRWD is planning to expand the MWRP and no new water or wastewater facilities are planned. However, distribution facilities may be proposed as part of future

development projects within the IRWD service area. The installation and construction of such facilities may result in adverse physical impacts to the environment, which could result in a significant cumulative impact to the physical environment. However, the proposed Area 9/2 Housing Project is not likely to trigger the need for additional facilities; therefore, the project's contribution would not be cumulatively considerable.

4.14.4.3 IMPACTS FROM NEW STORM WATER FACILITES

The geographic context for the analysis of cumulative impacts resulting from new storm water facilities is the UCI campus and its vicinity. Increased development on-campus may result in an increase in the area footage of impervious surfaces on-campus, which could result in a need for additional storm water facilities. The construction of additional storm water facilities could result in a significant cumulative physical impact to the environment. However, storm water facilities improvements would require environmental review. Environmental impacts that could result from the development of storm water facilities are analyzed in other sections of this EIR, and UCI would implement appropriate mitigation measures including LRDP MM Aes-1A, Aes-2A, Aes-3B, Air-2A, Air-2B, Bio-1A, Bio-2A, Bio-2B, Bio-3A, Bio-3B, Bio-3C, Bio-3D, Bio-4A, Cul-1A, Cul-1B, Cul-2A, Cul-4A, Haz-6A, Hyd-2A, Hyd-2B, Lan-2A, Noi-2A, and Noi-4A. Implementation of Mitigation Measure Hyd-1A, which would require a drainage study and incorporation of flow control measures, would reduce the potential for storm water facilities to exceed capacity, which would eliminate a potential need to expand existing facilities, on the proposed project site. Therefore, with implementation of LRDP mitigation measure Hyd-1A the project's contribution to a significant physical impact to the environment would not be cumulatively considerable.

4.14.4.4 WATER SUPPLY AVAILABILITY

The geographic context for the analysis of cumulative impacts for water supply availability is the IRWD service area. IRWD has reviewed the projected water demands associated with implementation of the 2007 LRDP. As a result of this review, IRWD has concluded that the projected LRDP water demands are consistent with IRWD's recently adopted Urban Water Management Plan, would not affect the water demand projections in the UWMP, and, therefore, would not change UWMP conclusions with respect to water supply reliability. Therefore, because the IRWD's UWMP would be able to supply both the UCI Campus and its service area in the future, cumulative impacts to water supply availability are less than significant.

4.14.4.5 LANDFILL CAPACITY

The geographic context for the analysis of cumulative impacts to landfill capacity is the Orange County region. Based on data provided by the IWMD, the life of the FRB Landfill has been extended to 2053. Future landfill capacity in Orange County is adequate to serve the region and UCI through 2053. Therefore, no significant cumulative impact to landfill capacity would occur.

4.14.4.6 APPLICABLE SOLID WASTE REGULATIONS

The geographic context for the analysis of cumulative impacts to solid waste regulations is the Orange County region. Applicable solid waste regulations include the Integrated Waste Management Act (AB 939) which requires cities and counties to divert 50 percent of all solid waste by January 1, 2000 through source reduction, recycling, and composting activities. As the population continues to grow within Orange County, compliance with AB 939 may become more difficult to attain. Therefore, a significant cumulative impact regarding applicable solid waste regulations exists.

While the UCI is not subject to AB 939, the University has adopted waste diversion goals as outlined in the March 2007 UC Sustainability Policy. As discussed in Volume I, Section 4.14.3.6, UCI diverted

approximately 50 percent of the solid waste generated by UCI in 2005 and UCI continues to implement, promote, and improve campus-wide comprehensive waste prevention and recycling programs. It is expected that UCI would increase its diversion rate despite the growth to the UCI population. Therefore, because UCI implements waste reduction and recycling programs and continues to increase its waste diversion rate, the project's contribution to significant cumulative impacts to applicable solid waste regulations would not be cumulatively considerable.

4.14.4.7 ENERGY CONSUMPTION

The geographic context for the analysis of cumulative impacts to energy consumption is the Southern California Edison (SCE) service area. The SCE service area includes Orange County, Los Angeles County, San Bernardino County, and parts of Riverside, Kern, Tulare, Inyo, Santa Barbara, and Mono Counties. Sources of electricity are diverse and widespread. Electricity and natural gas can be transmitted over long distances, and supply is usually made available from varying and numerous sources. Both electricity and natural gas needed in the region may be generated outside of the state or the country. It is not possible to reasonably predict where the new generation facilities would be located, or to evaluate environmental impacts from the construction and operation of these new facilities. However, should they be proposed in California, the California Energy Commission conducts a complete environmental review of proposed power plant projects 50 megawatts and larger before approving them, and requires as a matter of practice that all significant impacts be mitigated to a less-than-significant level. Smaller projects must also go through environmental review under the oversight of the local jurisdiction in which they are proposed. It can be assumed that additional facilities would be required in the future; however, because the locations and schedules of such projects are unknown, it is assumed that the construction of such facilities would result in a significant cumulative physical impact to the environment.

UCI recently completed the construction of a 13-megawatt cogeneration facility. This facility reduces the amount of energy required from SCE. Further, UCI would comply with the UC Sustainability Policy and construct buildings which include energy saving components to reduce energy demand. Therefore, while the on-campus energy demand would increase as the campus population increases, UCI is implementing policies to limits its demand from SCE. Therefore, because the Area 9/2 Housing Project would exceed State Title 24 energy conservation requirements and because the project is under the 2007 LRDP, the project's contribution to a significant physical impact to the environment resulting from the construction of additional energy facilities would not be cumulatively considerable.

4.14.5 CEQA CHECKLIST ITEMS ADEQUATELY ADDRESSED IN THE 2007 LRDP INITIAL STUDY

As discussed in Volume I, Section 4.14, the initial study for the 2007 LRDP indicated that all checklist items under the Utilities category should be evaluated in the EIR.

4.14.6 REFERENCES

Refer to Volume I, Section 4.14 for references relevant to this section.