5 CUMULATIVE IMPACTS

5.1 CEQA REQUIREMENTS

CEQA Guidelines Section 15130 requires that an EIR discuss the proposed project's cumulative and long-term effects on the environment. "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." (CEQA Guidelines, § 15355; see also Pub. Resources Code, § 21083, subd. (b).) Stated another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts." (CEQA Guidelines, § 15130, subd. (a)(1).)

"[I]ndividual effects may be changes resulting from a single project or a number of separate projects." (CEQA Guidelines, § 15355, subd. (a).) "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (CEQA Guidelines, § 15355, subd. (b).)

The need for cumulative impact assessment reflects the fact that, although a project may cause an "individually limited" or "individually minor" incremental impact that, by itself, is not significant, the increment may be "cumulatively considerable," and thus significant, when viewed together with environmental changes anticipated from past, present, and probable future projects. (CEQA Guidelines, §§ 15064, subd. (h)(1), 15065, subd. (c), 15355, subd. (b).) This formulation indicates that particular impacts may be less-than-significant on a project-specific basis but significant on a cumulative basis, because their small incremental contribution, viewed against the larger backdrop, is cumulatively considerable.

The lead agency defines the relevant geographic area of inquiry for each impact category (id., § 15130, subd. (b)(3)), and also identifies the universe of "past, present, and probable future projects producing related or cumulative impacts" relevant to the various categories, either through the preparation of a "list" of such projects or through the use of "a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact" (id., subd. (b)(1)).

The possibility exists that the "cumulative impact" of multiple projects will be significant, but that the incremental contribution to that impact from a particular project may not itself be "cumulatively considerable." Thus, CEQA Guidelines section 15064, subdivision (h)(4), states that "[t]he mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, it is not necessarily true that, even where cumulative

impacts are significant, any level of incremental contribution must be deemed cumulatively considerable.

In accordance with CEQA Guidelines section 15130(b), "the discussion of cumulative impacts mustl reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone."

5.2 SCOPE OF THE CUMULATIVE ANALYSIS

Because two reasonably foreseeable cumulative scenarios existed at the time the analysis was prepared, both are evaluated within this chapter. The first cumulative scenario is herein referred to as the "CEQA" Cumulative Scenario. This scenario assumes full buildout of the Davis city limits, as well as other probable future projects, which includes the Davis IC and Nishi Gateway projects. The second cumulative scenario evaluated within this chapter is herein referred to as the "Modified" Cumulative Scenario. For this cumulative scenario, it is recognized that the Davis IC project application has been put on "hold", per the project applicant's request. Due to the uncertainty of the "hold" status of the application, the City has included a Modified Cumulative Scenario in this chapter, which excludes the Davis IC Project, but retains the Nishi Gateway Project.

Scope of "CEQA" Cumulative Scenario
The geographic scope, or area of inquiry, for each impact category, with the exception of traffic and air quality/GHG, consists of the City of Davis city limits and those properties outside the city limits for which development applications have been submitted to the City of Davis (see Figure 5-1). There are two such applications:

- Davis Innovation Center (Davis IC) Project
- Nishi Gateway Project

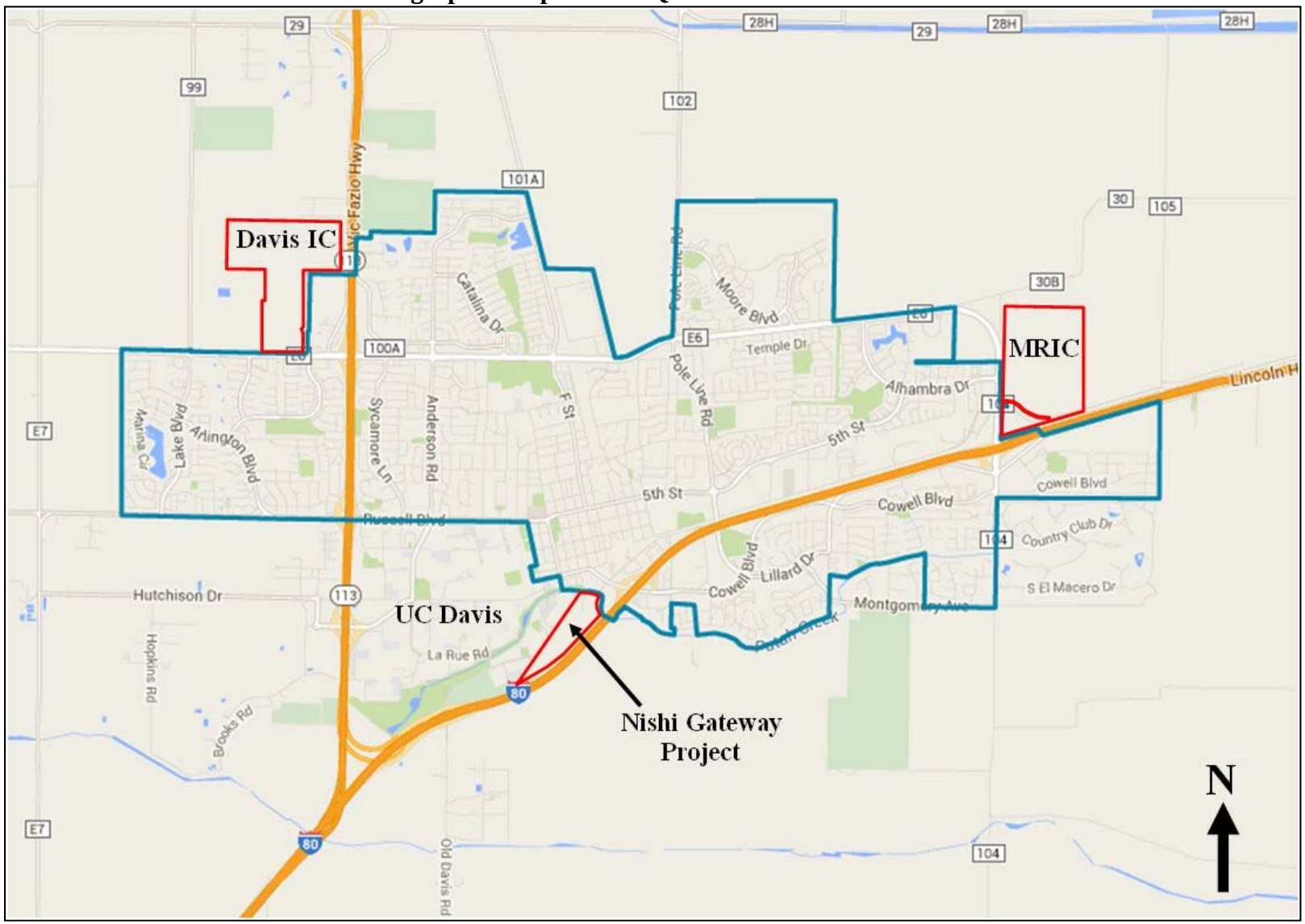
Cumulative Buildout Projections

The cumulative buildout projections for this analysis are based upon buildout of the City of Davis city limits in accordance with the land use designations shown on the adopted General Plan Land Use Map, as well as buildout of the Davis IC and Nishi Gateway projects.

City Limits

The following projections of residential and non-residential buildout potential within the City of Davis city limits has been prepared for this cumulative analysis using published data sources and City staff input, as noted below.

Figure 5-1
Geographic Scope of "CEQA" Cumulative Scenario



Residential Projections

The following residential buildout projections within Davis city limits are based upon recent data and projections included within the BAE Economic Evaluation of Innovation Park Proposals and Sacramento Area Council of Governments (SACOG) data.[1] According to SACOG, the City of Davis, as of the 2010 Census, had a total of 25,869 housing units.[2] According to the BAE study, the estimated remaining housing development potential within the City of Davis city limits is 2,231.[3] Therefore, the total residential buildout potential for the City of Davis city limits is 28,100. It should be noted that this figure does not include potential residential unit increases that may occur from redevelopment of existing developed properties not currently anticipated or projected for redevelopment.

Non-Residential Projections

The non-residential buildout projections within Davis city limits shown in Table 5-1 below is based upon Costar data, as well as Department of Community Development and Sustainability input.[4] The total amount of non-residential development within the City of Davis is as follows:

Table 5-1
Existing Davis Commercial Development, as of June, 2015

Building Type	Square Footage	Acreage
Office/Flex	2,331,393	379.5
Industrial	678,770	114.6
Retail	2,196,749	227.6
General Commercial	1,154,353	220.8
Total	6,361,265	942.5

Source: CoStar Group; BAE, 2015.

A recent May 2015 update of the vacant land analysis performed for the BPLS indicates that that there is approximately 153 net acres remaining in 32 properties, or undeveloped portions of partially-developed properties within the City of Davis, suitable for new research and development/office/flex space.[5] This includes sites that are zoned for office/flex and industrial building types and other commercial sites suitable for business growth.

1 BAE Urban Economics. *Economic Evaluation of Innovation Park Proposals*. July 9, 2015, p. 31, Table 8.

2 *Sacramento Area Council of Governments. SACOG Information Resource Center. City and County Fast Facts. Available at: http://www.sacog.org/infocenter/demographics/datalibrary/. Accessed on June 15, 2015.*

3 Per City of Davis, the 2,231 includes units at The Cannery, plus other currently zoned residential sites. Also assumes yield of 600 additional units from "Green Light" sites identified by 2008 General Plan Steering Committee as having strong potential for housing development.

4 City of Davis Community Development and Sustainability Department. *Business Park Land Stragety Technical Report*. October 27, 2010. pp. 95ff.

5 City Department of Community Development and Sustainability performed this update, using the Business Park Land Strategy technical data as a base.

This vacant land assessment assumes a development intensity range of between 0.26 and 0.35 FAR to reflect realistic future development intensity assumptions. The range's low end reflects a "typical" recent historical development intensity of 0.26 FAR. The range's higher end, 0.35 FAR, represents a realistic "higher intensity" 25-year average with the following considerations in mind:

- Assumption that 0.26 FAR trend may continue in the short term (0-10 years) resulting from market preferences.
- Accommodates assumption of higher intensity development occurring later in the 25-year timeframe.
- Represents a mix of single and two-story buildings
- Appropriately reflects Davis' flex/office market niche
- Represents compatibility with existing scale of Davis built environment

The total non-residential buildout potential for the 32 remaining vacant sites suitable for business growth is shown in Table 5-2 below. As with the residential projections, the figures below do not include potential additional non-residential development that could occur from redevelopment of existing non-residential properties. It is recognized that many non-residential sites in the City could support a higher intensity of development, but the specific location, timing and amount of such development that could occur is too speculative to project.

Table 5-2
Projected Office/Industrial/Commercial Development on Remaining Vacant Land within the City of Davis[1]

BPLS Status	# of Sites	Sum of Parcel Size (net acres)	Sum of Employees @ 0.26 FAR	Sum of Development Potential @ 0.26 FAR in square feet (Hist. Avg.)	Sum of Employees @ 0.35 FAR	Sum of Development Potential @ 0.35 FAR in square feet
Office/Flex & Industrial	21	130.9	3,908	1,357,361	4922	1,694,986
Other Commercial	11	19.9	676	225,040	910	302,938
Grand Total	**32**	**150.8**	**4,584**	**1,582,401**	**5832**	**1,997,924**
Existing Total (from Table 5-1)				**6,361,265**		**6,361,265**
Existing + Projected Total Office/Industrial/Commercial within Davis City Limits at Buildout				**7,943,666**		**8,359,189**

[1] Includes sites zoned for Office/Flex and Industrial, as well as other commercial sites suitable for business growth
Source: City of Davis Department of Community Development and Sustainability, May 2015.

Outside City Limits (Davis IC and Nishi Gateway)

In addition to buildout within the city limits, the cumulative buildout projections for the CEQA Cumulative Scenario of this EIR include the 208-acre Davis IC Project and 46.9-acre Nishi Gateway Project. The buildout projections for these two projects are presented in Tables 5-3 and 5-4 as follows:

Table 5-3
Davis IC Land Use Summary

Land Use	Land Use Area (acres)	Land Use Area (%)	Maximum Allowable Building Area (s.f.)	Potential Types of Buildings and Uses
Innovation Center • Tech offices / R&D, etc.	105.7	52	3,680,000	2 to 6 stories of tech offices, R&D work spaces, incubation spaces for start-ups, large floor plate flex spaces.
• Hotel / conference			200,000	200-room hotel with conference center
• Support retail			120,000	Ancillary employee-oriented retail/supporting services, such as, restaurants, paralegal services, day care
Open Space	85	40	--	Community open space, trails, public areas, plazas, gathering areas, and drainage areas
Roads/Circulation	17.3	8	--	--
Total	**208**	**100**	**4,000,000**	

Table 5-4
Nishi Gateway Land Uses

Land Use Type	Acreage	Total Units	Density	Bicycle Parking Spaces	Vehicle Parking Spaces
Residential: Multi-family Rental	6.9	440 units	60-66 du/ac	840	795
Residential: Multi-family For Sale	4.1	210 units	60 du/ac	420	315
Research and Development (R&D)	60.	325,000 sf	0.41-1.1 FAR	650	820
Surface Parking	13.1	-	-	-	-
Retail	-	20,000 sf	-	-	-
Roads	3.0	-	-	-	-
Creek	3.3	-	-	-	-
Parks and Greenway	6.5	-	-	-	-
Stormwater Detention	4.0	-	-	-	-
Total	**46.9**	**650 residential units 325,000 sf R&D 20,000 sf retail**	**-**	**1,910**	**1,930**

Notes:
FAR = floor area ratio; du = dwelling units; du/ac = dwelling units per acre; sf = square feet
Source: Ascent Environmental, 2014.

Summary

In total, full buildout of the Davis city limits, as well as the Davis IC and Nishi Gateway projects outside of the city limits, is expected to result in the development totals shown in Table 5-5:

Table 5-5
Buildout Projections for "CEQA" Cumulative Scenario
(without MRIC Project)

Location	Residential	Commercial/Retail (sf)	Office/Business Park and Industrial (sf)
City of Davis City Limits	28,100	3,654,040[1]	4,705,149[1]
Davis IC	N/A	320,000	3,680,000
Nishi Gateway	650	20,000	325,000
Totals	**28,750**	**3,994,040**	**8,710,149**

[1] Assumes higher FAR of 0.35 from Table 5-2.

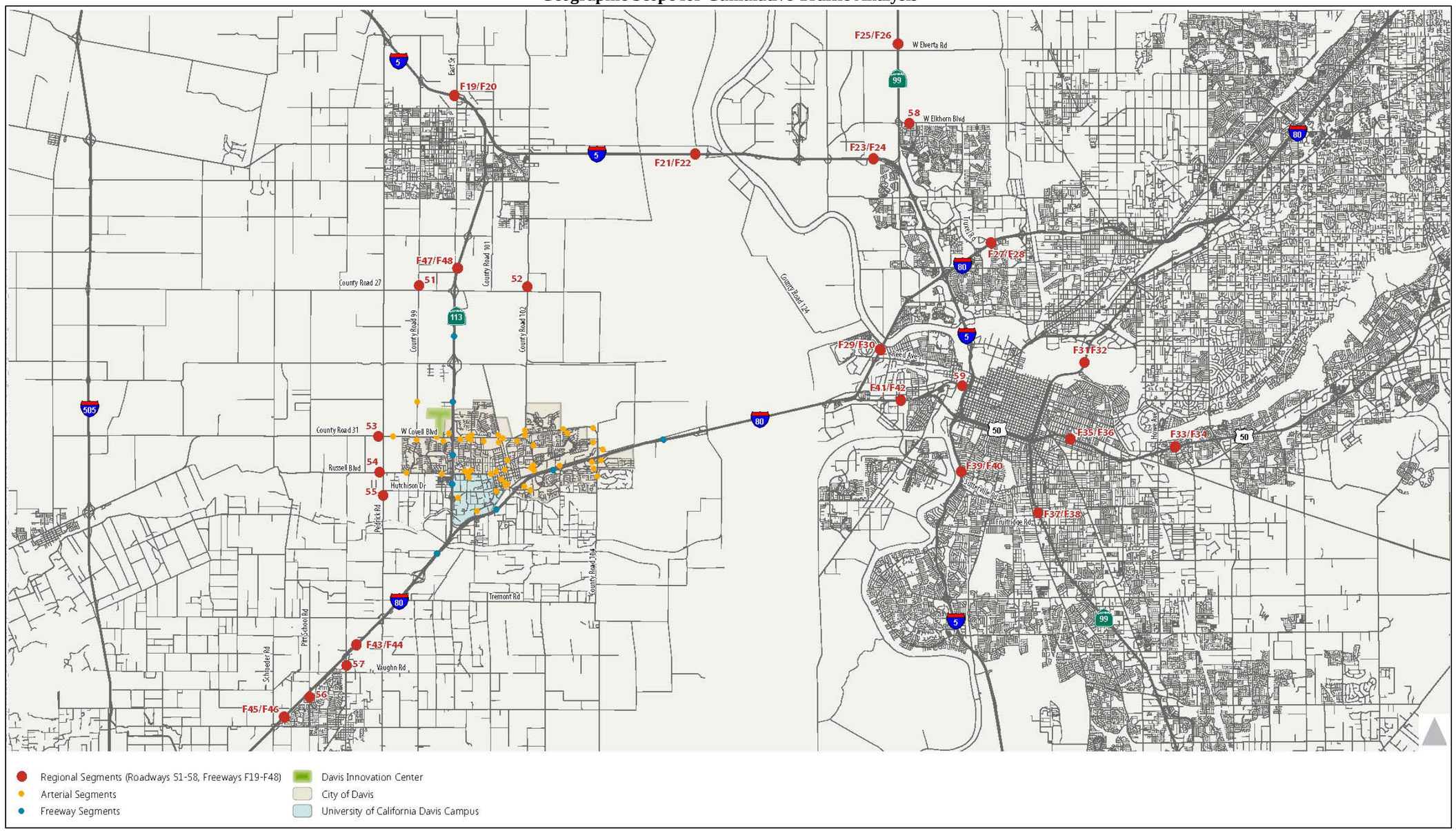
Traffic

The traffic analysis includes both the "local study area" consisting of roadway and freeway segments within and adjacent to the City of Davis and the "regional study area", which extends beyond the local traffic study area to ensure that roadway and freeway segments that could potentially be subject to substantial volume growth associated with the project are included in the analysis (see Figure 5-2). The scope of the regional analysis was selected based on a comparison of the With Project and No Project traffic volumes assuming cumulative conditions, using the SACMET Regional Travel Demand Model, which covers the counties of Sacramento, Sutter, Yolo and Yuba, as well as portions of Placer and El Dorado counties. For locations to the southwest in Solano County, outside the SACMET model area, volumes were estimated using the I-80 volume at the western gateway to the model area just west of Pedrick Road, and apportioning the project volumes to candidate roadways using the socioeconomic data regarding residences of Davis area employees in the BAE memo Economic Evaluation of Innovation Park Proposals (May 11, 2015). Representative segments of freeways and major arterials where the volume difference exceeded approximately 50 vehicles were selected. This scoping methodology results in an analytical commute shed for the project of an appropriate size to capture potentially significant cumulative impacts.

Air Quality

The geographic context for the cumulative air quality analysis includes the City of Davis and surrounding areas within the Sacramento Valley Air Basin (SVAB) that are designated nonattainment for ozone and particulate matter (PM).

Figure 5-2
Geographic Scope for Cumulative Traffic Analysis



Scope of "Modified" Cumulative Scenario

The City, at the request of the applicant, has chosen to explore the impacts associated with an alternative cumulative analysis that does not assume approval of both proposed Innovation Centers. In this modified or alternative cumulative scenario, the Davis IC is removed from the analysis. All other methodology and assumptions are the same as those described above for the CEQA-required cumulative effects analysis. The effects of this modified cumulative analysis are disclosed below for each CEQA impact topic area under the header "Modified Cumulative Scenario". The total buildout projections for the Modified Cumulative Scenario are shown in Table 5-6.

Table 5-6
Buildout Projections for "Modified" Cumulative Scenario (without MRIC Project)

Location	Residential	Commercial/Retail (sf)	Office/Business Park and Industrial (sf)
City of Davis City Limits	28,100	3,654,040[1]	4,705,149[1]
Nishi Gateway	650	20,000	325,000
Totals	**28,750**	**3,674,040**	**5,030,149**

[1] Assumes higher FAR of 0.35 from Table 5-2.

5.3 CUMULATIVE IMPACT ANALYSIS

The technical sections of this EIR (Sections 4.1 through 4.15) describe the Environmental Setting, Regulatory Context, Standards of Significance, and project-specific Impacts and Mitigation Measures, while the Cumulative Impacts Chapter of the EIR includes cumulative analyses for each corresponding impact section.

AESTHETICS AND VISUAL RESOURCES (SEE SECTION 4.1)

Some types of impacts to aesthetic resources are localized and not cumulative in nature. For example, the creation of glare or shadows at one location is not worsened by glare or shadows created at another location. Rather these effects are independent, and the determination as to whether they are adverse is specific to the project and location where they are created. Projects that block a view or affect the visual quality of a site also have localized aesthetic impacts. The impact occurs specific to a site or area and remains independent from another project elsewhere that may block a view or degrade the visual environment of a specific site.

There are two types of aesthetic impact that may be additive in nature and thus cumulative, night sky lighting and overall changes in the visual environment as the result of increasing urbanization of large areas. As development in one area increases and possibly expands over time, and meets or connects with development in an adjoining ex-urban area, the effect of night sky lighting experienced outside of the region may increase in the form of larger and/or more intense nighttime glow in the viewshed.

Similarly, as development in one area changes from rural to urban, and this pattern continues to occur throughout the undeveloped areas of a jurisdiction, the changes in visual character may become additive and cumulatively considerable. The proposed project's incremental contribution to night sky lighting and changes in visual character of the City of Davis are addressed below.

5-1 Cumulative impacts related to long-term changes in visual character of the region. Based on the analysis below and the lack of feasible mitigation, the impact is *cumulatively considerable* and *significant and unavoidable*.

CEQA Cumulative Scenario

As noted in Impact 4.1-2 of Section 4.1, Aesthetics and Visual Resources, the proposed project would include up to approximately 2,654,000 sf of innovation center uses, approximately 64.6 acres of green space, and annexation of the Mace Triangle site. The undeveloped portion of the Mace Triangle is proposed for development but not as a part of the MRIC. As a part of the MRIC application, the City has prepared a proposed PPD Ordinance that would apply only to the three Mace Triangle parcels. Per the PPD, the Ikeda parcel and other agricultural parcel would be designated General Commercial to allow for the continuation or expansion of the existing agricultural retail (Ikedas market) and/or for the development of up to 71,056 sf of new commercial uses.[6]

Impacts to changes in visual character resulting from development of the MRIC and the undeveloped Mace Triangle properties would combine with related impacts resulting from development of the Davis IC Project, the Nishi Gateway Project, and buildout of vacant lands within the city limits per their Davis General Plan land use designations. Additional urban development on vacant land within the city limits would not represent the same magnitude of visual change because this development would occur within in-fill areas, generally surrounded by urban uses that limit views through the sites. However, development of the Nishi Gateway, Davis IC, MRIC and Mace Triangle Sites,[7] totaling approximately 479 acres, would alter open space views, which are visible from surrounding developed areas, and contrast with the surrounding open space/agricultural environments. The combined effects of cumulative development on approximately 479 acres of open space/agricultural land on the periphery of the city limits would lead to a significant cumulative impact with respect to changes in visual character within the cumulative geographic setting. The MRIC's and Mace Triangle's incremental contribution toward this significant cumulative impact would be approximately 224 acres, which would be ***cumulatively considerable***.

[6] The City property (i.e., Park-and-Ride lot) would be designated Public-Semi-Public to allow for the continuation of existing uses. No new uses are proposed.

[7] This estimate does not include the acreage for the City Park-and-Ride lot portion of the Mace Triangle Site because it is already developed.

Mitigation Measure(s)
None available.

Buildout of the MRIC and the undeveloped portions of the Mace Triangle would combine with other development to represent a significant change in the visual character of the cumulative geographic context. Although compliance with the City's General Plan policies and the MRIC Design Guidelines would help to minimize impacts, feasible mitigation measures are not available to reduce impacts associated with the cumulative change in the existing visual character or quality of the project site from project development to a less-than-significant level. Therefore, the impact would remain *cumulatively considerable* and *significant and unavoidable*.

Modified Cumulative Scenario

Impacts to changes in visual character resulting from development of the MRIC and the undeveloped Mace Triangle properties would combine with related impacts resulting from development of the Nishi Gateway Project and buildout of vacant lands within the city limits per their Davis General Plan land use designations. Additional urban development on vacant land within the city limits would not represent the same magnitude of visual change because this development would occur within in-fill areas, generally surrounded by urban uses that limit views through the sites. However, development of the Nishi Gateway, MRIC, and Mace Triangle Sites,[8] totaling approximately 271 acres, although less than the CEQA Cumulative Scenario as discussed above, would still alter open space views, which are visible from surrounding developed areas, and contrast with the surrounding open space/agricultural environments. The combined effects of cumulative development on approximately 271 acres of open space/agricultural land on the periphery of the city limits, although less than under the CEQA Cumulative Scenario, would lead to a significant cumulative impact with respect to changes in visual character within the cumulative geographic setting. The MRIC's and Mace Triangle's incremental contribution toward this significant cumulative impact would be approximately 224 acres, which would be ***cumulatively considerable***.

Mitigation Measure(s)
None available.

Although compliance with the City's General Plan policies and the MRIC Design Guidelines would help to minimize impacts, feasible mitigation measures are not available to reduce impacts associated with the cumulative change in the existing visual character or quality of the project site from project development to a less-than-significant level. Therefore, the impact would remain *cumulatively considerable* and *significant and unavoidable*.

[8] This estimate does not include the acreage for the City Park-and-Ride lot portion of the Mace Triangle Site because it is already developed.

5-2 Cumulative impacts related to the creation of new sources of light or glare associated with development of the proposed project in combination with future buildout in the City of Davis. Based on the analysis below and with implementation of mitigation, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario

MRIC

Cumulative effects of lighting are visible over a wide area, due to the potential for lighting from a number of projects to create sky glow. The MRIC and undeveloped portions of the Mace Triangle do not have night time lighting under existing conditions, and do not presently contribute to skyglow in the area. As described in Impact 4.1-3, the MRIC would introduce new lighting sources at the project site; however, these fixtures would comply with City lighting design requirements, which would ensure that the MRIC would not create an adverse sky glow condition.

Specifically, the City's Outdoor Lighting Control standards have been designed to "…minimize light pollution, glare, and light trespass caused by inappropriate or misaligned light fixtures, while improving nighttime public safety, utility, and security, and *preserving the night sky as a natural resource and thus people's enjoyment of looking at the stars* (emphasis added).[9] To this end, the City requires all outdoor light fixtures, maintained upon private property used for commercial, industrial, or multifamily purposes, to be fully shielded. In addition, light trespass and glare shall be limited to a reasonable level through the use of shielding, and directional lighting methods, including, but not limited to, fixture location and height. Consistency with the City's Municipal Code would be ensured during the design permit and architectural review process, and implementation of Mitigation Measure 4.1-3, which requires the applicant to submit a lighting plan to the Community Development and Sustainability Department for review and approval, showing compliance with shielding and directional lighting standards included in the City's Outdoor Lighting Control ordinance.

The MRIC Design Guidelines are consistent with the City's Outdoor Lighting Control standards, in that they require exterior lighting throughout the project site to be designed and selected to provide appropriate light levels to reduce long-range visibility of night lighting with full cut off fixture designs. Therefore, the project would not have a considerable contribution to sky glow such that a new significant cumulative sky glow impact would occur.

[9] Davis Municipal Code, Chapter 8, Buildings, Article 8.17, Outdoor Lighting Control. Accessible at: http://qcode.us/codes/davis/.

Mace Triangle

The Mace Triangle properties currently contain a City-owned water tank, Ikedas Market, and a Park-and-Ride lot. Entitlements for the Mace Triangle include Annexation and Prezoning, General Plan Amendment, and a Preliminary Planned Development (PPD). The intent of the PPD would be to allow the continuation of existing uses, while recognizing the potential for additional urban development on the Ikedas parcel and adjacent agricultural parcel. As such, implementation of development on the undeveloped portions of the Mace Triangle, in combination with other reasonably foreseeable projects in the City of Davis, could introduce new sources of light and glare to the project area in the future. However, should an applicant propose development of the Mace Triangle in the future, any lighting would be subject to Article 8.17, Outdoor Lighting Control, of the Davis Municipal Code.

Other Cumulative Development

Other development on vacant lands within the Davis city limits, as well as the Davis IC and Nishi Gateway sites, would be required to comply with the City's Outdoor Lighting Control standards, which would ensure that each project's individual contribution to the sky glow effect would be minimized to less than cumulatively considerable.

Conclusion

While the proposed project's effects related to new sources of light and glare, in combination with related effects of other cumulative development, would be significant, the project's contribution to this significant cumulative impact will be rendered ***less than cumulatively considerable*** through its compliance with City Code requirements and the mitigation measures set forth in this EIR.

Mitigation Measures

MRIC and Mace Triangle

5-2 Implement Mitigation Measure 4.1-3.

Implementation of the above mitigation measure would ensure that the proposed project's incremental contribution to cumulative impacts related to new sources of light and glare is reduced to *less than cumulatively considerable*.

Modified Cumulative Scenario

As discussed above and described in Impact 4.1-3 of this EIR, the MRIC would introduce new lighting sources at the project site; however, these fixtures would comply with City lighting design requirements, which would ensure that the MRIC would not create an adverse sky glow condition. In addition, because the MRIC Design Guidelines would be consistent with the City's Outdoor Lighting Control standards, which require exterior

lighting to be designed and selected to provide appropriate light levels to reduce long-range visibility of night lighting with full cut off fixture designs, the MRIC would not have a considerable contribution to sky glow such that a new significant cumulative sky glow impact would occur.

As discussed above, implementation of development on the undeveloped portions of the Mace Triangle, in combination with other reasonably foreseeable projects in the City of Davis, could introduce new sources of light and glare to the project area in the future. However, should an applicant propose development of the Mace Triangle in the future, any lighting would be subject to Article 8.17, Outdoor Lighting Control, of the Davis Municipal Code. Similarly, development on vacant lands within the City, including the Nishi Gateway site, would be subject to the same standards. Compliance with the City's Outdoor Lighting Control standards would ensure that each project's individual contribution to the sky glow effect would be minimized to a less that is not considered cumulatively considerable.

Therefore, although the project's effects related to new sources of light and glare, in combination with related effects of other cumulative development, would be significant, the project's contribution to the significant cumulative impact would be ***less than cumulatively considerable*** due to compliance with City Code requirements and the mitigation measures set forth in this EIR.

Mitigation Measures

MRIC and Mace Triangle

5-2 Implement Mitigation Measure 4.1-3.

Implementation of the above mitigation measure would ensure that the proposed project's incremental contribution to cumulative impacts related to new sources of light and glare is reduced to *less than cumulatively considerable.*

AGRICULTURE AND FOREST RESOURCES (SEE SECTION 4.2)

5-3 Impacts related to cumulative loss of agricultural land. Based on the analysis below and the lack of feasible mitigation, the impact is *cumulatively considerable* and *significant and unavoidable*.

CEQA Cumulative Scenario

Annexation of the approximately 229-acre project site and redesignation of the property for urban development would result in the conversion of agricultural land, requiring mitigation per City of Davis Municipal Code requirements. At a 2:1 mitigation ratio, on- and off-site impacts associated with development of the MRIC will require approximately 406 acres of agricultural land mitigation (384 for MRIC and up to a maximum of approximately 22 acres for off-site sewer line, depending upon the final

alignment selected); and development of the agricultural portions of the Mace Triangle will require approximately 22 acres[10].

Development of other cumulative projects, such as the 208-acre Davis IC Project and 47-acre Nishi Gateway Project, the sites of which are primarily active agricultural sites, would result in related impacts associated with conversion of farmland. The combined effects of this cumulative development scenario would lead to a significant cumulative impact on agricultural resources within the cumulative geographic setting. This conclusion is consistent with the Davis General Plan EIR, which concluded that conversion of farmland associated with potential development of a new junior high school on several prospective sites would be significant and unavoidable. Among the sites evaluated in the GP EIR for the new junior high school were the Covell site; Nishi Gateway Site; Oeste Campus, which includes a portion of the Davis IC site; and the Signature Site (below Mace curve).[11]

Buildout of the remaining vacant parcels within the city limits would not be expected to result in additive effects related to conversion of agricultural land. Vacant parcels in agricultural use are limited to the horse ranch property; and this property is designated as Agriculture in the City's General Plan. Therefore, conversion of the horse ranch site to urban uses could not occur without a GPA and Measure R approval.

Although the project, in combination with other cumulative development on sites in agricultural use, would be required to set aside agricultural mitigation acreage at a 2:1 ratio (2 acres of agricultural land for every acre impacted), thereby minimizing the effects of agricultural land conversion, the cumulative impact, as well as the project's incremental contribution, would be ***cumulatively considerable***.

Mitigation Measure(s)

MRIC and Mace Triangle

5-3 Implement Mitigation Measures 4.2-1(a) and (b), and 4.2-3(b).

While Mitigation Measures 4.2-1(a) and (b) require the project to set aside two acres of agricultural land for every acre of agricultural land impacted, the result is nevertheless a net loss of agricultural land. Consistent with the Davis General Plan EIR, feasible mitigation measures do not exist to reduce the above impact to a less-than-significant level. Therefore, the impact would remain *cumulatively considerable* and *significant and unavoidable.*

[10] 10.9 acres of undeveloped ag land at a 2:1 ratio per City ordinance.
[11] See Davis General Plan EIR, p. 5A-32.

Modified Cumulative Scenario

As discussed above, the proposed project would result in the conversion of agricultural land, requiring mitigation at a 2:1 ratio (2 acres of agricultural land for every acre impacted), which equates to approximately 406 acres of agricultural land mitigation for the MRIC site (384 for MRIC and up to a maximum of approximately 22 acres for off-site sewer line, depending upon the final alignment selected) and approximately 22 acres for the Mace Triangle[12].

Development of the 47-acre Nishi Gateway Project, which is primarily active agricultural land, would result in related impacts associated with conversion of farmland. Buildout of the remaining vacant parcels within the city limits would not be expected to result in additive effects related to the conversion of agricultural land, as such development would primarily occur within in-fill areas that are not in agricultural use and are surrounded by existing development. Remaining vacant parcels within the city limits are limited in agricultural use to the horse ranch property, which is designated as Agriculture in the City's General Plan; accordingly, conversion of the horse ranch site to urban uses could not occur without a GPA and Measure R approval. Overall, the combined effects of cumulative development, although slightly less under the Modified Cumulative Scenario in comparison to the CEQA Cumulative Scenario, would lead to a significant cumulative impact on agricultural resources within the cumulative geographic setting.

Although the proposed project, in combination with other cumulative development on sites that are currently in agricultural use, would be required to set aside agricultural mitigation acreage at a 2:1 ratio, thereby minimizing the effects of agricultural land conversion, the cumulative impact, as well as the proposed project's incremental contribution, would be ***cumulatively considerable***.

Mitigation Measure(s)

MRIC and Mace Triangle

5-3 Implement Mitigation Measures 4.2-1(a) and (b), and 4.2-3(b).

While Mitigation Measures 4.2-1(a) and (b) require the proposed project to set aside two acres of agricultural land for every acre of agricultural land impacted, the result is nevertheless a net loss of agricultural land. Consistent with the Davis General Plan EIR, feasible mitigation measures do not exist to reduce the above impact to a less-than-significant level. Therefore, the impact would remain *cumulatively considerable* and *significant and unavoidable.*

[12] 10.9 acres of undeveloped ag land at a 2:1 ratio per City ordinance.

AIR QUALITY (SECTION 4.3)

A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development projects. As mentioned above, the geographic context for the proposed project cumulative air quality analysis includes the City of Davis and surrounding areas within the Sacramento Valley Air Basin (SVAB) that are designated nonattainment for ozone and particulate matter (PM).

5-4 A cumulatively considerable net increase of any criteria pollutant. Based on the analysis below, even with mitigation, the impact is *cumulatively considerable* and *significant and unavoidable*.

CEQA Cumulative Scenario

As discussed in detail in the Air Quality section of this EIR, areas not meeting the national ambient air quality standards (NAAQS) for criteria pollutants are designated by the U.S. Environmental Protection Agency (USEPA) as nonattainment. Similarly, areas not meeting the State's established California ambient air quality standards (CAAQS) for criteria pollutants, which are at least as stringent as the NAAQS, are designated nonattainment. At the federal level, the area is designated as severe nonattainment for the 8-hour ozone standard and nonattainment for the 24-hour $PM_{2.5}$ standard. At the State level, the area is designated as a serious nonattainment area for the 1-hour ozone standard, nonattainment for the 8-hour ozone standard, and nonattainment for the PM_{10} and $PM_{2.5}$ standards.

Due to the nonattainment designations, the Yolo-Solano Air Quality Management District (YSAQMD), along with the other air districts in the SVAB region, is required to develop plans to attain the AAQS for ozone and PM, which must show how the area will meet the AAQS by a certain year. As part of the development of attainment plans, the air districts within the nonattainment areas work together to calculate an emissions inventory and future emission projections based on anticipated regional growth in order to determine whether the area would exceed the AAQS in the attainment goal year. Based on the results of the emissions projections, the air districts establish thresholds of significance. Accordingly, the YSAQMD has established mass emissions thresholds of significance for criteria pollutants, which are intended to be the level at which the YSAQMD considers an individual project to have the potential to impede attainment of the AAQS and, thus, the level necessary to reduce regional emissions associated with anticipated future growth to AAQS.

Air pollution is largely a cumulative impact. The SVAB's nonattainment status of ozone and PM is a result of past and present development. Cumulative future development would result in increases in the amount of criteria air pollutants in the ambient air, which would contribute towards the current nonattainment status of the ozone and PM AAQS. Thus, impacts related to cumulative development within the SVAB could be considered cumulatively significant.

As the YSAQMD's mass emissions thresholds of significance for criteria pollutants represent the level at which an individual project has the potential to impede attainment of AAQS, as well as the level necessary to reduce regional emissions associated with anticipated future growth to AAQS, the YSAQMD's approach to determining cumulative air quality impacts from development projects is based on whether a project's individual emissions would exceed the YSAQMD thresholds of significance. If a project's estimated emission would be below the YSAQMD thresholds of significance, the project would not be expected to result in a cumulatively considerable contribution to a significant cumulative impact.

As discussed in Section 4.3, Air Quality, of this EIR, the proposed project would generate criteria air pollutant emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_X), which are ozone precursors, as well as PM emissions, associated with mobile (e.g., from project vehicle trips), stationary (e.g., from large machinery or equipment), area (e.g., from natural gas combustion from heating mechanisms, landscape maintenance equipment exhaust, and consumer products), and energy (e.g., from electricity usage) sources. Thus, the proposed project would contribute towards the current nonattainment status of ozone and PM within the SVAB. As determined in the Air Quality section, even with implementation of the required mitigation measures set forth in this EIR, the proposed project would result in emissions of ROG, NO_X, and PM_{10} in excess of the applicable thresholds of significance at project-level during operations. The majority of the proposed project's operational ROG emissions are associated specifically with consumer products (e.g., deodorants, cleaning products, spray paint, etc.). Even if the proposed project's operational ROG emissions due to all other sources (i.e., mobile and energy sources) were to be reduced to zero tons per year, the proposed project would still result in emissions from consumer products that would exceed the applicable YSAQMD threshold of significance.

As discussed in Section 4.3, possible additional mitigation measures for further reducing consumer product emissions of ROG could include limitations on consumer products at the site (e.g., amounts, types, etc.). The sale, manufacturing, substance control, and content limitation (such as volatile organic compound [VOC] limits) of consumer products are regulated by federal, State, and/or local government agencies. The YSAQMD is charged with local enforcement of regulations regarding consumer products that are associated with effects on air quality. Compliance with consumer product regulations is applicable to the individual consumer product, prior to the sale of such for use by the general public. Thus, any mitigation measures related to limitations on consumer products at the project-level could not be feasibly enforced or verified.

The majority of the proposed project's operational NO_X and PM_{10} emissions are associated with mobile sources. The proposed project's inherent site and/or design features that would contribute to a reduction in vehicle trips and vehicle miles traveled (VMT), such as site enhancements and features that encourage alternative modes of transportation, which subsequently result in mobile source emissions of criteria pollutants including NO_X and PM_{10}, have already been accounted for in the project modeling. Additional measures for the reduction of mobile source emissions, sufficient to reduce

emissions of NO_X and PM_{10} to below the applicable thresholds of significance, are not available or feasible for the proposed project at this time.

Overall, buildout of the proposed project in conjunction with buildout of the General Plan, Davis IC, and Nishi Gateway would result in a substantial increase in regional emissions from what has been anticipated for the area. In addition, the proposed project would exceed the applicable project-level thresholds for ROG and NO_X, which are ozone precursors, as well as for PM_{10}, for which feasible mitigation is not available at this time. Therefore, the proposed project would be considered to contribute to the cumulative air quality impacts in the region, particularly the region's nonattainment status of ozone and PM, and a ***cumulatively considerable*** net increase in emissions would result.

Mitigation Measure(s)

MRIC and Mace Triangle

5-4 Implement Mitigation Measure 4.3-2.

Additional feasible mitigation measures to further reduce the proposed project's operational emissions of ROG, NOx, and PM_{10} to below the applicable threshold of significance are not currently available. Therefore, the above impact would remain *cumulatively considerable* and *significant and unavoidable.*

Modified Cumulative Scenario

As discussed above, the proposed project would result in emissions of ROG, NO_X, and PM_{10} that would exceed the project-level thresholds of significance, even with implementation of mitigation measures. Based on the YSAQMD's approach to determining cumulative air quality impacts from development projects of whether a project's individual emissions would exceed the YSAQMD thresholds of significance, the proposed project is expected to result in a cumulatively considerable contribution to the cumulative impacts, particularly the current nonattainment status of the ozone and PM AAQS.

Although cumulative buildout under the Modified Cumulative Scenario would result in fewer regional emissions than under the CEQA Cumulative Scenario, buildout of the proposed project in conjunction with buildout of the General Plan and Nishi Gateway would still result in a substantial increase in regional emissions from what has been anticipated for the area. Therefore, the proposed project would be considered to contribute to a ***cumulatively considerable*** net increase in emissions.

Mitigation Measure(s)

MRIC and Mace Triangle

5-4 Implement Mitigation Measure 4.3-2.

Additional feasible mitigation measures to further reduce the proposed project's operational emissions of ROG, NOx, and PM_{10} to below the applicable threshold of significance are not currently available. Therefore, the above impact would remain *cumulatively considerable* and *significant and unavoidable.*

BIOLOGICAL RESOURCES (SEE SECTION 4.4)

5-5 Cumulative loss of habitat in the City of Davis area for special-status species. Based on the analysis below, even with mitigation, the impact is *cumulatively considerable* and *significant and unavoidable.*

CEQA Cumulative Scenario

The habitat loss resulting from the proposed project would combine with related impacts resulting from development of the Davis IC Project, the Nishi Gateway Project, and buildout of the city limits per the Davis General Plan. The combined effects of this cumulative development scenario would lead to a significant cumulative impact on habitat loss within the cumulative geographic setting. Buildout of the remaining vacant parcels within the Davis city limits, which are zoned for development, would result in the conversion of approximately 153 acres of habitat to urban uses. Development of the Nishi Gateway Project and Davis IC combined would result in conversion of approximately 255 acres of habitat to urban uses. Development of the proposed project would add an additional approximately 224 acres (212 acres for MRIC and approximately 12 acres for the undeveloped portions of the Mace Triangle) to that, for a cumulative total of approximately 632 acres of habitat converted to urban uses. Therefore, habitat conversion associated with development of the proposed project would constitute approximately 35 percent of the total habitat acreage converted under the CEQA Cumulative Scenario.

In addition, while construction of the proposed project would not be expected to result in *direct* adverse impacts to special-status species (because this EIR includes mitigation measures requiring preconstruction clearance surveys to protect any species occurring on-site), cumulative habitat loss could result in *indirect* adverse effects to the long-term viability of special-status species populations within the region, due to loss of their habitats. Special-status species that could be potentially impacted by development of the proposed project include, special-status plants, valley elderberry longhorn beetle, giant garter snake, burrowing owl, Swainson's hawk, and other raptors and migratory birds. Other cumulative development, such as the Davis IC and Nishi Gateway projects, will similarly be required to conduct preconstruction surveys to avoid adverse impacts to special-status species.

While this EIR requires the applicant to mitigate for the loss of Swainson's hawk foraging habitat resulting from development of the project, and burrowing owl habitat, if owls are found nesting on-site, the value of the region as it relates to the long-term viability of special-status species' habitats would be diminished as a result of project development. As a result, the project's incremental contribution to direct habitat impacts,

and indirect effects to special-status species, would be ***cumulatively considerable***, when viewed in conjunction with other cumulative development.

Mitigation Measure(s)

MRIC

5-5(a) Implement Mitigation Measures 4.4-2, 4.4-3, 4.4-6, 4.4-7, and 4.4-12.

MRIC and Mace Triangle

5-5(b) Implement Mitigation Measures 4.4-1, 4.4-4, 4.4-5, and 4.4-11.

Implementation of the above mitigation measure would reduce the direct impact to habitat loss and the indirect impact to species associated with the proposed project, but not to a less-than-significant level. Therefore, the impact would remain *cumulatively considerable* and *significant and unavoidable.*

Modified Cumulative Scenario

Although the Modified Cumulative Scenario would involve less cumulative development than the CEQA Cumulative Scenario, habitat loss would still occur as a result of the proposed project in combination with development of the Nishi Gateway Project and buildout of the city limits per the Davis General Plan. The combined effects of this cumulative development scenario would lead to a significant cumulative impact on habitat loss within the cumulative geographic setting. Buildout of the remaining vacant parcels within the Davis city limits, which are zoned for development, would result in the conversion of approximately 153 acres of habitat to urban uses. Development of the Nishi Gateway Project would result in conversion of approximately 47 acres of habitat to urban uses. Development of the proposed project would add an additional approximately 224 acres (212 acres for MRIC and approximately 12 acres for the undeveloped portions of the Mace Triangle) to that, for a cumulative total of approximately 424 acres of habitat converted to urban uses. Therefore, habitat conversion associated with development of the proposed project would constitute approximately 53 percent of the total habitat acreage converted under the Modified Cumulative Scenario.

In addition, while construction of the proposed project would not be expected to result in *direct* adverse impacts to special-status species (because this EIR includes mitigation measures requiring preconstruction clearance surveys to protect any species occurring on-site), cumulative habitat loss could result in *indirect* adverse effects to the long-term viability of special-status species populations within the region, due to loss of their habitats. Special-status species that could be potentially impacted by development of the proposed project include: special-status plants, valley elderberry longhorn beetle, giant garter snake, burrowing owl, Swainson's hawk, and other raptors and migratory birds. Other cumulative development, such as the Nishi Gateway Project, will similarly be

required to conduct preconstruction surveys to avoid adverse impacts to special-status species.

While this EIR requires the applicant to mitigate for the loss of Swainson's hawk foraging habitat resulting from development of the project, and burrowing owl habitat, if owls are found nesting on-site, the value of the region as it relates to the long-term viability of special-status species' habitats would be diminished as a result of project development. As a result, the project's incremental contribution to direct habitat impacts, and indirect effects to special-status species, would be ***cumulatively considerable***, when viewed in conjunction with other cumulative development.

Mitigation Measure(s)

MRIC

5-5(a) Implement Mitigation Measures 4.4-2, 4.4-3, 4.4-6, 4.4-7, and 4.4-12.

MRIC and Mace Triangle

5-5(b) Implement Mitigation Measures 4.4-1, 4.4-4, 4.4-5, and 4.4-11.

Implementation of the above mitigation measure would reduce the direct impact to habitat loss and the indirect impact to species associated with the proposed project, but not to a less-than-significant level. Therefore, the impact would remain *cumulatively considerable* and *significant and unavoidable.*

5-6 Cumulative impacts to movement corridors in the City of Davis area. Based on the analysis below, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario

Development of the proposed project would result in the conversion of approximately 224 acres of agricultural land to a largely urban environment. This is comprised of 212 acres for MRIC and approximately 12 acres for the undeveloped portions of the Mace Triangle. However, a portion of the 224 acres would remain undeveloped, and could continue to serve as a movement corridor for special-status and otherwise common wildlife species. Specifically, the project is required, per City of Davis ordinance, to include a 20.1-acre buffer around the MRIC's northern and eastern perimeter. This agricultural buffer will include wildlife friendly vegetation and will continue to enable movement of wildlife through the site. Therefore, the project's incremental contribution toward elimination of movement corridors would be less than cumulatively considerable.

Similar to the proposed project, other cumulative development, the sites of which may currently contain wildlife movement corridors, (i.e., both the Davis IC and Nishi Gateway projects) will be required, per City ordinance, to include agricultural buffers that would continue to facilitate any wildlife movements through the sites.

In conclusion, the project's contribution to this significant cumulative impact would be rendered ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

Modified Cumulative Scenario

Development of the proposed project would result in the conversion of approximately 224 acres of agricultural land to a largely urban environment. This is comprised of 212 acres for MRIC and approximately 12 acres for the undeveloped portions of the Mace Triangle. However, a portion of the 224 acres would remain undeveloped, and could continue to serve as a movement corridor for special-status and otherwise common wildlife species. Specifically, the project is required, per City of Davis ordinance, to include a 20.1-acre buffer around the MRIC's northern and eastern perimeter. This agricultural buffer will include wildlife friendly vegetation and will continue to enable movement of wildlife through the site. Therefore, the project's incremental contribution toward elimination of movement corridors would be less than cumulatively considerable.

Similar to the proposed project, other cumulative development, the sites of which may currently contain wildlife movement corridors, (i.e., the Nishi Gateway Project) will be required, per City ordinance, to include agricultural buffers that would continue to facilitate any wildlife movements through the sites.

In conclusion, the project's contribution to this significant cumulative impact would be rendered ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

CULTURAL RESOURCES (SEE SECTION 4.5)

5-7 Cumulative loss of cultural resources. Based on the analysis below and with implementation of mitigation, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario and Modified Cumulative Scenario

The effect of implementation of the proposed project on cultural resources is analyzed in Section 4.5 of this Draft EIR. While some cultural resources may have regional significance, the resources themselves are site-specific, and impacts to them are project-specific. For example, impacts to a subsurface archeological finds at one project site are generally not made worse by impacts from another project to a cultural resource at another site. Rather the resources and the effects upon them are generally independent. A possible exception to this would be a cultural resource that represents the last known example of its kind or is part of larger cultural resources such as a single building along an intact historic Main Street. For such a resource, cumulative impacts, and the

contribution of the proposed project to them, may be cumulatively significant. Such is not the case for the proposed project. The site-specific cultural resources analysis identified only one historic-era resource within the area of potential effect for the project. This historic-era resource, a farmstead, does not represent the last known example of its kind, nor is it part of larger cultural resources. Furthermore, implementation of Mitigation Measure 4.5-1 in Section 4.5 would minimize impacts to this resource to a less-than-significant level.

With respect to archeological resources, the EIR determined that only the northwestern corner of the MRIC site, and the northerly sewer alignment, are sensitive for buried prehistoric resources. Mitigation Measure 4.5-2 requires protection of archaeological resources should any be found during construction.

Because the proposed project would implement site-specific mitigation consistent with the California Health and Safety Code and the California Public Resources Code, and impacts to any historic or archaeological resources associated with the site would be site-specific, the project's incremental contribution towards the cumulative impact to cultural resources would be ***less than cumulatively considerable***.

Mitigation Measure(s)

MRIC

5-7(a) Implement Mitigation Measure 4.5-1.

MRIC and Mace Triangle

5-7(b) Implement Mitigation Measure 4.5-2.

Implementation of the above mitigation measure would ensure that the project's incremental contribution to cumulative cultural resources impacts is reduced to *less than cumulatively considerable*.

GEOLOGY, SOILS, AND MINERAL RESOURCES (SEE SECTION 4.6)

5-8 Cumulative increase in the potential for geological related impacts and hazards. Based on the analysis below, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario and Modified Cumulative Scenario

Impacts to geology, soils, seismicity, and mineral resources, related to implementation of the proposed project are analyzed in Section 4.6 of this EIR. While some geologic features may affect regional construction practices, such as seismicity or soil elasticity, impacts and mitigation measures are site-specific and project-specific. For example, impacts resulting from development on expansive soils or undocumented fill at one project site are not worsened by impacts from development on expansive soils or

undocumented fill at another project site. Rather, the soil conditions, and the implications of those conditions for each project, are independent.

As such, the potential for cumulative impacts related to geology, soils, seismicity and mineral resources, to which implementation of the proposed project might contribute, is ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

GREENHOUSE GAS EMISSIONS AND ENERGY (SEE SECTION 4.7)

Cumulative Setting for GHG

Global climate change is, by nature, a cumulative impact; however, the project's effects on global climate change have been addressed within this EIR as project-specific impacts (see Section 4.7, Greenhouse Gas Emissions and Energy). Emissions of GHG contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change (e.g., sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts). A single project could not generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from a project in combination with other past, present, and future projects contribute substantially to the world-wide phenomenon of global climate change and the associated environmental impacts. Although the geographical context for global climate change is the Earth, for analysis purposes under CEQA and due to the regulatory context pertaining to GHG emissions and global climate change applicable to the proposed project, the geographical context for global climate change in this EIR is limited to the State of California.

Cumulative Setting for Energy

Each incremental increase in the demand and consumption of non-renewable resources contributes indirectly to the generation of GHG emissions and, subsequently, to global climate change. The main forms of energy supply are electricity, natural gas, and oil. The City of Davis is currently supplied energy (electricity and natural gas) by the Pacific Gas and Electric Company (PG&E). Thus, specifically for the proposed project, the cumulative setting for electricity and natural gas would be the planning area of PG&E. The U.S. obtains crude oil from foreign suppliers, Alaska, and California. Accordingly, the cumulative setting for oil, including gasoline and diesel fuel, would be considered the entire nation, and, to a lesser extent, the State of California. Factors that affect the demand for energy resources include population growth, energy price, weather, and availability of alternative energy options. With any increase in population, demands on energy resources would be expected to subsequently increase. As such, similar to global climate change, increases in demand on energy resources is attributable to every nation, region, and city, and virtually every individual on Earth. Thus, the determination of whether an individual project's incremental contribution towards an overall increase in demand for energy supplies under a cumulative development condition (i.e., buildout of the General Plan,

Davis IC, and Nishi Gateway) would be significant is reliant upon whether a project would result in an inefficient, wasteful, and unnecessary consumption of energy.

5-9 Cumulative impacts related to greenhouse gas (GHG) emissions and global climate change. Based on the analysis below, even with mitigation, the impact would be *cumulatively considerable* and *significant and unavoidable*.

CEQA Cumulative Scenario and Modified Cumulative Scenario

As mentioned above, global climate change is, by nature, a cumulative impact. The cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on Earth. Accordingly, the analysis of GHG emissions generated by the proposed project and the associated contribution towards global climate change, as addressed in detail in Section 4.7, Greenhouse Gas Emissions and Energy, of this EIR, is inherently a cumulative impact analysis. Emissions of GHG contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change. A single project on its own could not generate enough GHG emissions to result in any noticeable changes in climatic conditions such as the global average temperature. Although, a project's GHG emissions are at a micro-scale relative to global emissions, a project's GHG emissions could result in a cumulatively considerable incremental contribution to the world-wide phenomenon of global climate change and the associated significant cumulative macro-scale environmental impacts when combined with GHG emissions of other past, present, and future projects.

Based on the cumulative nature of global climate change, emissions from a project must be considered in the context of that project's contribution to cumulative global GHG emissions. According to the analysis in Section 4.7, the proposed project would result in a substantial increase in GHG emissions from existing levels associated with the site. In addition, the proposed project's GHG emissions would exceed the recommended YSAQMD thresholds of significance, and would not meet the State's GHG emissions reduction target of reaching 1990 GHG levels by 2020 (consistent with AB 32), 40 percent below 1990 levels by 2030 (consistent with EO B-30-15), or 80 percent below 1990 levels by 2050 (consistent with EO S-03-05). The proposed project's GHG emissions would also not meet the more stringent desired reduction targets of the Davis CAAP.

Implementation of Mitigation Measures 4.3-2 and 4.14-6 of this EIR would reduce the proposed project's operational GHG emissions sufficient to meet the State and City 2020 reduction targets, but not sufficient to meet the other State or City reduction goals. Mitigation Measures 4.7-2(a) and (b) are intended to be consistent with the intent of the statewide and City's CAAP goals, which require GHG emission reductions by a greater, increasing percentage over time. With implementation of the additional mitigation measures, the proposed project is anticipated to also achieve the State 2030 reduction goal.

The State and the City would continue to develop programs for the reduction of local, regional, and statewide GHG emissions in order to meet GHG emission reduction goals per State and City standards and regulations. As such, although implementation of the mitigation measures required in this EIR alone cannot be shown to reduce project GHG emissions to net zero by 2050, the mitigation measures would ensure that the project would contribute to the overall downward trajectory of local GHG emissions to the year 2050.

In addition, the regulatory environment associated with climate change is becoming more stringent and technological advancements for the reduction of GHG emissions are ever-evolving. Based on recent developments, the regulatory environment associated with climate change has a high level of effect on land-use-related GHG emissions. Accordingly, the future regulations that may be in place in the year 2050 could substantially reduce project emissions at that time, but are currently unknown and cannot be reasonably predicted or quantified. Due to such regulatory uncertainties, as well as uncertainties related to the actual buildout of the proposed project and potential GHG emissions reductions due to sustainability features of the project, the full GHG reductions associated with such would be speculative to identify at this time. For this reason, and because the proposed project's GHG emissions cannot be shown to be reduced to net zero by 2050 with any certainty at this time, the proposed project's GHG emissions would be ***cumulatively considerable***.

Mitigation Measure(s)

MRIC

5-9(a) Implement Mitigation Measure 4.7-2(b).

MRIC and Mace Triangle

5-9(b) Implement Mitigation Measure 4.7-2(a).

Implementation of the above mitigation measures would reduce the GHG emissions associated with the proposed project, but not to a less-than-significant level. Therefore, the impact would remain *cumulatively considerable* and *significant and unavoidable.*

5-10 Cumulative impacts related to energy. Based on the analysis below, the impact is *less than cumulatively considerable.*

CEQA Cumulative Scenario and Modified Cumulative Scenario

California leads the nation in renewable energy generation growth and encouragement of alternatively-fueled and hybrid vehicles. State-specific regulations encourage energy efficiency and reduction of energy consumption. One of the regulations the State has adopted is the CALGreen Code, including the California Building Energy Efficiency Standards Code, which require building standards that encourage energy efficiency for all

new development and redevelopment projects within the State. The Building Energy Efficiency Standards focus on several key areas to improve the energy efficiency and include requirements to enable both demand reductions during critical peak periods and future solar electric and thermal system installations. The State standards are intended to help reduce global climate change and cumulative energy consumption. In addition, the Davis CAAP includes objectives for mobility and energy within the City with priorities to reduce VMT, improve efficiency of the transportation network, improve energy efficiency of the vehicle fleet, reduce the carbon content of fuels through the use of alternative fuels, strengthen energy efficiency requirements, develop local solar farms, and develop a renewable energy production plan to meet community electricity needs. As the City implements the CAAP objectives, the overall City's energy consumption will decline.

Overall, buildout of the proposed project in conjunction with buildout of the city limits per adopted General Plan land use designations, the Davis IC, and the Nishi Gateway Project would contribute to an increase in energy usage and consumption from current levels; thus, an increase in demand for energy resources and supplies would occur, which would represent a commitment of non-renewable resources and the irreversible consumption of energy. However, the proposed project, as well as each future development project within the City, would be required to comply with all applicable standards and regulations regarding energy conservation and fuel efficiency in place at the time of approval and/or development. Regulations regarding energy and fuel efficiency continue to become more and more stringent at the federal, State, and local levels. Technological advancements continue to be researched and could, once developed, change the outlook on available alternative energy resources, demand reductions, and overall energy and fuel efficiency regulations. Compliance with existing and future regulations, and development of technological advancements, would help to ensure that an inefficient, wasteful, or unnecessary usage of energy would not occur.

As discussed in Section 4.7, Greenhouse Gas Emissions and Energy, of this EIR, the MRIC portion of the proposed project includes a number of sustainability features that would reduce the overall project's energy usage. Some of the features, such as LEED certification and use of on-site solar or other alternative energy supplies would substantially reduce project-specific energy demands on PG&E supplies. For example, the MRIC applicant has committed to providing on-site energy generation and energy conversion systems, which may include solar photovoltaic production and heat transfer technologies, to supply and/or supplant a minimum of 50 percent of the electrical energy requirements of the MRIC. Mitigation Measure 4.7-4 further requires high energy consuming data centers within the MRIC to implement energy management principles, aimed at minimizing energy use.

Overall, because the proposed project would not result in a wasteful, inefficient, or unnecessary usage of energy and would include measures to reduce project energy usage, the proposed project's incremental contribution to cumulative impacts on energy would be considered ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

HAZARDS AND HAZARDOUS MATERIALS (SEE SECTION 4.8)

5-11 Increase in the number of people who could be exposed to potential hazards or hazardous materials and an increase in the transport, storage, and use of hazardous materials due to development of the proposed project in combination with future buildout in the City of Davis. Based on the analysis below, the impact is ***less than cumulatively considerable.***

CEQA Cumulative Scenario and Modified Cumulative Scenario

Impacts associated with hazards and hazardous materials related to implementation of the proposed project are analyzed in Section 4.7 of this EIR. All project-specific impacts related to hazards and hazardous materials were found to be less-than-significant with implementation of mitigation measures set forth in Section 4.7 of this EIR. Hazardous materials and other public health and safety issues are generally site-specific and/or project-specific, and would not be significantly affected by other development inside or outside of the City. Other cumulative development would be subject to the same federal, State, and local hazardous materials management requirements as would the proposed project, which would minimize potential risks associated with increased hazardous materials use in the community.

In conclusion, the contribution of the proposed project to cumulative impacts related to hazards and hazardous materials would be ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

HYDROLOGY AND WATER QUALITY (SEE SECTION 4.9)

5-12 Cumulative impacts associated with increases in volume runoff and effects to on- and off-site flooding within the City of Davis planning area. Based on the analysis below and with implementation of mitigation, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario

Development of the proposed project, the Davis IC, and other cumulative development within the surrounding principal watersheds that drain to Willow Slough and the Yolo Bypass, will lead to the combined effects of increasing runoff volumes and rates. This could lead to increases in low-level ponding west of the Bypass levee when water levels in the Willow Slough and Yolo Bypass are high. The City considers increases in ponding on off-site properties, as a result of project development, a significant effect. Therefore, the combined runoff effects of the proposed project, along with other cumulative

development in the watersheds draining to Willow Slough and the Yolo Bypass, would be considered significant.

As shown in Table 5-7, the combined development of the Davis IC and proposed project results in a range of increases in WSEs and inundation areas, as follows:

> The largest increase in flood WSE and inundation area are 0.52 feet and 121.8 acres.
>
> For 100-year and 200-year flood levels, the increase in flood WSEs is less than 0.03 feet and the increase in inundation area is less than 7.2 acres.

As is expected, the combined volumes of the proposed project and Davis IC Projects would lead to greater downstream WSEs and inundation areas at the land side of the Yolo Bypass levee during heavy storm events when flows in Willow Slough and the Yolo Bypass are high. However, each project will be required to mitigate its individual incremental increase in volume (as well as peak flow rate increase), so as to ensure that increases in ponding on off-site properties does not occur as a result of cumulative development. With implementation of Mitigation Measures 4.9-1(a) through 4.9-1(c) of the Hydrology and Water Quality section, the project's incremental contribution to cumulative hydrology impacts would be considered ***less than cumulatively considerable***.

Mitigation Measure(s)

MRIC and Mace Triangle

5-12 Implement Mitigation Measures 4.9-1(a) through 4.9-1(c).

Implementation of the above mitigation measure would ensure that the project's incremental contribution to cumulative hydrology impacts is *less than cumulatively considerable.*

Table 5-7
Increases in Flood WSE and Inundation Areas West of the Yolo Bypass Due to Development of the Davis IC, MRIC, and Mace Triangle

Local Storm	Predevelopment WSE, ft,NAVD88	Predevelopment Flooded Area, acres	Predevelopment Flooded Volume, ac- ft	Increase in Volume of Runoff from Development (from Table 1), ac-ft	Post Development Flooded Volume, ac-ft	Post Development WSE, ft, NAVD88	Development Related Increase in WSE, ft, NAVD88	Post Development Flooded Area, acres	Development Related Increase in Flooded Area, acres
Lowest Flood Water Level (WSE = 17 feet NAVD88)									
10-Year, 24-Hour	17	119.2	239.4	42.8	282.2	17.18	0.18	161.5	42.3
100-Year 24-Hour	17	119.2	239.4	57.1	296.5	17.24	0.24	175.6	56.5
Highest Flood Water Level Contained on City Owned Property (WSE = 19 feet NAVD88)									
10-Year, 24-Hour	19	623.2	1,098.30	42.8	1,141.10	19.07	0.07	641.8	18.6
100-Year 24-Hour	19	623.2	1,098.30	57.1	1,155.40	19.09	0.09	648	24.8
10-Year Water Level (WSE = 27.34 feet NAVD88)									
10-Year, 24-Hour	27.34	3,694.30	18,689.70	42.8	18,732.50	27.35	0.01	3,697.80	3.5
100-Year 24-Hour	27.34	3,694.30	18,689.70	57.1	18,746.80	27.36	0.02	3,699.00	4.7
100-Year Water Level (WSE = 29.5 feet NAVD88)									
10-Year, 24-Hour	29.5	4,314.80	27,258.00	42.8	27,300.80	29.51	0.01	4,317.30	2.5
100-Year 24-Hour	29.5	4,314.80	27,258.00	57.1	27,315.10	29.51	0.01	4,318.20	3.3
100-Year, 10-Day	29.5	4,314.80	27,258.00	123.2	27,381.20	29.53	0.03	4,322.00	7.2
200-Year Water Level (WSE = 32 feet NAVD88)									
10-Year, 24-Hour	32	4,970.40	38,828.60	42.8	38,871.40	32.01	0.01	4,972.00	1.6
100-Year 24-Hour	32	4,970.40	38,828.60	57.1	38,885.70	32.01	0.01	4,972.50	2.1
100-Year, 10-Day	32	4,970.40	38,828.60	123.2	38,951.80	32.02	0.02	4,974.90	4.5
200-Year, 10-Day	32	4,970.40	38,828.60	130.4	38,959.00	32.03	0.03	4,975.20	4.7

Source: West Yost Associates. Innovation Center Flood Elevation and Inundation Area Increase Study. May 15, 2015

Modified Cumulative Scenario

Development of the proposed project and other cumulative development within the surrounding principal watersheds that drain to Willow Slough and the Yolo Bypass, will lead to the combined effects of increasing runoff volumes and rates. This could lead to increases in low-level ponding west of the Bypass levee when water levels in the Willow Slough and Yolo Bypass are high. The City considers increases in ponding on off-site properties, as a result of project development, a significant effect. Therefore, the combined runoff effects of the proposed project, along with other cumulative development in the watersheds draining to Willow Slough and the Yolo Bypass, would be considered significant.

The Modified Cumulative Scenario would result in less of an increase in WSEs and inundation areas as compared to the CEQA Cumulative Scenario. In addition, each future project would be required to mitigate its individual incremental increase in volume (as well as peak flow rate increase), so as to ensure that increases in ponding on off-site properties does not occur as a result of cumulative development.

Overall, with implementation of Mitigation Measures 4.9-1(a) through 4.9-1(c) set forth in this EIR, the proposed project's incremental contribution to cumulative hydrology impacts would be considered ***less than cumulatively considerable***.

Mitigation Measure(s)

MRIC and Mace Triangle

5-12 Implement Mitigation Measures 4.9-1(a) through 4.9-1(c).

Implementation of the above mitigation measure would ensure that the proposed project's incremental contribution to cumulative hydrology impacts is *less than cumulatively considerable*.

5-13 Cumulative impacts to water quality within the City of Davis. Based on the analysis below, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario and Modified Cumulative Scenario

As noted in Impact 4.9-2 of Section 4.9, Hydrology and Water Quality, construction activities resulting from the proposed project have the potential to affect water quality and contribute to localized violations of water quality standards if stormwater runoff from construction activities enters receiving waters. Additional runoff from the construction site, in combination with the other reasonably foreseeable projects in the Davis area, could carry sediment from erosion of graded or excavated surface materials, leaks or spills from equipment, or inadvertent releases of building products could result in water quality degradation if runoff containing the sediment or contaminants should enter receiving waters in sufficient quantities.

While continued development within the City of Davis would result in additional stormwater runoff and entry of pollutants into receiving waters via construction and operation of future projects, each project is required to comply with the City's regulatory stormwater documents, standards, and requirements. Mitigation Measure 4.9-2 of this EIR would ensure that the MRIC project applicant and the future Mace Triangle project applicant(s) prepare a Stormwater Pollution Prevention Plan (SWPP), provide adequate storage capacity for the additional stormwater runoff generated, and incorporate sufficient best management practices (BMPs) to successfully remove pollutants from site runoff during the construction and operational phases.

In addition, as noted in Impact 4.9-3 of Section 4.9, the applicant proposes to integrate Low Impact Development (LID) measures throughout the project to provide stormwater quality treatment. The LID measures would include both volume-based best management practices (bioretention, infiltration features, pervious pavement, etc.) and flow-based best management practices (vegetated swales, storm water planter, etc.) in accordance with the City's Manual of Stormwater Quality Control Standards. Therefore, impacts related to operational water quality would be reduced to a less-than-significant level with implementation of mitigation.

As demonstrated in Section 4.9, Hydrology and Water Quality, the proposed project would not result in any significant impacts related to water quality or stormwater quality. Overall, the combined effects of increased runoff flows resulting from construction and operation of cumulative projects could be considered significant. However, given that the proposed project would be required through mitigation and City ordinances to implement BMPs and LID features in the site design, the incremental contribution resulting from the project would be considered ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

LAND USE AND URBAN DECAY (SEE SECTION 4.10)

5-14 Cumulative land use incompatibilities. Based on the analysis below, the impact is *less than cumulatively considerable.*

CEQA Cumulative Scenario and Modified Cumulative Scenario

Land use conflicts are site-specific and would not result in a cumulative impact. Incompatibility issues are addressed and mitigated on a project-by-project basis. The proposed project has been designed to be consistent with applicable aspects of the City's General Plan, and as described in this EIR, the project would not result in incompatibilities with any of the surrounding land uses. Therefore, the project's contribution to cumulative land use impacts related to land incompatibilities would be ***less than cumulatively considerable***

Mitigation Measure(s)
None required.

5-15 Cumulative urban decay. Based on the analysis below and with implementation of mitigation, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario

The urban decay resources impacts resulting from the MRIC site would combine with related impacts resulting from development of the Davis IC Project, the Mace Triangle, and the Nishi Gateway Project, and buildout of the Davis General Plan. The combined effects of this cumulative development scenario would lead to a significant cumulative impact on urban decay within the cumulative geographic setting.

Office and Industrial

In addition to the proposed MRIC site, there are 10 other office and industrial projects planned in the City of Davis (see Exhibit 7 of Appendix H). According to the urban decay analysis conducted specifically for the proposed project, the potential cumulative amount of office and industrial space that could be added to the Davis market by 2035, including the MRIC, totals close to 6.9 million sf. The cumulative amount of space is equal to 2.3 times the size of the existing office and industrial base in Davis (see Table 5-1). Of this amount of space, almost all, or up to 99 percent, could comprise competitive space for innovation sector businesses. ALH Economics concluded it is possible that some existing innovation sector businesses may seek to relocate to the MRIC upon availability or sometime thereafter. Therefore, existing office and industrial space in Davis could experience increased vacancy as a result of the innovation center.

Whether impacts from the MRIC's 2,394,000 sf of office/industrial space is considered, as was done in Section 4.10 of this EIR, or the projected cumulative total of approximately 6.9 million sf of office/industrial space is considered, the impact on the existing office/industrial base within the City of Davis will generally be the same, as there is a fixed amount of space in the City of Davis that is currently attractive to this tenant base. ALH determined this fixed amount of space to be 760,000 sf.

Any resultant vacancies would remain sustained until such time as yet additional demand was generated due to economic growth and expansion. Numerous market factors could likely boost this demand potential, including the attraction of larger increments of office and industrial space and the draw of the City of Davis to businesses located in other regional locations like Woodland and West Sacramento that would prefer a Davis location.

The regulatory review suggests existing City of Davis measures to avoid the onset of deterioration or decay are effective. Moreover, many of the office and industrial properties in Davis are owned by major institutional and private real estate companies, with the financial wherewithal to withstand prolonged vacancy and fund the maintenance

necessary for upkeep even during times of vacancy. Therefore, the potential for properties to be well maintained during periods of prolonged vacancy exists. ALH Economics therefore concludes that the office and industrial components of the proposed project, in combination with other related developments, are not anticipated to cause adverse physical impacts leading to urban decay, despite the anticipated potential of some prolonged existing office and industrial base vacancies.

Retail Space

In addition to the proposed MRIC, there are seven other projects with new retail components planned in the City of Davis (see Exhibit 15 of Appendix H). According to the urban decay analysis conducted specifically for the proposed project, an additional estimated cumulative total of 266,745 sf of planned retail could be added to the Davis market by 2035.

ALH Economics conducted analysis comparing the size of the planned retail space for each project, and all the projects cumulatively, to the amount of retail anticipated to be supportable by the employment and households associated with each project. The purpose of this analysis was to assess if the cumulative projects, in addition to the MRIC's, planned retail space would result in negative impacts on the existing retail base that could cause or contribute to urban decay.

The results of this analysis indicate that in the aggregate, the MRIC and the cumulative projects include development of 361,652 square feet of retail space. The supportable retail square feet based upon project-generated demand totals 474,407 square feet (see ALH Exhibit 16). These aggregate findings indicate that retail demand generated by the cumulative projects is anticipated to exceed the retail supply. Even if all the project-generated demand is not directed to each individual project's retail space, the results indicate the projects would need to capture less than 80 percent of the demand to achieve 95 percent occupancy. While the cumulative employee demand for retail space can support the anticipated cumulative retail space, the possibility exists for retail space to outpace employee demand as the cumulative projects buildout. As a result, similar to the conclusion for the MRIC project in Section 4.10 of this EIR, phasing controls should be implemented to ensure that the incremental contribution of the MRIC's retail space toward the potential cumulative urban decay impacts on existing retail space are less than cumulatively considerable.

Hotel

In addition to the proposed MRIC, there are two other projects with new hotel components planned in the City of Davis (see Exhibit 24 of Appendix H). The two planned hotel projects include a total of 237 hotel rooms could be added to the Davis market. Adding the proposed project's planned hotel rooms into the future supply results in the total addition of 437 hotel rooms to the Davis market.

ALH Economics prepared a future projection of hotel supply and demand and then examined the occupancy impacts pursuant to the addition of the planned hotel projects. Given the more cumulative nature of the analysis, and potentially prolonged innovation center absorption, the two innovation center hotels are assumed to be cumulatively added to the supply in 2035, or approximately eight years later than assumed individually for the MRIC.

The near-term results, after the addition of the new Embassy Suites Hotel in 2017, indicate that hotel occupancy is projected to dip down to 61.6 percent to 62.7 percent, following a much higher occupancy of 72.5 percent to 73.5 percent the year before when the supply could be temporarily reduced due to the redevelopment of the existing University Park Inn and Suites Hotel. The 61.6 percent to 62.76 percent rate is projected to quickly ratchet up, reaching 77.1 percent to 84.4 percent in 2034, which is the year before the MRIC's hotel and the Davis IC hotel are cumulatively assumed to be added to the market. Once these two hotels are added to the market, annual average occupancy is projected to drop to 54.8 percent to 60.2 percent and increase thereafter, although at the low end, remain in the 50 percent range until at least 2040.

In 2009 and 2010, at the height of the recession, hotels in Davis operated at average occupancy rates of 49.8 percent and 50.3 percent, respectively. These rates are even lower than the projected rates in Davis in 2035 when all cumulative projects have been added to the supply. Overall, the historic hotel occupancy rates in Davis were sustained in the 50 percent range for at least four years, from 2008 through 2012. ALH Economics is not aware of any hotels closing or becoming characterized by poor maintenance and lackluster operations during this time. Thus, market precedence suggests that reduced occupancy in the range of 50 percent is sustainable for a limited period of time without resulting in existing hotel closure.

ALH Economics conducted sensitivity analysis to assess potential innovation center hotel market impacts assuming earlier introduction of one of the innovation center hotels, such as in 2027 or 2030. This sensitivity analysis did not change the projected occupancy rates to a level where ALH Economics would conclude the potential for impacts resulting in potential hotel closure of existing hotels.

Conclusion

The cumulative analysis conducted for the MRIC's office/industrial space, and hotel space, in combination with other similar cumulative development, determined that the project's incremental contribution to urban decay of these spaces would not be cumulatively considerable. With respect to the project's incremental contribution to cumulative urban decay impacts on the retail sector, it was determined that with implementation of Mitigation Measure 4.10-3 of Section 4.10 of this EIR, the project's incremental contribution to cumulative urban decay impacts would be considered ***less than cumulatively considerable***.

Mitigation Measure(s)

MRIC

5-15 Implement Mitigation Measure 4.10-3.

Implementation of the above mitigation measure would ensure that the project's incremental contribution to cumulative urban decay impacts on retail space is *less than cumulatively considerable*.

Mace Triangle – none

Modified Cumulative Scenario

Similar to discussed above, the combined effects of the proposed project in combination with cumulative development including the Nishi Gateway Project and buildout of the Davis General Plan would lead to a significant cumulative impact on urban decay within the cumulative geographic setting.

Office and Industrial

As shown in Table 5-6, in addition to the proposed project, the total buildout projections for other office and industrial projects planned in the City of Davis under the Modified Cumulative Scenario equates to over 5.03 million sf (approximately 6.59 million sf including the proposed project). The cumulative amount of space is equal to 2.19 times the size of the existing office and industrial base in Davis (see Table 5-1). Of this amount of space, almost all, or up to 99 percent, could comprise competitive space for innovation sector businesses. ALH Economics concluded it is possible that some existing innovation sector businesses may seek to relocate to the MRIC upon availability or sometime thereafter. Therefore, existing office and industrial space in Davis could experience increased vacancy as a result of the proposed MRIC

Any resultant vacancies would remain sustained until such time as yet additional demand is generated due to economic growth and expansion. Numerous market factors could likely boost the demand potential, including the attraction of larger increments of office and industrial space and the draw of the City of Davis to businesses located in other regional locations like Woodland and West Sacramento that would prefer a Davis location.

The regulatory review suggests existing City of Davis measures to avoid the onset of deterioration or decay are effective. Moreover, many of the office and industrial properties in Davis are owned by major institutional and private real estate companies, with the financial wherewithal to withstand prolonged vacancy and fund the maintenance necessary for upkeep even during times of vacancy. Therefore, the potential for properties to be well maintained during periods of prolonged vacancy exists. ALH Economics therefore concludes that the office and industrial components of the proposed

project, in combination with other related developments, are not anticipated to cause adverse physical impacts leading to urban decay, despite the anticipated potential of some prolonged existing office and industrial base vacancies.

Retail Space

As shown in Table 5-6, in addition to the proposed project, the total buildout projections for other commercial and retail projects planned in the City of Davis under the Modified Cumulative Scenario equates to over 3.67 million sf (approximately 3.80 million sf including the proposed project). The cumulative amount of space is equal to 1.13 times the size of the existing retail and general commercial base in Davis (see Table 5-1).

As discussed above, retail demand generated by cumulative development is anticipated to exceed the retail supply. While the cumulative employee demand for retail space can support the anticipated cumulative retail space, the possibility exists for retail space to outpace employee demand as the cumulative projects buildout. As a result, similar to the conclusion for the proposed project in Section 4.10 of this EIR, phasing controls should be implemented to ensure that the incremental contribution of the MRIC's retail space toward the potential cumulative urban decay impacts on existing retail space are less than cumulatively considerable.

Hotel

As discussed above, market precedence suggests that reduced hotel occupancy in the range of 50 percent is sustainable for a limited period of time without resulting in existing hotel closure. Under the CEQA Cumulative Scenario, upon cumulative development in the City, the annual average hotel occupancy is projected to drop to 54.8 percent to 60.2 percent and increase thereafter, although at the low end, remain in the 50 percent range until at least 2040. The Modified Cumulative Scenario would result in the addition of fewer hotel rooms in the Davis market than the CEQA Cumulative Scenario, which would likely cause a slight increase in the projected annual average hotel occupancy. Accordingly, the proposed project's inclusion of a hotel would not result in a cumulatively considerable contribution to potential cumulative urban decay impacts on existing hotels.

Conclusion

Based on the above, the proposed project's incremental contribution to urban decay associated with the cumulative development of office, industrial, and hotel uses in the area would not be cumulatively considerable. With respect to the project's incremental contribution to cumulative urban decay impacts on the retail sector, it was determined that with implementation of Mitigation Measure 4.10-3 of Section 4.10 of this EIR, the project's incremental contribution to cumulative urban decay impacts would be considered ***less than cumulatively considerable***.

Mitigation Measure(s)

MRIC

5-15 Implement Mitigation Measure 4.10-3.

Implementation of the above mitigation measure would ensure that the project's incremental contribution to cumulative urban decay impacts on retail space is *less than cumulatively considerable*.

Mace Triangle – none

NOISE AND VIBRATION (SEE SECTION 4.11)

5-16 Cumulative impacts on noise-sensitive receptors. Based on the analysis below, the project's contribution to cumulative noise is *less than cumulatively considerable*.

CEQA Cumulative Scenario

MRIC and Mace Triangle

The cumulative context for noise impacts associated with the proposed project would consist of the existing and future noise sources that could affect the project or surrounding uses. Noise generated by construction would be temporary, and would not add to the permanent noise environment or be considered as part of the cumulative context. Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to the proposed project and on-site activities resulting from operation of the proposed project. The following analysis is based on noise level increases along roadways resulting from traffic from development of innovation center uses on the 212-acre MRIC site and potential future commercial/retail development on the 16.58-acre Mace Triangle site.

Cumulative Traffic Noise

The cumulative noise impacts due to project-related traffic increases on the existing local roadway network are analyzed for the following traffic scenarios:

- Cumulative No Project: Includes the growth anticipated in the SACOG Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) as well as the Davis IC, Mace Triangle, and Nishi Gateway development projects. Intersection and roadway volumes were developed using the difference method procedure, which adds the growth in traffic between the 2008 base year and the Cumulative No Project forecasts to existing volumes.

- Cumulative Plus Project: The Cumulative Plus Project scenario adds the projected trips from the MRIC and Mace Triangle onto the Cumulative No Project forecasts, discussed above.

Table 5-8 shows the predicted cumulative traffic noise level increases on the local roadway network for Cumulative No Project and Cumulative Plus Project conditions.[13]

To determine the proposed project's incremental contribution to the "cumulative no project" noise environment, the Federal Interagency Committee on Noise (FICON) criteria outlined in Table 4.11-9 of the Noise and Vibration Section were utilized. Pursuant to the FICON standards in Table 4.11-9, an incremental contribution would be significant if the contribution exceeded 5.0 dB where existing noise levels are less than 60 dB, 3.0 dB, where noise levels without the project are 60 to 65 dB, and if the contribution exceeded 1.5 dB where noise levels without the project are greater than 65 dB. In addition, as noted in the Regulatory Context section of Section 4.11, Noise and Vibration, a 3.0 dB change is barely perceptible to the human ear.

Off-site traffic noise increase threshold test

The test of significance for increases in off-site traffic noise is two-fold. First, traffic noise levels are reviewed to see if the project's contribution to traffic noise would exceed the FICON levels identified in Table 4.11-9 in Section 4.11-9, Noise and Vibration. If the project's incremental increase in traffic noise levels along surrounding roadways would exceed the FICON criteria shown in Table 4.11-9, the project would be considered to have a cumulatively considerable noise impact along that roadway segment.

The second part of the significance test would be applied if the project does not result in the traffic noise level increases shown in Table 4.11-9 (i.e., the project does not exceed the FICON criteria). In this case, each roadway segment is assessed to determine whether the project's traffic noise contribution would cause any receptors along the roadway to be exposed to exterior noise levels exceeding the City's General Plan Noise Element standards. Specifically, Noise Element Policy 1.1-c requires the following:

[13] Consistent with the traffic study prepared for the project, the roadway segment method for cumulative impact assessment was chosen because the potential changes in travel patterns in 2035, with both the project and the other two Innovation Center projects developed, make it infeasible to project intersection turning movement level projections with sufficient accuracy to support the impact and mitigation assessment. However, the two exceptions to the use of roadway segment analysis for the cumulative impact assessment are the sections of Covell Boulevard and Russell Boulevard within the SR 113 interchange areas; for these roadway segments, the intersection simulation method was used to ensure a more conservative analysis, given the complexity of traffic operations in this area.

Table 5-8
Cumulative No Project and Cumulative Plus Project Traffic Noise Levels

Roadway	Segment	Noise Levels (L_{dn}, dB) at Outdoor Activity Areas of Nearest Sensitive Receptors					Distance to Cumulative + Project Traffic Noise Contours (feet)[2]		
		Cumulative No Project	Cumulative + Project	Change	Significance Criteria[1]	Significant?	70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
5th St.	L St. to Pole Line Rd.	62.6	62.8	0.2	+3 dB	No	23	50	107
Alhambra Dr.	South of E Covell Blvd.	57.3	58.0	0.7	+5 dB or > 60 dB	No	9	20	44
Alhambra Dr.	West of Mace Blvd.	61.3	61.1	-0.2	+3 dB	No	15	33	71
E Covell Blvd.	F St. to J St.	64.4	64.3	-0.1	+3 dB	No	42	90	194
E Covell Blvd.	Monarch Ln. to Alhambra Dr.	66.2	65.8	-0.4	+1.5 dB	No	39	84	181
E Covell Blvd.	Research Park to Drew Cir.	65.3	65.2	-0.1	+1.5 dB	No	36	77	167
E Covell Blvd.	Drummond Ave. to Mace Blvd.	59.7	59.9	0.2	+5 dB or > 60 dB	No	11	23	49
F St.	North of E Covell Blvd.	64.3	63.1	-1.2	+3 dB	No	17	37	80
F St.	South of E Covell Blvd.	57.7	59.0	1.3	+5 dB or > 60 dB	No	14	30	64
I-80	East of Mace Blvd.	72.2	72.5	0.3	+1.5 dB	No	700	1,508	3,249
L St.	E. Covell Blvd. to Drexel Rd.	58.3	59.8	1.5	+5 dB or > 60 dB	No	10	23	49
Loyola Dr.	East of Pole Line Rd.	58.1	58.2	0.1	+5 dB or > 60 dB	No	8	18	38
Mace Blvd.	Harper Jr. HS to Alhambra	51.9	51.6	-0.3	+5 dB or > 60 dB	No	36	77	165
Mace Blvd.	South of El Macero Dr.	57.4	58.6	1.2	+5 dB or > 60 dB	No	11	24	52
Pole Line Rd.	North of E Covell Blvd.	64.6	65.0	0.4	+3 dB	No	35	74	160
Pole Line Rd.	E Covell Blvd.to Claremont Dr.	59.9	59.4	-0.5	+5 dB or > 60 dB	No	15	32	68
Pole Line Rd.	North of 5th St.	63.5	62.9	-0.6	+3 dB	No	17	36	78
Pole Line Rd.	South of 5th St.	65.2	66.2	1.0	+1.5 dB	No	28	61	130
Research Park Dr.	North of E Covell Blvd.	62.0	61.5	-0.5	+3 dB	No	20	44	95

(Continued on next page)

Table 5-8
Cumulative No Project and Cumulative Plus Project Traffic Noise Levels

Roadway	Segment	Noise Levels (L_{dn}, dB) at Outdoor Activity Areas of Nearest Sensitive Receptors					Distance to Cumulative + Project Traffic Noise Contours (feet)[2]		
		Cumulative No Project	Cumulative + Project	Change	Significance Criteria[1]	Significant?	70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}

Notes:
[1] Where existing noise levels are less than 60 dB an increase of 5 dB would be a significant increase. Additionally, any increase causing noise levels to exceed the City's Normally Acceptable 60 dB L_{dn} noise level standard at an existing residential use would also be significant. Where existing noise levels exceed 60 dB but are less than 65 dB, an increase of 3 dB or more would be significant. Where existing noise levels exceed 65 dB, an increase of 1.5 dB or more would be significant.
[2] Distances to traffic noise contours are measured in feet from the centerlines of the roadways.
[3] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: j.c. brennan & associates, Inc., March 16, 2015.

> New development and changes in use shall generally be allowed only if they will not adversely impact attainment within the community of the exterior and interior noise standards shown in Table 19 [Table 4.11-7] and Table 20 [Table 4.11-8] Cumulative and project specific impacts by new development on existing residential land uses shall be mitigated consistent with the standards in Table 19 [Table 4.11-7] and Table 20 [Table 4.11-8].

For residential uses, Table 19 [Table 4.11-7] establishes a Normally Acceptable exterior noise level standard of 60 dB L_{dn}. Therefore, if an existing residential receptor is exposed to existing noise levels of less than 60 dB L_{dn}, any project-related traffic noise level increase that causes noise levels to exceed 60 dB L_{dn} would be considered significant. If an existing receptor is exposed to conditionally acceptable exterior noise levels (60 to 70 dB) the FICON criteria shown in Table 4.11-9 would be used as the test of significance.

Findings

With respect to the first part of the test of significance, Table 5-8 demonstrates that the FICON criteria would not be exceeded as a result of the project's incremental traffic. When proposed project traffic noise is added to the Cumulative No Project scenario, the noise levels increase by as much as 1.5 dB, which is less than the FICON threshold of 5 dB where existing noise levels are less than 60 dB.

With respect to the second part of the significance test, the proposed project's contribution to traffic noise levels would not cause any new exceedances of the City's 60 dB exterior noise level standard.

Overall, the proposed project's incremental contribution to traffic noise levels would be ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

Modified Cumulative Scenario

The cumulative traffic noise under the Modified Cumulative Scenario would be less than the CEQA Cumulative Scenario due to the exclusion of the 208-acre, 4-million sf Davis IC project, which represents a large contribution to cumulative traffic conditions. Consequently, the proposed project's incremental increase in traffic would be even less likely to cause any new exceedances of noise level standards under the Modified Cumulative Scenario in comparison to the CEQA Cumulative Scenario. As discussed above, the proposed project's incremental contribution to cumulative traffic noise levels under the CEQA Cumulative Scenario would not exceed applicable thresholds of significance or standards. Therefore, the proposed project's incremental contribution to cumulative traffic noise levels under the Modified Cumulative Scenario would, similarly, not exceed applicable thresholds of significance or standards, and would be ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

5-17 Cumulative traffic noise effects on proposed uses. Based on the analysis below and with implementation of mitigation, the project's contribution to the cumulative exposure of future on-site noise-sensitive land uses to increased noise is *less than cumulatively considerable*.

CEQA Cumulative Scenario

MRIC

Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to the proposed project and other projects within the area. As shown in Table 5-9, cumulative transportation noise levels are predicted to comply with the City of Davis exterior noise level standards at the exterior spaces of the MRIC hotel, commons areas, and Oval park.

Table 5-9
Transportation Noise Levels at Proposed Uses

Receptor Description	Noise Source and Predicted Noise Level (L_{dn})				Standard	Impact? (Y/N)
	Interstate 80	Mace Blvd.	UPRR	Total		
Cumulative Plus Project						
Hotel (outdoor areas)	61 dB	62 dB	57 dB	65 dB	60 to 75 dB	No
North-South Commons	63 dB	52 dB	59 dB	65 dB	65 to 75 dB	No
The Oval	57 dB	56 dB	52 dB	60 dB	65 to 75 dB	No
East-West Commons	58 dB	56 dB	53 dB	61 dB	65 to 75 dB	No
Courtyard Plaza	60 dB	51 dB	55 dB	62 dB	65 to 75 dB	No

Source: j.c. brennan & associates, Inc., March 16, 2015.

Mace Triangle

As noted in Impact 4.11-4 of Section 4.11, Noise and Vibration, based upon the General Commercial land use designation proposed for the Ikedas parcel and the easternmost agricultural parcel, the City has identified a future development potential for these parcels, consisting of approximately 45,901 sf of research/office/R&D, and 25,155 sf of ancillary retail. Because of the uncertainty of these uses, in terms of site placement and specific tenants, an acoustical study will need to be submitted in conjunction with a development plan application for this site.

Conclusion

Through compliance with Mitigation Measure 4.11-4 of Section 4.11, Noise and Vibration, the proposed project's contribution to cumulative traffic noise would be ***less than cumulatively considerable*** with respect to the exterior noise levels experienced at future on-site sensitive uses.

Mitigation Measure(s)

MRIC – none

Mace Triangle

5-17 Implement Mitigation Measure 4.11-4.

Implementation of the above mitigation measure would ensure that the proposed project's incremental contribution to cumulative traffic noise impacts is *less than cumulatively considerable*.

Modified Cumulative Scenario

As discussed above, cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to the proposed project and other projects within the area. Cumulative transportation noise levels under the CEQA Cumulative Scenario are predicted to comply with the City of Davis exterior noise level standards at the exterior spaces of the MRIC hotel, commons areas, and Oval park. The cumulative traffic noise under the Modified Cumulative Scenario would be less than the CEQA Cumulative Scenario due to the exclusion of the 208-acre, 4-million sf Davis IC project, which represents a large contribution to cumulative traffic conditions. Consequently, the proposed project's incremental contribution to cumulative traffic noise impacts would be even less likely to cause any exceedances of noise level standards at the MRIC site under the Modified Cumulative Scenario in comparison to the CEQA Cumulative Scenario.

However, similar to the discussion above regarding the Mace Triangle, due to the uncertainty of the uses on the Mace Triangle, in terms of site placement and specific tenants, an acoustical study will need to be submitted in conjunction with a development plan application for the site. Therefore, Mitigation Measure 4.11-4 of Section 4.11, Noise and Vibration, would be required in order to ensure that the project's contribution to cumulative traffic noise would be ***less than cumulatively considerable*** with respect to the exterior noise levels experienced at future on-site sensitive uses.

Mitigation Measure(s)

MRIC – none

Mace Triangle

5-17 Implement Mitigation Measure 4.11-4.

Implementation of the above mitigation measure would ensure that the proposed project's incremental contribution to cumulative traffic noise impacts is *less than cumulatively considerable*.

POPULATION AND HOUSING (SEE SECTION 4.12)

5-18 Cumulative population and housing impacts. Based on the analysis below, the impact is *cumulatively considerable* and *significant and unavoidable*.

CEQA Cumulative Scenario

Impacts associated with population and housing related to implementation of the proposed project are analyzed in Section 4.12 of this EIR. Through 2035, an additional 871,000 people and 303,000 housing units are forecasted to be added in the region.[14] The proposed project would produce no housing and approximately 6,040 jobs (5,882 for MRIC and 158 for Mace Triangle), which is expected to result in an employee housing demand total of 3,860 dwelling units (3,763 for MRIC and 97 for Mace Triangle), which is 1.3 percent of SACOG's total projected increase of 303,000 units within the SACOG region.

As shown in Table 4.12-12, the estimated employee housing demand at buildout of the MRIC is 3,763. Using the methodology described in Table 4.12-12, out of the total employee housing demand of the MRIC of 3,763 units, an employee housing demand for 2,053 units would occur within the City of Davis.[15] The remaining housing units (1,710) needed to meet the MRIC's employee housing demand would be met outside of the City of Davis, within the six-county SACOG region.

Assuming that 1,238 housing units out of the 2,053 units would be available to accommodate the MRIC's total employee housing demand within the City of Davis, the resultant MRIC employee housing demand that cannot be accommodated in the City of Davis would be 815 housing units. This unmet housing demand within the City of Davis would then need to be met within surrounding jurisdictions, as discussed in Section 4.12.

Under the CEQA Cumulative Scenario, the MRIC project, in combination with the Davis IC and Nishi Gateway projects, and General Plan buildout, is projected to result in an unmet housing demand within the City of Davis of 4,530 units.[16] This unmet cumulative

[14] Sacramento Area Council of Governments. *Metropolitan Transportation Plan/Sustainable Communities Strategy*. Adopted April 19, 2012.
[15] See Table 4.12-12.
[16] BAE Urban Economics. *City of Davis Economic Evaluation of Innovation Park Proposals*. May 11, 2015, Table C1.

total is substantially more than the project's incremental unmet total of 815 units. As such, the combined effect of this unmet housing demand on other jurisdictions within the SACOG region would be significant with respect to inducing substantial population growth.

The 4,530 residential units that cannot be accommodated within the City of Davis, however, could be accommodated within the SACOG region, as evidenced in the MTP/SCS EIR, which concluded that the SACOG region would be sufficient to house all of the projected population and housing units expected to reside in the region through 2035.[17] According to SACOG, the entire proposed project and Davis IC Project (comprising the MRIC and Mace Triangle) would not exceed SACOG's regional employment projections; and therefore the employee household demand from the CEQA Cumulative Scenario is already accounted for in the MTP/SCS projections.[18] Notwithstanding this, because the City of Davis is not anticipated to provide its share of employee-generated housing for the MRIC, this proposed project would result in a ***cumulatively considerable*** incremental impact with respect to inducing substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

Mitigation Measure(s)

The MRIC's incremental impact could be addressed by requiring the proposed project to include residential, workforce housing. This project design mitigation has been evaluated in Chapter 8 of this EIR as the Mixed-Use Alternative. Feasible mitigation for the proposed non-residential MRIC project is not available to reduce this impact to a less-than-significant level. Therefore, this impact would remain *cumulatively considerable* and *significant and unavoidable*.

The physical environmental effects of such indirectly induced population growth within neighboring jurisdictions are addressed throughout the technical sections of this EIR, including Section 4.3, Air Quality; Section 4.7, Greenhouse Gas Emissions and Energy; and Section 4.14, Transportation and Circulation.

Modified Cumulative Scenario

As discussed in Section 4.12 of this EIR, through 2035, an additional 871,000 people and 303,000 housing units are forecasted to be added in the region.[19] The proposed project would produce no housing and approximately 6,040 jobs (5,882 for MRIC and 158 for the Mace Triangle), which is expected to result in an employee housing demand total of 3,860 dwelling units (3,763 for MRIC and 97 for Mace Triangle), which is 1.3 percent of

[17] Sacramento Area Council of Governments. *Metropolitan Transportation Plan/Sustainable Communities Strategy EIR [pg. 14-16]*. February 2012.

[18] Gordon Garry, Director of Research and Analysis, SACOG. Employment and Housing Demand Associated with Innovation Center Development *Letter*. April 10, 2015.

[19] Sacramento Area Council of Governments. *Metropolitan Transportation Plan/Sustainable Communities Strategy*. Adopted April 19, 2012.

SACOG's total projected increase of 303,000 units within the SACOG region. As discussed above, only a portion of the proposed project's employee housing demand would be met within the City of Davis. The remaining housing demand would need to be met within surrounding jurisdictions

The combined cumulative unmet housing demand within the City of Davis under the Modified Cumulative Scenario would be less than under the CEQA Cumulative Scenario. Although less, the total cumulative unmet housing demand under the Modified CEQA Scenario would still be substantially more than the project's incremental unmet total of 815 units, and the combined effect on other jurisdictions within the SACOG region would be significant with respect to inducing substantial population growth. However, as discussed above, the CEQA Cumulative Scenario would not exceed SACOG's regional employment projections and the associated employee household demand is already accounted for in the MTP/SCS projections. Nonetheless, because the City of Davis is not anticipated to provide its share of employee-generated housing for the proposed project, the project would result in a ***cumulatively considerable*** incremental impact with respect to inducing substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

Mitigation Measure(s)

The proposed project's incremental impact could be addressed by requiring the proposed project to include residential, workforce housing. This project design mitigation has been evaluated in Chapter 8 of this EIR as the Mixed-Use Alternative. Feasible mitigation for the proposed non-residential MRIC project is not available to reduce this impact to a less-than-significant level. Therefore, this impact would remain *cumulatively considerable* and *significant and unavoidable*.

The physical environmental effects of such indirectly induced population growth within neighboring jurisdictions are addressed throughout the technical sections of this EIR, including Section 4.3, Air Quality; Section 4.7, Greenhouse Gas Emissions and Energy; and Section 4.14, Transportation and Circulation.

PUBLIC SERVICES AND RECREATION (SEE SECTION 4.13)

5-19 Cumulative impacts to fire protection services from the proposed project in combination with future developments in the City of Davis. Based on the analysis below, even with mitigation, the impact is *cumulatively considerable* and *significant and unavoidable*.

CEQA Cumulative Scenario

The following impact discussion is based on the implementation of the proposed project in combination with other proposed and pending projects in the region. Other pending and proposed projects in the region under the CEQA Cumulative Scenario would include

buildout of the City's General Plan, as well as development of the project, the Davis IC, and the Nishi Gateway Project.

The closest station to the project site would be Station 33, located at 425 Mace Boulevard, approximately 0.50-mile south of the project site. Station 33 currently provides fire protection and emergency medical services to the site and its vicinity. In addition, Station 33 provides backup response to Station 31 in the downtown core of the City, given that Station 31 is overburdened with calls and cannot meet the General Plan response time goal of reaching all areas of the City within a five-minute emergency response time, 90 percent of the time. Response time includes alarm processing, turnout time, and travel time.

As discussed in Impact 4.13-1, the Davis Fire Chief has indicated that Station 33 can adequately serve the proposed project, with existing resources and personnel.[20] However, an impact is predicted to occur under a scenario in which Station 33 is not able to provide needed back-up response to the downtown core station because the Station has already responded to a fire/medical incident at the project project. In other words, the proposed project could exacerbate the existing response time deficiency experienced in certain areas of the City of Davis by precluding Station 33 from being able to provide back-up to already impacted areas.[21] The proposed project's impact, then, should be considered a secondary, or indirect cumulative impact, to fire protection services.

In conclusion, the proposed project, in combination with past, present, and probable future projects, will result in a significant cumulative impact to fire protection services; and the project's incremental contribution would be ***cumulatively considerable***.

Mitigation Measure(s)

MRIC and Mace Triangle

5-19 *Prior to issuance of building permits for each phase of development, the project applicant shall contribute the project's fair share funding towards one of the following mitigation options, as determined by the City of Davis Community Development and Sustainability Department and Davis Fire Department:*

1. *Construct a fourth fire station within the City of Davis.*
2. *Modify of existing Davis fire facilities, which may include renovation of existing fire stations.*
3. *Complete a Fire Facilities Master Plan (FFMP), and Community Risk and Standards of Cover Study to identify the various alternatives that could be implemented to enable the City of Davis*

[20] Personal communication with Chief Nathan J. Trauernicht, City of Davis Fire Department. February 5, 2015.
[21] Personal communication with Chief Nathan J. Trauernicht, City of Davis Fire Department. February 5, 2015.

Fire Department to reach all areas of the City, including the Davis Mace Ranch Innovation Center project site, within a five-minute emergency response time, 90 percent of the time, consistent with Davis General Plan Policy POLFIRE 1.2.

Once the mitigation option is selected, the identified improvement project(s) shall be included in the City's Capital Improvement Program and the City's Fire Impact Fee updated accordingly. In addition, each improvement project shall be subject to its own environmental review process, unless the improvement can be determined by the City to be exempt from CEQA.

The above impact could be reduced to a less-than-significant level if one of the above three mitigation options is implemented. Successful implementation of each mitigation option, however, cannot be assured, as the full amount of funding for the improvement(s) has not been secured, nor programmed into an identified improvement program. As a result, the proposed project's incremental contribution to this significant impact would remain *cumulatively considerable and significant and unavoidable*.

Modified Cumulative Scenario

The following impact discussion is based on the implementation of the proposed project in combination with other proposed and pending projects in the region. Other pending and proposed projects in the region under the Modified Cumulative Scenario would include buildout of the City's General Plan, as well as development of the proposed project and the Nishi Gateway Project.

As discussed above, the proposed project could exacerbate the existing response time deficiency experienced in certain areas of the City of Davis by precluding Station 33 from being able to provide back-up to already impacted areas.[22] The proposed project's impact, then, should be considered a secondary, or indirect cumulative impact, to fire protection services.

In conclusion, the proposed project, in combination with past, present, and probable future projects under the Modified Cumulative Scenario, would result in a significant cumulative impact to fire protection services; and the project's incremental contribution would be ***cumulatively considerable***.

Mitigation Measure(s)

MRIC and Mace Triangle

[22] Personal communication with Chief Nathan J. Trauernicht, City of Davis Fire Department. February 5, 2015.

5-19 *Prior to issuance of building permits for each phase of development, the project applicant shall contribute the project's fair share funding towards one of the following mitigation options, as determined by the City of Davis Department of Community Development and Sustainability and Davis Fire Department:*

1. *Construct a fourth fire station within the City of Davis.*
2. *Modify of existing Davis fire facilities, which may include renovation of existing fire stations.*
3. *Complete a Fire Facilities Master Plan (FFMP), and Community Risk and Standards of Cover Study to identify the various alternatives that could be implemented to enable the City of Davis Fire Department to reach all areas of the City, including the Davis Mace Ranch Innovation Center project site, within a five-minute emergency response time, 90 percent of the time, consistent with Davis General Plan Policy POLFIRE 1.2.*

Once the mitigation option is selected, the identified improvement project(s) shall be included in the City's Capital Improvement Program and the City's Fire Impact Fee updated accordingly. In addition, each improvement project shall be subject to its own environmental review process, unless the improvement can be determined by the City to be exempt from CEQA.

The above impact could be reduced to a less-than-significant level if one of the above three mitigation options is implemented. Successful implementation of each mitigation option, however, cannot be assured, as the full amount of funding for the improvement(s) has not been secured, nor programmed into an identified improvement program. As a result, the proposed project's incremental contribution to this significant impact would remain *cumulatively considerable and significant and unavoidable*.

5-20 Cumulative impacts to public services and recreation from the proposed project in combination with existing and future developments in the City of Davis. Based on the analysis below, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario and Modified Cumulative Scenario

The following impact discussion is based on the implementation of the proposed project in combination with other proposed and pending projects in the region. Other pending and proposed projects in the region under the cumulative context would include buildout of the City's General Plan, as well as development of the proposed project, the Davis IC, and the Nishi Gateway Project.

Each development project is required by the City of Davis to pay adopted development impact fees, which include fees for such services as public safety, general facilities, roadways, parks, and open space. Each project's payment of adopted City impact fees for

public services and recreation would ensure that the combined, related effects of cumulative development on public services and recreation would not be significant. It follows that the proposed project's incremental contribution would be ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

TRANSPORTATION AND CIRCULATION (SEE SECTION 4.14)

This section presents the results of the cumulative traffic analysis prepared for the project by Fehr & Peers. Because two reasonably foreseeable cumulative scenarios existed at the time the analysis was prepared, both are analyzed:

- The *CEQA Cumulative Scenario* envisions Year 2035 conditions with development of the MRIC and Mace Triangle along with full development of the Davis IC and the Nishi Gateway projects, cumulatively adding about 18,390 employees to the City of Davis in 20 years;
- The *Modified Cumulative Scenario* envisions just the Nishi Gateway Project developing along with the MRIC and Mace Triangle, cumulatively adding about 7,548 employees to the City of Davis.

Generally, the cumulative operations analysis evaluates:

- AM and PM peak hour roadway segment volumes and capacities to assess the impacts of the project relative to future cumulative conditions (i.e., 2035 No Project and 2035 With Project)
- AM and PM peak hour intersection operations within the Mace Boulevard Interchange area for Cumulative and Cumulative Plus Project scenarios
- AM and PM peak hour freeway volumes, vehicle densities and level of service (LOS) for Cumulative and Cumulative Plus Project scenarios

It is noted that the roadway segment method for cumulative impact assessment for most of the study area was chosen over intersection analysis for several reasons.

- CEQA indicates that the discussion of cumulative impacts "shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great a detail as is provided for the effects attributable to the project alone. The discussion shall be guided by standards of practicality and reasonableness…"
- The nature of travel forecasting includes uncertainty about future events that are difficult to predict (i.e., the great recession). As such, the further into the future we try to predict the more it is desirable to aggregate to provide reasonable forecasts and analysis. This is especially true for the local roadway network, given that there are multiple routes that an employee could choose to take if traveling from the project to the remainder of Davis

(i.e., East Covell Boulevard, Alhambra Drive to Fifth Street or Loyola Drive, 2nd Street, Cowell Boulevard, and Drummond Avenue).

- The cumulative forecasts are prepared for year 2035 conditions and assume full development of the MRIC, Davis IC, and Nishi Gateway projects as well as the increment of development projected to occur in Davis based on the SACOG MTP/SCS.
- Analyzing road segments is sufficient to determine how many lanes are required (i.e., two or four) on the segment and how much right-of-way to preserve at connecting intersections.
- Forecasts are developed and evaluated for intersections at and immediately adjacent to the I-80/Mace Boulevard interchange because there is essentially only a single route between I-80 and the project.

Study Area

Figure 5-3 shows the *local* freeway and roadway segment locations evaluated for the cumulative traffic scenarios. The study roadway segments cover an area larger than the Existing Plus Project analysis, in that it includes key roadways throughout the City of Davis and several County roadways, because the cumulative (2035) analysis includes growth throughout Davis, including the concurrently studied Davis IC and Nishi Gateway projects.

Figure 5-4 shows the *regional* freeway and roadway segment locations evaluated for the cumulative scenarios.

Methodology

Roadway Segment Operations

Roadway segment operations were assessed for the cumulative traffic scenarios using LOS thresholds for peak hour volumes. Roadway capacities for the different roadway types in the study area were developed using the roadway capacity methodology presented in the *2010 Highway Capacity Manual*, which defines peak hour capacities based on features including number of lanes, design speed, intersection spacing, horizontal and vertical curvature, and other factors. Table 5-10 presents the capacities developed for the roadway segment analysis, using the characteristics of Davis roadways in each category.

Figure 5-3
Local Study Roadway Segments for Cumulative Impact Analysis

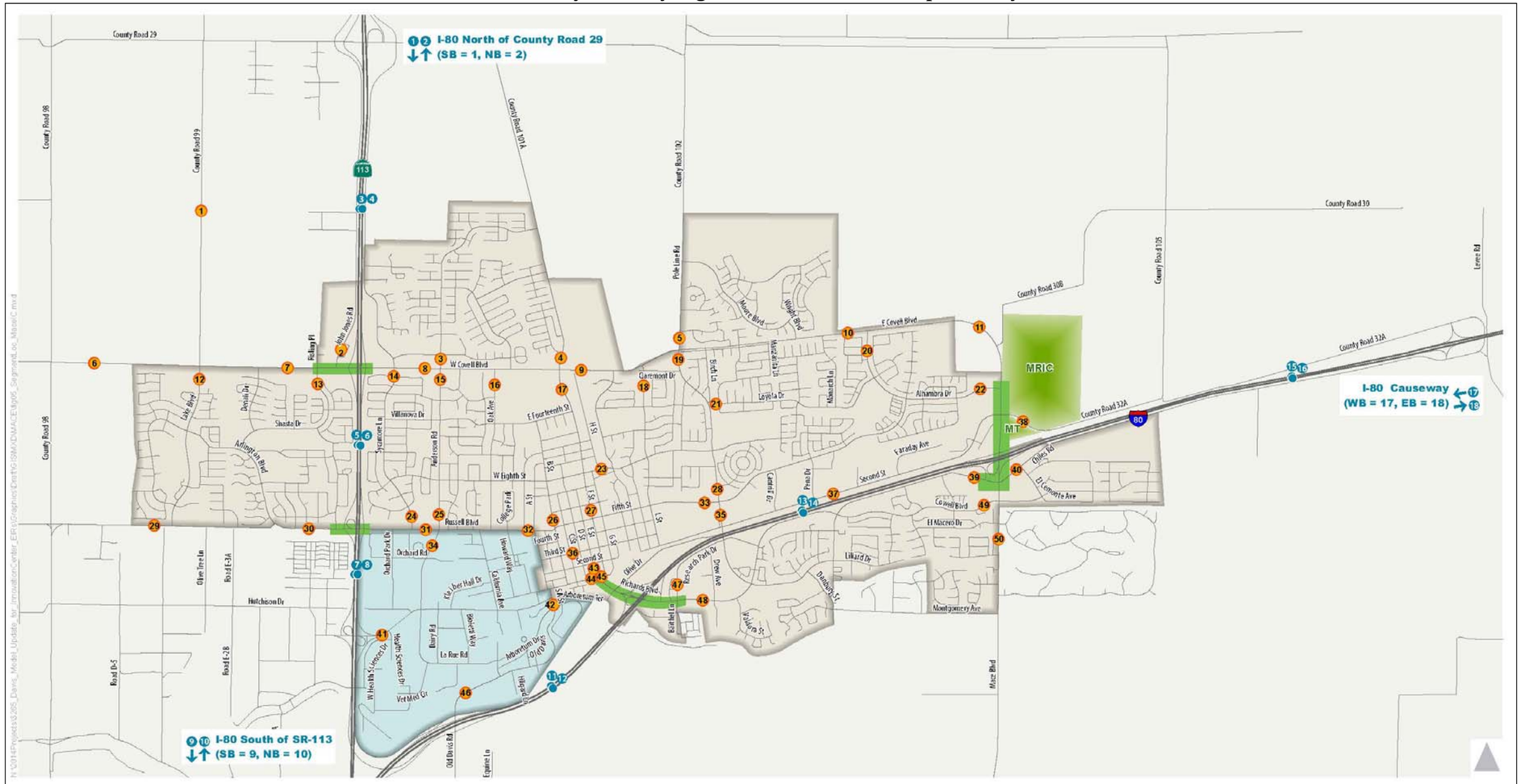


Figure 4.14-5

Study Roadway Segments for Cumulative Impact Analysis

Figure 5-4
Regional Study Roadway Segments for Cumulative Impact Analysis

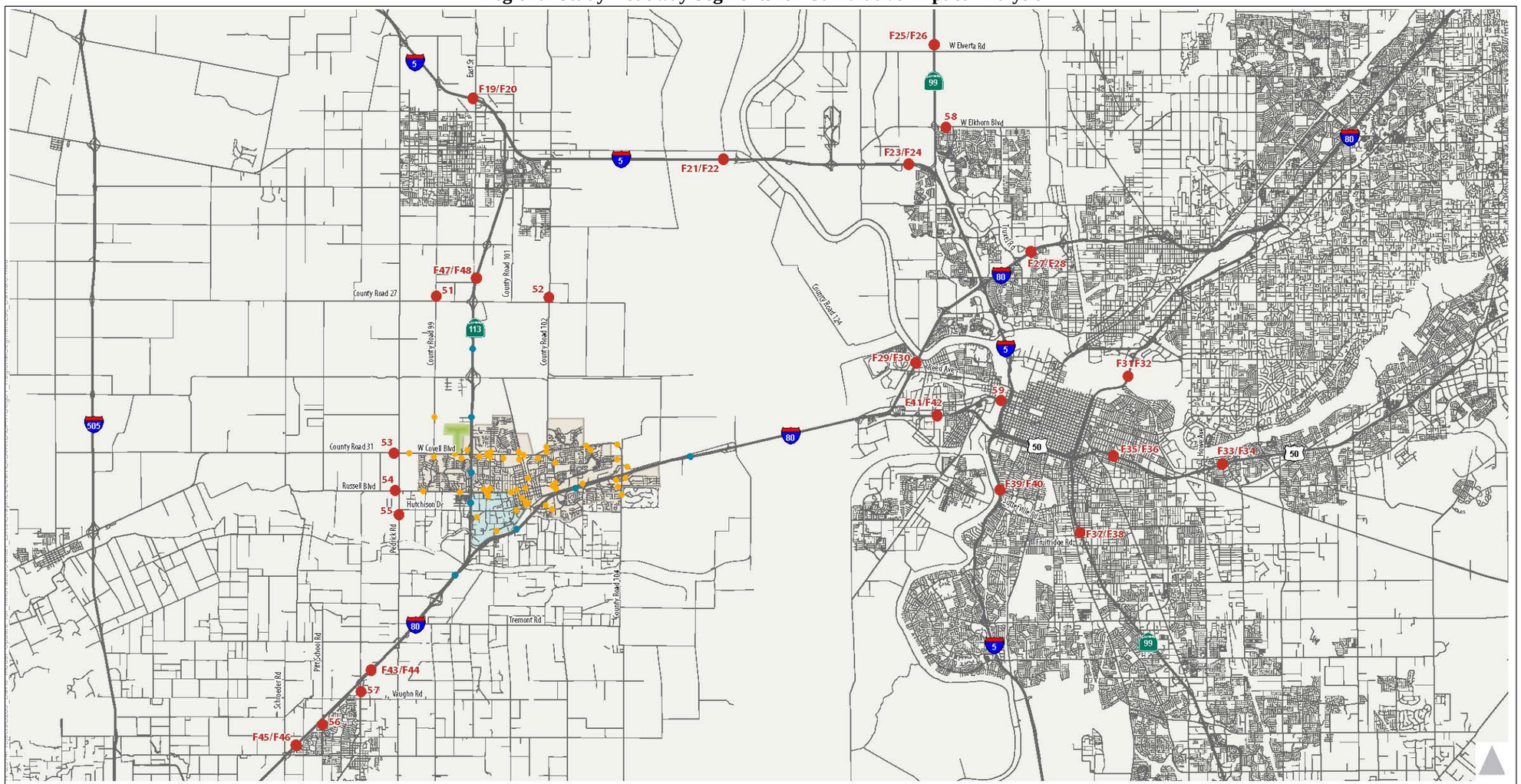


Figure 1

Regional Roadway and
Freeway Analysis Segments

Table 5-10
Roadway Segment LOS Definitions

Functional Classification	LOS volume not to exceed (vph)		
	C	D	E
4-Lane Major Arterial	3,170	4,400	4,770
2-Lane Major Arterial	1,370	1,650	1,780
2-Lane Minor Arterial	1,030	1,450	1,750
Collector	660	920	1,110
Local Street	360	510	610

Source: Developed by Fehr & Peers for Davis roadway characteristics using the 2010 HCM methodology.

Intersection Operations Within the Mace Boulevard Interchange Area

The analysis methodology used is the same as presented in Section 4.14.

Freeway Operations

The analysis methodology used is the same as presented in Section 4.14.

Travel Forecasting Method

Intersection and roadway traffic forecasts for the cumulative scenarios were developed using the City of Davis travel demand model, which is a focused four-step model with a much more detailed roadway network and land use zone structure than the six-county regional model developed by SACOG. The land use forecasts for both the base year and horizon year for the City model were updated by Fehr & Peers for this evaluation. The base year land use for the City model was updated to reflect 2008 conditions, which is the same base year for the regional model developed by SACOG to reflect the current version of the Metropolitan Transportation Plan/Sustainable Communities Plan (MTP/SCS). The horizon year land use for the City of Davis travel model was then updated to reflect 2035 conditions, which is also the current MTP/SCS horizon year. The 2035 horizon year land use for the City model was developed by adding the land use growth reflected in the MTP/SCS model, between 2008 and 2035, to the new 2008 City base year land use.

The MRIC, Mace Triangle, Davis IC, and Nishi Gateway projects were also incorporated into SACOG's regional model for 2035 so that forecasts could be developed for the regional analysis and data on regional travel (i.e., through trips and internal to external trips) could be incorporated into the City of Davis model. Based on consultation with SACOG and City of Davis staff, it was determined that the additional employment associated with the projects (which are not included in the MTP/SCS land use forecasts), would result in a reallocation of regional employment, rather than an increase over 2035 employment forecasts for the Sacramento region. The 2035 land use forecasts in the SACOG regional model were adjusted to reduce office and industrial employment growth in other portions of the region to account for the reallocation associated with the Davis projects. The SACOG MTP/SCS forecasts the addition of 2,230 new office and industrial employees in the City of Davis by 2035.

To determine the impact of the proposed project on regional employment allocation and assess where Project employees are likely to live, an economic assessment was prepared and is documented in the *City of Davis Economic Evaluation of Innovation Park Proposals* (Bay Area Economics, March 2015). The economic assessment estimates that 557 of the 5,882 MRIC employees projected to occupy the proposed project at build-out would otherwise be part of the employment growth predicted by SACOG for Davis by 2035, while all the remaining employment would be reallocated from other jurisdictions.

The City of Davis estimates a residential development potential of 2,231 new housing units, including the Cannery Project, through 2035. The economic evaluation forecasts that 1,238 estimated households of total Innovation Center employees would be accommodated within those new Davis households under the cumulative scenario, leaving the remaining MRIC and Mace Triangle employee households that would need to be accommodated outside of Davis.

The CEQA Cumulative No Project scenario includes the growth anticipated in the MTP/SCS as well as the Davis IC and Nishi Gateway development projects. Intersection and roadway volumes were developed using the difference method procedure, which adds the growth in traffic between the 2008 base year and the Cumulative No Project forecasts to existing volumes.

The Modified Cumulative No Project scenario includes the growth anticipated in the MTP/SCS as well as the Nishi Gateway development project. Intersection and roadway volumes were developed using the difference method procedure, which adds the growth in traffic between the 2008 base year and the Cumulative No Project forecasts to existing volumes.

The Cumulative Plus Project scenarios were developed by adding the proposed MRIC and Mace Triangle project land uses to the city model and adjusting the city model gateways to reflect the household location of MRIC employees as identified in the economic evaluation. Intersection and roadway volumes were developed using the difference method procedure, which adds the growth in traffic between the base year and the Cumulative Plus Project forecasts to existing volumes.

Forecasts of project vehicle miles of travel (VMT) was estimated by utilizing a combination of vehicle trip generation estimates as well as trip length data based on household locations in the *Economic Evaluation of Innovation Park Proposals* (BAE, March 2015), California Household Travel Survey (CHTS) data, and census data. This provides a full accounting of VMT generated by the project.

The travel model assigns most of the external vehicle trips generated by MRIC to the I-80/Mace Boulevard interchange given the proximity of the interchange to the project and the fact that the interchanges (i.e., hook ramps) on CR 32A and CR 32B are located about 3 miles from the project site. The resulting congestion at the I-80/Mace Boulevard interchange causes a redistribution of many "non-project" trips in East Davis and South Davis to other less congested routes. This includes roadways such as Pole Line Road, Cowell Boulevard, and Richards Boulevard. For some roadway segments, volumes decrease with the "plus project" scenario as a result of this redistribution.

Project Trip Generation

The trip generation of the project is the same as presented in Section 4.14.

Regional Facilities Analysis

The regional analysis extends beyond the originally-scoped traffic study area to ensure that roadway and freeway segments that could be subject to substantial volume growth with the project are included in the analysis. The scope of the regional analysis was selected based on a comparison of the With Project and No Project traffic volumes in the cumulative case, using the SACMET Regional Travel Demand Model, which covers the counties of Sacramento, Sutter, Yolo and Yuba, as well as portions of Placer and El Dorado counties. For locations to the southwest in Solano County, outside the SACMET model area, volumes were estimated using the I-80 volume at the western gateway to the model area just west of Pedrick Road, and apportioning the project volumes to candidate roadways using the socioeconomic data regarding residences of Davis area employees in the BAE memo Economic Evaluation of Innovation Park Proposals (March 10, 2015). Representative segments of freeways and major arterials where the volume difference exceeded 50 were selected. While the scoping methodology does not ensure that every arterial in the greater region that would see a volume increase of this level or higher would be studied, the methodology does address segments in other jurisdictions that would be affected to the greatest extent and captures a reasonably large commute shed for the projects.

Cumulative Impacts and Mitigation Measures

5-21 Cumulative Impacts to Intersections Within the Freeway Interchange Area. Based upon the analysis below, even with mitigation, the proposed project's incremental contribution to cumulative intersection impacts would be *cumulatively considerable* and *significant and unavoidable*.

CEQA Cumulative Scenario

Table 5-11 shows the traffic simulation LOS results for the Mace Boulevard interchange area. In the CEQA Cumulative Without Project case, several intersections are projected to operate at LOS D or E. With the addition of Project traffic, service levels would deteriorate further, and two intersections would operate at LOS F. Using the criteria presented under standard of significance #1, significant impacts are identified at two intersections in the Mace Boulevard/I-80 interchange area:

1. Mace Boulevard/2nd Street/County Road 32A
2. Mace Boulevard/I-80 Westbound Ramps

Table 5-11
CEQA Cumulative Plus Project Peak Hour Intersection Operations
Mace Boulevard/I-80 Interchange Area

No.	Intersection	Control	CEQA Cumulative No Project				CEQA Cumulative Plus Project			
			AM Peak		PM Peak		AM Peak		PM Peak	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
15	Mace Blvd/ Alhambra Drive	Signal	11	B	55	D	46	D	78	E
22	Mace Blvd/2nd Street/County Road 32A	Signal	30	C	68	E	67	E	**167**	**F**
33	Mace Blvd/I-80 WB Ramps	Signal	69	E	46	D	**110**	**F**	**92**	**F**
34	Mace Blvd/ Chiles Road	Signal	28	C	38	D	27	C	69	E
41	I-80 EB Off-Ramp/Chiles Road	Signal	11	B	18	B	10	A	41	D
42	Mace Blvd/I-80 EB Ramps	Uncontrolled	5	A	5	A	5	A	5	A

Notes:
1. Delay is reported in seconds per vehicle for the overall intersection for signalized and uncontrolled intersections.
2. **Bold** – LOS below standard. Shading indicates significant impact.

In summary, the project's incremental increase in traffic to study intersections, in combination with traffic from cumulative development, would be considered ***cumulatively considerable***.

Mitigation Measure(s)

Focused Traffic Study Requirement to Verify Timing for Improvements

Due to the project scale and its extended buildout, and the uncertainty over the timing of each project phase, the establishment of an ongoing management and monitoring program is the best way to establish the need for implementation of individual mitigation measures. The following mitigation measure will require the Master Owners' Association for the MRIC to conduct focused traffic studies with each phase of development, submit the study to the City and, if standards are met, the project applicant or the City shall construct physical traffic improvements.

MRIC

5-21(a) Implement Mitigation Measure 4.14-2(a).

Mace Triangle – none

Mitigation Options for Mace Boulevard/I-80 Westbound Ramps and Mace Boulevard/2nd Street/County Road 32A

Three potential mitigation options are available for the mitigation of the impact to the interchange area intersections. Each measure is described below, followed by an evaluation of its effectiveness:

1. ***Option 1 (Roadway and Intersection Widening Alternative):*** *Widen the roadways and intersections in the impacted area to provide LOS E or better operation;*

2. ***Option 2 (Widening Plus Project Access Change Alternative):*** *Modify the proposed new project access on Mace Boulevard, north of Alhambra Drive, to provide a traffic signal with full access (i.e., all movements allowed), as well as widen adjacent roadways and intersections to provide LOS E or better operation, lessening the turning movement demand at the project access driveway at the Alhambra Drive intersection;*

3. ***Option 3 (Interchange Alternative):*** *Construct capacity improvements at the County Road 32A/32B interchange and on County Road 32A to allow more Project traffic to use this interchange, lessening the traffic on the Mace Boulevard interchange;*

Another approach would be to implement a reduced intensity alternative in order to reduce project traffic in the Mace Boulevard interchange area. This, coupled, with widening of adjacent roadways and intersections, would be expected to provide LOS E or better operations to the above-listed facilities. The reduced intensity/project alternative approach is considered in Chapter 7, Alternatives, of this EIR.

The following section evaluates the effectiveness of each mitigation strategy.

MRIC and Mace Triangle

5-21(b) ***Roadway and Intersection Widening Alternative (Option 1)*** *Construct the improvements to Mace Boulevard to provide sufficient capacity to serve the Cumulative Plus Project traffic. Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis.*

In addition to the widenings identified in Mitigation Measure 4.14-2(b), the following improvements shall be implemented:

- *Southbound Mace Boulevard: Extend the third southbound lane back from the Westbound Ramps to the 2nd Street/County Road 32A intersection;*

- *Northbound Mace Boulevard: Add a third northbound lane between 2nd Street/County Road 32A and Alhambra Avenue/Project Central Driveway, and extend a second northbound through lane from Alhambra Drive to the project northern driveway;*

- *2nd Street/County Road 32A intersection: Widen eastbound approach to add a second left turn lane;*

- *I-80 Westbound Ramps intersection: lengthen westbound right-turn lane*

With these mitigations, LOS E would be restored to the impacted intersections, and queues would be contained within the available storage.

Widening the Mace Boulevard overpass of I-80, modifying the westbound off-ramp, and widening the southbound on-ramp at the I-80/Mace Boulevard interchange would require approval by Caltrans.

With implementation of Mitigation Measure 5-21(b), the impact would be reduced to a less-than-significant level. However, because the approval of interchange improvements by Caltrans cannot be assured, the impact remains *cumulatively considerable* and *significant and unavoidable.*

MRIC and Mace Triangle

5-21(c) ***Widening Plus Project Access Change Alternative (Option 2):***

Modify the proposed new project access on Mace Boulevard, north of Alhambra Drive, to provide a traffic signal with full access (i.e., all movements allowed), and widen adjacent roadways and intersections to provide LOS E or better operation as described in Option 5-21(b). Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis.

With these mitigations, LOS E would be restored to the impacted intersections, and queues would be contained within the available storage.

Widening the Mace Boulevard overpass of I-80, modifying the westbound off-ramp, and widening the southbound on-ramp at the I-80/Mace Boulevard interchange would require approval by Caltrans.

With implementation of Mitigation Measure 5-21(c), the impact would be reduced to a less-than-significant level. However, because the approval of interchange improvements by Caltrans cannot be assured, the impact remains *cumulatively considerable* and *significant and unavoidable*.

MRIC and Mace Triangle

5-21(d) ***Interchange Alternative (Option 3)****:*

Construct capacity improvements at the County Road 32 interchange and along County Road 32A to allow this interchange to serve more project traffic and reduce project traffic using the Mace Boulevard interchange. Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis. The improvements include:

- *Reconstruction, widening, and potential relocation to the west, of the eastbound and westbound on- and off-ramps to provide more storage capacity, and to provide traffic signals or roundabouts at the ramp terminal intersections. Provision of an auxiliary lane between the relocated eastbound on-ramp merge and the causeway structure.*
- *Provision of a grade separation of County Road 32A and the UPRR tracks;*
- *Re-configuration of the County Road 32A/County Road 105 intersection to provide uninterrupted County Road 32A flow with County Road 105 under stop control.*

With these improvements and the associated project traffic shift (estimated to be about 600 trips in each peak hour), the Mace Boulevard mitigations would be reduced to the following:

- *Mace Boulevard/Chiles Road intersection: Add a northbound through lane, lengthen the westbound right-turn pocket to 300 feet, and re-stripe the westbound through lane to a shared through-right lane;*
- *Mace Boulevard/I-80 Eastbound Ramps: Add a southbound right-turn lane, re-stripe the second southbound dedicated through lane as a shared through-right, add a receiving lane on the I-80 eastbound loop on-ramps, re-stripe the second northbound dedicated through lane as a shared through-right, and add a receiving lane on the I-80 eastbound straight on-ramp;*
- *Mace Boulevard/I-80 Westbound Ramps: Re-stripe the southbound dedicated right-turn lane as a shared through-right, and add a southbound receiving lane on the south leg;*
- *Mace Boulevard/2nd Street/County Road 32A intersection: Add a northbound left-turn lane, and add an eastbound right-turn lane (450 feet long);*

- *Mace Boulevard/Alhambra Drive/Central Project Driveway intersection: Add an eastbound left-turn lane, re-stripe the eastbound shared through-left lane to a shared through-right lane; and re-strips the dedicated northbound right-turn lane to a shared through-right.*

Relocation of the eastbound hook on-ramp from its present location along Chiles Road, to a point further west, would allow for the provision of an auxiliary lane on eastbound I-80 between the on-ramp and the causeway structure to facilitate merge activities with the increased on-ramp volumes. This would require the acquisition of additional right-of-way on the south side of Chiles Road that is currently used for agricultural activities and may have a secondary impact.

With these mitigations, the interchange area intersections would operate at LOS E or better. The operations of County Road 32A and 32B ramp intersections would operate at LOS A in both peak hours, once signalized, with the volume shift, and the County Road 32A/County Road 105 intersection would operate at LOS C in both peak hours with the re-alignment and relocation of the stop sign to the County Road 105 approach.

The addition of 600 peak hour vehicle trips to County Road 32A has the potential to negatively impact bicycle flow along CR 32A between CR 105 and the access to the causeway bicycle path. The following mitigation measure would reduce this potential impact to a less-than-significant level.

- *County Road 32A – from County Road 105 to Causeway Bicycle Path Access: widen CR 32A to meet Yolo County standards for a 2-lane arterial (14 foot travel lanes and 6 foot shoulder/on-street bike lanes).*

It is noted that Union Pacific Railroad has discussed the potential closure of the County Road 32A grade crossing, due to safety concerns. While the future closure of the crossing is not confirmed, the potential for the closure means that the grade separation in Mitigation Measure 5-21(d) would need to be constructed in order to achieve the intended benefits of the mitigation. That is, a near-term reconfiguration of the grade crossing as described above may not be feasible.

Because the interchange improvements at both the Mace Boulevard interchange and the County Road 32A/32B interchange would require Caltrans review and approval, and due to the uncertainty about UP's plans for the railroad grade crossing at County Road 32A, the impact remains *cumulatively considerable* and *significant and unavoidable*.

Modified Cumulative Scenario

Table 5-12 shows the traffic simulation LOS results for the Mace Boulevard interchange area. In the Modified Cumulative without Project scenario, all of the study intersections are projected to operate at LOS D or better conditions. With the addition of proposed project traffic, service levels would deteriorate and several significant impacts are identified in the Mace Boulevard/I-80 interchange area.

Table 5-12
Modified Cumulative Plus Project Peak Hour Intersection Operations
Mace Boulevard/I-80 Interchange Area

No.	Intersection	Control	Modified Cumulative No Project				Modified Cumulative Plus Project			
			AM Peak		PM Peak		AM Peak		PM Peak	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
15	Mace Blvd/ Alhambra Drive	Signal	10	A	11	B	**86**	**F**	72	E
22	Mace Blvd/2nd Street/County Road 32A	Signal	27	C	46	D	70	E	**119**	**F**
33	Mace Blvd/I-80 WB Ramps	Signal	36	D	39	D	**119**	**F**	56	E
34	Mace Blvd/ Chiles Road	Signal	25	C	35	D	27	C	33	C
41	I-80 EB Off-Ramp/Chiles Road	Signal	9	A	17	B	11	B	16	B
42	Mace Blvd/I-80 EB Ramps	Uncontrolled	3	A	3	A	5	A	3	A

Notes:
1. Delay is reported in seconds per vehicle for the overall intersection for signalized and uncontrolled intersections.
2. **Bold** – LOS below standard. Shading indicates significant impact.

The following three intersections (listed from north to south) are significantly impacted in the Modified Cumulative Plus Project case, based on the first standard of significance listed in Section 4.14 of this EIR:

1. Mace Boulevard/2nd Street/County Road 32A
2. Mace Boulevard/I-80 Westbound Ramps
3. Mace Boulevard/Alhambra Drive

In summary, the proposed project's incremental increase in traffic to study intersections, in combination with traffic from cumulative development, would be considered ***cumulatively considerable***.

Mitigation Measure(s)

Focused Traffic Study Requirement to Verify Timing for Improvements

Due to the project scale and its extended buildout, and the uncertainty over the timing of each project phase, the establishment of an ongoing management and monitoring program is the best way to establish the need for implementation of individual mitigation measures. The following mitigation measure will require the Master Owners' Association for the MRIC to conduct focused traffic studies with each phase of development, submit the study to the City and, if standards are met, the project applicant or the City shall construct physical traffic improvements.

MRIC

5-21(a) Implement Mitigation Measure 4.14-2(a).

Mace Triangle – none

Mitigation Options for Mace Boulevard/I-80 Westbound Ramps; Mace Boulevard/2nd Street/County Road 32A; and Chiles Road/I-80 Eastbound Off-Ramp

Three potential mitigation options are available for the mitigation of the impact to the three interchange area intersections. Each measure is described below, followed by an evaluation of its effectiveness:

1. ***Option 1 (Roadway and Intersection Widening Alternative):*** *Widen the roadways and intersections in the impacted area to provide LOS E or better operation;*

2. ***Option 2 (Widening Plus Project Access Change Alternative):*** *Modify the proposed new project access on Mace Boulevard, north of Alhambra Drive, to provide a traffic signal with full access (i.e., all movements allowed), as well as widen adjacent roadways and intersections to provide LOS E or better operation, lessening the turning movement demand at the project access driveway at the Alhambra Drive intersection;*

3. ***Option 3 (Interchange Alternative):*** *Construct capacity improvements at the County Road 32A/32B interchange and on County Road 32A to allow more Project traffic to use this interchange, lessening the traffic on the Mace Boulevard interchange;*

Another approach would be to implement a reduced intensity alternative in order to reduce project traffic in the Mace Boulevard interchange area. This, coupled, with widening of adjacent roadways and intersections, would be expected to provide LOS E or better operations to the above-listed facilities. The reduced intensity/project alternative approach is considered in Chapter 7, Alternatives, of this EIR.

The following section evaluates the effectiveness of each mitigation strategy.

MRIC and Mace Triangle

5-21(b) ***Roadway and Intersection Widening Alternative (Option 1)*** *Construct the improvements to Mace Boulevard to provide sufficient capacity to serve the Cumulative Plus Project traffic. Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis.*

In addition to the widenings identified in Mitigation Measure 4.14-2(b), the following improvements shall be implemented:

- *Southbound Mace Boulevard: Extend the third southbound lane back from the Westbound Ramps to the 2nd Street/County Road 32A intersection;*
- *Northbound Mace Boulevard: Add a second northbound lane between 2nd Street/County Road 32A and Alhambra Avenue/Project Central Driveway;*
- *Mace Boulevard/Alhambra Drive: Add a second southbound left-turn lane;*
- *Second Street/County Road 32A intersection: no additions;*
- *I-80 eastbound straight on-ramp: no additions.*

With these mitigations, LOS E would be restored to the impacted intersections, and queues would be contained within the available storage.

Widening the Mace Boulevard overpass of I-80 would require approval by Caltrans.

With implementation of Mitigation Measure 5-21(b), the impact would be reduced to a less-than-significant level. However, because the approval of interchange improvements by Caltrans cannot be assured, the impact remains *cumulatively considerable* and *significant and unavoidable.*

MRIC and Mace Triangle

5-21(c) ***Widening Plus Project Access Change Alternative (Option 2):***

Modify the proposed new project access on Mace Boulevard, north of Alhambra Drive, to provide a traffic signal with full access (i.e., all movements allowed), and widen adjacent roadways and intersections to

provide LOS E or better operation as described in Mitigation Measure 5-21(b). Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis.

With these mitigations, LOS E would be restored to the impacted intersections, and queues would be contained within the available storage.

Widening the Mace Boulevard overpass of I-80 would require approval by Caltrans.

With implementation of Mitigation Measure 5-21(c), the impact would be reduced to a less-than-significant level. However, because the approval of interchange improvements by Caltrans cannot be assured, the impact remains *cumulatively considerable* and *significant and unavoidable.*

MRIC and Mace Triangle

5-21(d) ***Interchange Alternative (Option 3)****:*

Construct capacity improvements at the County Road 32 interchange and along County Road 32A to allow this interchange to serve more project traffic and reduce project traffic using the Mace Boulevard interchange. Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis. The improvements include:

- *Reconstruction, widening, and potential relocation to the west, of the eastbound and westbound on- and off-ramps to provide more storage capacity, and to provide traffic signals or roundabouts at the ramp terminal intersections. Provision of an auxiliary lane between the relocated eastbound on-ramp merge and the causeway structure.*

- *Provision of a grade separation of County Road 32A and the UPRR tracks;*

- *Re-configuration of the County Road 32A/County Road 105 intersection to provide uninterrupted County Road 32A flow with County Road 105 under stop control.*

With these improvements and the associated project traffic shift (estimated to be about 600 trips in each peak hour), the Mace Boulevard mitigations would be reduced to the following:

- *<u>Mace Boulevard/Chiles Road intersection:</u> Add a northbound through lane, lengthen the westbound right-turn pocket to 300*

feet, and re-stripe the westbound through lane to a shared through-right lane;

- *Mace Boulevard/I-80 Eastbound Ramps: Add a southbound right-turn lane, re-stripe the second southbound dedicated through lane as a shared through-right, add a receiving lane on the I-80 eastbound loop on-ramps, re-stripe the second northbound dedicated through lane as a shared through-right, and add a receiving lane on the I-80 eastbound straight on-ramp;*

- *Mace Boulevard/I-80 Westbound Ramps: Re-stripe the southbound dedicated right-turn lane as a shared through-right, and add a southbound receiving lane on the south leg;*

- *Mace Boulevard/2nd Street/County Road 32A intersection: Add a northbound left-turn lane, and add an eastbound right-turn lane (450 feet long);*

- *Mace Boulevard/Alhambra Drive/Central Project Driveway intersection: Add an eastbound left-turn lane, re-stripe the eastbound shared through-left lane to a shared through-right lane; and re-strips the dedicated northbound right-turn lane to a shared through-right.*

Relocation of the eastbound hook on-ramp from its present location along Chiles Road, to a point further west, would allow for the provision of an auxiliary lane on eastbound I-80 between the on-ramp and the causeway structure to facilitate merge activities with the increased on-ramp volumes. This would require the acquisition of additional right-of-way on the south side of Chiles Road that is currently used for agricultural activities and may have a secondary impact.

With these mitigations, the interchange area intersections would operate at LOS E or better. The operations of County Road 32A and 32B ramp intersections would operate at LOS A in both peak hours, once signalized, with the volume shift, and the County Road 32A/County Road 105 intersection would operate at LOS C in both peak hours with the re-alignment and relocation of the stop sign to the County Road 105 approach.

The addition of 600 peak hour vehicle trips to County Road 32A has the potential to negatively impact bicycle flow along CR 32A between CR 105 and the access to the causeway bicycle path. The following mitigation measure would reduce this potential impact to a less-than-significant level.

- *County Road 32A – from County Road 105 to Causeway Bicycle Path Access: widen CR 32A to meet Yolo County standards for a 2-lane arterial (14 foot travel lanes and 6 foot shoulder/on-street bike lanes).*

It is noted that Union Pacific Railroad has discussed the potential closure of the County Road 32A grade crossing, due to safety concerns. While the future closure of the crossing is not confirmed, the potential for the closure means that the grade separation in Mitigation Measure 5-21(d) would need to be constructed in order to achieve the intended benefits of the mitigation. That is, a near-term reconfiguration of the grade crossing as described above may not be feasible.

Because the interchange improvements at both the Mace Boulevard interchange and the County Road 32A/32B interchange would require Caltrans review and approval, and due to the uncertainty about UP's plans for the railroad grade crossing at County Road 32A, the impact remains *cumulatively considerable* and *significant and unavoidable*.

5-22 Cumulative Impacts to Roadway Segments. Based upon the analysis below, even with mitigation, the proposed project's incremental contribution to cumulative roadway segment impacts would be *cumulatively considerable* and *significant and unavoidable*.

CEQA Cumulative Scenario

Table 5-13 presents the cumulative roadway segment volumes for the CEQA Cumulative No Project and CEQA Cumulative With Project cases in the local study area. It should be noted that the amount and location of new development in both cases results in substantially different travel route choices, which leads to volume growth on many roadways and volume drops on some roadways. It is also noted that Mace Boulevard from Chiles Road to Alhambra Drive is not discussed here, because it is discussed above in Impact 5-21.

Adding the project to the CEQA Cumulative No Project condition causes significant impacts on five roadway segments, including:

1. Covell Boulevard East of Denali Drive (LOS F, PM peak hour)
2. John Jones Road North of Covell Boulevard (LOS F, AM and PM peak hours)
3. Old Davis Road north of I-80 (LOS E, PM peak hour)
4. Pole Line Road south of 5th Street (LOS F, PM peak hour)
5. Richards Boulevard east of Research Park Drive (LOS F, AM and PM peak hours)

Table 5-13
CEQA Cumulative Roadway Segment LOS

				AM				PM			
				CEQA Cumulative No Project		CEQA Cumulative With Project		CEQA Cumulative No Project		CEQA Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
1st Street E of D Street	44	City Core	1,780	1,020	C	890	C	1,250	C	1,190	C
1st Street E of E Street	45	City Core	1,780	460	C	610	C	1,030	C	1,340	C
2nd Street E of Pena Drive	37	City	1,750	1,570	E	1,330	D	1,760	**F**	1,690	E
3rd Street E of B Street	36	City Core	610	830	**F**	820	**F**	1,570	**F**	1,390	**F**
5th Street W of Pole Line Road	33	City	4,770	1,480	C	1,200	C	1,400	C	1,470	C
8th Street E of F Street	23	City	1,750	940	C	840	C	1,070	D	820	C
Alhambra Drive S of Covell Blvd	20	City	1,750	670	C	720	C	330	C	380	C
Alhambra Drive W of Mace Blvd	22	City	1,110	900	D	900	D	790	D	790	D
Anderson Road N of Covell Blvd	3	City	1,750	610	C	570	C	920	C	720	C
Anderson Road N of Russell Blvd	25	City	1,750	980	C	1,150	D	1,640	E	1,040	D

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Table 5-13
CEQA Cumulative Roadway Segment LOS

				AM				PM			
				CEQA Cumulative No Project		CEQA Cumulative With Project		CEQA Cumulative No Project		CEQA Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
Anderson Road S of Covell Blvd	15	City	1,750	780	C	830	C	630	C	810	C
La Rue Road S of Russell Blvd	34	UCD	4,770	1,650	C	1,760	C	1,760	C	2,250	C
B Street N of Russell Blvd/ 5th Street	26	City	1,750	670	C	580	C	1,020	C	630	C
Chiles Road E of Mace Blvd	40	City	1,750	850	C	800	C	1,500	E	1,090	D
Chiles Road W of Cowell/EB 80 Off	39	City	1,750	980	C	1,000	C	1,130	D	1,210	D
County Road 31 E of County Road 98	6	Yolo	1,780	740	C	830	C	830	C	1,090	C
County Road 32A E of Mace Blvd	38	Yolo 32A	1,750	170	C	860	C	1,160	D	1,070	D
County Road 99D S of County Road 29	1	Yolo	1,750	730	C	640	C	570	C	820	C
Covell Blvd E of Denali Drive	7	City	1,780	1,130	C	990	C	1,110	C	2,080	**F**

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Table 5-13
CEQA Cumulative Roadway Segment LOS

				AM				PM			
				CEQA Cumulative No Project		CEQA Cumulative With Project		CEQA Cumulative No Project		CEQA Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
Covell Blvd, E of F Street	9	City	4,770	2,750	C	2,470	C	2,650	C	2,580	C
Covell Blvd E of Harper High	11	Yolo	1,780	1,440	**D**	1,090	C	1,580	**D**	1,480	**D**
Covell Blvd E of Monarch Lane	10	City	4,770	2,070	C	1,570	C	1,870	C	1,700	C
Covell Blvd W of Anderson Road	8	City	4,770	1,940	C	2,040	C	1,880	C	2,380	C
Cowell Blvd Blvd W of Mace Blvd	49	City	1,750	730	C	640	C	620	C	660	C
E Street N of 1st Street	43	City Core	610	470	D	390	D	1,290	**F**	660	**F**
F Street N of 5th Street	27	City	1,750	540	C	580	C	730	C	720	C
F Street N of Covell Blvd	4	City	1,750	760	C	760	C	980	C	740	C
F Street S of Covell Blvd	17	City	1,750	860	C	1,050	D	720	C	980	C
Hutchison Drive W of Health Science Drive	41	UCD	4,770	2,080	C	1,790	C	2,230	C	2,030	C

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Table 5-13
CEQA Cumulative Roadway Segment LOS

				AM				PM			
				CEQA Cumulative No Project		CEQA Cumulative With Project		CEQA Cumulative No Project		CEQA Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
John Jones Road N of Covell Blvd	2	City	1,750	1,380	D	2,110	**F**	1,390	D	1,760	**F**
L Street S of Covell Blvd	18	City	1,110	570	C	670	D	460	C	640	C
Lake Blvd S of Covell Blvd	12	City	1,750	790	C	770	C	510	C	640	C
Loyola Drive E of Pole Line Road	21	City	1,110	360	C	330	C	440	C	450	C
Mace Blvd S of El Macero Drive	50	City	1,780	280	C	310	C	270	C	360	C
Oak Ave S of Covell Blvd	16	City	1,110	500	C	490	C	430	C	660	C
Old Davis Road N of I-80	46	UCD	1,750	1,190	D	1,380	D	910	C	1,460	**E**
Old Davis Road S of Hutchison Drive	42	UCD	1,750	1,040	D	1,010	C	1,080	D	1,250	D
Pole Line Road N of 5th Street	28	City	1,750	1,090	D	1,050	D	1,510	E	1,310	D

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Table 5-13
CEQA Cumulative Roadway Segment LOS

				AM				PM			
				CEQA Cumulative No Project		CEQA Cumulative With Project		CEQA Cumulative No Project		CEQA Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
Pole Line Road N of Covell Blvd	5	City	1,780	1,320	C	1,370	C	1,410	D	1,520	D
Pole Line Road S of 5th Street	35	City	1,780	1,450	D	1,540	D	1,530	D	1,960	**F**
Pole Line Road S of Covell Blvd	19	City	1,750	940	C	870	C	1,210	D	1,070	D
Research Park Drive N of Richards Blvd	47	City	1,750	510	C	730	C	1,070	D	950	C
Richards Blvd E of Research Park Drive	48	City	1,780	2,000	**F**	2,070	**F**	2,260	**F**	2,220	**F**
Russell Blvd E of Eisenhower Street	30	City	4,770	2,140	C	2,040	C	1,810	C	1,980	C
Russell Blvd W of A Street	32	City	4,770	1,890	C	1,670	C	2,140	C	2,350	C
Russell Blvd W of Anderson Road	31	City	4,770	1,900	C	1,980	C	2,690	C	2,150	C
Russell Blvd W of Lake Blvd	29	City	1,750	790	C	910	C	1,040	D	970	C

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Table 5-13
CEQA Cumulative Roadway Segment LOS

				AM				PM			
				CEQA Cumulative No Project		CEQA Cumulative With Project		CEQA Cumulative No Project		CEQA Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
Shasta Drive S of Covell Blvd	13	City	1,750	890	C	880	C	980	C	990	C
Sycamore Lane N of Russell Blvd	24	City	1,110	970	E	1,000	E	660	C	1,030	E
Sycamore Lane S of Covell Blvd	14	City	1,110	1,010	E	1,030	E	1,030	E	890	D

Note: Deficient operations are in **bold**. Significant impacts are highlighted in grey.

For all but one of these segments (Old Davis Road north of I-80), the projected travel demand exceeds the peak hour capacity, and widening would be required to serve the projected demand. In the case of Old Davis Road, the demand is projected to remain under capacity, but the LOS would exceed the UC Davis standard of LOS D.

In summary, the proposed project's incremental increase in traffic along roadway segments, in combination with traffic from cumulative development, would be considered ***cumulatively considerable***.

Mitigation Measure

Because the CEQA Cumulative plus Project scenario assumes a significant level of new development in Davis, and the cumulative impacts to the five road segments are based on forecast volumes that would exceed capacities by approximately 10 to 20 percent (for most of the segments), a combination of monitoring and traffic management strategies is recommended as an alternative to widening. Old Davis Road would operate at LOS E conditions, below its projected capacity, but is identified as an impact because the road segment is located on the UC Davis campus and the campus LOS threshold is D. Therefore, Mitigation Measure 5-22 is proposed to reduce the impacts to the extent feasible, without roadway widening that (1) would potentially not be needed and/or (2) would be inconsistent with City of Davis General Plan policies regarding ultimate roadway widths.

MRIC and Mace Triangle

5-22 *The MRIC Master Owners' Association shall coordinate with the City of Davis to implement travel route management strategies, including changeable message signs with route delay information and downtown parking capacity information, signal coordination and timing plans, and other roadway network management strategies, as appropriate, to efficiently manage the capacities of the various major roadways (i.e., Richards Boulevard, Cowell Boulevard, Pole Line Road, Fifth Street, Old Davis Road, etc.) serving as the primary travel corridors in Davis. Annual monitoring shall be conducted by the Master Owners' Association, and submitted to the City, to verify effectiveness of the route management strategies. Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis*

Because the effectiveness of these measures cannot be assured of reducing the projected volumes on the affected roadways to a level that reduces volumes at or below the affected roadways' capacities, this impact remains *cumulatively considerable* and *significant and unavoidable*.

Modified Cumulative Scenario

Table 5-14 presents the cumulative roadway segment volumes for the Modified Cumulative No Project and Modified Cumulative With Project cases in the local study

area. It should be noted that the amount and location of new development in both cases results in substantially different travel route choices, which leads to volume growth on many roadways and volume drops on some roadways. It is also noted that Mace Boulevard from Chiles Road to Alhambra Drive is not discussed here, because it is discussed above in Impact 5-21.

Adding the project to the Modified Cumulative No Project condition causes significant impacts on three roadway segments:

1. Second Street East of Pena Drive (LOS F, PM peak hour)
2. Third Street East of B Street (LOS F, AM peak hour)
3. Covell Boulevard East of Harper Junior High School (LOS D, AM peak hour and LOS E, PM peak hour)

(It is noted that the above portion of Covell Boulevard is located within Yolo County jurisdiction, and has a LOS D threshold.)

For the Third Street segment, forecast volumes are substantially over the roadway's capacity, whereas for the other two segments, forecast volumes are at or below capacity.

In summary, the project's incremental increase in traffic along roadway segments, in combination with traffic from the Modified Cumulative no Project scenario, would be considered ***cumulatively considerable***.

Mitigation Measures

Because the Modified Cumulative plus Project scenario assumes a significant level of new development in Davis, and the cumulative impacts to the three road segments are based on forecast volumes that are at or below capacity (in two cases) and substantially over capacity on one roadway where significant widening is unfeasible, a combination of monitoring and traffic management strategies is recommended as an alternative to widening. Therefore, Mitigation Measure 5-22(a) is proposed to reduce the impacts to the extent feasible, without roadway widening that (1) would potentially not be needed and/or (2) would be inconsistent with City of Davis General Plan policies regarding ultimate roadway widths.

Table 5-14
Modified Cumulative Roadway Segment LOS

				AM				PM			
				Modified Cumulative No Project		Modified Cumulative With Project		Modified Cumulative No Project		Modified Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
1st Street E of D Street	44	City Core	1,780	920	C	940	C	1140	C	1120	C
1st Street E of E Street	45	City Core	1,780	380	C	330	C	770	C	1150	C
2nd Street E of Pena Drive	37	City	1,750	1180	D	1250	D	1720	E	1760	**F**
3rd Street E of B Street	36	City Core	610	720	**F**	750	**F**	1300	**F**	1280	**F**
5th Street W of Pole Line Road	33	City	4,770	990	C	1020	C	1250	C	1380	C
8th Street E of F Street	23	City	1,750	760	C	820	C	870	C	930	C
Alhambra Drive S of Covell Blvd	20	City	1,750	430	C	630	C	220	C	530	C
Alhambra Drive W of Mace Blvd	22	City	1,110	870	D	970	E	690	D	910	D
Anderson Road N of Covell Blvd	3	City	1,750	460	C	550	C	780	C	620	C
Anderson Road N of Russell Blvd	25	City	1,750	910	C	910	C	1530	E	1000	C

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Table 5-14
Modified Cumulative Roadway Segment LOS

				AM				PM			
				Modified Cumulative No Project		Modified Cumulative With Project		Modified Cumulative No Project		Modified Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
Anderson Road S of Covell Blvd	15	City	1,750	770	C	790	C	680	C	870	C
La Rue Road S of Russell Blvd	34	UCD	4,770	1670	C	1680	C	1800	C	2220	C
B Street N of Russell Blvd/ 5th Street	26	City	1,750	450	C	510	C	790	C	610	C
Chiles Road E of Mace Blvd	40	City	1,750	810	C	810	C	1480	E	990	C
Chiles Road W of Cowell/EB 80 Off	39	City	1,750	930	C	930	C	1100	D	1210	D
County Road 31 E of County Road 98	6	Yolo	1,780	610	C	680	C	720	C	950	C
County Road 32A E of Mace Blvd	38	Yolo 32A	1,750	180	C	290	C	1160	D	480	C
County Road 99D S of County Road 29	1	Yolo	1,750	100	C	100	C	50	C	110	C
Covell Blvd E of Denali Drive	7	City	1,780	1250	C	1280	C	1330	C	1630	D

(Continued on next page)

Table 5-14
Modified Cumulative Roadway Segment LOS

				AM				PM			
				Modified Cumulative No Project		Modified Cumulative With Project		Modified Cumulative No Project		Modified Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
Covell Blvd, E of F Street	9	City	4,770	2370	C	2470	C	2360	C	2590	C
Covell Blvd E of Harper High	11	Yolo	1,780	1370	C	1540	**D**	1370	C	1750	**E**
Covell Blvd E of Monarch Lane	10	City	4,770	1720	C	1980	C	1620	C	2000	C
Covell Blvd W of Anderson Road	8	City	4,770	1700	C	1830	C	1680	C	2190	C
Cowell Blvd Blvd W of Mace Blvd	49	City	1,750	630	C	610	C	580	C	610	C
E Street N of 1st Street	43	City Core	610	390	D	430	D	1160	**F**	680	**F**
F Street N of 5th Street	27	City	1,750	460	C	480	C	700	C	660	C
F Street N of Covell Blvd	4	City	1,750	740	C	750	C	940	C	740	C
F Street S of Covell Blvd	17	City	1,750	970	C	930	C	760	C	940	C
Hutchison Drive W of Health Science Drive	41	UCD	4,770	1730	C	1730	C	2170	C	1970	C

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Table 5-14
Modified Cumulative Roadway Segment LOS

				AM				PM			
				Modified Cumulative No Project		Modified Cumulative With Project		Modified Cumulative No Project		Modified Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
John Jones Road N of Covell Blvd	2	City	1,750	600	C	600	C	220	C	520	C
L Street S of Covell Blvd	18	City	1,110	600	C	630	C	440	C	580	C
Lake Blvd S of Covell Blvd	12	City	1,750	730	C	720	C	550	C	720	C
Loyola Drive E of Pole Line Road	21	City	1,110	300	C	380	C	280	C	470	C
Mace Blvd S of El Macero Drive	50	City	1,780	130	C	140	C	230	C	280	C
Oak Ave S of Covell Blvd	16	City	1,110	530	C	500	C	470	C	650	C
Old Davis Road N of I-80	46	UCD	1,750	1160	D	1180	D	690	C	1250	D
Old Davis Road S of Hutchison Drive	42	UCD	1,750	750	C	820	C	890	C	1100	D
Pole Line Road N of 5th Street	28	City	1,750	1030	C	1060	D	1530	E	1300	D

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Table 5-14
Modified Cumulative Roadway Segment LOS

				AM				PM			
				Modified Cumulative No Project		Modified Cumulative With Project		Modified Cumulative No Project		Modified Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
Pole Line Road N of Covell Blvd	5	City	1,780	1280	C	1310	C	1360	C	1430	D
Pole Line Road S of 5th Street	35	City	1,780	1270	C	1380	D	1460	D	1780	E
Pole Line Road S of Covell Blvd	19	City	1,750	770	C	700	C	1120	D	1060	D
Research Park Drive N of Richards Blvd	47	City	1,750	550	C	550	C	990	C	1010	C
Richards Blvd E of Research Park Drive	48	City	1,780	1740	E	1630	D	2090	**F**	2010	**F**
Russell Blvd E of Eisenhower Street	30	City	4,770	1600	C	1640	C	1280	C	1500	C
Russell Blvd W of A Street	32	City	4,770	1620	C	1650	C	2100	C	2430	C
Russell Blvd W of Anderson Road	31	City	4,770	1460	C	1620	C	2480	C	2050	C
Russell Blvd W of Lake Blvd	29	City	1,750	810	C	810	C	1010	C	970	C

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Table 5-14
Modified Cumulative Roadway Segment LOS

				AM				PM			
				Modified Cumulative No Project		Modified Cumulative With Project		Modified Cumulative No Project		Modified Cumulative With Project	
Roadway Segment	Segment ID	Jurisdiction	Capacity	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS	Total Volume	LOS
Shasta Drive S of Covell Blvd	13	City	1,750	570	C	610	C	600	C	760	C
Sycamore Lane N of Russell Blvd	24	City	1,110	810	D	810	D	510	C	830	D
Sycamore Lane S of Covell Blvd	14	City	1,110	760	D	840	D	760	D	740	D

Note: Deficient operations are in **bold**. Significant impacts are highlighted in grey.

MRIC and Mace Triangle

5-22(a) The MRIC Master Owners' Association shall coordinate with the City of Davis to implement travel route management strategies, including changeable message signs with route delay information and downtown parking capacity information, signal coordination and timing plans, and other roadway network management strategies, as appropriate, to efficiently manage the capacities of the various major roadways (i.e., Richards Boulevard, Cowell Boulevard, Pole Line Road, Fifth Street, Old Davis Road, etc.) serving as the primary travel corridors in Davis. Annual monitoring shall be conducted by the Master Owners' Association, and submitted to the City, to verify effectiveness of the route management strategies. Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis.

An optional Mitigation Measure 5-22(b) is provided below, which would address the forecasted near-capacity condition on the two-lane section of Covell Boulevard at the "Mace Curve". This improvement would increase the arterial roadway capacity for trips in east Davis, and mitigate the Covell Boulevard significant impact to a less than significant level.

MRIC and Mace Triangle

5-22(b) Project applicant shall widen Covell Boulevard from two lanes to four lanes from the Harper Junior High School access to Alhambra Boulevard. Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis.

Because the effectiveness of Mitigation Measure 5-22(a) cannot be assured of reducing the projected volumes on the affected roadways to a level that reduces volumes at or below the affected roadways' capacities, this impact remains *cumulatively considerable* and *significant and unavoidable*.

With implementation of Mitigation Measure 5-22(b), the impact to Covell Boulevard at the Mace Curve would be reduced to a *less than significant* level.

5-23 Cumulative Impacts to Local Area Freeway Segments. Based upon the analysis below, even with mitigation, the proposed project's incremental contribution to cumulative freeway impacts would be *cumulatively considerable* and *significant and unavoidable*.

CEQA Cumulative Scenario

Table 5-15 shows the effect of project traffic on the CEQA Cumulative No Project freeway operating condition for the local study area freeway segments studied. The project has a significant cumulative impact on four freeway segments, by either causing

them to fall from E or better to LOS F, or by adding more than 5 percent to the AM or PM peak hour volume on segments that would operate at LOS F without the project:

1. I-80 Eastbound, PM peak hour, Mace to Chiles
2. I-80 Eastbound, PM peak hour, Chiles to Enterprise
3. I-80 Westbound, AM peak hour, Enterprise to Chiles
4. I-80 Westbound, AM peak hour, Chiles to Mace

The CEQA Cumulative forecasts, with project traffic, indicate the need for additional lane capacity on I-80 between the Enterprise Drive and Richards Boulevard interchanges. The Metropolitan Transportation Plan/Sustainable Communities Strategy 2035, adopted by the SACOG Board in 2012, included a project to construct carpool lanes between Downtown Sacramento and the I-80/Richards Boulevard interchange in Davis. This project, in conjunction with additional auxiliary lanes between the Chiles Road hook ramps and Richards Boulevard ramps, would provide sufficient capacity to restore the above freeway segments to LOS E or better operation.

The proposed project's incremental increase in traffic along freeway segments, in combination with traffic from cumulative development, would be considered ***cumulatively considerable***.

Mitigation Measure(s)

MRIC and Mace Triangle

5-23 *The applicant shall contribute a proportional share to the local contribution portion of freeway improvement projects to construct carpool lanes on I-80 between Highway 50/Jefferson Boulevard and Richards Boulevard, as well as to the construction of auxiliary lanes between Chiles Road and Mace Boulevard. Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis.*

With implementation of Mitigation Measure 5-23, the impact would be reduced to a less-than-significant level. Since this mitigation depends upon the actions of other agencies, including the SACOG and Caltrans, its implementation cannot be assured. Therefore, while the mitigation would reduce the impact to a less-than-significant level, this impact remains *cumulatively considerable* and *significant and unavoidable*.

Table 5-15
CEQA Cumulative Peak Hour Freeway Operations

Route	Direction	Segment	Existing				CEQA Cumulative No Project				CEQA Cumulative With Project			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-80	Eastbound	Kidwell Road to SR-113 Junction	11	A	11	A	16	B	14	B	17	B	18	B
		Old Davis Road to Richards Boulevard	17	B	18	B	23	C	28	D	23	C	27	D
		Richards Boulevard to Mace Boulevard	20	C	22	C	27	C	38	E	26	C	43	E
		Mace Boulevard to Chiles Road	25	C	26	C	34	D	-	**F**	35	D	-	**F**
		Chiles Road to Enterprise Boulevard	19	C	24	C	26	C	-	**F**	27	D	-	**F**
	Westbound	Enterprise Boulevard to Chiles Road	18	B	20	C	40	E	32	D	-	**F**	33	D
		Chiles Road to Mace Boulevard	17	B	21	C	39	E	29	D	-	**F**	31	D

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Table 5-15
CEQA Cumulative Peak Hour Freeway Operations

Route	Direction	Segment	Existing				CEQA Cumulative No Project				CEQA Cumulative With Project			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
		Mace Boulevard to Olive Drive	25	C	22	C	-	F	32	D	-	**F**	32	D
		Richards Boulevard to Old Davis Road	17	B	25	C	27	D	42	**E**	30	D	45	E
		SR-113 Junction to Kidwell Road	14	B	17	B	18	B	24	C	18	B	26	C
SR-113	Northbound	Hutchison Drive to Russell Boulevard	8	A	12	B	18	B	17	B	18	B	17	B
		Russell Boulevard to Covell Boulevard	9	A	15	B	20	C	22	C	21	C	21	C
		Covell Boulevard to County Road 29	6	A	13	B	9	A	19	C	10	A	19	C
		County Road 29 to County Road 27	7	A	12	B	10	A	23	C	11	A	27	D

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Table 5-15
CEQA Cumulative Peak Hour Freeway Operations

Route	Direction	Segment	Existing				CEQA Cumulative No Project				CEQA Cumulative With Project			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
	Southbound	County Road 27 to County Road 29	17	B	15	B	30	D	19	C	36	E	20	C
		County Road 29 to Covell Boulevard	16	B	16	B	24	C	18	B	26	C	20	C
		Covell Boulevard to Russell Boulevard	18	B	9	A	22	C	22	C	31	D	23	C
		Russell Boulevard to Hutchison Drive	18	B	7	A	26	C	18	B	35	D	21	C

Notes: Delay and LOS is based on 2010 HCM methodology.

Modified Cumulative Scenario

Table 5-16 shows the effect of project traffic on the Modified Cumulative No Project freeway operating condition for the local study area freeway segments studied. The project has a significant cumulative impact on one freeway segment, by causing it to worsen from LOS E to LOS F:

1. I-80 Eastbound, PM peak hour, Mace to Chiles

The Modified Cumulative forecasts, with project traffic, indicate the need for additional lane capacity on I-80 between the Mace Boulevard and Chiles Road. The Metropolitan Transportation Plan/Sustainable Communities Strategy 2035, adopted by the SACOG Board in 2012, includes a project to construct carpool lanes between Downtown Sacramento and the I-80/Richards Boulevard interchange in Davis. This project, in conjunction with additional auxiliary lanes between the Chiles Road hook ramps and Richards Boulevard ramps, would provide sufficient capacity to restore the above freeway segment to LOS E or better operation.

The proposed project's incremental increase in traffic along the above freeway segment, in combination with traffic from cumulative development, would be considered ***cumulatively considerable***.

Mitigation Measure(s)

MRIC and Mace Triangle

5-23 *The applicant shall contribute a proportional share to the local contribution portion of freeway improvement projects to construct carpool lanes on I-80 between Richards Boulevard and the causeway structure, as well as to the construction of auxiliary lanes between Chiles Road and Mace Boulevard. Responsibility for implementation of this mitigation measure shall be assigned to the MRIC and Mace Triangle on a fair share basis.*

With implementation of Mitigation Measure 5-23, the impact would be reduced to a less-than-significant level. Since this mitigation depends upon the actions of other agencies, including the SACOG and Caltrans, its implementation cannot be assured. Therefore, while the mitigation would reduce the impact to a less-than-significant level, this impact remains *cumulatively considerable* and *significant and unavoidable*.

Table 5-16
Modified Cumulative Peak Hour Freeway Operations

Route	Direction	Segment	Existing				Modified Cumulative No Project				Modified Cumulative With Project			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-80	Eastbound	Kidwell Road to SR-113 Junction	11	A	11	A	15	B	14	B	15	B	14	B
		Old Davis Road to Richards Boulevard	17	B	18	B	22	C	24	C	23	C	24	C
		Richards Boulevard to Mace Boulevard	20	C	22	C	26	C	32	D	26	C	32	D
		Mace Boulevard to Chiles Road	25	C	26	C	32	D	42	E	33	D	-	**F**
		Chiles Road to Enterprise Boulevard	19	C	24	C	24	C	38	E	25	C	41	E
	Westbound	Enterprise Boulevard to Chiles Road	18	B	20	C	28	D	30	D	31	D	31	D
		Chiles Road to Mace Boulevard	17	B	21	C	27	D	28	D	30	D	28	D

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Table 5-16
Modified Cumulative Peak Hour Freeway Operations

Route	Direction	Segment	Existing				Modified Cumulative No Project				Modified Cumulative With Project			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
		Mace Boulevard to Olive Drive	25	C	22	C	36	E	30	D	36	E	31	D
		Richards Boulevard to Old Davis Road	17	B	25	C	22	C	39	E	22	C	39	E
		SR-113 Junction to Kidwell Road	14	B	17	B	18	B	22	C	18	B	23	C
SR-113	Northbound	Hutchison Drive to Russell Boulevard	8	A	12	B	12	B	17	B	13	B	17	B
		Russell Boulevard to Covell Boulevard	9	A	15	B	13	B	21	C	13	B	21	C
		Covell Boulevard to County Road 29	6	A	13	B	9	A	18	B	9	A	19	C

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Table 5-16
Modified Cumulative Peak Hour Freeway Operations

Route	Direction	Segment	Existing				Modified Cumulative No Project				Modified Cumulative With Project			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
		County Road 29 to County Road 27	7	A	12	B	10	A	18	B	10	A	19	C
	Southbound	County Road 27 to County Road 29	17	B	15	B	22	C	18	B	24	C	18	B
		County Road 29 to Covell Boulevard	16	B	16	B	22	C	18	B	22	C	18	B
		Covell Boulevard to Russell Boulevard	18	B	9	A	23	C	16	B	24	C	16	B
		Russell Boulevard to Hutchison Drive	18	B	7	A	26	C	13	B	27	D	14	B

Notes: Delay and LOS is based on 2010 HCM methodology.

5-24 Cumulative Impacts to Regional Facilities. Based upon the analysis below, the proposed project's incremental contribution to cumulative regional facility impacts would be *less than cumulatively considerable*.

CEQA Cumulative Scenario

Table 5-17 presents the CEQA Cumulative Scenario analysis for freeway segments, and Table 5-18 presents the CEQA Cumulative Scenario analysis for arterial roadway segments. For the freeway analysis, several freeway segments are projected to operate at LOS F without the project; however, the project adds less than 5 seconds of delay to these segments. Furthermore, the project does not cause any segment to deteriorate from LOS E or better to LOS F. Therefore, no significant impacts to the regional freeways are identified.

For the roadway analysis, all but one segment is projected to operate at LOS C or better, and one segment, Elkhorn east of SR 70/99, is projected to operate at LOS F in both peak hours, with and without the project. Using the rural LOS standard of LOS D, this segment operates below the standard. However, the project does not increase the v/c ratio by more than 0.05, so the project's impact is ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

Modified Cumulative Scenario

The CEQA Cumulative Scenario evaluated above resulted in no significant impacts to regional facilities. Because the Modified Cumulative Scenario would involve 10,842 fewer employees in Davis due to the exclusion of the Davis IC Project, in comparison to the CEQA Cumulative Scenario, the incremental impact of the proposed project on freeways and road segments farther away from the project site under the Modified Cumulative Scenario would be less. As such, the effect of the project on regional facilities is ***less than significant***.

Mitigation Measure(s)
None required.

Table 5-17
CEQA Cumulative Peak Hour Freeway Operations Regional Analysis

			Existing				Cumulative No Project				Cumulative With MRIC Project			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Route	Direction	Segment	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-80	Eastbound	Schroeder Road to Pitt School Road	17	B	22	C	22	C	29	D	22	C	29	D
		N 1st (SR-113) to Pedrick Road	20	C	23	C	29	D	32	D	29	D	32	D
		Reed Avenue to El Camino Ave	12	B	23	C	24	C	39	E	23	C	40	E
		Truxel Road to Northgate Boulevard	14	B	14	B	22	C	21	C	22	C	21	C
	Westbound	Pitt School Road to Schroeder Road	18	B	21	C	24	C	27	D	24	C	27	D
		Pedrick Road to N 1st (SR-113)	19	C	23	C	27	D	32	D	27	D	32	D
		El Camino Ave to Reed Ave	24	C	15	B	36	E	24	C	36	E	24	C
		Northgate Boulevard to Truxel Road	19	C	21	C	28	D	29	D	28	D	29	D
I-80 Business	Eastbound	American River Crossing to Exposition Boulevard	29	D	24	C	36	E	29	D	36	E	29	D
	Westbound	Exposition Boulevard to E St	34	D	38	E	-	**F**	-	**F**	-	**F**	-	**F**
SR-113	Northbound	County Road 27 to County Road 25A	7	A	15	B	9	A	22	C	9	A	23	C
	Southbound	County Road 25 A to County Road 27	12	B	7	A	20	C	10	A	22	C	10	A

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Table 5-17
CEQA Cumulative Peak Hour Freeway Operations Regional Analysis

			Existing				Cumulative No Project				Cumulative With MRIC Project			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Route	Direction	Segment	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-5	Northbound	Sutterville Road to Broadway	35	D	17	B	-	**F**	23	C	-	**F**	23	C
		SR-99 Split to Powerline Road	19	C	18	B	25	C	28	D	26	C	28	D
		Old River Road to County Road 102	14	B	13	B	26	C	20	C	27	D	20	C
		N East Street (SR-113) to County Road 99	9	A	8	A	15	B	13	B	15	B	13	B
	Southbound	Broadway to Sutterville Road	11	A	27	D	15	B	37	E	15	B	37	E
		Powerline Road to SR-99	16	B	25	C	24	C	29	D	23	C	30	D
		County Road 102 to Old River Road	13	B	22	C	20	C	-	**F**	20	C	-	**F**
		County Road 99 to N East St (SR-113)	8	A	11	A	13	B	18	B	13	B	18	B
I-50	Eastbound	Harbor Boulevard to Jefferson Boulevard	17	B	17	B	21	C	24	C	21	C	24	C
		Stockton Boulevard to 59th Street	26	C	28	D	36	E	44	E	36	E	44	E
		Howe Avenue to Watt Avenue	28	D	34	D	44	E	-	**F**	43	E	-	**F**
	Westbound	Jefferson Boulevard to Harbor Boulevard	15	B	15	B	19	C	18	B	20	C	18	B
		59 th Street to Stockton Boulevard	29	D	24	C	-	**F**	32	D	-	**F**	32	D

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Table 5-17
CEQA Cumulative Peak Hour Freeway Operations Regional Analysis

			Existing				Cumulative No Project				Cumulative With MRIC Project			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Route	**Direction**	**Segment**	**Density**	**LOS**	**Density**	**LOS**	**Density**	**LOS**	**Density**	**LOS**	**Density**	**LOS**	**Density**	**LOS**
		Watt Ave to Howe Ave	28	D	23	C	-	**F**	34	D	-	**F**	34	D
SR-99	Northbound	Fruitridge Road to Sutterville Road	27	D	22	C	31	D	26	C	30	D	26	C
		W Elverta Road to Riego Road	6	A	19	C	14	B	-	**F**	14	B	-	**F**
	Southbound	Sutterville Road to Fruitridge Road	20	C	25	C	23	C	27	D	23	C	28	D
		Riego Road to W Elverta Road	19	C	9	A	-	**F**	18	B	-	**F**	18	B

Table 5-18
CEQA Cumulative Peak Hour Roadway Segment Operations Regional Analysis

Roadway Name	Segment ID	Jurisdiction	Capacity	AM						PM					
				Existing		Cumulative No Project		Cumulative With Project		Existing		Cumulative No Project		Cumulative With Project	
				Total	LOS	Total	LOS	Total	LOS	Total	LOS	Total	LOS	Total	LOS
CR 99 N of CR 27	51	Yolo	1,750	340	C	570	C	580	C	310	C	570	C	580	C
CR 102 N of CR 27	52	Yolo	1,780	540	C	670	C	750	C	730	C	970	C	1,020	C
Covell W of Pedrick	53	Yolo	1,780	500	C	760	C	860	C	570	C	810	C	900	C
Russell W of Pedrick	54	Yolo	1,750	250	C	340	C	360	C	200	C	290	C	300	C
Pedrick S of Hutchison	55	Yolo	1,780	330	C	410	C	410	C	380	C	460	C	460	C
Pitt School S of Stratford	56	Dixon	4,770	910	C	1,190	C	1,190	C	850	C	1,130	C	1,130	C
SR 113 N of Dorset	57	Dixon	4,770	1,160	C	1,440	C	1,440	C	1,340	C	1,620	C	1,620	C
Elkhorn E of SR 70/99	58	Sacramento	1,780	1,680	E	2,200	**F**	2,240	**F**	1,690	E	2,150	**F**	2,180	**F**
Tower Bridge Gateway E of 3rd	59	West Sacramento	4,770	1,170	C	1,230	C	1,250	C	1,680	C	1,380	C	1,400	C

UTILITIES (SEE SECTION 4.15)

5-25 Cumulative water system impacts. Based on the analysis below, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario and Modified Cumulative Scenario

As discussed in Impact 4.15-1, the project-level impact discussion for water supply and delivery considers the project's water demand in conjunction with demand from other cumulative buildout over a 20-year horizon. This approach reflects a typical cumulative discussion, and is appropriate in this case because arranging the project-level impact discussion in this way enables the reader to see how the discussion corresponds to the analytical requirements of SB 610. As shown in Table 4.15-23 and Table 4.15-24 in the Utilities section, sufficient water supplies are available to serve the proposed project and other proposed projects, as well as the buildout demands of the City's current service area, over the next 20 years during normal-year, single-dry year, and multiple-dry year scenarios.

The analysis within Impact 4.15-1 also determined that the City's existing water delivery infrastructure system would be able to accommodate the domestic and fire flow demands associated with the proposed project and cumulative development, including General Plan buildout and the Davis IC and Nishi Gateway projects.

The above discussion demonstrates that the project's incremental contribution toward cumulative effects on water supply would be ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.

5-26 Cumulative wastewater treatment and collection system impacts. Based on the analysis below and with implementation of mitigation, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario and Modified Cumulative Scenario

Wastewater Treatment Plant Capacity

As mentioned above, West Yost evaluated impacts of future General Plan growth, the proposed project, including the Mace Triangle properties, and other proposed development projects (Davis IC and Nishi Gateway) on the WWTP, using the following three methodologies:

- Indoor Water Use Basis
- Land Use and Sewer Flow Factor Basis
- BOD Loading Basis

Indoor Water Use Basis

The indoor water use associated with future General Plan buildout development is estimated in the WSA, which presents total projected water use on an annual average basis, and then assumes that indoor water use represents 49 percent of residential use and 46 percent of commercial/industrial/institutional uses. Assuming that indoor water use equates with wastewater generation, the predicted wastewater flows from General Plan buildout development are summarized in Table 5-19.

Table 5-19
Estimated Wastewater Generation from General Plan Buildout Development

Source	Water Demand (ac-ft/yr)	Indoor Use Percentage	Wastewater Generation (mgd)
Residential, Single-family	315	49	0.28
Residential, Multiple-family	276	49	0.25
Commercial/Industrial/Institutional	213	46	0.19
Total	**804**	**-**	**0.72**

Notes:
ac-ft/yr = acre feet per year
mgd = million gallons per day

Source: West Yost Associates. Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity. Technical Memorandum (Final). April 2, 2015.

The projected indoor water use associated with the proposed project and other proposed development is estimated in the WSA; and those estimates are presented in Table 5-20. The predicted wastewater flow from the proposed development projects is estimated to be 0.66 mgd.

Table 5-20
Projected Indoor Water Use for the Proposed Davis IC Project and Other Proposed Development

Proposed Project	Average Indoor Water Use (mgd)
Davis IC	0.322
MRIC Site/Mace Triangle Site	0.203
Nishi Gateway Project	0.136
Total	**0.661**

Source: West Yost Associates. Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity. Technical Memorandum (Final). April 2, 2015.

Combining the results from Table 5-19 and Table 5-20 produces a total estimated wastewater generation from future development of 1.38 mgd. However, given the uncertainties associated with future development, West Yost conservatively applied a 20 percent factor of safety, which produces a total estimated wastewater generation from future development of 1.66 mgd. This result equates to the estimated available WWTP average dry weather flow (ADWF) capacity of 1.66 mgd discussed above, thus

substantiating that the WWTP can accommodate wastewater flows from all future development, including the proposed project, according to this flow estimation method.

Land Use and Sewer Flow Factor Basis

As illustrated in Table 4.15-15 of the Utilities section, the SSMP specifies sewer flow factors for a range of land uses.

While the WSA does not specify the number of future single-family versus multiple-family units to be added to the City service area, it does specify the total number of residential units to be added (2,231), and it also specifies the number of future water supply connections to be added. Specifically, 815 future additional single-family water supply connections are indicated. If it is assumed that a one-to-one correspondence exists between single-family units and single-family connections, then a total of 1,416 future additional multiple-family units can be inferred. The WSA also specifies 7,500 future employees to be added, although it does not make any assumptions about future retail customers associated with future commercial development. For this analysis, flows associated with future retail customers are considered to be de minimus. Given these assumptions, the ADWF associated with General Plan buildout development is indicated in Table 5-21.

Table 5-21
Projected Wastewater Generation from General Plan Buildout Development

Category	Flow Factor (gpd/unit)	Quantity	Average Flow (mgd)
Residential, Single-family	330	815	0.27
Residential, Multiple-family	230	1,416	0.33
Employees	15	7,500	0.11
Total	**-**	**-**	**0.71**

Source: West Yost Associates. Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity. Technical Memorandum (Final). April 2, 2015.

The same method can be used to estimate future wastewater flows associated with the proposed project and other proposed development projects, specified above. The City SSMP does not specify sewer flow factors for either retail customers or convention center guests, both of which are applicable for the proposed project. However, the WSA specifies indoor water use factors of three gpd per customer/guest for both. That value is used in combination with sewer flow factors in Table 4.15-15 of the Utilities Section, and the land use quantities, to produce projected wastewater generation rates for the projects, which are shown in Table 5-22.

Combining the results from Table 5-21 and Table 5-22 produces a total estimated wastewater generation from future development of 1.19 mgd (0.71 from the General Plan buildout, and 0.481 from the Davis IC and Nishi Gateway projects. However, given the uncertainties associated with future development, West Yost applied a 20 percent factor of safety, which produces a total estimated wastewater generation from future

development of 1.43 mgd. Given the estimated available WWTP ADWF capacity of 1.66 mgd discussed above, this demonstrates that the WWTP can accommodate all future development, including the proposed project, according to this flow estimation method.

Table 5-22
Projected Wastewater Generation for the Proposed Development Projects

Project	Average Flow (mgd)
Davis IC	0.193
MRIC Site/Mace Triangle Site	0.111
Nishi Gateway Project	0.177
Total	**0.481**

Source: West Yost Associates. Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity. Technical Memorandum (Final). April 2, 2015.

BOD Loading Basis

For General Plan buildout development, the estimated BOD loadings are indicated in Table 5-23. For the proposed development projects, including the proposed project, the estimated BOD loadings are indicated in Table 5-24. Given the large number of uncertainties associated with future development, West Yost also applied a 20 percent safety factor to the results.

As indicated in Table 5-23, after accounting for future General Plan buildout, the WWTP would have an estimated available BOD loading capacity of 660 lbs/day. Therefore, as can be seen in Table 5-24, the WWTP would not have sufficient capacity to accommodate the BOD loading projected for the MRIC/Mace Triangle, Davis IC, and Nishi Gateway projects, regardless of whether a 20 percent safety factor is assumed for the proposed project.

Table 5-23
Projected Future BOD Loads for General Plan Buildout Development

Category	Projected BOD Load (lbs/day)	Plus 20 Percent Safety Factor (lbs/day)
Residential	600	720
Non-Residential	350	420
Total	**950**	**1,140**

Source: West Yost Associates. Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity. Technical Memorandum (Final). April 2, 2015.

Wastewater Collection

As illustrated in Table 4.15-29 of the Utilities section, the estimated wastewater flow generation numbers from the MRIC site and the Mace Triangle site for both a sewer flow factor basis and an indoor water use basis result in a PWWF of 0.427 mgd and 0.637 mgd, respectively.

Table 5-24
Projected Future BOD Loads for Proposed Project and Other Proposed Development

Proposed Development	Projected BOD Load (lbs/day)	Plus 20 Percent Safety Factor (lbs/day)
Davis IC	590	710
MRIC Site/Mace Triangle Site	370	440
Nishi Gateway Commercial	70	80
Nishi Gateway Residential	180	220
Total	**1,210**	**1,450**

Source: West Yost Associates. Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity. Technical Memorandum (Final). April 2, 2015.

According to the City Sewer Spreadsheets, the 42-inch diameter trunk sewer north of the City is predicted to flow at 88 percent of capacity at buildout PWWF conditions. Similarly, the 21-inch diameter trunk sewer serving south Davis is predicted to flow at 84 percent of capacity at buildout PWWF conditions. In light of the City's d/D standard of 0.75 specified in the 2009 SECAP, the remaining available capacity in these lines would be 0.31 mgd in the 42-inch diameter trunk sewer, and 0.28 mgd in the 21-inch diameter trunk sewer.

Taken at face value, there appears to be inadequate capacity available in either trunk sewer to accommodate the proposed development. However, as noted above, it appears that the City Sewer Spreadsheets significantly over-predict ADWF throughout the system. If the ADWF estimates in the City Sewer Spreadsheets are reduced by 40 percent (as per the findings in Table 5-25), then the 42-inch diameter trunk sewer would have approximately 5.0 mgd of allowable capacity remaining at General Plan buildout PWWF conditions, while the 21-inch diameter sewer would have approximately 1.4 mgd of allowable capacity remaining at General Plan buildout PWWF conditions. It is thus concluded that adequate buildout PWWF capacity exists in both lines to handle the additional flow generated by the MRIC and Mace Triangle.

Table 5-25
Estimated Wastewater Generation from Existing Development City-Wide

Source	Units	Quantity	Flow Factor (gpd/unit)	ADWF (mgd)
Residential, Single-family	Dwelling Units	14,516	330	4.79
Residential Multi-family	Dwelling Units	12,080	230	2.78
Commercial/Institutional	Employees	37,500	15	0.56
Total	**-**	**-**	**-**	**8.13**

Source: West Yost Associates. Impacts of Innovation Center/Nishi Property Development on Wastewater Collection System Capacity. Technical Memorandum. March 25, 2015.

Conclusion

Based on flow considerations alone, this analysis demonstrates that the WWTP would have the capacity to accommodate flows from all future General Plan buildout development, plus the flows from the proposed project, Davis IC, and Nishi Gateway projects. However, based on BOD loading considerations, adequate WWTP capacity does not exist to fully accommodate the proposed cumulative projects not anticipated in the General Plan.

Using the City's design standards and flow calculations, the 42-inch and the 21-inch diameter trunk mains lack the capacity to accommodate future General Plan growth and the proposed project, Davis IC, and Nishi Gateway projects. However, upon downward-adjusting the ADWF values in the City Sewer Spreadsheets by 40 percent (as appears justified from this analysis), there would be adequate PWWF capacity in both possible trunk mains for City General Plan buildout development plus the flow from the proposed developments, assuming that actual project flows conform relatively closely to those assumed in this analysis.

With implementation of the following mitigation measure, the project's wastewater effects, in combination with related effects from cumulative development, would result in a ***less than cumulatively considerable*** impact to the City's wastewater system.

Mitigation Measure(s)

MRIC

5-26(a) *Prior to approval of improvement plans for each phase of development, the applicant shall provide funding for the City to perform a WWTP analysis to identify the then-current City of Davis WWTP BOD loading capacity. If the WWTP analysis determines that adequate BOD loading capacity exists at the WWTP to serve the MRIC Project phase under review, further action is not required for the phase under review. If the analysis finds that the WWTP BOD loading capacity is not sufficient to serve the particular development phase under review, that phase of development shall not be approved until a plan, for financing and constructing additional BOD loading capacity improvements has been prepared and approved; the additional BOD loading capacity improvements have been constructed; and the City Engineer has verified that sufficient capacity exists to serve said phase.*

5-26(b) *Implement Mitigation Measures 4.15-3(a) and (b).*

Implementation of the above mitigation measures would ensure that the proposed project's incremental contribution to cumulative wastewater treatment and collection system impacts is reduced to *less than cumulatively considerable.*

Mace Triangle – none

5-27 The project may contribute to cumulative impacts on utilities, including solid waste, natural gas, electric, and telecommunications. Based on the analysis below, the impact is *less than cumulatively considerable*.

CEQA Cumulative Scenario and Modified Cumulative Scenario

With respect to solid waste, the Yolo County Central Landfill has a substantial amount of remaining capacity (36,555,700 cubic yards), with an estimated landfill closure date of 2081. The proposed project's incremental contribution to cumulative solid waste generation represents approximately 0.031 percent of the remaining capacity at the Yolo County Central Landfill. This incremental contribution is less than cumulatively considerable.

With respect to gas and electric service, PG&E has indicated that the load demand created by the two innovation center projects can be accommodated by existing substations in the area.[23] Since California's energy crisis in 2001, utility planning is done in a much more coordinated manner to achieve adequacy of supply, to establish and oversee formal operational standards for running the bulk power systems, and to address security concerns for critical electrical infrastructures. This coordination is administered under mandatory procedures set up by the electric power industry's electricity reliability organization (the North American Electric Reliability Corporation), with oversight provided by the Federal Energy Regulatory Commission and the US Department of Energy. This planning effort has resulted in a more dependable electricity supply to the State, and new transmission lines are being built throughout California and elsewhere to ensure a steady and reliable supply of electricity. In addition, all projects in California are subject to Title 24 requirements for energy conservation, as discussed in more detail in Section 4.7, Greenhouse Gas Emissions and Energy, of this EIR. Therefore, development of cumulative projects is not anticipated to result in demand exceeding supply, and there would be no significant cumulative impact. The proposed project's infrastructure improvements would ensure that necessary upgrades to the natural gas and electrical distribution systems are provided and that capacity of the service provider to provide natural gas and electricity to the project and existing customers would not be exceeded. The proposed project's incremental contribution to cumulative demands on natural gas and electricity services would be less than cumulatively considerable.

Telecommunications services are provided on-demand, and service providers expand their distribution systems as needed to accommodate growth. Cumulative projects would increase demand for these services, but would be accommodated by any one of a number of providers in the Davis area. Therefore, there would be no significant cumulative impact. The proposed project's telecommunications needs would be accommodated by

[23] Personal email communication between Nick Pappani, Vice President, Raney Planning & Management, Inc. and Seth Perez, Land Agent, PG&E. March 23, 2015.

these providers, and demand would not exceed supply. Therefore, the proposed project's incremental contribution to cumulative demands on telecommunications services would be less than cumulatively considerable.

The above discussion demonstrates that the proposed project's incremental contribution toward cumulative effects on solid waste, natural gas and electricity, and telecommunications would be ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.