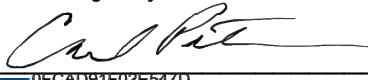


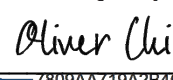


REQUEST FOR CITY COUNCIL ACTION

MEETING DATE: JUNE 13, 2023

TITLE: SECOND READING AND ADOPTION OF ORDINANCE NO. 23-11 AND ORDINANCE NO. 23-12 APPROVING A GENERAL PLAN AMENDMENT, A ZONE CHANGE, AND A DEVELOPMENT AGREEMENT FOR IRVINE MARKET PLACE RESIDENTIAL DEVELOPMENT IN LOWER PETERS CANYON (PLANNING AREA 4)

DocuSigned by:

UFCAD91F02E547D...
City Clerk

DocuSigned by:

7809AA719A2B4C7...
City Manager

RECOMMENDED ACTION

Read by title only, second reading and adoption of the following ordinances:

- 1) ORDINANCE NO. 23-11 - AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF IRVINE, CALIFORNIA, APPROVING ZONE CHANGE 00870374-PZC TO AMEND CHAPTER 9-4 AND SECTION 3-37-28 OF THE IRVINE ZONING ORDINANCE TO ALLOW THE ADDITION OF 969 DWELLING UNITS TO THE PLANNING AREA DWELLING UNIT CAP FOR PLANNING AREA 4 (LOWER PETERS CANYON) WITH UP TO 1,261 DWELLING UNITS ASSIGNED TO THE 4.9 LOWER PETERS CANYON REGIONAL COMMERCIAL ZONING DISTRICT WITH A CORRESPONDING REDUCTION IN REGIONAL COMMERCIAL SQUARE FOOTAGE, AND TO ADD RESIDENTIAL DEVELOPMENT STANDARDS FOR THE 4.9 LOWER PETERS CANYON REGIONAL COMMERCIAL ZONING DISTRICT; FILED BY IRVINE COMPANY
- 2) ORDINANCE NO. 23-12 - AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF IRVINE, CALIFORNIA, APPROVING DEVELOPMENT AGREEMENT 00900866-PDA TO ESTABLISH PUBLIC BENEFITS AND AFFORDABLE HOUSING OPPORTUNITIES ASSOCIATED WITH THE IRVINE MARKET PLACE RESIDENTIAL DEVELOPMENT IN PLANNING AREA 4 (LOWER PETERS CANYON); FILED BY IRVINE COMPANY

EXECUTIVE SUMMARY

Ordinance Nos. 23-11 and 23-12 were introduced for first reading on May 23, 2023, by the City Council. The vote at the first reading was as follows:

AYES: 5 COUNCILMEMBERS: Agran, Carroll, Kim, Treseder, and Khan

NOES: 0 COUNCILMEMBERS: None

ABSENT: 0 COUNCILMEMBERS: None

ABSTAIN: 0 COUNCILMEMBERS: None

Unless otherwise directed by a Member of the City Council, the vote at second reading will reflect the same vote as at first reading. However, if a Councilmember was absent at first reading, his or her vote cast at second reading will be reflected. If a Councilmember is not present at the second reading/adoption, the vote will be reflected as absent.

ATTACHMENTS

City Council Ordinance No. 23-11

City Council Ordinance No. 23-12

CITY COUNCIL ORDINANCE NO. 23-11

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF IRVINE, CALIFORNIA, APPROVING ZONE CHANGE 00870374-PZC TO AMEND CHAPTER 9-4 AND SECTION 3-37-28 OF THE IRVINE ZONING ORDINANCE TO ALLOW THE ADDITION OF 969 DWELLING UNITS TO THE PLANNING AREA DWELLING UNIT CAP PLANNING AREA 4 (LOWER PETERS CANYON) WITH UP TO 1,261 DWELLING UNITS ASSIGNED TO THE 4.9 LOWER PETERS CANYON REGIONAL COMMERCIAL ZONING DISTRICT WITH A CORRESPONDING REDUCTION IN REGIONAL COMMERCIAL SQUARE FOOTAGE, AND TO ADD RESIDENTIAL DEVELOPMENT STANDARDS FOR THE 4.9 LOWER PETERS CANYON REGIONAL COMMERCIAL ZONING DISTRICT; FILED BY IRVINE COMPANY

WHEREAS, the City of Irvine has an adopted Zoning Ordinance which establishes intensity standards for residential and non-residential development by zoning district for each planning area in the city; and

WHEREAS, the Zoning Ordinance does not allow residential development in the 4.9 Lower Peters Canyon Regional Commercial zoning district of Planning Area (PA) 4; and

WHEREAS, Irvine Company proposes to redevelop a commercial site containing approximately 200,000 square feet of inline tenant space into a 1,261-unit apartment complex. The project site is located within the Irvine Market Place regional commercial center located at the southwest corner of Bryan Avenue and the Eastern Transportation Corridor (261 Toll Road) and is designated 4.9 Lower Peters Canyon Regional Commercial per the Zoning Ordinance. The associated application for development is Master Plan 00882754-PMP; and

WHEREAS, on April 28, 2022, Irvine Company filed an application for Zone Change 00870374-PZC to amend the text of Chapter 9-4 and Section 3-37 of the Irvine Zoning Ordinance to add dwelling units in PA 4 in support of the new residential development project at Irvine Market Place in PA 4; and

WHEREAS, the proposed Zone Change application includes revisions to text, tables, and exhibits of the City's Zoning Ordinance as follows:

- A. Revise Section 9-4-3 to include 1,261 Maximum Regulatory Dwelling Units (inclusive of Density Bonus units pursuant to applicable State law) in the 4.9 Lower Peters Canyon Regional Commercial zoning district, a total which includes the reallocation of 293 Unallocated Dwelling Units previously approved for PA 4 to this zoning district; and

- B. Revise Section 9-4-3 to reduce the Maximum Regulatory Square Feet in the 4.9 Lower Peters Canyon Regional Commercial zoning district from 865,590 square feet to 666,996 square feet (a reduction of 198,594 square feet); and
- C. Revise Section 3-37-28 to identify additional development standards that would apply to residential development in the 4.9 Lower Peters Canyon Regional Commercial zoning district; and
- D. Revise Section 3-37-28 and Chapter 9-4 to make additional changes corresponding to the revisions above; and

WHEREAS, the Zone Change is consistent with and implements the associated General Plan Amendment application (File No. 00863325-PGA) to amend the City of Irvine General Plan by allowing up to 1,261 Regional Commercial dwelling units in PA 4 with a corresponding decrease in commercial square footage; and

WHEREAS, Development Agreement 00900866-PDA is associated with the Zone Change and establishes public benefits and affordable housing opportunities associated with the Irvine Market Place residential development project proposed; and

WHEREAS, Zone Change 00870374-PZC is a "project" as defined by the California Environmental Quality Act (CEQA); and

WHEREAS, in 1995, the County of Orange Board of Supervisors approved and certified the PA 4 Environmental Impact Report (EIR) [State Clearinghouse (SCH) No. 94041030] for residential and commercial development in PA 4 (the "PA 4 EIR"); and

WHEREAS, in July 2003, the Irvine City Council approved an Addendum to the PA 4 EIR to allow for a multi-family residential development in PA 4 Sector 8 in place of commercial uses; and

WHEREAS, an Addendum to the previously certified PA 4 EIR was prepared pursuant to Section 15164 of the CEQA Guidelines to analyze, *inter alia*, development of 1,261 residential units in the Regional Commercial category of PA 4 as contemplated by the proposed Zone Change in conjunction with the associated GPA and Master Plan applications, and determined there are no new or significant effects on the environment and no additional mitigation measures are needed; and

WHEREAS, on March 14, 2023, the City Council approved the Memorandum of Understanding (MOU) associated with future residential development of 4,500 housing units. The subject site is the first of the six sites included in the MOU to come up for entitlement and it is being evaluated for development of up to 1,261 residential apartment units; and

WHEREAS, on May 4, 2023, the Planning Commission of the City of Irvine considered information presented by the applicant, the Community Development Department, and other interested parties at a public meeting and recommended, by a vote of 4-0-1 (Commissioner Lim absent) that the City Council approve the Zone Change; and

WHEREAS, on May 7, 2023, notice of the May 23, 2023 City Council public hearing was published in the Orange County Register, was posted at the project site and at designated City bulletin boards, and was mailed to all property owners, residents, and homeowners associations within 500 feet of the project site boundaries; and

WHEREAS, the City Council of the City of Irvine considered information presented by the applicant, the Community Development Department, and other interested parties at a public hearing held on May 23, 2023.

NOW, THEREFORE, the City Council of the City of Irvine DOES HEREBY ORDAIN as follows:

SECTION 1. That the above recitals are true and correct and are incorporated herein.

SECTION 2. An Addendum to the PA 4 EIR (SCH No. 94041030) was prepared in April 2023 pursuant to Section 15164 of the CEQA Guidelines, and concluded that the proposed project does not create any new impacts that were not previously considered and does not intensify any impacts previously identified, and, therefore, will not have a significant effect on the environment.

SECTION 3. Pursuant to Section 15162 of the CEQA Guidelines, the following has been determined:

- A. There are no substantial changes from the project that will require major revisions to the PA 4 EIR due to new, significant environmental effects or a substantial increase in the severity of impacts identified in the PA 4 EIR.
- B. Substantial changes have not occurred in the circumstances under which the Project is being undertaken that will require major revisions of the PA 4 EIR to disclose new, significant environmental effects or a substantial increase in the severity of the impacts identified in the PA 4 EIR.
- C. There is no new information of substantial importance not known at the time the PA 4 EIR was certified that shows any of the following:
 1. The Project will have any new significant effects not discussed in the PA 4 EIR.
 2. There are impacts that were determined to be significant in the PA 4 EIR that will be substantially increased.

3. There are additional mitigation measures or alternatives to the Project that would substantially reduce one or more of the significant effects identified in the PA 4 EIR.
4. There are additional mitigation measures or alternatives that were rejected by the project proponent that are considerably different from those analyzed in the EIR that would substantially reduce any significant impact identified in the PA 4 EIR.

SECTION 4. Pursuant to Section 15164 of the CEQA Guidelines, this project is covered by the previously certified PA 4 EIR (SCH No. 94041030) and the aforementioned Addendum, which serves as the EIR for the proposed project. The effects of the Project were examined in the PA 4 EIR and all feasible mitigation measures and alternatives developed in the certified EIR are incorporated into this project. Based on public testimony and independent judgment, the City Council determines that no new mitigation measures are required. The Addendum to the PA 4 EIR, therefore is recommended to be adequate to serve as the environmental clearance for this project in satisfaction of the requirements of CEQA.

SECTION 5. Pursuant to Fish and Game Code Section 7.11.4 (C), all required Fish and Game filing fees have been paid subsequent to certification of the PA 4 EIR (SCH No. 94041030).

SECTION 6. The City Council hereby makes the findings required by Section 2-38-7 of the Irvine Zoning Ordinance for approval of Zone Change 00870374-PZC as follows:

- A. The proposed zone change is consistent with the City of Irvine General Plan.

The proposed Zone Change, specific to Chapter 9-4 and Section 3-37-28 of the Irvine Zoning Ordinance, is consistent with and implements the Irvine General Plan as it is proposed to be amended through General Plan Amendment 00863325-PGA. The General Plan Land Use Classification covering the subject project area is intended for commercial development that would also support residential uses within same area. The Zone Change would allow up to 1,261 dwelling units in the 4.9 Lower Peters Canyon Regional Commercial zoning district. The corresponding designation of the project site is Regional Commercial, as depicted in the Land Use Element of the General Plan. The Zone Change would remain consistent with other applicable General Plan Elements and policies such as circulation, housing, noise, safety, parks and recreation, among others. Collectively, Irvine's General Plan provides a thoughtful framework that balances development intensity with harmonious land use patterns while ensuring that infrastructure and municipal services are available to serve the development.

The proposed infill residential development project that would be facilitated by the subject Zone Change will be consistent with applicable policies of Irvine's General Plan with respect to open space, transportation, recreation, and housing. This Zone Change will increase the City's housing stock, will be

located in an already developed area away from open space, vehicle trips that would originate from the associated development can be accommodated within the existing circulation network capacity, the development site can be serviced without upgrading downstream infrastructure capacity, and the use will be complementary to existing nearby land uses in terms of density and design. As such, the proposed Zone Change is consistent with the General Plan as proposed to be amended through General Plan Amendment 00863325-PGA.

- B. The proposed zone change is consistent with any applicable concept plan.

There is no concept plan for PA 4. As such, this finding does not apply.

- C. The proposed zone change meets all the requirements set forth within Division 8 for the dedication of permanent open space through a specified phased implementation program for affected planning areas and zoning districts.

This project is not required to dedicate open space because it is located outside an affected open space implementation district. As such, this finding does not apply.

- D. The proposed zone change is in the best interest of the public health, safety, and welfare of the community.

The proposed Zone Change will allow infill residential units within an urbanized area of the City, currently designated for commercial development, which is supported by other nearby land uses such as schools, parks, retail centers, and employment opportunities. Allowing residential units in the 4.9 Lower Peters Canyon Regional Commercial zoning district will provide housing that will contribute toward jobs and housing balance in the area. New residents will become part of a fully integrated community. Furthermore, the site is surrounded by existing commercial and residential apartments and can be supported with the existing infrastructure (e.g. roadway network, utilities, etc.). The development would be considered an infill project and will not take away land reserved for open space. By supporting infill development, the City is preserving open space, not contributing to sprawl, and increasing its housing stock (both market rate and affordable) to meet market demand in a way that complements nearby development without detracting from the quality of life that currently exists.

Future development that would be facilitated by this Zone Change will be required to comply with all applicable subdivision, building and safety, noise, and other related codes and ordinances therefore ensuring protection of the community's health, safety, and welfare. Therefore the proposed Zone Change is in the best interest of the public health, safety, and welfare of the community.

- E. Based upon information available at the time of approval, adequate sewer and water lines, utilities, sewage treatment capacity, drainage facilities, police protection, fire protection/emergency medical care, vehicular circulation and school facilities will be available to serve the area affected by the proposed Zone Change when development occurs.

Existing sewer and water lines, utilities, sewage treatment capacity, and drainage facilities have adequate capacity to accommodate the new units, therefore, new facilities will not be required to be constructed. Roads, police protection, fire protection/emergency medical care, and school facilities are already available and will be able to accommodate the increased demands to serve the planned 1,261-unit residential development in PA 4.

- F. If the proposed zone change affects land located within the coastal zone, the proposed zone change will comply with the provisions of the land use plan of the certified local coastal program.

The City of Irvine has a small area of land within the Irvine Business Complex (PA 36) that is located in the coastal zone. The proposed Zone Change, which would impact an area within PA 4, is located several miles away from the coastal zone. As such, this finding does not apply.

SECTION 7. The City Clerk shall certify to the passage of this Ordinance and this Ordinance shall be published as required by law and shall take effect as provided by law.

NOW, THEREFORE, based on the above findings, the City Council of the City of Irvine DOES HEREBY APPROVE Zone Change 00870374-PZC, as shown in Exhibit A, attached hereto.

PASSED AND ADOPTED by the City Council of the City of Irvine at a regular meeting held on the 13th day of June 2023.

MAYOR OF THE CITY OF IRVINE

ATTEST:

CITY CLERK OF THE CITY OF IRVINE

STATE OF CALIFORNIA)
COUNTY OF ORANGE) SS
CITY OF IRVINE)

I, CARL PETERSEN, City Clerk of the City of Irvine, HEREBY DO CERTIFY that the foregoing ordinance was introduced for first reading on the 23rd day of May 2023, and duly adopted at a regular meeting of the City Council of the City of Irvine, held on the 13th day of June 2023.

AYES: COUNCILMEMBERS:
NOES: COUNCILMEMBERS:
ABSENT: COUNCILMEMBERS:
ABSTAIN: COUNCILMEMBERS:

CITY CLERK OF THE CITY OF IRVINE

Sec. 2-17-2. Need for Master Plan.

- A. A Master Plan shall be required for certain kinds of developments, as noted below. When both a Master Plan and conditional use permit are required for a project, the submittal of a Master Plan may be waived by the Director of Community Development, provided the conditional use permit includes all the information that would be required for a Master Plan (see Section 2-9-2).
 - 1. Nonresidential development in the following zoning districts:
 - 3.1 Multi-Use.
 - 4.1 Neighborhood Commercial.
 - 4.2 Community Commercial.
 - 4.4 Commercial Recreation.
 - 4.5 Regional Commercial.
 - 4.6 Regional Office.
 - 4.7 Urban Commercial.
 - 4.8 Irvine Center Garden Commercial.
 - 5.5H Medical and Science.
 - 8.1 Trails and Transit Oriented Development.
 - 2. Residential development in the following zoning districts:
 - 2.2 Low Density Residential.
 - 2.3 Medium Density Residential.
 - 2.4 Medium-High Density Residential.
 - 2.5 High Density Residential.
 - 3.1 Multi-Use.
 - 4.9 Lower Peters Canyon Regional Commercial
 - 5.3 IBC Residential.
 - 8.1 Trails and Transit Oriented District.
 - 3. All development in the Hillside Overlay District.
- B. At the Director of Community Development's discretion, a Master Plan may be required where:
 - 1. The project is under multiple ownership; or
 - 2. A development proposal will affect decisions on the remainder of any phased project that will not be addressed in conjunction with the development proposal alone.
- C. In addition to the above, a Master Plan shall be required for all projects located within the Irvine Business Complex (Planning Area 36) which meet any of the following criteria:
 - 1. The site is in excess of 10 net acres in size.
 - 2. The Master Plan will include two or more principal uses.
 - 3. The site is proposed to be a receiving site for a transfer of development rights.

(Code 1976, § V.E-212.2; Ord. No. 92-3, 4-14-92; Ord. No. 92-20, § 6, 11-10-92; Ord. No. 93-14, § 3, 10-12-93; Ord. No. 94-7, § 3, 6-14-94; Ord. No. 95-4, § 1, 5-9-95; Ord. No. 96-18, § 4, 12-10-96; Ord. No. 97-05, 5-13-97; Ord. No. 06-18, § 4, 10-24-06; Ord. No. 08-08, § 5, 8-12-0; Ord. No. 11-12, § 4(Exh. A), 9-13-11)

Sec. 3-37-28. 4.9 Lower Peters Canyon Regional Commercial.^{1,3}

- A. *Intent.* This category is designed to facilitate the development of regional commercial uses within Sectors 4 and 10 of Lower Peters Canyon. In addition, it is the intent of this category to allow a wide enough range of ancillary uses to encourage full community utilization and to provide for a synergism of compatible commercial activities.
- B. *Permitted uses.²*
1. Accessory use.³
 2. Agriculture.
 3. Arcades, game.
 4. Bar, tavern, cocktail lounge.
 5. Caretaker's quarters.
 6. Child care centers.
 7. Church.
 8. Commercial recreation (over 1,500 square feet).
 9. Commercial recreation (under 1,500 square feet).
 10. Community facility.
 11. Convenience liquor store.
 12. Department stores.
 13. Equipment rental.
 14. Financial institution (except drive-thru).
 15. Fortunetelling.
 16. Fraternal and service clubs.
 17. Government facility.
 18. Greenhouses.
 19. Hospital.
 20. Hotel/motel (after July 1, 2005).
 21. Industries, service.
 22. Information center.
 23. Office, administrative, business, professional.
 24. Office, design professionals.
 25. Office, headquarters.
 26. Office, medical.
 27. Outdoor sales.
 28. Outdoor vendor.

29. Parks.
30. Residential, attached.^{11, 12}
31. Residential, nonprofit/institutional.
32. Restaurants.
33. Restaurant, fast food (except drive-thru).
34. Retail and/or service business, general (except drive-thru).
35. Retail business, home improvement related.
36. Schools, commercial.
37. Schools, private.
38. Schools, public.
39. Single room occupancy (SRO).
40. Supermarkets.
41. Utility building and facility.
42. Vehicle assembly.
43. Vehicle body repair, paint or restoration.
44. Vehicle leasing and rentals.
45. Vehicle repair.
46. Vehicle sales.
47. Veterinary services, domestics.
48. Veterinary services, livestock.
49. Warehouse and sales outlet.
50. Warehousing, storage and distribution.
51. Wireless communication facility (may require a wireless communication facility permit, a minor conditional use permit, a major conditional use permit or may be prohibited, depending on the type of installation and the location of the installation site, pursuant to the review procedures matrix in Section 2-37.5-3).

C. *Conditional uses.*⁶

1. Carwash.
2. Conference/convention facility.
3. Congregate care facility.
4. Convalescent home.
5. Domestic animal care facility.¹⁰
6. Financial institution, drive-thru.
7. Golf course.
8. Health club.

9. Manufactured structure (nonresidential).
10. Massage establishment.
11. Restaurant, "Type 47" ABC License operating after 12:00 a.m.
12. Restaurant, fast food (drive-thru).
13. Gas station/fuel dispenser.⁵
14. Any other use which the Planning Commission finds consistent with the purpose and intent of this district and which is found to be compatible with adjacent planned and/or existing land uses.

	Minimum Site Size	5,000 square feet
	<i>Minimum building site area</i>	10,000 square feet
	<i>Maximum Site Coverage</i>	Area Excluding Required Setbacks (%)
	Residential Uses	80%
	<i>Maximum Dwelling Units</i>	1,261 dwelling units
	<i>Maximum building height</i>	
	<u>Non-residential</u>	50 feet ⁶
	<u>Residential, attached</u>	75 feet ⁶
	Minimum Site landscaping	20%
	Minimum Open Space Area	5% (multifamily only)
	<i>Building setbacks⁷from:</i>	
	<u>Non-Residential</u>	
	Front: ⁸	
	Building under 25 feet in height	10 feet
	Building between 25 feet and 35 feet in height	15 feet
	Building over 35 feet in height	20 feet
	Side: ⁹	
	Building under 25 feet in height	0 feet
	Building between 25 and 35 feet in height	5 feet
	Building over 35 feet in height	10 feet
	Rear	0 feet
	<u>Residential</u>	
	Major Arterial: ⁸	30 feet
	Primary Arterial: ⁸	20 feet
	Secondary Arterial: ⁸	20 feet
	Private Street or Drive:	10 feet
	Eastern Transportation Corridor (SR-261): ⁸	40 feet
	Interior Boundary if adjacent to non-residential uses	
	Side	10 feet ¹³
	Rear	10 feet ¹³
	Building to Building	
	All uses	10 feet

¹ Development within this zoning district is subject to the requirements outlined in Section 9-4-7.A.3.

² Some permitted uses may have to conform to or fulfill conditions of approval imposed in conjunction with previous discretionary approvals. Additionally, a Master Plan application may need to be processed (see Chapter 2-17).

³ Development standards for Planning Area 4 have been established through a development agreement between the City and the property owner approved November 26, 1996. These standards are based on a specific plan approved by the County prior to the City's annexation of Lower Peters Canyon or as modified by development agreement. The development standards in this agreement were codified in the zoning ordinance, and differ from other areas of the City. The development agreement expired in 2017..

⁴ A Master Plan application may be required in addition to a conditional use permit (see Chapter 2-17).

⁵ See Section 9-4-7.A.8 for service station regulations within Planning Area 4.

⁶ Architectural projections (including light towers in the parking areas) comprising less than 10 percent of the total building footprint may exceed the maximum height by up to 15 feet.

⁷ Eaves, cornices, chimneys, outside staircases, balconies and similar architectural features may project six feet into any required setback. Where the setback is less than six feet, the projection shall not exceed 60 percent of the required setback area.

⁸ Measured from the ultimate street right-of-way.

⁹ Measured from the side property line.

¹⁰ Domestic animal care facilities shall require a veterinary certificate of health and proof of current vaccinations for distemper, rabies and parvovirus. Animals may be groomed, trained, exercised socialized and kept or boarded overnight, but not bred, sold or let for hire.

¹¹ Subject to approval of a Master Plan pursuant to Chapter 2-17.

¹² Residential development within this zoning district is subject to the requirements outlined in Section 9-4-7.A.2.h.

¹³ Where residential uses abut potentially incompatible features (e.g. trash enclosures, retail back of house, compressors or similar uses as determined by the Director of Community Development), determination of interior setbacks shall be determined through master plan or conditional use permit.

(Ord. No. 97-06, § 3(V.E-325.4.9), 5-13-97; Ord. No. 05-13, § 4, 7-12-05; Ord. No. 05-16, § 2, 7-12-05; Ord. No. 09-02, § 3, 3-24-09; Ord. No. 10-04, § 3, 4-13-10; Ord. No. 13-08, § 2(Exh. A), 1-14-14 ; Res. No. 15-86, § 3(Exh. A), 8-11-15; Ord. No. 18-05 , Exh. A, 4-24-18)

CHAPTER 9-4. PLANNING AREA 4 (LOWER PETERS CANYON)

Sec. 9-4-1. Land use zoning map.

(See Planning Area 4 map following Section 9-4-3.)

(Code 1976, § V.E-804.1; Ord. No. 92-3, 4-14-92; Ord. No. 95-4, 5-9-95; Ord. No. 95-22, § 3, 11-28-95; Ord. No. 97-06, 5-13-97; Ord. No. 03-32, § 5, 11-18-03)

c. 9-4-2. Introduction.

- A. Planning Area 4 is located in the northern portion of the City. Boundaries include Interstate 5 (Santa Ana Freeway) to the south, Jamboree Road to the west, Culver Drive to the east and Portola Parkway to the north. This boundary includes a small portion of land that extends north of Portola Parkway between Jamboree Road and the west leg of the Eastern Transportation Corridor.
- B. Standards for Planning Area 4 have been established through a development agreement between the City and the property owner approved November 26, 1996. These standards are based on a specific plan approved by the County prior to the City's annexation of Lower Peters Canyon or as modified pursuant to the development agreement. The development standards in this agreement were codified in the zoning ordinance, and differ from other areas of the City. The development agreement expired in 2017.

(Code 1976, § V.E-804.2; Ord. No. 92-3, 4-14-92; Ord. No. 95-4, 5-9-95; Ord. No. 95-22, § 3, 11-28-95; Ord. No. 97-06, 5-13-97)

Sec. 9-4-3. Statistical analysis.

General Plan Category	Zoning Number	Zoning District	Building Intensity Standard			
			Maximum Regulatory Dwelling Units	Additive ² /Density Bonus ³ Dwelling Units	Maximum Regulatory Square Feet	Additive Square Feet ²
Residential:						
Medium Density	2.3F	Medium Density	5,361	0	0	0
Medium-High Density	2.4/2.4F	Medium-High Density	2,315	162	0	0
Multi-Use:						
Multi-Use	3.1	Multi-Use	0	0	*85,000	0
Commercial:						
Community Commercial	4.2	Community Commercial	0	0	124,410	0
Regional Commercial	4.9	LPC ⁴ Regional Commercial	1,051	210 ³	666,996	0
Business/Industrial:						

Research and Industrial	5.6	Business Park	0	0	1,423,000	0
Unallocated Dwelling Units ¹	n/a	n/a	0	0	0	0
PLANNING AREA TOTAL			8,727	372	2,299,406	0

*85,000 square feet refers to maximum square footage for commercial uses. All uses shall not generate more than 12,250 ADT unless additional environmental documentation ensures traffic mitigation.

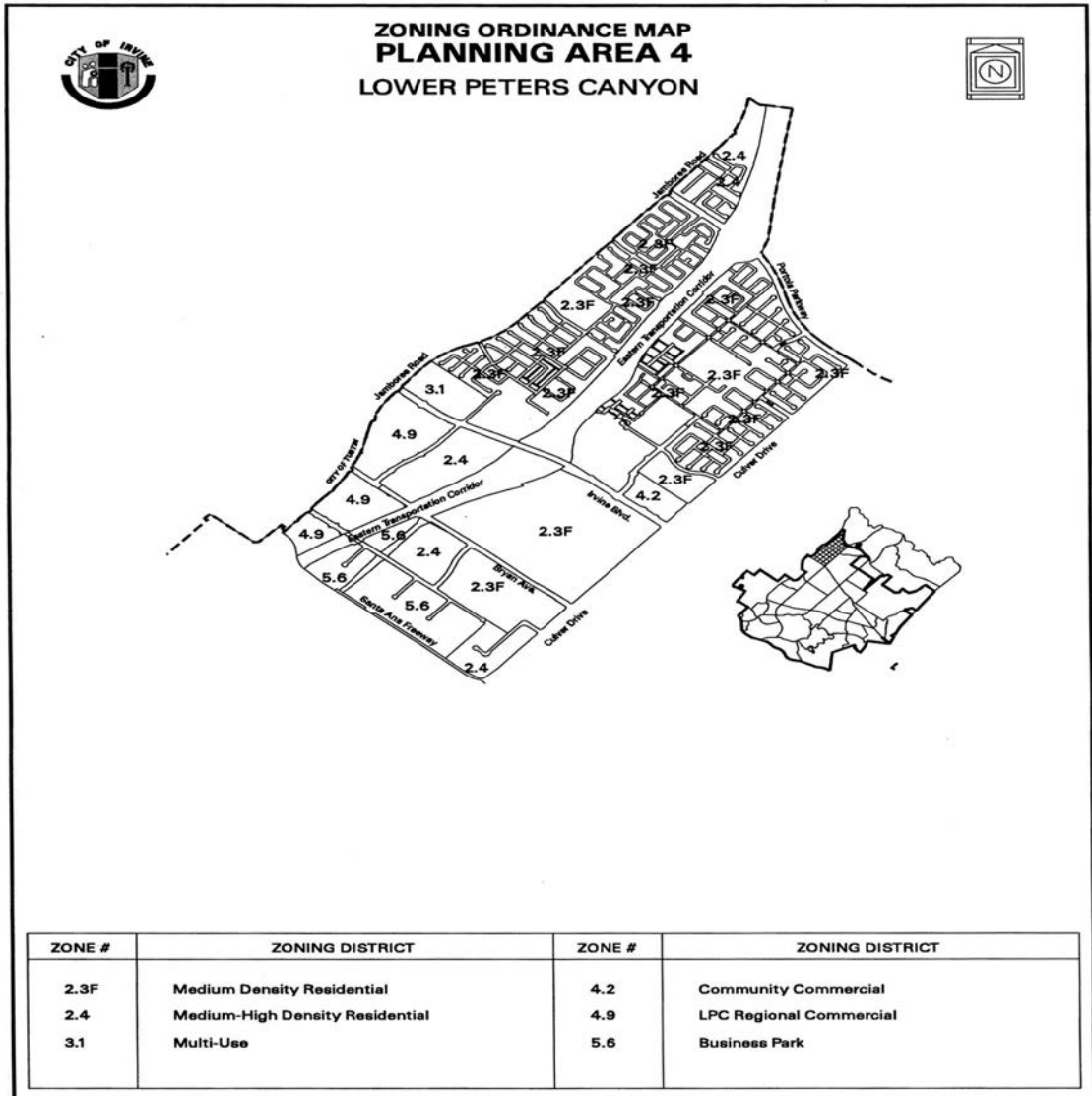
¹Unallocated dwelling units represent those units remaining in a planning area that may be built anywhere in the same planning area. These units are within the maximum development intensity for the planning area; and, therefore, placement of unallocated units into any residential category or category allowing residential uses within the planning area for purposes of development is determined to be consistent with the General Plan and Zoning Code with regard to intensity allocation only, provided that placement is otherwise consistent with site specific zoning regulations and that any potential environmental impacts are adequately addressed, including traffic impacts, pursuant to CEQA.

²See Section 9-0-3.C, Building Intensity Standards.

³Density bonus units. These units are not considered additive.

⁴LPC is the Lower Peter's Canyon Village.

(Code 1976, § V.E-804.3; Ord. No. 92-3, 4-14-92; Ord. No. 95-4, 5-9-95; Ord. No. 95-22, § 3, 11-28-95; Ord. No. 97-06, 5-13-97; Ord. No. 00-15, § 4, 1-9-01; Ord. No. 03-02, § 4, 1-14-03; Ord. No. 03-32, § 5, 11-18-03; Ord. No. 10-04, § 3, 4-13-10; Ord. No. 12-09, § 3(Exh. A), 5-22-12)



Sec. 9-4-4. Land use matrix.

P	=	Permitted
C	=	Conditional
."	=	Prohibited

Land Use	Category					
	2.3 Medium Density Residential	2.4 Medium- High Density Residential	3.1 Multi- Use	4.2 Community Commercial	4.9 Regional Commercial	5.6 Business Park

Accessory uses (1)	P	P	P	P	P	P
Advertising and publishing businesses	.	.	.	.	.	P
Alternative health care provider (7)	.	.	P	P	P	P
Answering and communication services	.	.	.	.	.	P
Assembly of components or finished products	.	.	.	.	.	P
Agriculture (6)	P	P	C (1)	P	P	P
Antennas (above height limit)	.	.	.	C	C	.
Apiaries	.	.	.	.	.	.
Arcades, game	.	.	.	P	P	.
Automobile parking lots and structures	.	.	.	P	.	.
Automobile repair specialty shop	.	.	.	.	P	.
Bar, tavern, cocktail lounge	.	.	C	C	P	C (2)
Barber and beauty shops	.	.	P	.	.	P
Blueprinting, reproduction, copying, photo supplies, bookbinding, photoengraving and printing	.	.	P	.	.	P
Caretaker's quarters	.	.	.	P	P	.
Carwash	.	.	C	C	C	C
Cemeteries/mausoleums	.	.	.	.	.	.
Child care centers	P	P	P	P	P	C
Churches (and other places of religious worship)	P	P	P	P	P	C
Civic, governmental and cultural	C	C	P	P	P	P
Clinics	.	.	.	P	P	.
Coastal zone development	.	.	.	.	.	.
Commercial recreation, nonresidential districts	.	.	P	P	P	P
Commercial recreation, residential districts	C	C	.	.	.	.

Communication transmitting, reception or relay facilities	.	.	.	P	.	.
Community facilities, public (including private clubs, lodges, union halls)	P .	P .	P .	P .	P .	P .
Community centers, including recreation facilities located internal to and designed to serve a specific residential district	P	P	.	.	.	.
Community centers, located in residential districts, including recreation facilities, but not internal to or designed to serve a specific neighborhood	C	C	.	.	.	.
Community information centers	C	C	P	P	P	P
Concrete recycling facilities	.	.	.	.	.	.
Conference convention facilities	.	.	.	P	C	P
Congregate care facilities	C	C	C	C	C	C
Convalescent home	C	C	C	C	C	.
Convenience liquor store	.	.	C	C	P	C
Cultural facilities (theaters, libraries, art galleries, music halls, observatories)	C	C	P	P	C	P
Dairy, commercial	.	.	.	.	.	.
Day care centers/facilities	P	P	P	P	P	P
Department stores	.	.	C	P	P	.
Domestic animal care facility	.	.	C	C	C	.
Dry cleaners and self-serve laundry	.	.	P	P	.	.
Educational facilities, including off-site institutions of higher learning	.	.	C	.	.	.
Engineering supplies	.	.	.	.	.	P

Equipment rental	.	.	.	.	P	C
Escort bureaus and introductory services	.	.	.	.	.	.
Financial institutions	.	.	P	P	P	P
Financial institutions, drive-thru	.	.	P	C	C	C
Fire stations	C	C	P	P	P	P
Florists	.	.	P	P	.	P
Fortunetelling	.	.	.	P	P	.
Fraternal and service clubs	.	.	.	P	P	.
Gas station/fuel dispenser	.	.	C	C	C	C
Golf courses	C	C	C	C	C	C
Government facilities	P	P	P	P	P	P
Greenhouses, commercial	.	.	C	P	P	C
Guard houses, gates and other security facilities	P	P	P	P	P	P
Health clubs	C	C	C	C	C	C
Heliports	.	.	.	.	.	.
Home care	P	P	.	.	.	.
Home occupations	P	P	.	.	.	.
Hospital, including medical offices/dental walk-in clinics and emergency centers	P	P	P	P	P	P
Hotel/motel	.	.	C (3)	C (3)	P (3)	.
Industries, service	.	.	.	P	P	P
Information center	P	P	P	P	P	P
Intra-community directional signs	P	P	P	P	P	P
Janitorial businesses	.	.	.	.	.	P
Landscaping businesses	.	.	.	.	.	C
Library	.	.	P	P	.	.
Mail-order businesses	.	.	.	.	.	P
Maintenance facilities and structures	C	C	P	P	P	P
Manufactured structures, nonresidential	.	.	C	C	C	C
Manufactured structures, residential	C	C	.	.	.	.
Manufacturing, heavy (components)	.	.	.	.	.	C
Manufacturing, light	.	.	.	.	.	C

Massage facilities and related businesses	.	.	C	C	C	.
Messenger, mail and delivery services	.	.	.	.	.	P
Mining and processing	.	.	.	.	.	.
Miniwarehouse	.	.	.	.	.	C
Model home sales complex	P	P	P	.	.	.
Movie theaters	.	.	.	.	P	.
Motion picture and recording studios	.	.	.	.	.	P
Museum	C	C	P	P	C	P
Nonprofit groups and meeting facilities	.	.	P	.	.	.
Nurseries, wholesale	P	P	.	P	P	P
Nursery schools	P	P	P	P	P	C
Office,						
Administrative	.	.	C	P	P	P
Business	.	.	C	P	P	P
Professional	.	.	C	P	P	P
Offices, design professionals	.	.	C	P	P	P
Office furniture, equipment and sales (including computers, furnishings, installation and interior decoration)	.	.	.	.	P	P
Office, headquarters	.	.	P	P	P	P
Office, planned unit development	.	.	.	C	C	.
Outdoor bazaar	.	.	C	P	P	.
Outdoor sales	.	.	C	P	P	.
Outdoor storage	.	.	.	.	.	C
Outdoor vendors	.	.	C	P	P	C
Packing plants for agricultural products	.	.	.	.	.	.
Parks (including parking for recreational uses)	P	P	P	P	P	P
Parks, private (noncommercial)	P	P	P	P	P	P
Pharmacies, dispensing	.	.	.	P	P	P
Picnic areas	P	P	P	P	P	P
Police stations	C	C	P	P	P	P
Recycling center	.	.	.	.	.	.

Recreation facilities, public and private (including health and tennis clubs and spas)	P	P	P	P	P	P
Recreational vehicle storage, private	.	.	.	.	.	C
Recreational vehicle storage, public	.	.	.	.	.	C
Research and development	.	.	.	.	.	C
Residential, accessory dwelling unit	P(8)	P(8)	.	.	.	.
Residential, attached.	P	P	P(9)	.	P(9)	.
Residential, conventional detached	P	P	.	.	.	.
Residential, nonprofit	P	P	P	P	P	P
Residential, institutional	P	P	P	P	P	P
Residential, planned unit developments	C	C	.	.	.	.
Restaurants	.	.	C	P	P	C
Restaurants, fast food and drive-thru	.	.	C	C	C	C
Restaurants, take-out	.	.	C	P	P	C
Retail and service business, general	.	.	C	P	P	.
Retail and service businesses, home improvement	.	.	C	P	P	.
Schools, private	P	P	P	P	P	P
Schools, public	P	P	P	P	P	P
Short-term rental	.	.	.	.	.	.
Solid waste stations	.	.	.	.	.	.
Stables, private	.	.	.	P	.	.
Stables, public	.	.	.	P	.	.
Supermarkets	.	.	C	P	P	.
Temporary uses (5)	P	P	P	P	P	P
Transportation support facilities, including park-and-ride and other uses intended to promote the use of transportation management programs and systems	.	.	P	.	.	.

Travel agencies	.	.	P	P	.	P
Truck terminals	.	.	.	.	.	.
Utility buildings and facilities	C	C	C	C	P	C
Vehicle assembly	.	.	.	.	P	C
Vehicle body repair, paint or restoration	.	.	.	.	P	.
Vehicle impound yards	.	.	.	.	.	.
Vehicle leasing and rentals	.	.	.	C	P	C
Vehicle repair	.	.	.	C	P	.
Vehicle sales	.	.	.	C	P	C
Vehicle storage	.	.	.	.	.	C
Vehicle wrecking yards	.	.	.	.	.	.
Veterinary services, domestics	.	.	.	P	P	P
Veterinary services, livestock	.	.	.	P	P	.
Vocational schools	.	.	.	.	.	C
Warehouse and sales outlets	.	.	C	P	P	C
Warehousing, storage and distribution	.	.	.	.	P	C

Notes:

- (1) Demonstration only.
- (2) If within restaurants.
- (3) After July 1, 2005.
- (4) If the 20-acre site set aside for the Tustin Unified School District is not used for school purposes.
- (5) As defined in Section 9-4-7.A.9.
- (6) As defined in Section 9-4-7.B.1.d.
- (7) This land use generates traffic trips the same as office, administrative, in the Irvine Business Complex and in the remainder of the City.
- (8) See Chapter 3-26 for specific accessory dwelling unit requirements.
- (9) Subject to approval of a Master Plan.

(Code 1976, § V.E-804.4; Ord. No. 92-3, 4-14-92; Ord. No. 95-4, 5-9-95; Ord. No. 95-22, § 3, 11-28-95; Ord. No. 97-06, 5-13-97; Ord. No. 99-14, § 2, 6-8-99; Ord. No. 05-16, § 2, 7-12-05; Ord. No. 10-04, § 3, 4-13-10; Ord. No. 13-08, § 2(Exh. A), 1-14-14 ; Ord. No. 18-05 , Exh. A, 4-24-18)

Sec. 9-4-5. General development requirements.

A. *Sectors.*

1. *Description.*
 - a. Sectors, dividing the planning area into 11 subareas, have been established to allow for an intermediate level of planning. This intermediate level of planning is to be done in conjunction with the first subdivision or Master Plan within a sector (Exhibit 1).
2. *Review process.*
 - a. Prior to or concurrent with City approval of the first subdivision map (except maps for finance and conveyance purposes only) or Master Plan within each sector, the Planning Commission shall review and approve the following for the entire sector (pursuant to the criteria outlined in Section 9-4-5.A.3 below):
 - (1) Ownership of landscape, natural open space and recreation areas.
 - (2) Location, width, and treatment of riding and hiking trails within or contiguous to the site.
 - (3) A list of any alternative development standards proposed as part of the application.
 - (4) Location of significant vegetation and special site features, and an indication of the resources to be altered and the resources to be preserved.
 - (5) Location of extensions of off-site roads, flood control facilities, or utilities to serve adjacent areas.
 - (6) Existing and planned uses on adjoining and proximate lands.
 - (7) Access to the project site and on-site pedestrian and vehicular patterns.
 - (8) Sector(s), location, acreage, types of land use and estimated number of dwelling units (or square footages for each nonresidential use) within each sector and/or building site (if deemed applicable by the Director of Community Development).
 - (9) A community design program which summarizes the design features of the area (i.e., signage design, fencing design, landscape themes, common landscape features (adjacent to arterials), eucalyptus windrow design/preservation concepts, architectural theme, and other community design features (if deemed applicable by the Director of Community Development)).
 - (10) Regional riding and hiking and bicycle trail alignments and design concepts (if deemed applicable by the Director of Community Development).
 - (11) Lower Peters Canyon open space spine and creek design concepts (if deemed applicable by the Director of Community Development).
 - (12) Community park design concepts (size, access, relationship with adjacent land uses) (if deemed applicable by the Director of Community Development).
 - (13) Ownership and maintenance responsibilities for public and private park, recreation and open space uses (if deemed applicable by the Director of Community Development).
 - (14) Access, parking, landscape and architecture themes consistent with the special use park for Sector 9 only (containing mixed-use development surrounding the special use park). This tract map may be approved without the completion of a County-approved general development plan for the special use park.
 - b. The application for said subdivision map or Master Plan shall be accompanied by maps, text, or other documentation to satisfy the above requirements. The form and content of such submittals shall be made to the satisfaction of the Director of Community Development.

3. *Alternative development standards.*

- a. If alternative development standards are proposed in conjunction with the Planning Commission approvals required by Section 9-4-5.A.2 above, a description of the proposed standards and how they differ shall be submitted. In addition, the Planning Commission will consider the following criteria prior to final action on the map, and make appropriate findings, if necessary:
1. *General character.* Relationship in scale, bulk, coverage and density with surrounding land uses.
 2. *Facilities.* The availability of infrastructure facilities to serve the project.
 3. *Harmful effects.* The harmful effects, if any, upon desirable neighborhood environments.
 4. *Traffic.* The generation of traffic and its effect on the capacity and character of surrounding streets.
 5. *Noise.* The existing and predictable future level and quantity of noise the property is subject to and the noise which would be generated by the proposed use.
 6. *Suitability.* The physical suitability of the site for the proposed project.

B. *Interim land uses.*

1. *Permitted uses.*

- a. The existing uses within Planning Area 4, listed below, shall be considered permitted uses; provided, however, that said uses shall be limited to the existing size, scope and location at the date of annexation to the City of Irvine. Maintenance, replacement, and additions shall be permitted for existing uses within Planning Area 4.
- (1) Agriculture and associated uses;
 - (2) Wholesale nursery;
 - (3) Mobile home park (along Culver Drive).

2. *Temporary uses.*

- a. The following temporary uses shall be permitted in conjunction with development in all sectors of the Lower Peters Canyon area:
- (1) Borrow and/or disposal sites and related construction/grading facilities subject to the provisions of the City of Irvine Grading Code; and
 - (2) Model homes, real estate sales offices and construction offices or trailers, per administrative approval by the Director of Community Development.
- b. The following temporary and/or permanent use shall be prohibited in all sectors of the Lower Peters Canyon area:
- (1) Concrete recycling facilities.

(Code 1976, § V.E-804.5; Ord. No. 92-3, 4-14-92; Ord. No. 95-4, 5-9-95; Ord. No. 95-22, § 3, 11-28-95; Ord. No. 97-06, 5-13-97; Ord. No. 99-14, § 2, 6-8-99)

Sec. 9-4-6. Reserved.

Sec. 9-4-7. Special development requirements.

A. Land use.

1. Sector development intensity.

- a. The maximum dwelling units within Sector 1 (Medium-High Density Residential) shall not exceed 1,200 dwelling units.
- b. The maximum dwelling units within Sector 2 (Medium Density Residential) shall not exceed 2,040 dwelling units. Within Sector 2, individual projects may exceed 12.5 dus/acre provided that the sector total is not exceeded.
- c. The maximum dwelling units within Sector 3 (Medium-High Density Residential) shall not exceed 1,200 dwelling units.
- d. The maximum gross floor area within Sector 4 (Regional Commercial) shall not exceed 267,406 square feet and the maximum dwelling units shall not exceed 1,261 dwelling units.
- e. The maximum dwelling units within Sector 5 (Medium Density Residential) shall not exceed 2,910 dwelling units. Within Sector 5, individual projects may exceed 12.5 dus/acre provided that the sector total is not exceeded.
- f. The maximum gross floor area within Sector 6 (Community Commercial) shall not exceed 136,000 square feet.
- g. The maximum dwelling units within Sector 7 (Medium Density Residential) shall not exceed 1,200 dwelling units. Within Sector 7, individual projects may exceed 12.5 dus/acre provided that the sector total is not exceeded.
- h. The maximum gross floor area within Sector 8 (Business Park) shall not exceed 1,423,000 square feet. Maximum dwelling units within Sector 8 shall not exceed 422.
- i. The maximum gross floor area devoted to commercial use within Sector 9 (Multi-Use) shall not exceed 85,000 square feet. All uses within Sector 9 shall not generate more than 12,250 average daily trips (ADT) unless additional environmental documentation ensures traffic mitigation.
- j. The maximum gross floor area within Sector 10 (Regional Commercial) shall not exceed 388,000 square feet.
- k. The maximum dwelling units for medium density residential uses within Sector 11 shall not generate more than 2,830 ADT unless additional environmental documentation ensures traffic mitigation. The maximum dwelling units for Medium-High Density Residential uses within Sector 11 shall not exceed 840 dwelling units. Within Sector 11, individual projects may exceed 12.5 dus/acre provided that the sector total is not exceeded.
- l. The maximum dwelling unit and commercial square footage totals for each sector are calculated on a gross acreage basis and apply to the overall sectors and not any particular division of those sectors.
- m. Sector boundaries and acreages are approximate and shall be established by subdivision, Master Plan and/or conditional use permit approval.
- n. The total number of dwelling units for Planning Area 4 (Lower Peters Canyon) shall not exceed 8,937 units.
- o. Adjustments in sector boundaries resulting in an acreage change of 10 percent or more of the total sector for final street alignments, landscaping requirements, geotechnical or engineering

refinements, site plans and/or tentative and/or final subdivision maps shall require approval from the Planning Commission.

- p. Adjustments in sector boundaries resulting in an acreage change of less than 10 percent of the total sector for final street alignments, landscaping requirements, geotechnical or engineering refinements, site plans and/or tentative and/or final subdivision maps shall require the approval of the Director of Community Development.
- q. Commercial sectors (Sectors 4, 6, and 10) may exceed the maximum gross floor area established for the sector by 10 percent provided that the total commercial square footage for Planning Area 4 does not exceed 876,406square feet.

2. *Residential.*

- a. No individual residential project (except affordable housing projects or projects in the 4.9 Lower Peters Canyon Regional Commercial district) shall exceed 25 dwelling units per gross acre.
- b.
- c. Except for residential projects in the 4.9 Lower Peters Canyon Regional Commercial district, the affordable housing goals for Lower Peters Canyon shall be consistent with the Irvine Housing Element in effect on November 26, 1996. The City shall cooperate with the property owner to identify possible public funding programs for affordable housing within Lower Peters Canyon, and the property owner is encouraged to seek such funding as well.
 - (1) In accordance with the Irvine Housing Element, neither the property owner nor any residential builder shall be required to provide any privately subsidized affordable housing, or apply for public financing for affordable housing, or reserve land specifically for affordable housing.
 - (2) The affordable housing goals are not requirements or standards. The provision of ownership housing for moderate-income households (up to 120 percent of the median income) is encouraged.
 - (3) Residential projects in the 4.9 Lower Peters Canyon Regional Commercial district shall be consistent with the Irvine Housing Element in effect at the time of project approval.
- d. Maximum height for fences and walls shall be in accordance with Chapter 3-35, Wall and Fence Standards.
- e. Private streets and driveways.
 - (1) Streets or driveways serving four or less dwelling units and having no parking within the travelway shall have a minimum paved width of 12 feet for one-way traffic or 20 feet for two-way traffic.
 - (2) Streets or driveways used primarily for access to garages or carports for more than four dwelling units and with no parking within the travelway shall have a minimum paved width of 12 feet for one-way traffic or 24 feet for two-way traffic.
 - (3) Streets and driveways where on-street parking will be limited to one side only shall have a minimum paved width of 32 feet.
 - (4) Streets and driveways with on-street parking permitted on both sides shall have a minimum paved width of 36 feet.
- f. Private motor courts.

- (1) Motor courts serving two to 12 cluster homes shall have a minimum paved width of 24 feet, excluding garage aprons and designated parking spaces.
 - (2) Sidewalks are not required for private motor courts serving cluster homes.
 - (3) Motor courts may include planting areas without raised curbs.
- g. Building massing.
- (1) As a goal, the property owner shall consider site planning techniques and architectural treatments to reduce the impact of building mass when processing Master Plans or conditional use permits for residential development adjacent to Bryan Avenue, Irvine Boulevard and Portola Parkway,. Use of varied building heights, building articulation, landscaping, walls and fences, screening and other similar techniques may be employed to achieve the desired goal.
- h. Multifamily residential.
- (1) All storage, including cartons, containers or trash, will be shielded from view within a building or area enclosed by a wall not less than six feet in height. If unroofed, no such area will be located within setback areas or within 50 feet of any residential building.
 - (2) All lights will be designed and located to minimize off-site impacts.
- i. Standards for all residential housing types within Planning Area 4, except in the 4.9 Regional Commercial zoning district which will be addressed through a master plan, are outlined in Sections 3-37-14 and 3-37-15. Standards for 4.9 Regional Commercial are found in Section 3-37-28.
- j. A screen referred to in this section shall be the same as a "wall or fence" and conform to the following:
- (1) See Chapter, 3-35 Wall and Fence Standards.
 - (2) See Chapter 3-15, Landscaping Standards.
3. *Regional Commercial (Sectors 4 and 10) (Commercial Uses only).*
- a. All exterior and interior lighting shall be designed and located to confine direct rays to the site. Except for necessary security lighting, all lights shall remain off during nonbusiness hours.
 - b. All loading and unloading shall be performed on the site. Loading platforms and areas shall be screened from view from adjacent streets, highways and residential areas.
 - c. All commercial storage, including cartons, containers or trash, shall be screened from view within a building or area enclosed by a wall not less than six feet in height. If unroofed, no such area shall be located within setback areas or within 50 feet of any residential sector.
 - d. Maximum height for fences and walls shall be in accordance with Chapter 3-35, Wall and Fence Standards.
 - e. Mechanical equipment, such as, but not limited to, air conditioning, heating, and ventilation ducts and exhausts, placed on any roof shall be screened from view, where feasible, from abutting sections of streets or highways and/or painted to match building coloration.
4. Community Commercial.
- a. All exterior and interior lighting shall be designed and located to confine direct rays to the site. Except for necessary security lighting, all lights shall remain off during nonbusiness hours.

- b. All loading and unloading shall be performed on the site. Loading platforms and areas shall be screened from view from adjacent streets, highways and residential areas.
 - c. All storage, including cartons, containers or trash, shall be screened from view within a building or area enclosed by a wall not less than six feet in height. If unroofed, no such area shall be located within setback areas or within 50 feet of a residential sector (or, if a community facility is located within a residential sector, within 50 feet of any residential building).
 - d. Maximum height for fences and walls shall be in accordance with Chapter 3-35, Wall and Fence Standards.
 - (1) Mechanical equipment placed on any roof, including, but not limited to, air conditioning, heating, and ventilation ducts and exhausts, shall be screened from view, where feasible, from abutting sections of streets or highways and/or painted to match building coloration.
5. *Institutional.*
- a. As provided in the Lower Peters Canyon development agreement, Planning Area 4 has a goal of providing 4,380 square feet of public facility institutional uses and 490,000 square feet of educational facility institutional uses. Such uses shall be permitted in every sector of Planning Area 4. Institutional uses consistent with this goal include:
 - (1) Public and private schools.
 - (2) Churches.
 - (3) Utilities.
 - (4) Public facilities.
 - (5) Libraries.
 - (6) Post offices.
 - (7) Police stations.
 - (8) Fire facilities.
 - (9) Day care centers.
 - (10) Hospitals.
 - (11) Government offices.
 - (12) Educational facilities.
 - (13) Nonprofit housing.
 - (14) Institutional residential.
 - b. The maximum building site area for institutional uses within Planning Area 4 shall be the same as the district in which the use is established.
 - c. The maximum building height for institutional uses within Planning Area 4 shall be the same as the district in which the use is established.
 - d. Building setbacks for institutional uses within Planning Area 4 shall be the same as the district in which the use is established.
 - e. All storage, including cartons, containers or trash, shall be screened from view within a building or area enclosed by a wall not less than six feet in height. If unroofed, no such area shall be

located within setback areas or within 50 feet of a residential sector (or, if a community facility is located within a residential sector, within 50 feet of any residential building).

- f. Maximum height for fences and walls shall be in accordance with Chapter 3-35, Wall and Fence Standards.
 - (1) A screen shall be installed along all site boundaries where the facility abuts residential areas. Except as otherwise provided, the screening shall be not less than five feet or more than seven feet in height.
 - (2) Mechanical equipment placed on any roof, including, but not limited to, air conditioning, heating, and ventilation ducts and exhausts, shall be screened from view from abutting streets, highways, residential areas or open space uses.
6. *Multi-Use (Sector 9).*
- a. All lighting shall be designed and located to minimize power consumption and to confine direct rays to the premises.
 - b. All loading shall be performed on the site. Loading platforms and areas shall be screened from view from adjacent streets, highways and residential areas.
 - c. All storage, including cartons, containers or trash, shall be shielded from view within a building area enclosed by a wall not less than six feet in height. If unroofed, no such area shall be located within setback areas or within 50 feet of any residential building.
 - d. Screening, as described in Section 9-4-7.A.2.j (required screening is not counted as part of net usable acres):
 - (1) *Abutting residential areas.* A screen shall be installed along all site boundaries where premises abut areas zoned for residential uses. Except where otherwise provided, the screening shall have a total height of no less than six feet and no more than seven feet. Where there is a difference in elevation on opposite sides of the screen, the height shall be measured from the highest elevation.
 - (2) *Streets and intersections.* Screening along all streets and boundaries shall have a height of not less than 36 inches and not more than 42 inches within 20 feet of the point of intersection of:
 - (a) A vehicular accessway or driveway and a street.
 - (b) A vehicular accessway or driveway and a sidewalk.
 - (c) Two or more vehicular accessways, driveways or streets.
 - (3) *Parking areas abutting arterial highways.* A landscaped screen shall be installed along all parking areas abutting an arterial highway. Except as otherwise provided, the screening shall have height of not less than 36 inches and not more than 42 inches. Where there is a difference in elevation on opposite sides of the screen, the height shall be measured from the highest elevation.
 - (4) Notwithstanding the requirements listed above, where the finished elevation of the property at the boundary line, or within five feet inside the boundary, is lower than an abutting property elevation, such change in elevation may be used in lieu of, or in combination with, additional screening to satisfy the screening requirements of this section.
 - (5) All outdoor storage of materials and products shall be screened from view from adjacent residential areas and from adjacent streets and highways.

- (6) Mechanical equipment placed on any roof, such as, but not limited to, air conditioning, heating, and ventilating ducts and exhaust, shall be screened from view from any abutting street or highway and any abutting areas zoned for residential or open space uses within Planning Area 4.
 - e. Except as otherwise established by an approved Master Plan, any permitted business operation shall be performed or carried out entirely within a building that is designed and constructed so that the enclosed operations and uses do not cause or produce a nuisance to adjacent sites, such as, but not limited to, the following: radio frequency interference, sound, vibration, electromechanical disturbance, electromagnetic disturbance, radiation, air pollution, dust, emission of toxic or nontoxic odors, or toxic or nontoxic matter.
7. *Business Park (Sector 8).*
- a. All lighting shall be designed and located to minimize power consumption and to confine direct rays to the premises.
 - b. All loading shall be performed on the site. Loading platforms and areas shall be screened from view from adjacent streets, highways and residential areas.
 - c. All storage, including cartons, containers or trash, shall be shielded from view within a building area enclosed by a wall not less than six feet in height. No such area shall be located within setback areas or within 50 feet of any residential building unless overhead screening is provided.
 - d. Screening, as described in Section 9-4-7.A.2.j (required screening is not counted as part of net usable acres):
 - (1) *Abutting residential areas.* A screen shall be installed along all site boundaries where premises abut areas zoned for residential uses. Except where otherwise provided, the screening shall have a total height of no less than six feet and no more than seven feet. Where there is a difference in elevation on opposite sides of the screen, the height shall be measured from the highest elevation.
 - (2) *Streets and intersections.* Screening along all streets and boundaries shall have a height of not less than 36 inches and not more than 42 inches within 20 feet of the point of intersection of:
 - (a) A vehicular accessway or driveway and a street.
 - (b) A vehicular accessway or driveway and a sidewalk.
 - (c) Two or more vehicular accessways, driveways or streets.
 - (3) *Parking areas abutting arterial highways.* A landscaped screen shall be installed along all parking areas abutting an arterial highway. Except as otherwise provided, the screening shall have height of not less than 36 inches and not more than 42 inches. Where there is a difference in elevation on opposite sides of the screen, the height shall be measured from the highest elevation.
 - (4) Notwithstanding the requirements listed above, where the finished elevation of the property at the boundary line, or within five feet inside the boundary, is lower than an abutting property elevation, such change in elevation may be used in lieu of, or in combination with, additional screening to satisfy the screening requirements of this section.
 - (5) *Outdoor storage.* All outdoor storage of materials and products shall be screened from view from adjacent residential areas in Lower Peters Canyon and from adjacent streets and highways.

- (6) *Mechanical equipment.* Mechanical equipment placed on any roof, such as, but not limited to, air conditioning, heating, and ventilating ducts and exhaust, shall be screened from view from any abutting street or highway and any abutting areas zoned for residential or open space uses within Planning Area 4.
 - e. Except as otherwise established by an approved site plan, any permitted business operation shall be performed or carried out entirely within a building that is designed and constructed so that the enclosed operations and uses do not cause or produce a nuisance to adjacent sites, such as, but not limited to, the following: radio frequency interference, sound, vibration, electromechanical disturbance, electromagnetic disturbance, radiation, air pollution, dust, emission of toxic or nontoxic odors, or toxic or nontoxic matter.
8. *Service stations.*
- a. Service stations, including those with the following associated uses, shall be permitted in Sectors 4, 6, 8, 9 and 10 subject to the approval of a conditional use permit by the Planning Commission:
 - (1) Sale/installation of petroleum products, tires, batteries and related minor automotive accessories.
 - (2) Minor automobile maintenance, e.g., tuneups, drive belt replacement, muffler/brake repair, electrical repair, washing, and lubricating services. (Heavy automobile repair involving major engine, transmission, drive train or similar work is prohibited.)
 - (3) Convenience store ("mini-market") offering incidental food, packaged goods, and convenience items to the motoring public.
 - (4) Any other use determined by the Director of Community Development to be consistent with the purpose and intent of this chapter.
 - b. Development standards:
 - (1) The maximum building height shall be 25 feet.
 - (2) Building line regulations (measured from main building):
 - (a) From ultimate right-of-way lines: 20 feet minimum.
 - (b) From interior property lines: 25 feet from any property line abutting an area designated for residential uses. Ten feet from property lines abutting commercially designated areas.
 - (3) All exterior and interior lighting shall be designed and located to confine direct rays to the site.
 - (4) All storage, including cartons, containers or trash, shall be shielded from view within a building or area enclosed by a wall not less than six feet in height. No such area shall be located within setback areas or within 50 feet of any residential building unless overhead screening is provided.
 - (5) All activities other than the sale of motor fuels and lubricants and washing of cars shall be contained in a completely enclosed structure.
 - (6) Screening (as described in Section 9-4-7.A.2.j):
 - (a) Screening along all streets shall be a minimum of 30 inches and a maximum of 42 inches in height.

- (b) Mechanical equipment placed on any roof, including, but not limited to, air conditioning, heating, and ventilation ducts and exhausts, shall be screened from view from abutting streets, highways or residential areas.
 - (c) Service station uses shall be designed so that operations are shielded from public view. Pump stations and service bays shall be oriented away from public view and landscape berms shall be used as a screen (e.g., reverse bay, backs-up station).
 - c. No portion of a service station site shall be utilized for automobile storage other than for temporary parking of an automobile being serviced or for temporary use by employees during working hours.
 - d. Service stations which are closed for more than 12 consecutive months will be required to submit an application for a new conditional use permit prior to issuance of a new certificate of use and occupancy.
- 9. *Temporary uses and structures.* The following temporary uses and structures are permitted in all land use categories throughout Planning Area 4:
 - a. *Residential tract sales and rentals.*
 - (1) Model homes, subject to the approval of the Director of Community Development.
 - (2) Garages, attached and detached.
 - (3) Temporary sales office building, or commercial coach.
 - (a) When the proposed temporary real estate office is located so that the described parcel is less than 300 feet from any building site used for residential purposes, the proposed real estate office may be permitted subject to the approval of the Director of Community Development for a maximum time period of two years from the date of approval.
 - (b) A building permit application for a temporary real estate office may be approved for a maximum time period of 18 months from the date of approval. The permit may be extended for one additional year if it is located more than 300 feet from any building site used for residential purposes.
 - (4) Accessory buildings and structures.
 - (5) Recreational facilities that will be a permanent portion of the subdivision.
 - (6) Permanent streets and driveways that will be part of the subdivision after the abandonment of the real estate office use.
 - (7) Temporary children's playgrounds.
 - (8) Temporary and permanent fencing, walks and structural amenities.
 - (9) Temporary vehicle parking and maneuvering areas to provide off-street parking as necessary for employees and guests.
 - (10) Temporary vehicular accessways.
 - (11) Signs in connection with the uses permitted above shall be permitted within a tract on the following conditions:
 - (a) The sign copy shall be limited to matters relating to the tract within which the signs are located.

- (b) Signs shall have a time limit of existence concurrent with the use of the permitted temporary offices.
 - (c) The maximum sign area for ground signs located at a street entrance shall be 64 square feet.
 - (d) Additional signage, exclusive of signs allowed in (11)(c) above shall be in accord with Division 7; however, they shall not exceed a total sign area of 100 square feet.
- b. *Construction office.*
 - (1) A temporary construction office during the construction of a main building on the same site shall be permitted upon the following conditions:
 - (a) The construction office shall be removed or converted to a permitted use prior to the issuance of a certificate of use and occupancy for the main building or buildings.
 - (b) If construction is phased over a length of time, the permit may provide that certificates of use and occupancy may be issued for completed buildings, except the last buildings to be completed, prior to removal or conversion of the temporary use.
- c. *Commercial and noncommercial coaches.*
 - (1) A temporary commercial coach may be approved for a maximum of two years from the date of approval.
 - (2) A cash bond in an amount to be determined by the Director of Community Development for each commercial coach unit shall be posted with the Director of Community Development, to guarantee the removal of each coach unit upon the expiration of the permit.
- d. *Mobile home residence.*
 - (1) A temporary mobile home is permitted during the construction of a permanent dwelling in all Residential Districts within Planning Area 4 (Lower Peters Canyon).
 - (a) The temporary mobile home shall be located on the same building site and concurrent with the construction of a permanent dwelling.
 - (b) The mobile home shall be permitted for a period of time not to exceed one year, or until the issuance of a certificate of use and occupancy for the main building, whichever occurs first. Time extensions shall be subject to the approval of a conditional use permit by the Planning Commission.
 - (2) A temporary mobile home, ancillary to an existing dwelling on the same building site, is permitted subject to a conditional use permit by the Planning Commission, in all Residential Districts and similar areas.
 - (a) The application shall include evidence as necessary to explain the need and the temporary nature of the proposed use.
 - (b) The application shall include a written guarantee that the mobile home will be removed and the property will be restored to its original state or to a permitted use within 60 days after the expiration date of the use permit.

- (c) The mobile home shall be permitted for a period of time not to exceed two years after the issuance of a certificate of use and occupancy for such use unless a shorter period of time is specified by the conditional use permit.
 - e. *Seasonal uses.*
 - (1) Seasonal land uses including Christmas tree sales facilities, Halloween pumpkin sales facilities, and off-site sales of single-season agricultural products shall be permitted subject to a seasonal use permit, as outlined in Chapter 2-27.
 - f. *Special outdoor gatherings.*
 - (1) Special outdoor gatherings shall be permitted subject to a special event permit.
10. *Accessory uses and structures.*
- a. See Section 1-2-1 for general definitions for accessory uses and accessory structure and Section 3-5-1 for accessory structures development standards.
 - b. Garages and carports.
 - (1) The placement or construction of garages and carports on any building site used for residential purposes shall comply with the setback requirements for a main building except as otherwise specified as follows:
 - (a) When the building is closer than 20 feet from the ultimate right-of-way line of a street or common driveway providing primary access and circulation to other dwelling units, attached and detached garages shall be located so that the garage entry is a minimum of 20 feet, at the closest point, from the sidewalk (or curblines, if no sidewalk exists).
 - (b) When alleys, private streets or common driveways are provided specifically as vehicular access to garages and carports when separate access and circulation systems are provided for pedestrians, guests and emergency vehicles, attached and detached garages and carports may be placed anywhere within the rear setback area to within a minimum of five feet from such alley, private street or common driveway.
 - (c) Except as otherwise specified in Subsections (1)(a) and (1)(b) above, detached garages and carports may be placed or constructed any place within the required rear or interior side setback area except within those areas where fences and walls are limited to a maximum height of 3.5 feet.
 - c. Patio covers and roofs. See Section 3-27-7, Lattice/Trellis Patio Cover, Cabana, Pool House, and Gazebo Setback Requirements, for development standards.
 - d. Satellite dish antennas. See Section 3-8-3, Satellite Dish Antenna Standards.
 - e. Swimming pools. See Section 3-27-8, Pools and Spas and Mechanical Equipment Setback Requirements, for development standards.
 - f. Fences and walls. See Chapter 3-35, Wall and Fence Standards.
 - g. Miscellaneous accessory uses.
 - (1) Permitted accessory uses not involving a building or structure may be placed or located on any portion of a building site. However, if any such permitted accessory use is placed or located within the ultimate street right-of-way, it shall be removed by the owner, and at no expense to the public agency involved, prior to the widening of the street.

- h. Elevated driveway on steep topography.
 - (1) Where the ground slopes down from the street providing vehicular access to a building site, an elevated driveway connecting the dwelling and garage with the street may be installed within the setback area subject to the following provisions:
 - (a) The ground surface elevation of the building site along a line 20 feet from and parallel to the street right-of-way line shall be a minimum of at least five feet lower than the street elevation.
 - (b) The maximum width of the driveway shall be 20 feet.
 - (c) A handrail not exceeding 3.5 feet in height may be installed along the edges of the driveway.
 - (d) A stairway may be constructed from the driveway to the ground surface.

B. *Public and private facilities.*

1. *Open space dedication.*

- a. The County's regional riding and hiking trails and regional bikeways will be incorporated into an open space spine system as conceptually shown on Exhibit 2 (open space spine/regional trail system). Details of the open space spine system shall be further defined in each sector tract map, consistent with Exhibits 2, 3a and 3b (open space spine/regional trail sections).
- b. An enhanced setback on the east side of Peters Canyon Wash, extending 200 feet north of the Santa Ana Freeway (I-5), shall be landscaped to complement Peters Canyon Wash landscaping immediately south of I-5. The enhanced setback shall be consistent with criteria outlined in the Peters Canyon Wash Master Plan (21045-MP).
- c. Certain areas within the entire Lower Peters Canyon area, although privately owned and fenced, may be designated as open space. Through the use of deed restrictions, dedications or similar techniques, these areas may limit development to preserve the open space character.
- d. Prior to approval of the first subdivision map or Master Plan in a sector, the developer shall address jurisdictional regulations for off-site open space dedication areas, as shown in Exhibit 4, and on-site regional riding and hiking trails, to the satisfaction of the Director of Community Development.
 - (1) *Sectors 3, 4, 7 and 8.* An offer of dedication has been recorded which provides for the County of Orange to accept Management Unit III of Limestone Canyon Regional Park no sooner than 90 days following issuance of building permits for 3,559 dwelling units and 54,510 commercial square feet in Lower Peters Canyon Sectors 3, 4, 7 and 8 (Limestone Canyon irrevocable offer of dedication).
 - (2) *Sectors 2, 5 and 6.* The landowner shall record an offer of dedication in favor of the County of Orange for Irvine Open Space District C, as shown in Exhibit 4, prior to a concurrent recordation of the first final tract map within Lower Peters Canyon Sector 2, 5 or 6. The offer will provide that it may be accepted no sooner than 90 days following issuance of building permits for 75 percent of the total development in Sectors 2, 5 and 6 or completion of development therein, whichever occurs first.
 - (3) *Sector 1.* The landowner shall record an offer of dedication in favor of the County of Orange for 26 acres of Irvine Open Space District A, as shown in Exhibit 4, prior to or concurrent with the recordation of the first tract map within Lower Peters Canyon and Sector 1. The offer shall provide that it may be accepted no sooner than 90 days following issuance of

building permits for 75 percent of the development in Lower Peters Canyon Sector 1 or completion of development therein, whichever occurs first.

- (4) *Offers of dedication.* Each offer in Subsections (2) and (3) above shall be subject to nonmonetary encumbrances, easements, liens, restrictions and title exceptions of record or apparent which do not prevent use of the conveyance areas consistent with the uses set forth below:
- (a) The offer shall provide for conveyance of title by grant deed subject to land use restrictions and/or open space easements. This will ensure that the conveyed land, including corresponding means of enforcement, will be used in perpetuity consistent with the intent of the dedication and the purposes to be served by conservation areas. Land reserved for road, transportation, transit, drainage, flood control, water, sewer and utility purposes by public agencies may be excluded from the offer at the landowner's discretion.
 - (b) Mineral and water rights (excluding the right of surface entry) on conveyed lands shall be reserved by the landowner. The landowner will make full written disclosure of toxic and hazardous substances which, to his or her knowledge, were stored on or deposited in the land to be dedicated. Road, transportation, transit, flood control, drainage, water, sewer and utility easements necessary to accomplish development in adjoining areas and/or to accomplish planned facilities by public agencies and utilities on conveyed lands are required if necessary to preserve or facilitate agricultural uses on adjoining Open Space Districts not yet conveyed.
 - (c) The enhancement of habitat areas by the landowner, particularly riparian habitat, shall be allowed in conveyed Open Space Districts, consistent with applicable standards and procedures for purposes of environmental impact mitigation.
 - (d) The City or other appropriate public agency will accept the offer within two years after all other conditions of acceptance have been satisfied. However, acceptance may be delayed beyond two years by mutual agreement of the City and landowner.
 - (e) Prior to being transferred to public ownership, agricultural uses defined below shall be allowed in the Open Space District. Landform, vegetation and drainage modifications pursuant to all allowable uses shall be permitted, except in riparian vegetation areas. Riparian vegetation will not be significantly modified, except as necessary to provide fire protection, access roads, flood control, drainage, water, sewer and utility facilities, or where habitat is to be enhanced as part of a mitigation program approved by the California Department of Fish and Game. The landowner may convey land or easements within the Open Space District to public agencies and utilities for road, transportation, transit, drainage, flood control, water, sewer and utility purposes.
 - 1. Permitted agricultural uses shall include the following:
 - a. Agriculture.
 - b. Community care facilities serving six or fewer persons and large day care homes.
 - c. Parks, playgrounds, and athletic fields (noncommercial).

- d. Single-family dwelling or mobile home (one per building site).
 - e. Animal hospitals and clinics.
 - f. Apiaries.
 - g. Communication transmitting, reception or relay facilities.
 - h. Employee quarters related to agricultural uses.
 - i. Grading and excavation over 5,000 cubic yards.
 - j. Landfill gas recovery operations.
 - k. Libraries and museums.
 - l. Public/private utility buildings and structures.
 - m. Wholesale nurseries.
2. Conditional agricultural uses subject to a conditional use permit shall include the following:
- a. Airports and heliports.
 - b. Cemeteries, mortuaries, mausoleums and crematories.
 - c. Churches, temples and other places of worship.
 - d. Commercial dairies.
 - e. Commercial outdoor recreation.
 - f. Commercial processing of agricultural minerals.
 - g. Commercial stables.
 - h. Community care facilities serving seven to 12 persons.
 - i. Country clubs, golf courses, riding clubs, swimming clubs, tennis clubs and yacht clubs.
 - j. Educational institution.
 - k. Kennels.
 - l. Livestock feeding ranches in compliance with applicable health and safety regulations.
 - m. Mini-storage facilities.
 - n. Packing plants for agricultural products.
 - o. Research and development testing facilities and activities.
 - p. Sanitary landfills.
 - q. Permanent facilities for sale of agricultural products grown on the site.
 - r. Storage of recreation vehicles, campers, trailers and boats.

2. *Eucalyptus windbreaks.*

- a. Prior to the recordation of any subdivision map (except for financing and conveyance purposes) and the release of the financial security guaranteeing the landscape improvements, the applicant

shall demonstrate compliance with the 1996 eucalyptus windrow maintenance and preservation plan in a manner meeting the approval of the Director of Community Development in consultation with the Director of Public Works and the Chief Building Official.

3. *Special Historic District compatibility.*

- a. For a distance of approximately 900 feet from Irvine Boulevard along the boundary of the Mixed-Use Area (Sector 9), a landscaped area containing eucalyptus trees shall be provided in order to screen the view of future development from the special use park and the surrounding land uses.
- b. Along the northern boundary of the special use park (Sector 9), a 20-foot landscaped area containing eucalyptus trees shall be provided in order to screen the view of future development from the special use park. Residential structures directly abutting the landscaped area will be restricted to a maximum building height of 25 feet.
- c. Prior to the issuance of a demolition permit and/or relocation permit for any structure in the Irvine Agricultural Headquarters Complex (Sector 2) known or anticipated to contain asbestos-containing building materials (ACBMs), the applicant shall:
 - (1) Develop an asbestos management plan for the structure.
 - (2) Complete the demolition and/or relocation in conformity with the United States Environmental Protection Agency national emission standards on asbestos and the corresponding standards of the South Coast Air Quality Management District. Evidence of compliance of the survey and abatement activities shall be provided by the project contractor in writing to the Orange County Fire/Hazardous Materials Unit prior to any disruption of the structure.
- d. Prior to the issuance of a demolition permit for any structure in the boundaries of the National Register eligible Irvine Agricultural Headquarters Complex, the developer shall prepare a written and photographic documentary record of the structure, its historic uses and other features related to the structure. This report shall be prepared to the satisfaction of the Director of Community Development.
 - (1) Copies of the final report shall be provided to and on file with the County of Orange Harbors, Beaches and Parks, the City of Tustin, and the Irvine Branch Public Libraries.

4. *Parks.*

Residential development shall comply with Park Requirements in Section 5-5-1004 and other applicable regulations.

C. *Circulation.*

1. *Streets.*

a. *Culver Drive.*

(1) *Access.*

- (a) Direct vehicular access to the Lower Peters Canyon site from Culver Drive between Bryan Avenue and the Santa Ana Freeway (I-5) will be limited to one signalized intersection at Farwell Avenue.

- (b) Culver Drive shall be improved subject to specifications .

(2) *Culver Drive wall.*

- (a) If requested by Crestwood Estates Homeowners' Association and approved by the City of Irvine, the landowner shall construct a wall, comparable to the adjoining Culver Drive wall, along the Culver Drive side of the association's existing park prior to the issuance of the first building permit in the Community Commercial Zoning District (Sector 6) within Lower Peters Canyon.
 - (3) *Culver Drive edge setback.*
 - (a) The setback along the village edge located along the westerly side of Culver Drive between Portola Parkway and I-5 shall be a minimum of 35 feet from the back of the curb.
 - 1. Commercial uses along the Culver Drive edge shall have a minimum setback of 30 feet from the back of the curb.
 - 2. The average village edge width as measured from the back of the curb on Culver Drive shall be 50 feet.
 - 3. Significant open space areas (e.g., public parks, open space spine/regional trail elements, and flood control facility rights-of-way) adjacent to Culver Drive and village entry treatments shall be incorporated into the village edge up to a maximum of 150 feet from the back of the curb.
 - (4) *Village edge between Bryan and Escudero.*
 - (a) The existing village edge shall be increased by eight feet and improved (at a maximum cost of \$350,000 to The Irvine Company) with landscaping, additional tree planting and a sidewalk, and shall be counted toward the average village edge width of 50 feet.
 - 1. No work shall be required that involves relocation of any utilities, as determined by the owner of those utilities.
 - (b) The property owner shall submit plans for infrastructure improvements at least 60 days prior to issuance of the 1,547th residential building permit as calculated when combining the total of building permits issued in Planning Area 5 and Planning Area 4.
 - (c) The property owner shall commence construction of improvements no later than the issuance of the 1,547th residential building permit as calculated when combining the total of building permits issued in Planning Area 5 and Planning Area 4.
 - (5) *Village edge buildings.*
 - (a) Residential buildings adjacent to Culver Drive shall be limited to two stories. Architectural features may exceed the height of the roofline.
 - (b) Wherever possible, the property owner shall seek to reduce building mass through a variety of methods, including the use of landscaping, building articulation, walls and fences, screening and other similar design techniques.
- b. *County design standards.*
- (1) Arterial highway, collector, and local street construction within and adjacent to Lower Peters Canyon will be in accordance with County design standards; however, deviations consistent with the Lower Peters Canyon design character and intent may be proposed during the subdivision review process.

- c. *Arterial setbacks.*
 - (1) Setbacks from all arterials within Planning Area 4 shall be 25 feet, measured from back of curb, as depicted in Exhibits 3a and 3b.
 - (2) Setbacks along arterials containing open space spines within Planning Area 4 shall be 45 feet, measured from back of curb, as depicted in Exhibits 3a and 3b.
 - (3) Setbacks along the Eastern Transportation Corridor are depicted in Exhibits 2 and 3a.
- 2. *Public transit and transportation demand management (TDM).*
 - a. Prior to the issuance of building permits, the applicant, or any future landowners, shall provide evidence of payment to the City of Tustin for transit fees as prescribed in an areawide transit fee program, if established, in accordance with Lower Peters Canyon Specific Plan General Regulation 18. The issuance of building permits shall not be delayed by the absence of an established transit fee program. In the event that a commuter rail transit fee study has not been completed by November 27, 2000, the landowner's and future landowners' obligation to participate in the areawide transit fee program shall expire.
- 7. *Engineering standards.*
 - a. Engineering standards applicable to Lower Peters Canyon shall be as described in Exhibits 8a and 8b.
- 8. *City entry feature.*
 - a. The property owner shall provide a City entry feature at the intersection of Peters Canyon Wash and the I-5 Freeway, consistent in design and scope with similar improvements approved for Sector 10.
- 9. *Circulation and phasing requirements.*
 - a. Prior to the approval of the first subdivision map or Master Plan in a sector (except for financing or conveyance purposes), the developer shall prepare a traffic study for the sector.
 - (1) The study shall be approved by the Director of Public Works, in consultation with the City of Tustin.
 - (2) The traffic study shall:
 - (a) Identify and assign circulation measures pursuant to the project circulation phasing plan;
 - (b) Evaluate the impact of either the delay of any previously committed circulation improvements or construction of currently unanticipated circulation improvements assumed in the March 1995 Lower Peters Canyon traffic study for each of the horizon years analyzed; and
 - (c) Utilize the circulation system and capacity assumptions consistent with the City of Irvine and the City of Tustin circulation Master Plans and with those additional circulation improvements used by the affected jurisdiction for the applicable horizon year.
 - b. As part of each application for the first subdivision map or Master Plan in a sector, a pedestrian circulation plan shall be submitted and approved to the satisfaction of the Director of Public Works. The plan shall show pedestrian access to regional hiking trails, parks, schools, shopping areas, bus stops and/or other public facilities.

- c. (Note: This alternative language shall take the place of the following two regulations if they are satisfied prior to the City's annexation of Lower Peters Canyon.) Lower Peters Canyon EIR 557 mitigation measures T-2 and T-3 have been superseded by the Lower Peters Canyon intersection improvement agreement dated June 1997.

10. *Riding and hiking trails.*

- a. Prior to approval of the first subdivision map or Master Plan for Sectors 5, 7 and 8, the developer shall ensure that the Peters Canyon and Hicks Canyon regional riding and hiking trails are incorporated into the site design, including grade-separated undercrossings at Jamboree Road, Culver Drive and the Santa Ana Freeway (I-5), using the existing undercrossing.
 - (1) These trails shall be designed consistent with specifications in the County of Orange Master Plan of regional riding and hiking trails and the regional riding and hiking trails design manual.
 - (2) Subject trails may be included as a joint use within flood control right-of-way.
 - (3) Prior to approval of subdivision maps by the City of Irvine Subdivision Committee, proposed trail designs shall be submitted to the City subject to review and approval of the Director of Community Development.
- b. Prior to the recordation of any applicable map containing trail alignments, the applicant shall irrevocably offer to the City of Irvine, or its designated public agency, the recreational trail for riding and hiking trail purposes and Class I (off-road) bikeway within the tract boundary in accordance with the following:
 - (1) Prior to the recordation of an applicable final tract map, the subdivider shall irrevocably offer to the County of Orange a 16-foot-wide recreation easement including the trail surfaces and wood fence maintenance easement for Peters Canyon regional riding and hiking trail purposes and 16-foot-wide recreation easement including trail surfaces and wood fence maintenance easement for the Class I (off-road) bikeway in a location and in a manner meeting the approval of the Director of Community Development. The subdivider shall not grant any easements over the property subject to the recreation easement unless such easements are first reviewed and approved by the County of Orange. Until such time as the easement is accepted by the County, maintenance and upkeep of the easement area shall be the responsibility of the subdivider or its successors.
 - (2) Prior to the recordation of an applicable subdivision map adjacent to the riding and hiking trail/Class I bikeway, the subdivider shall design the proposed riding and hiking trail and Class I bikeway, and prior to the issuance of building permits adjacent to the riding and hiking trail and Class I bikeway, the applicant shall enter into an agreement and post financial security for a period of 10 years, guaranteeing 150 percent of the cost of the designing, engineering, and construction of the riding and hiking trail and Class I bikeway. Said improvements shall be in accordance with the County-approved area plan for PA 2 (Area Plan 96-2) of the Lower Peters Canyon specific plan, the Master Plan of riding and hiking trails and the County's bikeway Master Plan.
 - (3) Prior to the issuance of a grading permit, the grading plans shall be reviewed by the Director of Community Development to assure that the proposed grading provides for and will not interfere with or preclude the installation of the

recreational riding and hiking trail and bikeway in a location and in a manner meeting the approval of the Director of Community Development.

- (4) Prior to the issuance of the 150th final certificate of use and occupancy within Sector 2-B, or any final certificate of use and occupancy in Sectors 2-C or 2-E (Exhibit 9), and prior to the release of financial security guaranteeing the riding and hiking trail improvements and Class I bikeway improvements within each applicable sector, the riding and hiking trails improvements shall be installed, including the grade-separated crossing of Jamboree Road at Peters Canyon Wash, at-grade crossings of Trevino Drive and Robinson Drive and related improvements (i.e., signals with buttons installed at appropriate heights for pedestrians, bicyclists and equestrians), in a manner meeting the approval of the Director of Community Development.
- (5) Prior to the issuance of the 150th final certificate of use and occupancy within Sector 2-B, or any final certificate of use and occupancy in Sectors 2-C or 2-E (Exhibit 9), the applicant shall furnish to the Chief Building Official a written copy of the Director of Community Development's approval of the improvements installed.

D. *Neighborhood design.*

1. *Community theme.*

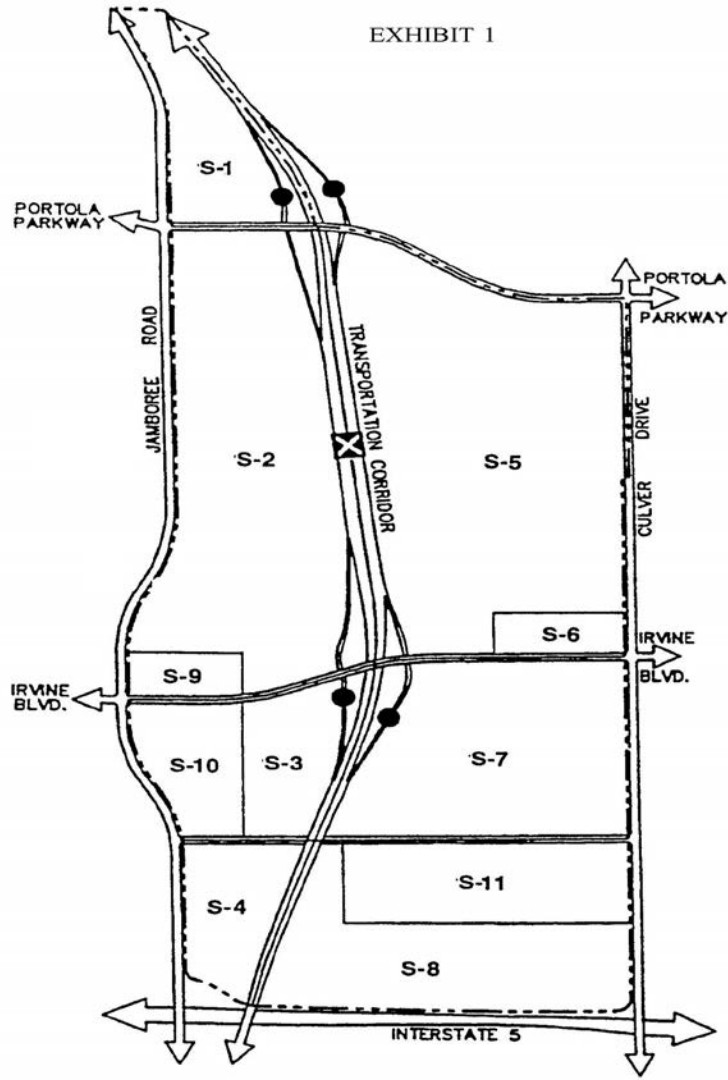
- a. Planning Area 4 is a large-scale multi-use planned development intersected by major regional transportation facilities which provide delineation and definition to subareas within the larger community. The community subareas may be developed in thematically distinct villages or Residential Districts and have their own identity. The open space spine system, including a system of regional and local trails, within Lower Peters Canyon has potential to provide a unifying design feature within the community. Location of public and quasipublic facilities, such as school, community and neighborhood parks, and institutional uses, in proximity to the open space spine system is encouraged where feasible. The use of special landscape treatments and/or thematic elements may be used by the applicant to enhance this system and further embellish distinguishable features of the community. The key to this goal is to create a distinctive community theme and reserve diversity and flexibility so that the community can respond to market changes over time during the 20-year projected schedule for completion.

E. *Chemical management.*

1. *Tanks and pipelines.*

- a. Prior to issuance of certificates of use and occupancy for individual tenant improvements or construction permits for tanks or pipelines, uses shall be identified and, for specified uses, the applicant shall propose plans and measures for chemical management, including, but not limited to, storage, emergency response, employee training, spill contingencies and disposal, to the satisfaction of the Director of Community Development.
 - (1) Chemical management plans shall be approved by the Director of Community Development and other specified agencies such as the Orange County Fire Authority, the Health Care Agency and sewerage agencies to ensure implementation of each agency's respective requirements. A copy of the approved chemical management plans shall be furnished to the Chief Building Official, prior to the issuance of any certificates of use and occupancy.
 - (2) Certificates or permits may be ministerially withheld if features needed to properly manage chemicals cannot be incorporated into a previously completed building, center or complex.

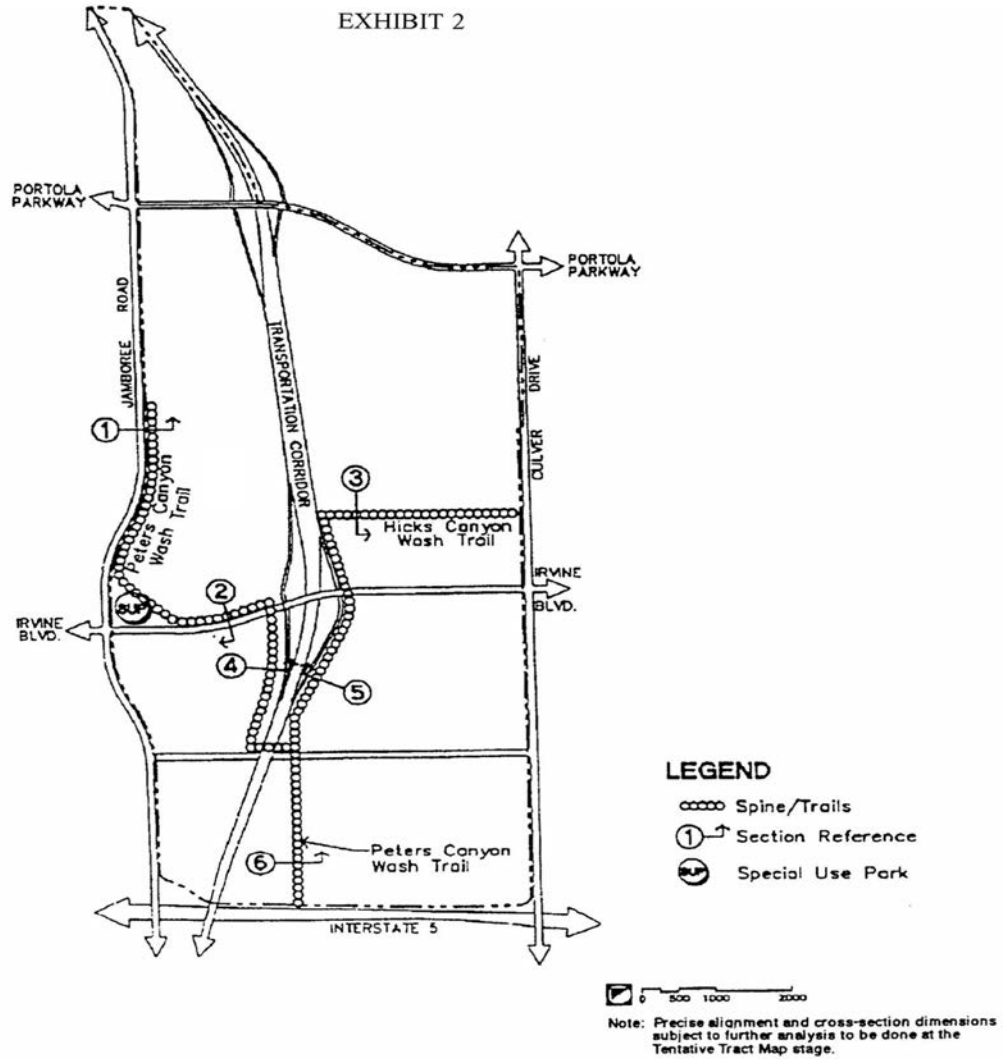
EXHIBIT 1



LOWER PETERS CANYON SECTORS

February 6, 1997

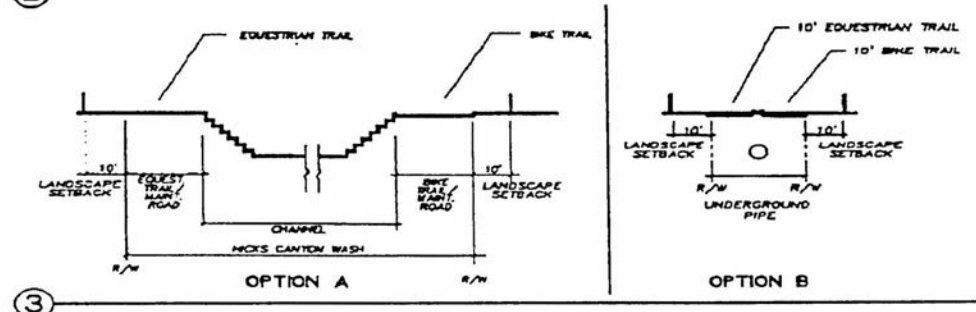
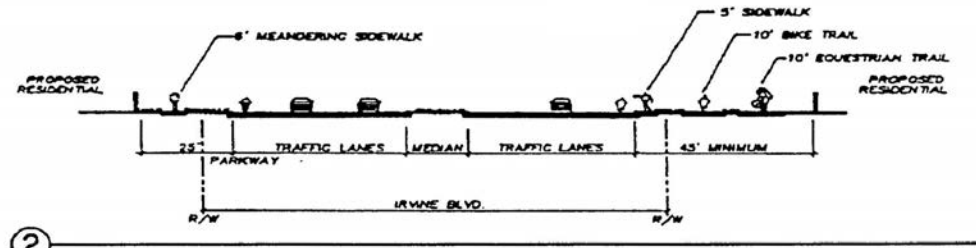
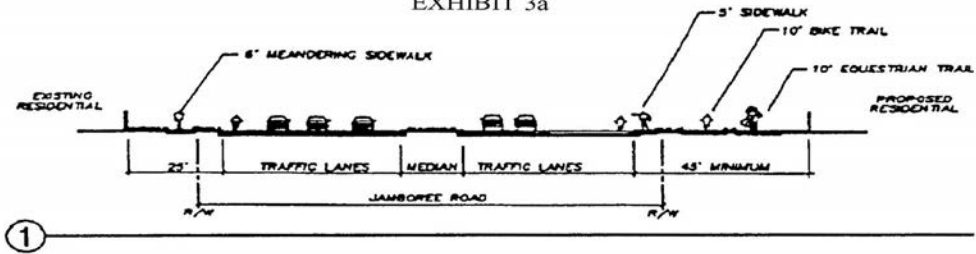
EXHIBIT 2



LOWER PETERS CANYON

OPEN SPACE SPINE/ REGIONAL TRAIL SYSTEM

EXHIBIT 3a



NOTE: PROPOSED ALIGNMENT AND CROSS-SECTION DIMENSIONS ARE SUBJECT TO FURTHER ANALYSIS TO BE DONE AT THE TENTATIVE TRACT MAP STAGE.

LOWER PETERS CANYON

OPEN SPACE SPINE/ REGIONAL TRAIL SYSTEM

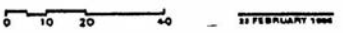
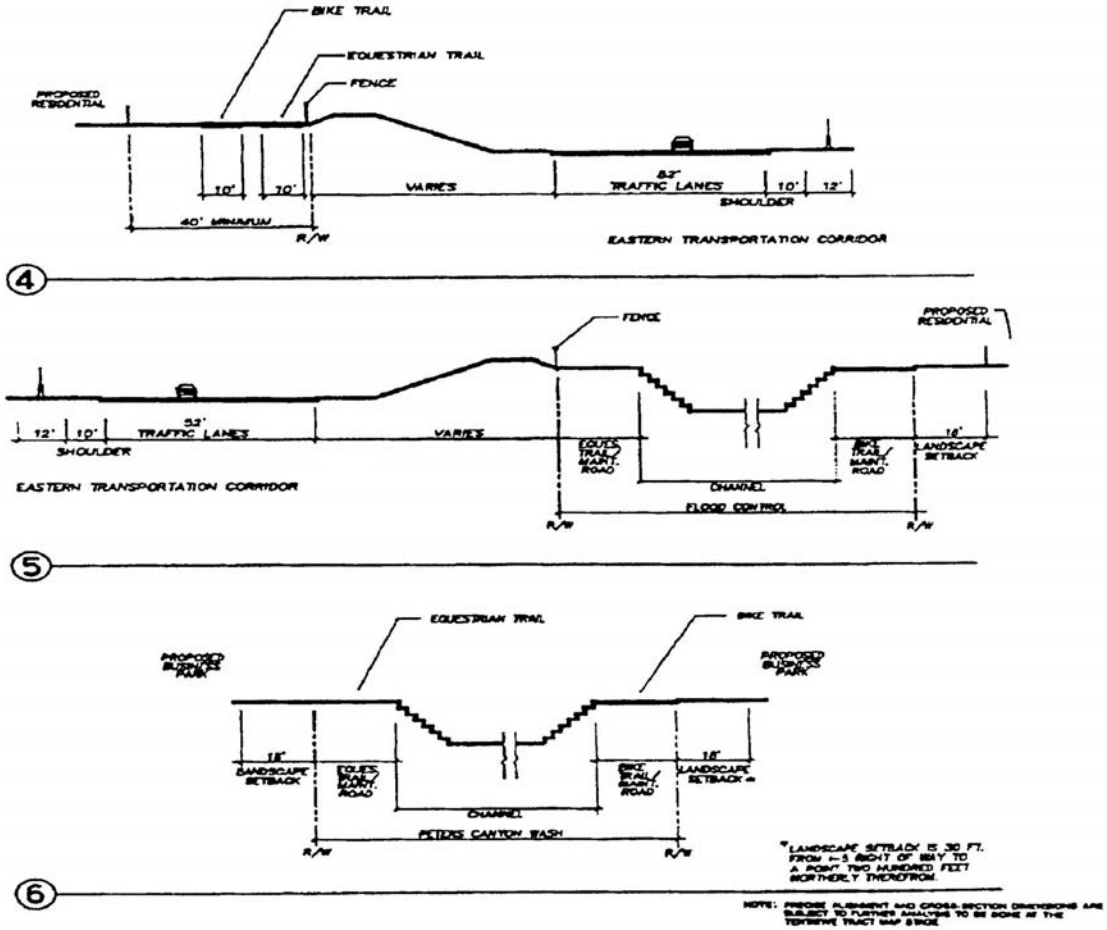


EXHIBIT 3b

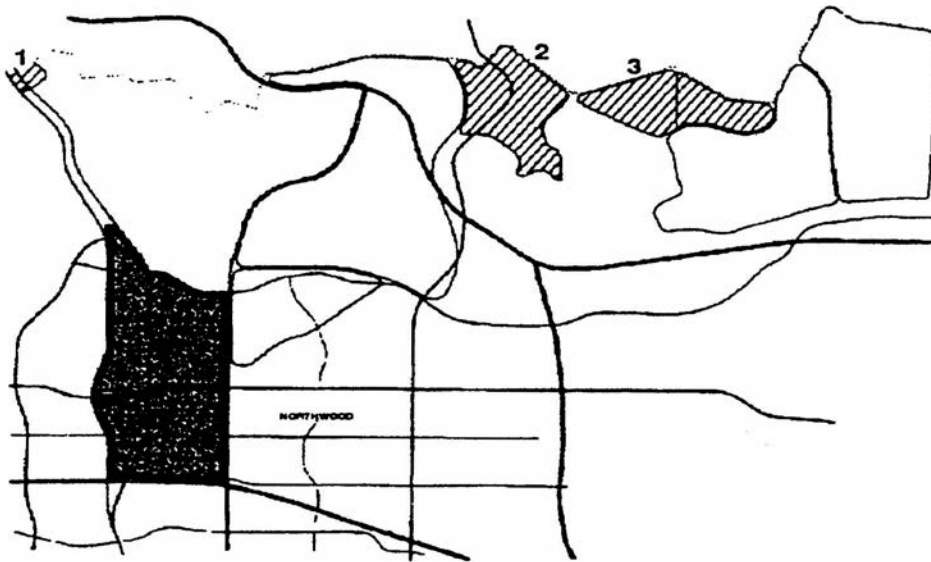


LOWER PETERS CANYON

OPEN SPACE SPINE/ REGIONAL TRAIL SYSTEM



EXHIBIT 4



LEGEND

-  DEVELOPMENT AREA
-  DEDICATION AREA

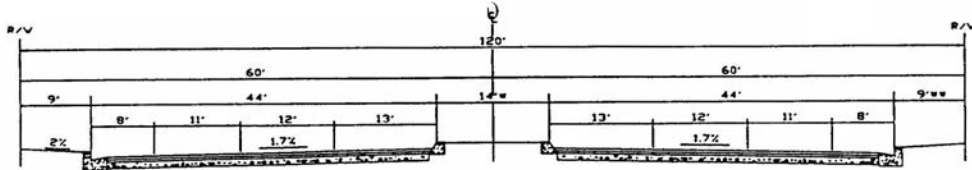
- 1** Irvine Open Space District "A" (Portion of Committed Open Space)
- 2** Irvine Open Space District "C"
- 3** Limestone Canyon Management Unit #1

LOWER PETERS CANYON REGIONAL OPEN SPACE DEDICATION AREAS



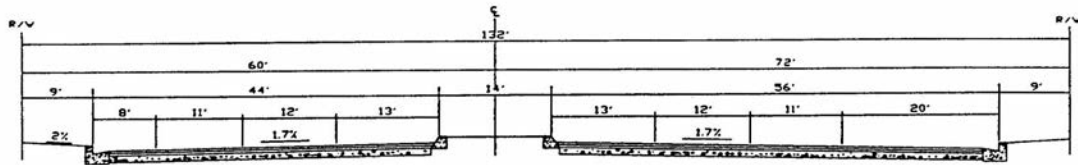
2.

EXHIBIT 8b

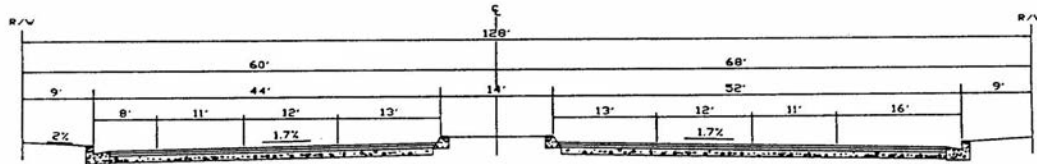


JAMBOREE ROAD
IRVINE BOULEVARD
PORTOLA PARKWAY
CULVER DRIVE
SECTION 1
NO SCALE

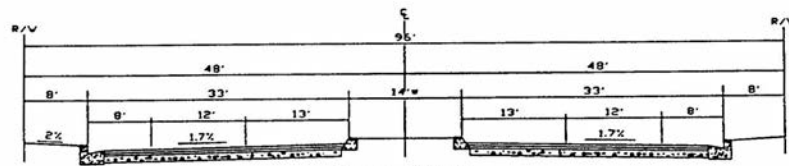
* WIDTH TO 24" FOR DOUBLE LEFT TURN LANE WHERE REQUIRED
** EXISTING PARKWAY WIDTH VARIES ON CULVER DRIVE



(MAJOR/ARTERIAL INTERSECTION)
(WITH SEPARATE RIGHT TURN LANE)
SECTION 1A
NO SCALE



(MAJOR/PROJECT ENTRY)
(WITH SEPARATE RIGHT TURN LANE)
SECTION 1B
NO SCALE



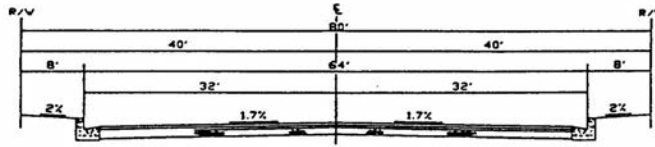
BRYAN AVENUE
SECTION 2
NO SCALE

* WIDTH TO 24" FOR DOUBLE LEFT TURN LANE WHERE REQUIRED

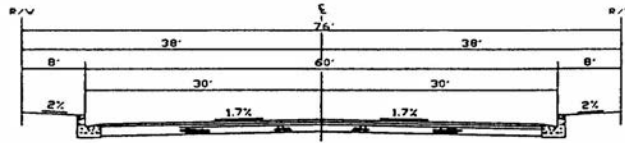
LOWER PETERS CANYON

STREET RIGHT-OF-WAY PARKING WIDTH

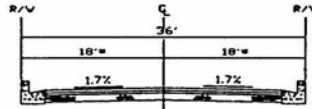
EXHIBIT 8b



EL CAHINO REAL
ETC TO BRYAN AVENUE
SECTION 3
1/8" SCALE

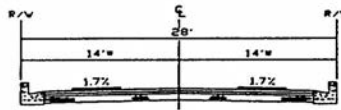


LOCAL ROADWAY
(TRAFFIC VOLUMES GREATER THAN 8,000)
SECTION 4
1/8" SCALE



LOCAL ROADWAY
(TRAFFIC VOLUMES LESS THAN 8,000
AND PARKING BOTH SIDES)
SECTION 5
1/8" SCALE

* DIMENSION INCLUDES ONE FOOT WITH ROLLED CURBS



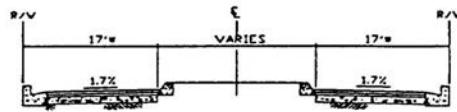
LOCAL ROADWAY
(TRAFFIC VOLUMES LESS THAN 8,000
AND PARKING PROHIBITED)
SECTION 6
1/8" SCALE

* DIMENSION INCLUDES ONE FOOT WITH ROLLED CURBS

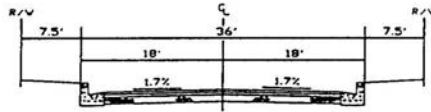
LOWER PETERS CANYON

STREET RIGHT-OF-WAY PARKING WIDTH

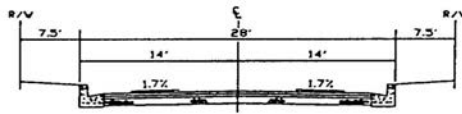
EXHIBIT 8b



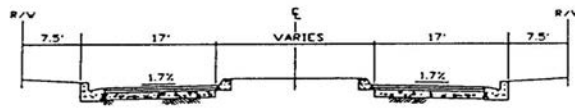
LOCAL ROADWAY WITH MEDIAN
 (TRAFFIC VOLUMES LESS THAN 8,000
 AND PARKING PROHIBITED)
SECTION 7
 NO SCALE
 * REDUCE SIDEWALK ONE FOOT
 WITH ROLLED CURB



LOCAL ENTRY ROADWAY
 (TRAFFIC VOLUMES LESS THAN 8,000
 AND PARKING BOTH SIDES)
SECTION 8
 NO SCALE



LOCAL ENTRY ROADWAY
 (TRAFFIC VOLUMES LESS THAN 8,000
 AND PARKING PROHIBITED)
SECTION 9
 NO SCALE



LOCAL ENTRY ROADWAY WITH MEDIAN
 (TRAFFIC VOLUMES LESS THAN 8,000
 AND PARKING PROHIBITED)
SECTION 10
 NO SCALE

CITY COUNCIL ORDINANCE NO. 23-12

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF IRVINE, CALIFORNIA, APPROVING DEVELOPMENT AGREEMENT 00900866-PDA TO ESTABLISH PUBLIC BENEFITS AND AFFORDABLE HOUSING OPPORTUNITIES ASSOCIATED WITH THE IRVINE MARKET PLACE RESIDENTIAL DEVELOPMENT IN PLANNING AREA 4 (LOWER PETERS CANYON); FILED BY IRVINE COMPANY

WHEREAS, an application has been filed by Irvine Company, requesting approval of Development Agreement 00900866-PDA associated with the development of a new residential apartment complex with up to 1,261 units located in Planning Area (PA) 4 (Lower Peters Canyon); and

WHEREAS, Irvine Company proposes to redevelop a commercial site containing approximately 200,000 square feet of inline tenant space into a 1,261-unit apartment complex. The project site is located within the Irvine Market Place regional commercial center; and

WHEREAS, on March 14, 2023, the City Council approved a Memorandum of Understanding (MOU) associated with future residential development of 4,500 housing units. The subject site is the first of the six sites included in the MOU to come up for entitlement and it is being evaluated for development of up to 1,261 residential apartment units; and

WHEREAS, the Development Agreement applicability is limited to the 15.52-acre site located at the southwest corner of Bryan Avenue and the Eastern Transportation Corridor (261 Toll Road); and

WHEREAS, the Development Agreement is associated General Plan Amendment 00863325-PGA, Zone Change 00870374-PZC, and Master Plan 00882754-PMP, which all work in concert to effectuate the development of the residential project; and

WHEREAS, the Development Agreement does not append, rescind or revise any approvals or conditions for development of the proposed residential project at the subject property. Instead, the Development Agreement would vest the approvals noted above for a period of fifteen (15) years and provides a public benefit in the form of agreed upon terms regarding:

- A. Rental housing being located within an established mixed-use district where existing infrastructure is in place; and

- B. The addition of 211 new affordable housing units at the Very-Low, Low, and Moderate income levels for a period of 75 years, exceeding City's current standards, to the City's housing stock; and
- C. Payment of a public benefit fee (which equates to \$14,500 per residential unit) to be used at the sole discretion of the City for municipal purposes such as enhancements to existing parks, trails, bridges, and affordable housing; and

WHEREAS, Irvine City Council Resolution No. 82-68 established procedures and requirements for the consideration of approval, amendment, and/or cancellation of a statutory Development Agreement in accordance with Govt. Code Title 7, Division 1, Chapter 4, Article 2.5 Development Agreements, Section 65865; and

WHEREAS, the Planning Commission of the City of Irvine has considered information presented by the applicant, the Community Development Department, and other interested parties at a duly-noticed public hearing held on May 4, 2023; and

WHEREAS, on May 7, 2023, notice of the May 23, 2023 City Council public hearing was published in the Orange County Register, was posted at the project site and at designated City bulletin boards, and was mailed to all property owners, residents, and homeowners associations within 500 feet of the project site boundaries; and

WHEREAS, the City Council of the City of Irvine considered information presented by the applicant, the Community Development Department, and other interested parties at a public hearing held on May 23, 2023.

NOW, THEREFORE, the City Council of the City of Irvine DOES HEREBY ORDAIN as follows:

SECTION 1. That the above recitals are true and correct and are incorporated herein.

SECTION 2. Pursuant to Section 6 of the City of Irvine CEQA Procedures and Sections 15162, 15168, and 15378 of the State CEQA Guidelines, the City Council approves: (1) the development vested by this Agreement conforms in all respects to development studied in and contemplated by the certified PA 4 Program Environmental Impact Report (EIR) [State Clearinghouse (SCH) No. 94041030] as refined through the April 2023 Addendum prepared for the project (the "PA 4 EIR") and (2) that this Agreement will not have any new or different environmental impacts from the development which is the subject of the EIR; and (3) that there are no changes to the project, changes in circumstances or new information that would require the preparation of subsequent or supplemental environmental review for the matters covered by the Agreement under CEQA Guideline Section 15162 and Public Resources Code Section 21166, and, therefore, this action falls within the scope of the EIR and its corresponding approved project.

SECTION 3. The City Council make the findings required by City Council Resolution No. 82-68 for approval of Development Agreement 00900866-PDA as follows:

- A. Is consistent with the objectives, policies, general land uses and programs specified in the General Plan and any applicable specific plan.

Development Agreement 00900866-PDA is consistent with the Irvine General Plan in that the use and development intensity described in the Master Plan, as vested by the Agreement, correspond to the land uses and maximum number of residential units as regulated in the General Plan for PA 4, upon effectuation of the associated General Plan Amendment and Zone Change applications. As there are no applicable specific plans affecting the subject site, that portion of the required finding is not applicable. Therefore, the proposed Development Agreement is consistent with the objectives, policies, general land uses and programs specified in the General Plan.

- B. Is compatible with the uses authorized in, and the regulations prescribed for, the land use district in which the real property is located.

Development Agreement 00900866-PDA is consistent with the uses within the land use district and surrounding areas in which the real property is located, upon effectuation of the associated General Plan Amendment and Zone Change applications.

If the City Council is inclined to make the findings that the project is compatible with the uses authorized in, and the regulation prescribed for the land use district in which the property is located, that it is the best interest of the City of Irvine to approve the Development Agreement be approved as an integral part of that application.

- C. Is in conformity with public convenience, general welfare and good land use practices.

The Development Agreement is in conformity with the City of Irvine's standards for public convenience, general welfare, and good land use practices in that the Development Agreement does not independently set or revise any land use approvals. The Development Agreement sets forth the affordable housing requirements and public benefit contributions agreed to by the applicant.

- D. Will not be detrimental to the health, safety and general welfare.

All future development proposed on the subject site is required to comply with all applicable local, regional, state and federal regulations regarding health and safety matters.

- E. Will not adversely affect the orderly development of property or the preservation of property values.

The Development Agreement will not adversely affect the orderly development of property and will preserve property values in that it promotes a quality residential mixed-use project using sustainable development practices. The Development Agreement will vest underlying approvals for a period of 15 years. Future residential development will replace existing in-line commercial development that is approximately 200,000 square feet in area.

SECTION 4. That Development Agreement 00900866-PDA vests development approvals for the Irvine Company, and/or subsequent owners for the 15.52-acre project site located at the southwest corner of Bryan Avenue and the Eastern Transportation Corridor for a period of fifteen (15) years.

SECTION 5. The City Clerk shall certify to the passage of this Ordinance and this Ordinance shall be published as required by law and shall take effect as provided by law.

NOW, THEREFORE, based on the above findings, the City Council of the City of Irvine DOES HEREBY APPROVE Development Agreement 00900866-PDA, as shown in Exhibit A, attached hereto.

PASSED AND ADOPTED by the City Council of the City of Irvine at a regular meeting held on the 13th day of June 2023.

MAYOR OF THE CITY OF IRVINE

ATTEST:

CITY CLERK OF THE CITY OF IRVINE

STATE OF CALIFORNIA)
COUNTY OF ORANGE) SS
CITY OF IRVINE)

I, CARL PETERSEN, City Clerk of the City of Irvine, HEREBY DO CERTIFY that the foregoing ordinance was introduced for first reading on the 23rd day of May 2023, and duly adopted at a regular meeting of the City Council of the City of Irvine, held on the 13th day of June 2023.

AYES: COUNCILMEMBERS:

NOES: COUNCILMEMBERS:

ABSENT: COUNCILMEMBERS:

ABSTAIN: COUNCILMEMBERS:

CITY CLERK OF THE CITY OF IRVINE

RECORDING REQUESTED BY
AND WHEN RECORDED MAIL TO:

CITY OF IRVINE
One Civic Center Plaza
P.O. Box 19575
Irvine, CA 92623-9575
Attention: City Clerk

(Space Above this Line is for Recorders' Use Only)

This Agreement is recorded at the request and for the benefit of the City of Irvine under the authority of Government Code § 65868.5 requiring recordation by the County recorder and is exempt from the payment of a recording fee pursuant to Government Code § 6103

DEVELOPMENT AGREEMENT

Pursuant to Government Code §§ 65864-65869.5

by and among

CITY OF IRVINE

and

IRVINE MARKET PLACE II LLC

DEVELOPMENT AGREEMENT

This Development Agreement (“**Agreement**”) is entered into this ___ day of _____, 2023, by and among the CITY OF IRVINE, a California municipal corporation (the “**City**”), and IRVINE MARKET PLACE II LLC, a Delaware limited liability company (“**Landowner**”). The City and Landowner are collectively referred to herein as the “**Parties**” and individually as a “**Party**”.

RECITALS

A. Capitalized terms not otherwise defined in this Agreement shall have the meaning given to such terms in Section 1 of this Agreement.

B. Landowner owns the real property, which is approximately 15.5 acres of land, located within the boundaries of the City, more specifically described in Exhibit A to this Agreement (the “**Property**”).

C. The City adopted a General Plan amendment, zone change, master plan and tentative parcel map, which are more specifically described in the “**Development Plan**” set forth in Exhibit B to this Agreement. Landowner intends to develop the Property in accordance with the Development Plan. Landowner’s planned development of the Property under the Development Plan is referred to as the “**Project**”.

D. On March 14, 2023, Landowner (or an affiliate of Landowner on Landowner’s behalf) and the City entered into that certain Memorandum of Understanding Regarding Affordable Housing and Related Matters Between the City of Irvine and Irvine Company (“**MOU**”), which provides in part for a comprehensive master planning approach for future Landowner development projects, such as the Project, including related affordable housing requirements. For reference purposes only, and not for purposes of adding any additional rights or obligations under this Agreement, the MOU is attached hereto as Exhibit F and incorporated herein by this reference.

E. In connection with the affordable housing requirements under the MOU, it is the intent of the Parties that the Affordable Housing Provisions in Section 6 below shall, throughout the Term of this Agreement, be applicable to the Property for the applicable terms as set forth therein. The Parties intend that no further affordable housing obligations shall be required to satisfy the affordable housing requirements applicable to the Project.

F. Pursuant to the MOU, Landowner (or an affiliate of Landowner) will convey to the City or its designated land trust 4.69 acres of land known as the Technology Drive site, as more particularly described in the MOU. Landowner (or an affiliate of Landowner) also will extinguish 92 existing Low Income housing credits in connection with its conveyance of the Technology Drive site, as more specifically discussed in the MOU. With the conveyance of the Technology Drive site and extinguishment of the existing Low Income housing credits, City and Landowner have agreed that the Project has satisfied the requirements under Sections 4.4.1.ii and 4.4.1.iii of the MOU with respect to the amount of Very Low Income housing units and Low Income housing units required by those Sections of the MOU.

G. In light of the nature of the development projects, as an incentive under the State Density Bonus Law, and City's determination that it does not anticipate a need to construct new community-level sports parks, the MOU provides that enumerated development projects, including the Project, will be exempt from the park dedication requirements of Section 5-5-1004 of the Irvine Municipal Code ("**Park Dedication Requirements**").

H. In addition to the incentive set forth in the above Recital, the Project will include the additional bonus units, incentives, concessions, and/or waivers pursuant to the State Density Bonus Law and the Density Bonus Housing Agreement as further set forth in the Affordable Housing Summary (defined below).

I. The MOU further provides that, in consideration for the understandings set forth in the MOU, Landowner will pay a public benefit payment that will be used by the City for municipal purposes determined in the City's sole discretion.

J. The MOU further provides that the City will process development agreements securing vested development rights and the terms necessary to implement the MOU. The City has determined that the terms of the MOU and this Agreement satisfy the Affordable Housing Ordinance and the Parks Code and substantially advance the goals of the City's Housing Element. This Agreement provides Landowner with the financial and legal assurances needed to proceed with the development of the Project.

K. To strengthen the public planning process, encourage private participation in comprehensive planning, and reduce the economic risk of development, the Legislature of the State of California adopted the Development Agreement Statute, Section 65864, *et. seq.*, of the California Government Code. The Development Agreement Statute authorizes the City to enter into an agreement with any person having a legal or equitable interest in real property and to provide for the development of such property and to vest certain development rights therein. Pursuant to the authorization set forth in the Development Agreement Statute, the City adopted Resolution No. 82-68 on July 13, 1982, establishing procedures for the consideration and approval of development agreements.

L. Among other purposes, this Agreement is intended to be, and shall be construed as, a development agreement within the meaning of the Development Agreement Statute. This Agreement eliminates uncertainty in planning for and secures the orderly development of the Project; ensures a desirable and functional community environment; provides effective and efficient development of public facilities, infrastructure, and services appropriate for the development of the Project; assures attainment of the maximum effective utilization of resources within the City; and provides the City and its residents the significant public benefits, thereby achieving the goals and purposes of the Development Agreement Statute. In exchange for these public benefits, Landowner desires to receive the assurance that it may proceed with development of the Property in accordance with the terms and conditions of this Agreement, the Existing Land Use Regulations, and the Development Plan, which are all described in further detail below.

M. The City has determined that the Project is consistent with the goals and policies of the City's General Plan and imposes appropriate standards and requirements with respect to the development of the Property in order to maintain the overall quality of life and the environment

within the City. The City has further determined that this Agreement is in the best public interest of the City and its residents and that adopting this Agreement constitutes a present exercise of its police power. The Project is within the scope of the project covered by the certified Lower Peters Canyon Specific Plan Final Environmental Impact Report (SCH No. 94041030) (the “**Final EIR**”). Prior to its approval of this Agreement, the City, pursuant to CEQA, prepared an addendum to the certified Final EIR and completed its environmental review of the Project. The Parties acknowledge that the Final EIR and addendum has been prepared for the development of the Property and the adoption of the Development Plan for the Property. The Parties acknowledge that the Final EIR and addendum concludes and the City has found in connection with its approval of this Agreement based on the Final EIR and addendum, that subject to incorporation and implementation of the mitigation measures and project design features adopted as part of the approval of the Development Plan, as well as existing plans, programs, and policies, there is no current deficiency or pending deficiency in any municipal services or facilities (including without limitation sewer, solid waste disposal, drainage, flood control, water supply, street, police, fire, and similar infrastructure and municipal services) required for the development of the Property.

N. On _____, 2023, the Planning Commission of the City held a public hearing on this Agreement, made certain findings and determinations with respect thereto, and recommended to the City Council that this Agreement be approved. On _____, 2023, the City Council also held a public hearing on this Agreement, considered the Planning Commission’s recommendations, and found that this Agreement is consistent with the City’s General Plan.

O. In accordance with the Development Agreement Statute, the City Development Agreement Regulations, and applicable law, on ___ the City Council adopted Ordinance No. __, finding this Agreement consistent with the City’s General Plan and approving this Agreement.

AGREEMENT

Based upon the foregoing Recitals, which are incorporated herein by this reference, and for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the City and Landowner hereby agree as follows:

1. DEFINITIONS.

The following terms when used in this Agreement shall have the meanings set forth below:

“**Affordable Housing Ordinance**” shall mean the comprehensive program for the provision of affordable housing as set forth in Chapter 2-3 of the City of Irvine Zoning Ordinance.

“**Affordable Housing Provisions**” shall mean the provisions set forth in Section 6 below.

“**Affordable Housing Summary**” shall mean the summary of affordable units provided in the Project as attached as Exhibit D hereto.

“**Affordable Units**” shall mean the residential units to be rented by Landowner (or such other owner with respect to Affordable Units not within the Project) to Very Low Income, Low Income, or Moderate Income households at affordable rents in accordance with this Agreement and the Density Bonus Housing Agreement.

“**Agreement**” shall mean this Development Agreement by and between the City and Landowner.

“**Annual Review**” shall have the meaning ascribed in Section 10.1 of this Agreement.

“**Area Median Income**” shall mean the Orange County area median income as published periodically by the California Department of Housing and Community Development in Section 6932 of Title 25 of the California Code of Regulations, or successor regulation based on the median household income as annually established by the United States Department of Housing and Urban Development.

“**City**” shall have the meaning ascribed in the introductory paragraph to this Agreement.

“**City Council**” shall mean the governing body of the City.

“**City Development Agreement Regulations**” shall mean the regulations establishing procedures and requirements for the consideration of development agreements set forth in the City’s Resolution No. 82-68 adopted by the City Council on July 13, 1982, as the same may be amended from time to time.

“**Defaulting Party**” shall have the meaning ascribed to it in Section 9.2 of this Agreement.

“**Density Bonus Housing Agreement**” shall mean that certain Density Bonus Housing Agreement between City and Landowner in the form mutually approved by City and Landowner.

“**Development Agreement Statute**” refers to Sections 65864 through 65869.5 of the California Government Code, as the same may be amended from time to time.

“**Development Fees**” shall mean the monetary consideration charged by the City in connection with a development project, including the Project, for the purpose of defraying all or a portion of the cost of mitigating the project impacts and funding development of the public facilities related to the development of the Project. Development Fees shall not include: (i) the City’s normal fees established by Resolution No. _____ for processing, environmental assessment/review, tentative tracts/parcel map review, plan checking, site review, site approval, administrative review, building permit (plumbing, mechanical, electrical, building), inspection, and similar fees imposed to recover the City’s costs associated with processing, reviewing, and inspecting applications, plans, specifications, etc.; or (ii) fees and charges levied by any other public agency, utility, district, or joint powers authority, whether or not such fees are collected by the City.

“**Development Plan**” shall mean the Project as set forth in Exhibit B to this Agreement.

“**Effective Date**” shall mean the date that is the later of: (i) the date that the ordinance approving this Agreement becomes effective, or (ii) the date that this Agreement is executed by the City and Landowner and recorded in the Official Records of Orange County, California.

“**Existing Land Use Regulations**” shall mean the City’s General Plan, Zoning Ordinance, and all other ordinances, resolutions, rules, policies, and regulations adopted or utilized

by the City for the processing of development projects, which govern development and use of the Property in effect on the Effective Date of this Agreement, including without limitation: (i) the permitted uses of the Property; (ii) the density and intensity of use, maximum height, size and setback requirements of proposed buildings; (iii) provisions for the reservation and dedication of land for public purposes including, without limitation, for park purposes; (iv) traffic study guidelines; (v) Development Fee requirements; (vi) requirements for the provision of affordable housing and the regulation of rents or sale prices for housing; and (vii) subject to the last sentence in this paragraph, construction standards and specifications, all as set forth in Exhibit C to this Agreement. If Landowner, in its sole and absolute discretion, consents in writing to amendments or changes to these documents adopted by the City or voter initiative after the Effective Date of this Agreement, then those amendments or changes shall be considered to be part of the “Existing Land Use Regulations” for purposes of this Agreement. If such amendments or changes are made, then the City and Landowner shall prepare a revised Exhibit C which reflects such amendments or changes, which revised Exhibit C shall be approved by the City Manager, and the City Manager is authorized hereby to replace Exhibit C with such approved revised exhibit. The term “Existing Land Use Regulations” does not include the Uniform Codes pertaining to construction adopted for general application in the City.

“**General Plan**” shall mean the City of Irvine General Plan, as it exists on the Effective Date of this Agreement, which expressly includes General Plan Amendment _____, and as it may further be amended by the City from time to time and applicable to the Property pursuant to Section 4.6 of this Agreement.

“**Landowner**” shall mean Irvine Market Place II LLC, a Delaware limited liability company.

“**Landowner Affiliate**” shall mean The Irvine Company LLC, Irvine Management Company or any person or entity controlling, controlled by, or under common control with either such entity.

“**Low Income**” shall mean persons or households earning between 51 percent and 80 percent of the Area Median Income, adjusted for household size.

“**Market Rate Units**” shall mean residential units within the Project to be rented by Landowner without restriction to income levels or rental rate.

“**Moderate Income**” shall mean persons or households earning between 81 percent to 120 percent of the Area Median Income, adjusted for household size.

“**Mortgage**” shall mean a mortgage, deed of trust, sale and leaseback arrangement, or any other form of conveyance in which the Property, or a portion thereof or interest therein, is pledged as security, and contracted for in good faith and for fair value.

“**Mortgagee**” shall mean the holder of a beneficial interest under a Mortgage, or any successor or assignee of any such Mortgagee.

“**Non-defaulting Party**” shall have the meaning ascribed to it in Section 9.2 of this Agreement.

“**Non-Density Bonus Units**” shall mean the base residential units permitted pursuant to the Project’s Development Plan.

“**Park Dedication Requirements**” shall have the meaning ascribed to it in Recital G of this Agreement.

“**Project**” shall mean the development of the Property under the Development Plan pursuant to this Agreement and the Existing Land Use Regulations.

“**Property**” shall have the meaning ascribed to it in Recital B of this Agreement.

“**Regulatory Agreement(s)**” shall mean that certain or those certain Regulatory Agreement(s) in a form mutually approved by City and Landowner, applicable to the Project.

“**State Density Bonus Law**” shall mean California Government Code Section 65915-65918, as the same may be amended from time to time.

“**Term**” shall mean the period of time during which this Agreement shall be in effect and bind the Parties and their respective successors and assigns, as set forth in Section 2 of this Agreement.

“**Third Party Challenge**” shall have the meaning ascribed to it in Section 14 of this Agreement.

“**Very Low Income**” shall mean persons or households earning between 31 percent and 50 percent of the Area Median Income, adjusted for family size.

2. TERM.

2.1 Term. The term of this Agreement (“**Term**”) shall commence on the Effective Date of this Agreement and shall continue thereafter for a period of 15 years, as may be extended, unless this Agreement is terminated, modified, or extended by circumstances set forth in this Agreement or by mutual written consent of the Parties. Upon the request of Landowner, including, without limitation, in the event of any enactments pursuant to Section 4.10 of this Agreement or moratoria, or from legal actions or appeals which enjoin performance under this Agreement or act to stay performance under this Agreement or from any actions pursuant to Section 9, or from any litigation related to the Project, the Development Plan, the Property, this Agreement, or the Density Bonus Housing Agreement, the City Manager and/or his or her designee may approve an extension of the Term, which approval may not be unreasonably withheld, delayed or conditioned, and in which event the City Manager shall be authorized to document the extension.

2.2 Execution of Agreement. After the City executes this Agreement, Landowner shall have thirty (30) days after the City’s delivery of an executed copy of this Agreement to execute and return two originally executed counterparts to the City Attorney and the City Clerk. If Landowner does not provide the City its original executed counterpart of this Agreement before the thirty (30) days expires, this Agreement shall not be recorded against the Property and this Agreement shall be deemed null and void and have no force or effect.

3. PROJECT SPECIFIC PROVISIONS.

Not applicable.

4. DEVELOPMENT OF PROPERTY.

4.1 Applicable Regulations; Vested Right to Develop. Other than as expressly set forth herein, during the Term of this Agreement, the terms and conditions of development applicable to the Property, including but not limited to the permitted uses of the Property, the density and intensity of use, the maximum height and size of proposed buildings, and the provisions for the reservation and dedication of land for public purposes, shall be those set forth in the Development Plan and the Existing Land Use Regulations. Subject to the terms and conditions of this Agreement, Landowner shall have the vested right to carry out and develop the Project on the Property in accordance with the Development Plan and the Existing Land Use Regulations.

4.2 Processing of Applications and Permits. Upon satisfactory completion by Landowner of all required preliminary actions and payment of appropriate processing fees, if any, the City shall proceed to process and check all applications for the Project development and building approvals within the times set forth in the Permit Streamlining Act (Chapter 4.5 (commencing with Section 65920) of Division 1 of Title 7 of the California Government Code), the Subdivision Map Act (Division 2 (commencing with Section 66410) of Title 7 of the California Government Code), and other applicable provisions of law, as the same may be amended from time to time. Landowner acknowledges that normal and reasonable time periods will be required for the City's processing of any applications for development, and that such time periods, to the extent consistent with State law, will not violate this Agreement.

4.3 Subsequent Discretionary Actions. To the extent that the Development Plan provides for the City to process and consider subsequent discretionary actions and permits under the terms of the Existing Land Use Regulations, then the City acknowledges pursuant to Government Code Section 65865.2 that the conditions, terms, restrictions, and requirements for any subsequent discretionary actions or permits shall not prevent development of the Property for the uses and to the density or intensity of development set forth in this Agreement. City agrees that any future development approvals for the Property will be consistent with the Development Plan, Existing Land Use Regulations and this Agreement. In processing Landowner's application for subsequent discretionary actions or permits, the City acknowledges that it shall use the Affordable Housing Provisions, and waive the Park Dedication Requirements pursuant to the State Density Bonus Law as provided in Section 7, as set forth in this Agreement for the development of the Property, and that such requirements and waiver supersede any City ordinances, regulations, policies and guidelines which would otherwise be applicable to the Property regarding affordable housing and park dedication and improvement requirements, including the Affordable Housing Ordinance and Park Dedication Requirements, and any ordinances or regulations adopted by the City after the Effective Date of this Agreement that regulate the economic terms that any housing may be offered for rent or for sale by Landowner or the provision of parkland in connection with the Project. Any subsequent discretionary actions or permits, including without limitation general plan amendments, zone changes, or parcel or tract maps, shall upon approval by the City be vested

in the same manner as provided in this Agreement for the Existing Land Use Regulations and Development Plan.

4.4 Subdivision Maps. The City agrees that Landowner may file and process tentative subdivision maps for any or all of the Property in accordance with Chapter 4.5 (commencing with Section 66498.1) of Division 2 of Title 7 of the California Government Code and the applicable provisions of the City's subdivision ordinance (excluding the Park Dedication Requirements except as required by the Density Bonus Housing Agreement), as the same may be amended from time to time. If final maps are not recorded for the entire Property before such tentative map(s) would otherwise expire, the term of such tentative map(s) automatically shall be extended for the Term of this Agreement. Pursuant to Government Code Section 65867.5(c), any tentative map prepared for the Property subject to Government Code Section 66473.7 shall comply with the provisions of Government Code Section 66473.7 (related to water supplies for residential subdivisions over five hundred (500) units) as enacted as of the Effective Date of this Agreement. City acknowledges that the Project is only a portion of the Property described in Exhibit A to this Agreement, and that Landowner is processing Tentative Parcel Map No. 2022-162 in order to subdivide the Property into four (4) parcels, with the Project only being within three (3) of such future parcels. Upon recordation of the parcel map for the Project, City and Landowner will amend this Agreement to revise the description of the Property in Exhibit A to this Agreement to limit the Property to the Project area, and release the remaining portion of the Property from this Agreement that is not part of the Project area. The City Manager and/or his or her designee is authorized to approve and execute such amendment on behalf of the City.

4.5 Other Governmental Permits. Provided that Landowner pays the reasonable cost of such cooperation, the City shall cooperate with Landowner in its efforts to obtain such additional permits and approvals as may be required by any other governmental or quasi-governmental agencies having jurisdiction over such portion of the Property for which such permit or approval is sought, as long as such permits and approvals are consistent with the City's approvals for the Property and with applicable regulatory requirements. The City does not warrant or represent that any other governmental or quasi- governmental permits or approvals will be granted.

4.6 Subsequent Changes in General Plan Amendments, Zoning and Other Regulatory Actions. Changes in General Plan amendments, zoning, and other regulatory actions, including without limitation the Affordable Housing Ordinance or the Park Dedication Requirements, that may be adopted after the date of this Agreement will not become effective for the Property or any portion of the Property unless consented to in writing by Landowner, or by its successors-in-interest to the portion of the Property affected by such changes. Landowner shall have sole and absolute discretion to accept or reject any changes. If Landowner or its successors-in-interest for the portion of the Property affected by such changes consent in writing to the changes, then they shall be effective and considered as part of the Existing Land Use Regulations and Development Plan, under the terms of this Agreement, including without limitation the provision regarding vested rights in Section 4.1 of this Agreement.

4.7 Assurances to Landowner. The Parties acknowledge that the public benefits to be provided by Landowner to the City pursuant to this Agreement are in consideration for and reliance upon assurances that the City will permit development of the Property in accordance with the terms of this Agreement. The Parties further acknowledge that the Development Plan, with certain

specific exceptions described within the regulations in the Development Plan, provides Landowner with the flexibility to regulate the rate and timing of its development of the Property unilaterally, and that any future regulations which purport to regulate the rate and timing of development would conflict with the Development Plan. The City acknowledges that Landowner cannot at this time predict the timing or rate at which the Property will be developed. The timing and rate of development depend on numerous factors such as market demand, interest rates, absorption, completion schedules, and other factors which are not within the control of the City or Landowner. In *Pardee Construction Co. v. City of Camarillo* (1984) 37 Cal. 3d 465, the California Supreme Court held that a construction company was not exempt from a city's growth control ordinance notwithstanding that the construction company and the city had entered into a consent judgment (tantamount to a contract under California law) establishing the company's vested rights to develop its property in accordance with the zoning. The California Supreme Court reached this result on the basis that the consent judgment failed to address the timing of development. It is the intent of the Parties to avoid the result of the *Pardee* case by acknowledging and providing in this Agreement that Landowner shall have the vested right to develop the Property in such order and at such rate and at such time as Landowner deems appropriate within the exercise of Landowner's sole subjective business judgment, notwithstanding the adoption of an initiative after the Effective Date of this Agreement by the City's electorate to the contrary. In addition to and not in limitation of the foregoing, but except as set forth in the following sentence, it is the intent of the Parties that no City moratorium or other similar limitation relating to the rate or timing of the development of the Project or any portion thereof, whether adopted by initiative, referendum or otherwise, shall apply to the Property to the extent such moratorium, initiative, referendum or other similar limitation is in conflict with the express provisions of this Agreement. Notwithstanding the foregoing, Landowner acknowledges and agrees that nothing herein is intended nor shall be construed as overriding any provision of the Development Plan relating to the rate or timing of development of the Project.

4.8 Changes in Mitigation Requirements. The City (by the City Manager and/or his or her designee) and Landowner may at any time mutually agree on changes to the mitigation requirements or project design features of the Project without amending this Agreement, provided that the Parties comply with all other applicable laws and processes relating to such change or changes.

4.9 Project Trips and Land Uses.

4.9.1 Incorporation of Project Trips in the City Traffic Model. The Parties acknowledge that the Final EIR and addendum contain a detailed traffic study which analyzes the future traffic that will be generated by the Project ("Project Trips"), and which describes the extent to which such future Project Trips will utilize the capacity of existing and planned future roads, freeway/tollway mainlines, freeway/tollway ramps, and intersections in the City and the surrounding area ("Roadway Capacity Utilization"). The City agrees that it will incorporate the Project as part of the City's current traffic model and future traffic model updates, and the City will include these same items in future traffic studies which it may prepare regarding future development or roadway planning projects.

4.9.2 Reservation of Roadway Capacity Utilization by City. The City agrees that Landowner has, through the construction of existing roadways in the City and the construction of improvements specified in the project design features, conditions of approval, and mitigation measures adopted as part of the Development Plan, fully mitigated for the impacts of the Project Trips of the Development Plan, except as specifically noted in the Final EIR and addendum and the findings adopted by the City. The City also agrees that as part of the approval of future tentative subdivision maps or subsequent discretionary actions and permits for the approved Development Plan, it will not require Landowner to provide, construct, fully fund or fair-share fund additional roadway right-of-way, capacity, or improvements.

4.9.3 Future Unanticipated Traffic from Additional Development and Unanticipated Changes in Roadways. The Final EIR and addendum's traffic study includes all of the anticipated traffic from existing and anticipated and planned future development, including development which is authorized by the general plans and zoning adopted by the City and other jurisdictions. The Parties acknowledge that in the future it is possible that unanticipated new projects and changes in approved development could generate new traffic not included in the Final EIR and addendum's traffic study, which could result in an unanticipated significant adverse impact caused by those projects. The Parties also acknowledge that future unanticipated traffic or traffic congestion could be generated by: (i) unanticipated development projects or growth that was not analyzed in the Final EIR and addendum's traffic study or (ii) unanticipated modifications made to planned existing or future roadway improvements (future roads, freeway/tollway mainlines, freeway/tollway ramps, and intersections), i.e., modifications that were not assumed in the Final EIR and addendum traffic study. Mitigation for such unanticipated traffic or traffic congestion is the responsibility of those other projects, and not the responsibility of Landowner as part of the implementation and construction of the Development Plan. The Parties also acknowledge that, as a result, in this situation the Project would not be contributing to any cumulative significant adverse impact as defined under the California Environmental Quality Act (“CEQA”), because the Project's contribution has already been fully mitigated, and such new adverse traffic impact would be completely caused by such unanticipated traffic, and there would be no relationship or nexus between the Development Plan and any other further traffic mitigation or traffic improvements beyond those provided for in Project, the Development Plan, or the Final EIR and addendum.

4.9.4 Future Changes in City Traffic Impacts. Nothing in this Agreement shall limit the City from changing its traffic level of service or other traffic impact standards under the General Plan, zoning, and other regulations, provided that these new standards do not: (i) serve as a basis for disapproving, delaying, reducing, or otherwise restricting development of the Property otherwise authorized by the Development Plan; or (ii) result in conditions dangerous to health and safety as defined in Section 4.10.3.

4.9.5 Additional Mitigation Measures. The Parties agree that in the event that there is future unanticipated traffic from additional unanticipated development (other than the proposed Project), and unanticipated changes in roadways under Section

4.9.2 and/or future unanticipated changes in traffic generation rates or other changed conditions under Section 4.9.3, the City has the authority to approve, subject to Section 4.3 the subsequent discretionary approvals under the Development Plan for the Property without imposing, either upon the City or upon Landowner, additional mitigation measures, conditions, or requirements relating to traffic circulation. However, if there were litigation challenging such subsequent discretionary approvals in the future that results in a final, non-appealable judgment which determines that Section 4.9.1, 4.9.2, or 4.9.3 is invalid, then the City may adopt additional mitigation measures, with Landowner's consent and at no cost to the City, as necessary to comply with the court's judgment. In such situation, if the Parties fail to reach agreement as to effective and acceptable additional mitigation measures, then the City shall be under no obligation under this Agreement to issue a subsequent discretionary approval that conflicts with the court's judgment.

4.10 Reserved Powers.

4.10.1 Consistent Future City Regulations. City ordinances, resolutions, regulations, and official policies adopted or approved after the Effective Date of this Agreement pursuant to procedures provided by law that do not conflict with the Development Plan, the Existing Land Use Regulations or the provisions of this Agreement shall apply to and govern development of the Property. The Parties understand and agree that, without limitation, and to the maximum extent allowed under applicable law, any future City regulations, whether adopted by City council action or voter initiative or otherwise, which increase the cost of development, reduce the density or intensity of the Project, or limit the rate, timing or sequencing of development of the Property, or otherwise restrict the permitted uses, density, improvements and construction shall be deemed inconsistent with this Agreement and shall not be applicable to the development of the Property, unless Landowner expressly consents thereto.

4.10.2 Overriding State and Federal Laws and Regulations. State and federal laws and regulations that override Landowner's vested rights set forth in this Agreement shall apply to the Property, together with any City ordinances, resolutions, regulations, and official policies which are necessary to enable the City to comply with such overriding State and federal laws and regulations; provided, however, that: (i) Landowner does not waive its right to challenge or contest the validity of any such State, federal, or local laws, regulations or official policies; and (ii) in the event that any such State or federal law or regulation (or City ordinance, resolution, regulation, or official policy undertaken pursuant thereto) prevents or precludes compliance with one or more provisions of this Agreement, the Parties agree to consider in good faith amending or suspending such provisions of this Agreement as may be necessary to comply with such State or federal laws, provided that no Party shall be bound to approve any amendment to this Agreement unless this Agreement is amended in accordance with the procedures applicable to the adoption of development agreements as set forth in the Development Agreement Statute and each Party retains full discretion with respect to such an approval.

4.10.3 Public Health and Safety. Any City ordinance, resolution, regulation, or official policy, which is necessary to protect persons on the Property or in

the immediate community, or both, from conditions dangerous to their health, safety, or both, notwithstanding that the application of such ordinance, resolution, regulation, or official policy would result in the impairment of Landowner's vested rights under this Agreement, shall apply to the Property. City shall reasonably consider application and construction of any such ordinance, resolution, regulation, or official policy consistent with this Agreement so as to provide Landowner with the rights and assurances provided to it in this Agreement.

4.10.4 Uniform Construction Codes. Provisions of the building standards set forth in the Uniform Construction Codes shall apply to the Property. As used herein, the term "**Uniform Construction Codes**" collectively refers to the XXXX¹ California Building Codes; the XXXX California Electric Code; the XXXX California Plumbing Code; the XXXX California Mechanical Code; the XXXX Uniform Solar Energy Code; the XXXX Uniform Swimming Pool, Spa and Hot Tub Code; the XXXX Uniform Housing Code; the Uniform Administrative Code, XXXX Edition; and the XXXX California Fire Code (including amendments by the Orange County Fire Authority), as modified and amended by official action of the City, and any modifications or amendments to any such Code adopted in the future by the City.

4.10.5 Police Power. In all respects not provided for in this Agreement, the City shall retain full rights to exercise its police power to regulate the development of the Property, and any uses or developments requiring a site plan, tentative tract map, conditional use permit, variance, or other discretionary action or permit pursuant to Existing Land Use Regulations shall require a permit or approval pursuant to this Agreement and consistent with the Development Agreement Statute. This Agreement is not intended to grant Landowner a right to the issuance of such permit or approval nor to restrict the City's exercise of discretion provided for in Section 4.3 of this Agreement.

4.11 Electrification. As plans for delivery of needed housing progress, consideration will be given to evolving sustainability objectives including reduction of the use of natural gas and more specifically, new multi-family structures having all-electric appliances, rooftop solar generation, and electric heating and air conditioning.

5. FEES.

5.1 Development Fees. During the Term of this Agreement, the City shall not levy or require with respect to development of the Property any site-specific Development Fees (i.e., Development Fees that are not of general application, are expressly or effectively imposed only on the Property, or are not adopted by ordinance on a City-wide basis) except those set forth in the Development Plan, and those in effect on the Effective Date of this Agreement. It is understood that the preceding limitation on the City's imposition of Development Fees shall not limit the City from levying against the Property additional Development Fees to the extent such Development Fees have been established in an ordinance which was adopted by the City on a City-wide basis, and are applicable to all new development within the City. Without limiting the generality of the foregoing, the City shall not, subsequent to the Effective Date of this Agreement, impose any new

¹ Date of applicable year to be inserted

fee or requirement upon the Project for the purpose of raising revenue for the provision of affordable housing not otherwise set forth in this Agreement.

5.2 Other Fees and Charges. Except as specifically set forth in Section 5.1 of this Agreement, nothing set forth in this Agreement is intended or shall be construed to limit or restrict the City's authority to impose new fees, charges, assessments, or taxes for the development of the Property or to increase any existing fees, charges, assessments, or taxes, and nothing set forth herein is intended or shall be construed to limit or restrict whatever right Landowner might otherwise have to challenge any fee, charge, assessment, or tax either not set forth in this Agreement or not in effect on the Effective Date of this Agreement. In connection therewith, Landowner shall comply with and timely pay all applicable fees, charges, assessments, and special and general taxes validly imposed in accordance with the Constitution and laws of the State of California, including without limitation school impact fees in accordance with Government Code Sections 65995, *et seq.*

6. AFFORDABLE HOUSING PROVISIONS. This Section 6 fulfills the affordable housing requirements of the affordable housing regulations of the Existing Land Use Regulations. Accordingly, the Project shall comply with the affordable housing requirements set forth in this Section.

6.1 Affordability Levels, Location, and Duration. The Project shall provide for the development of the following Affordable Units:

6.1.1 Very Low Income - Onsite: Five percent (5%) of the Project's Non-Density Bonus Units shall be affordable as rental units to Very Low Income households.

- (i) These units shall be provided at the Property.
- (ii) The period of affordability of these units shall be for seventy-five (75) years from the date the unit is held out for rent by an eligible household.

6.1.2 Moderate Income – Onsite: Ten percent (10%) of the total residential units of the Project's Non-Density Bonus Units shall be affordable as rental units to Moderate Income households.

- (i) These units shall be provided at the Property.
- (ii) The period of affordability of these units shall be for seventy-five (75) years from the date the unit is held out for rent by an eligible household.

6.1.3 Moderate Income – Onsite or Offsite: Five percent (5%) the total residential units of the Project's Non-Density Bonus Units shall be affordable as rental units to Moderate Income households.

- (i) These units may be provided (a) at the Property, (b) new construction off the Property, including but not limited to the other properties identified in the MOU, or (c) at City's

reasonable discretion, subject to Landowner's approval of the location, through the extension of the period of affordability for existing, expiring affordable units at other properties.

(ii) The period of affordability of the units provided pursuant to Section 6.1.3(i)(a) and (b) shall be for seventy-five (75) years from the date the unit is held out for rent by an eligible household. The period of affordability for units provided pursuant to Section 6.1.3(i)(c) shall be seventy-five (75) years after the expiration of the existing applicable income-restrictions on such units.

6.2 Distribution and Size of Units. When the Affordable Units are provided at the Property, the Affordable Units shall be reasonably dispersed throughout the Property. The proportional mix of the number of bedrooms per Affordable Unit shall be generally consistent with the bedroom mix of the Market Rate Units of the Project; provided, however, that the Project may provide a larger proportion of Affordable Units with a higher bedroom count as compared to the Market Rate Units. Architectural design and building materials for the Affordable Units must be similar to and compatible with other units within the Property. Prior to Landowner marketing the Affordable Units, and as often as reasonably requested by the City, Landowner shall provide the City's Director of Community Development or designee with the number, location and other required specifications of the Affordable Units to be located on the Property which shall conform to the Affordable Housing Summary.

6.3 Monitoring. As part of the Annual Review pursuant to Section 10 of this Agreement, Landowner shall provide City with an annual report detailing compliance with this Section 6.

6.4 Affordable Housing Plan. The provisions of this Agreement, the Density Bonus Housing Agreement, the MOU, and the Regulatory Agreement shall constitute the affordable housing plan for the Project and satisfy the affordable housing plan requirements of the Affordable Housing Ordinance.

7. DENSITY BONUS HOUSING AND WAIVER OF PARKLAND REQUIREMENTS. Pursuant to Section 2-3-10 of the Affordable Housing Ordinance and the State Density Bonus Law, concurrently herewith the Parties have entered into the Density Bonus Housing Agreement. Based on the affordable housing requirements in this Agreement and as an incentive under the State Density Bonus Law for the density bonus units provided under the Density Bonus Housing Agreement, the City (i) has determined that waiving City parkland requirements, including the Park Dedication Requirements would result in identifiable and actual cost reductions for the Project, to provide for affordable housing costs, for the Project and (ii) and, pursuant to the Density Bonus Housing Agreement, has waived any requirements for the Project to comply with the Park Dedication Requirements. The Project shall provide on-site recreation amenities as set forth in Exhibit E attached hereto.

8. PUBLIC BENEFIT PAYMENT. No later than the issuance of building permits for the Project residential units, Landowner shall pay to City a public benefit payment ("**Public Benefit Payment**") equal to \$14,500.00 per residential unit (the "**Public Benefit Rate**"), as may be adjusted as provided herein. The Public Benefit Rate shall be adjusted annually commencing on January 1, 2025 based on a calculation of the change in the Engineering News-Record (ENR)

Construction Cost Index (CCI) between January 1, 2024 and the January of the year in which the fee is paid; provided, however that the Public Benefit Rate shall not be less than \$14,500.00 per residential unit. The Public Benefit Payment may be used at the sole discretion of the City for municipal purposes.

9. DEFAULT, REMEDIES AND TERMINATION.

9.1 Mutually Dependent Obligations. The obligations of the City and Landowner under this Agreement are mutually dependent. If either Party fails to perform its obligations under this Agreement, the other Party may suspend or terminate performance of its own obligations, after giving notice and an opportunity to cure as provided for in this Agreement.

9.2 Notice and Opportunity to Cure. Before this Agreement may be terminated or action may be taken to obtain judicial relief consistent with this Agreement, the Party seeking relief (the “**Non-defaulting Party**”) shall comply with the notice and cure provisions of this Section 10.2. A Non-defaulting Party in its discretion may elect to declare a default under this Agreement in accordance with the procedures set forth below for any failure or breach of any other Party (the “**Defaulting Party**”) to perform any material duty or obligation of said Defaulting Party in accordance with the terms of this Agreement. However, the Non-defaulting Party must provide written notice to the Defaulting Party setting forth the nature of the breach or failure and the actions, if any, required by the Non-defaulting Party to cure such breach or failure. The Defaulting Party shall be deemed in “default” of its obligations set forth in this Agreement if the Defaulting Party has failed to take action and cured the default within ten (10) days after the date of such notice (for monetary defaults), within thirty (30) days after the date of such notice (for non-monetary defaults), or within such lesser time as may be specifically provided in this Agreement. If, however, a non-monetary default cannot be cured within such thirty (30) day period, but can be cured within one hundred eighty (180) days after the date of such notice, as long as the Defaulting Party does each of the following:

- (i) notifies the Non-defaulting Party in writing with a reasonable explanation as to the reasons the asserted default is not curable within the thirty (30) day period;
- (ii) notifies the Non-defaulting Party of the Defaulting Party’s proposed course of action to cure the default;
- (iii) promptly commences to cure the default within the thirty (30) day period;
- (iv) makes periodic reports to the Non-defaulting Party as to the progress of the program of cure; and
- (v) diligently prosecutes such cure to completion within one hundred eighty (180) days from notice of default,

then the Defaulting Party shall not be deemed in breach of this Agreement. Notwithstanding the foregoing, the Defaulting Party shall be deemed in default of its obligations set forth in this Agreement if said breach or failure involves the payment of money but the Defaulting Party has failed to completely cure said monetary default within ten (10) days (or such lesser time as may be specifically provided in this Agreement) after the date of such notice.

9.3 Default Remedies. Subject to Section 9.4, in the event of a default, the Non-Defaulting Party, at its option, may institute legal action to cure, correct, or remedy such default, enjoin any threatened or attempted violation, enforce the terms of this Agreement by specific performance, or pursue any other legal or equitable remedy. Furthermore, the City, in addition to or as an alternative to exercising the remedies set forth in this section, in the event of a material default by Landowner, may give notice of its intent to terminate or modify this Agreement pursuant to the City Development Agreement Regulations and/or the Development Agreement Statute, in which event the matter shall be scheduled for consideration and review by the City Council in the manner set forth in the City Development Agreement Regulations or the Development Agreement Statute.

9.4 Exclusive Remedy. The Parties acknowledge that they would not have entered into this Agreement if either Party were to be liable for damages under or with respect to this Agreement or the Development Plan, except as provided in this section. Accordingly, Landowner covenants on behalf of itself and its successors and assigns, not to sue the City, and the City on behalf of itself and its successors and assigns, not to sue Landowner, for damages or monetary relief for any breach of this Agreement or arising out of or connected with any dispute, controversy, or issue regarding the application, interpretation, or effect of this Agreement or the Development Plan, the Existing Land Use Regulations, or any land use permit or approval sought in connection with the development or use of a parcel or any portion thereof, the Parties agreeing that declaratory and injunctive relief, mandate, and specific performance shall be Landowner's sole and exclusive judicial remedies, with the exceptions provided for in Section 9.4.1 and 9.4.2.

9.4.1 In the case of a breach of an obligation to pay money or to allocate funding in a manner specified in this Agreement, or to indemnify and defend a party pursuant to this Agreement, a Party may sue to compel monetary relief to the extent such relief involves enforcement of the other Party's obligations under this Agreement and not damages or other monetary penalty over and above such obligations.

9.4.2 Landowner may seek and recover monetary damages for the cost of additional mitigation measures, conditions, requirements, fees, taxes or affordable housing obligations (in addition to those provided for in this Agreement) imposed on the Property in violation of this Agreement.

9.5 Force Majeure. The obligations of any Party shall not be deemed to be in default where delays or failures to perform are due to any cause without the fault and beyond the reasonable control of such Party, including to the extent applicable, the following: war; insurrection; strikes; walk-outs; the unavailability or shortage of labor, material, or equipment; riots; floods; earthquakes; the discovery and resolution of hazardous waste or significant geologic, hydrologic, archaeological, paleontologic, or endangered species problems on the Property; fires; casualties; acts of God; epidemics or pandemics (but excluding any existing restrictions based on the conditions of the COVID-19 pandemic as they exists as of the Effective Date), governmental restrictions imposed or mandated by other governmental entities (which actions by other governmental entities were not encouraged or solicited by the City); with regard to delays of Landowner's performance under this Agreement, delays caused by the City's failure to act or timely perform its obligations set forth herein; with regard to delays of the City's performance, delays caused by Landowner's failure to act or timely perform its obligations set forth herein;

inability to obtain necessary permits or approvals from other governmental entities; enactment of conflicting state or federal statutes or regulations; judicial decisions; or litigation not commenced by such Party. Notwithstanding the foregoing, any delay caused by the failure of the City or any agency, division, or office of the City to timely issue a license, permit, or approval required pursuant to this Agreement shall not constitute an event of force majeure extending the time for the City's performance. If written notice of such delay or impossibility of performance is provided to the other Party within a reasonable time after the commencement of such delay or condition of impossibility, an extension of time for such cause will be granted in writing for the period of the enforced delay, or longer as may be mutually agreed upon by the Parties in writing, or the performance rendered impossible may be excused in writing by the Party so notified. In no event shall adverse market or financial conditions constitute an event of force majeure extending the time for such Party's performance. In addition, in no event shall the Term of this Agreement be extended automatically by an event of force majeure.

9.6 Option to Terminate Due to Litigation. If a lawsuit is filed challenging the City's Project approvals or the ordinance approving this Agreement within the time periods for the filing of such lawsuits under CEQA or the State Planning and Zoning Law, then the Parties shall meet and confer concerning the potential impact of the lawsuit on this Agreement and the development of the Project. Within thirty (30) days of such meeting, if Landowner determines that such litigation may have an unacceptable adverse impact on the Project or its rights under this Agreement, Landowner may in its discretion terminate this Agreement by sending the City a written notice of such termination, and the Parties shall be relieved of any further obligations to this Agreement, to the extent that such obligations have not been performed prior to such termination. Landowner acknowledges that if this Agreement is terminated, City shall have the discretion to restore the City's prior Project approvals to the condition that such General Plan and zoning designations existed prior to the adoption of such City Project approvals, and Landowner waives the right to challenge any such restoration. Notwithstanding the foregoing, the MOU shall continue to apply to the subject Property with respect to Landowner's future project approval requests, but nothing herein shall be construed to require Developer to proceed with the construction or other implementation of the Project.

10. ANNUAL REVIEW.

10.1 Timing of Annual Review. During the Term of this Agreement, at least once every twelve (12) month period from the Effective Date of this Agreement, the City shall review the good faith compliance of Landowner with the terms of this Agreement ("**Annual Review**"). The Annual Review shall be conducted by the City Council or its designee in accordance with the City Development Agreement Regulations.

10.2 Standards for Annual Review. During the Annual Review, Landowner shall be required to demonstrate good-faith compliance with the terms of this Agreement by submitting a performance report, if such report is requested by the City. If the City finds and determines that Landowner has not complied with the terms and conditions of this Agreement, then the City may declare a default by Landowner in accordance with this Agreement. The City may exercise its rights and remedies relating to any such event of default only after the period for curing a default as set forth in Section 9 has expired without cure of the default. The reasonable costs incurred by the City in connection with the Annual Review process shall be paid by Landowner.

10.3 Certificate of Compliance. With respect to each year in which the City approves Landowner's compliance with this Agreement, the City shall, upon written request by Landowner, provide Landowner with a written certificate of good faith compliance within thirty (30) days of the City's receipt of Landowner's request for same.

11. MORTGAGEE RIGHTS.

11.1 Encumbrances on the Property. The Parties agree that this Agreement shall not prevent or limit, in any manner, Landowner from encumbering the Property or any portion thereof or any improvements thereon with any Mortgage securing financing with respect to the construction, development, use, or operation of the Project.

11.2 Mortgagee Protection. This Agreement shall be superior and senior to the lien of any Mortgage. Notwithstanding the foregoing, no breach of this Agreement shall defeat, render invalid, diminish, or impair the lien of any Mortgage made in good faith and for value, and any acquisition or acceptance of title or any right or interest in or with respect to the Property or any portion thereof by a Mortgagee (whether pursuant to foreclosure, trustee's sale, deed in lieu of foreclosure, lease termination, or otherwise) shall be subject to all of the terms and conditions of this Agreement and any such Mortgagee who takes title to the Property or any portion thereof shall be entitled to the benefits arising under this Agreement.

11.3 Mortgagee Not Obligated. Notwithstanding the provisions of this Section 11, a Mortgagee will not have any obligation or duty pursuant to the terms set forth in this Agreement to perform the obligations of Landowner or other affirmative covenants of Landowner, or to guarantee such performance, except that: (i) the Mortgagee shall have the right to develop the Property under the Development Plan provided that Mortgagee complies with the terms of this Agreement and (ii) to the extent that any covenant to be performed by Landowner is a condition to the performance of a covenant by the City, such performance shall continue to be a condition precedent to the City's performance.

11.4 Notice of Default to Mortgagee; Right of Mortgagee to Cure. Each Mortgagee shall, upon written request to the City, be entitled to receive written notice from the City of the results of the Annual Review and of any default by Landowner of its obligations set forth in this Agreement. Each Mortgagee shall have a further right, but not an obligation, to cure such default within ten (10) days after receipt of such notice (for monetary defaults), within thirty (30) days after receipt of such notice (for non-monetary defaults) or, if such default can only be remedied or cured by such Mortgagee upon obtaining possession of the Property, such Mortgagee shall have the right to seek to obtain possession with diligence and continuity through a receiver or otherwise, and to remedy or cure such default within thirty (30) days after obtaining possession, and, except in case of emergency or to protect the public health or safety, the City may not exercise any of its judicial remedies set forth in this Agreement until expiration of such thirty (30) day period; provided, however, that in the case of a default which cannot with diligence be remedied or cured within such thirty (30) day period, the Mortgagee shall have such additional time as is reasonably necessary to remedy or cure such default provided Mortgagee promptly commences to cure the default within the thirty (30) day period and diligently prosecutes such cure to completion.

12. ASSIGNMENT.

12.1 Permitted Assignment. Landowner shall have the right to assign its rights and obligations under this Agreement to a Landowner Affiliate in connection with a transfer of all or any portion of Landowner’s interest in the Property to such affiliate. In the event of any such assignment, (i) assignee shall be liable for performance of the obligations of Landowner after the date of assignment with respect to the portion of the Property so transferred and (ii) following written notice to the City Landowner shall be relieved of its legal duty to perform the assigned obligations set forth in this Agreement applicable solely to the portion of the Property so transferred. Notwithstanding the foregoing sentences, the transferring Landowner(s) shall remain responsible for all obligations that do not relate solely to the portion of the Property being sold, transferred, or assigned.

12.2 Assignment with City Consent. Subject to City’s consent, which consent shall not be unreasonably withheld, conditioned or delayed, Landowner shall have the right to assign its rights and obligations under this Agreement in connection with a transfer of all or any portion of Landowner’s interest in the Property to a non-affiliated party. In the event of any such assignment, assignee shall be liable for performance of the obligations of Landowner after the date of assignment with respect to the portion of the Property so transferred. Except to the extent Landowner is in default under this Agreement prior to the transfer, then, upon the written consent of the City to the partial or complete assignment of this Agreement and the express written assumption in a form approved by the City of such assigned obligations of Landowner under this Agreement by the assignee, Landowner shall be relieved of its legal duty to perform the assigned obligations set forth in this Agreement, other than the obligations that do not relate solely to the portion of the Property being sold, transferred or assigned.

12.3 Assignee Subject to Terms of Agreement. Following an assignment or transfer of any of the rights and interests of Landowner set forth in this Agreement in accordance with Section 12.1 or 12.2, the assignee’s exercise, use, and enjoyment of the Property shall be subject to the terms of this Agreement to the same extent as if the assignee or transferee was Landowner.

12.4 Condition of Assignment or Transfer. All assignments or transfers under this Section 12 shall be undertaken in conjunction with corresponding assignments or transfers of other agreements related to the Project, including but not limited to the Density Bonus Housing Agreement, MOU, and the Regulatory Agreement.

13. INDEMNITY.

13.1 Indemnity by Landowner. Landowner agrees to indemnify, defend, and hold harmless the City and City’s designees that are performing City’s obligations under this Agreement, and their representatives, elected and appointed councils, boards, commissions, officers, agents, and employees (collectively, the “Indemnitees”) from and against any and all actions, suits, claims, liabilities, losses, damages, penalties, obligations, and expenses (including but not limited to attorneys’ fees and costs) which may arise, directly or indirectly, from the acts, omissions, or operations of such Landowner or Landowner’s agents, contractors, subcontractors, agents, or employees pursuant to this Agreement, but excluding any loss resulting from the intentional misconduct or gross negligence of any of the Indemnitees. Notwithstanding the

foregoing, the City shall have the right to select and retain counsel to defend any such action or actions and Landowner shall pay the reasonable cost for this defense.

13.2 Survival. The indemnity provisions set forth in this Agreement shall survive termination of this Agreement.

14. THIRD PARTY LEGAL CHALLENGE.

In the event of any legal action instituted by any third party challenging the validity or enforceability of any provision of this Agreement or the City's Project approvals, the application of the Existing Land Use Regulations to the Project, or subsequent discretionary approvals under the Development Plan ("**Third Party Legal Challenge**"), the City shall have the right but not the obligation to defend such Third Party Legal Challenge and Landowner shall be responsible for the legal expenses incurred by the City in connection therewith. So long as Landowner is not in default under this Agreement, the City shall not allow any default or judgment to be taken against it or compromise the defense of the action without Landowner's prior written approval. Landowner shall further have the right to settle such Third Party Legal Challenge, provided that nothing in this Agreement shall authorize Landowner to settle such Third Party Legal Challenge on terms that would constitute an amendment or modification of this Agreement, the Existing Land Use Regulations, or the Development Plan unless such amendment or modification is approved by the City in accordance with applicable legal requirements, and the City reserves its full legislative discretion with respect to making such an approval.

15. MISCELLANEOUS.

15.1 Covenants. The provisions of this Agreement shall constitute covenants which shall run with the land comprising the Property for the benefit of the Property, and the burdens and benefits to the Property shall bind and inure to the benefit of each of the Parties and all successors in interest to the Parties.

15.2 Entire Agreement; Waivers and Amendments. This Agreement constitutes the entire understanding and agreement of the Parties and supersedes all previous negotiations, discussions, and agreements among the Parties with respect to all or part of the subject matter of this Agreement. No parole evidence of any prior or other agreement shall be permitted to contradict or vary the terms of this Agreement. Failure by a Party to insist upon the strict performance of any of the provisions of this Agreement by any other Party, or the failure by a Party to exercise its rights upon the default of the other Party, shall not constitute a waiver of such Party's right to insist and demand strict compliance by the other Party with the terms of this Agreement thereafter. Any amendments or modifications to this Agreement must be in writing, signed by duly authorized representatives of each of the Parties, and recorded in the Official Records of Orange County, California.

15.3 Recovery of Legal Expenses by Prevailing Party in Any Action. If either Party to this Agreement commences an action against the other Party to this Agreement arising out of or in connection with this Agreement, the prevailing Party shall be entitled to receive, in addition to the relief granted, reasonable attorneys' fees, expert witness fees, costs of investigation, and costs of suit from the losing Party; provided, however, that the attorneys' fees awarded pursuant to this

Section shall not exceed the hourly rate paid by City for legal services multiplied by the reasonable number of hours spent by the prevailing Party in the conduct of the litigation. The court may set such fees in the same action or in a separate action brought for that purpose.

15.4 Constructive Notice and Acceptance. Every person who now or hereafter owns or acquires any right, title, or interest in or to any portion of the Project or the Property is and shall be conclusively deemed to have consented and agreed to every provision contained herein, whether or not any reference to this Agreement is contained in the instrument by which such person acquired an interest in the Project or the Property.

15.5 No Third Party Beneficiaries or Other Signatories. This Agreement and all of its terms, conditions, and provisions are entered into only for the benefit of the Parties executing this Agreement (and any successors in interest), and not for the benefit of any other individual or entity, and no other person or entity shall have any right of action based upon any provision of this Agreement.

15.6 Relationship of Parties. The City and Landowner hereby renounce the existence of any form of joint venture or partnership between them and agree that nothing contained herein or in any document executed in connection herewith shall be construed as making the City and Landowner joint venturers or partners.

15.7 Severability. If any term, provision, covenant, or condition of this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions of this Agreement shall continue in full force and effect, unless and to the extent the rights and obligations of any Party has been materially altered or abridged by such holding.

15.8 Further Actions and Instruments. Each of the Parties shall cooperate with and provide reasonable assistance to the other Party to the extent necessary to implement this Agreement. Upon the request of a Party at any time, the other Party shall promptly execute, with acknowledgement or affidavit if reasonably required, and file or record such required instruments and writings and take any actions as may be reasonably necessary to implement this Agreement or to evidence or consummate the transactions contemplated by this Agreement.

15.9 Estoppel Certificate. Any Party may, at any time, deliver written notice to any other Party requesting such Party to certify in writing that, to the best knowledge of the certifying Party: (i) this Agreement is in full force and effect and a binding obligation of the Party; (ii) this Agreement has not been amended or modified either orally or in writing, and if so amended, identifying the amendments; and (iii) the requesting Party is not in default in the performance of its obligations set forth in this Agreement or, if in default, to describe therein the nature and amount of any such defaults. A Party receiving such a request shall execute and return the certificate within sixty (60) days following its receipt. Any third party, including a Mortgagee, shall be entitled to rely on the certificate.

15.10 Applicable Law: Venue. This Agreement shall be construed and enforced in accordance with the internal laws of the State of California. Any action at law or in equity arising under this Agreement or brought by any Party for the purpose of enforcing, construing, or determining the validity of any provision of this Agreement shall be filed and tried in the Superior

Court of the County of Orange, State of California, or the United States District Court for the Central District of California, and the Parties waive all provisions of law providing for the removal or change of venue to any other court.

15.11 Non-Liability of City Officers and Employees. No official, officer, employee, agent, or representative of the City shall be personally liable to Landowner or its successors and assigns for any loss arising out of or connected with this Agreement or the Existing Land Use Regulations.

15.12 Notices. Any notice or communication required under this Agreement between the City and Landowner must be in writing and may be given either personally, by registered or certified mail, return receipt requested, or by facsimile transmission. If given by registered or certified mail, the same shall be deemed to have been given and received on the date of actual receipt by the addressee designated below as the Party to whom the notice is sent. If personally delivered, a notice shall be deemed to have been given when delivered to the Party to whom it is addressed. Notices delivered by facsimile transmission shall be deemed to have been given on the first business day following the date of transmission to the facsimile number. A Party may at any time, by giving ten (10) days' written notice to the other Parties, designate any other address in substitution of the address to which such notice or communication shall be given. Such notices or communications shall be given to the Parties at their addresses set forth below:

To Landowner: Irvine Company
550 Newport Center Drive
Newport Beach, CA 92660
Attn: Senior Vice President, Entitlements

With a copy to: Irvine Company
550 Newport Center Drive
Newport Beach, CA 92660
Attn: General Counsel

To City: City of Irvine
City Hall
One Civic Center Plaza
Irvine, California 92623-9575
Attn: City Manager

With a copy to: Rutan & Tucker, LLP
18575 Jamboree Road, 9th Floor
Irvine, CA 92612
Attn: Jeffrey T. Melching, City Attorney

15.13 Authority to Execute. Landowner warrants and represents that: (i) it is duly organized and existing; (ii) it is duly authorized to execute and deliver this Agreement; (iii) by so executing this Agreement, Landowner is formally bound to the provisions of this Agreement; (iv) Landowner's entering into and performance of its obligations set forth in this Agreement do not violate any provision of any other agreement to which Landowner is bound; and (v) there is no

existing or threatened litigation or legal proceeding of which Landowner is aware that could prevent Landowner from entering into or performing its obligations set forth in this Agreement.

15.14 Counterparts and Exhibits. This Agreement may be executed in any number of counterparts, each of which shall constitute one original and all of which shall be one and the same instrument. This Agreement contains six (6) exhibits, attached to this Agreement and made a part of it by this reference. The exhibits are identified as follows:

Exhibit A – Legal Description of the Property

Exhibit B – Development Plan

Exhibit C – Existing Land Use Regulations

Exhibit D – Affordable Housing Summary

Exhibit E – On-Site Recreation Amenities

Exhibit F – Memorandum of Understanding

IN WITNESS WHEREOF, the City and Landowner have executed this Agreement on the day and date first set forth above.

“CITY”

CITY OF IRVINE
a California municipal corporation

By: _____
Mayor

Attest:

By: _____
City Clerk

Approved as to form:

By: _____
City Attorney

“LANDOWNER”

IRVINE MARKET PLACE II LLC,
a Delaware limited liability company

By: _____
Name: _____
Title: _____

By: _____
Name: _____
Title: _____

EXHIBIT A

LEGAL DESCRIPTION OF THE PROPERTY

THE LAND REFERRED TO HEREIN IS SITUATED IN THE CITY OF IRVINE, COUNTY OF ORANGE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCELS 2 OF PARCEL MAP NO. 93-204 IN THE CITY OF IRVINE, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS SHOWN ON A MAP FILED IN BOOK 291, PAGES 19 TO 23 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPTING THEREFROM ANY AND ALL OIL, OIL RIGHTS, MINERALS, MINERAL RIGHTS, NATURAL GAS RIGHTS, AND OTHER HYDROCARBONS BY WHATSOEVER NAME KNOWN, GEOTHERMAL STEAM, ANY OTHER MATERIAL RESOURCES AND ALL PRODUCTS DERIVED FROM ANY OF THE FOREGOING, THAT MAY BE WITHIN OR UNDER THE PROPERTY, TOGETHER WITH THE PERPETUAL RIGHT OF DRILLING, MINING, EXPLORING AND OPERATING THEREFOR AND STORING IN AND REMOVING THE SAME FROM THE PROPERTY OR ANY OTHER PROPERTY, INCLUDING THE RIGHT TO WHIPSTOCK OR DIRECTIONALLY DRILL AND MINE FROM PROPERTIES OTHER THAN THOSE CONVEYED HEREBY, OIL OR GAS WELLS, TUNNELS AND SHAFTS INTO, THROUGH OR ACROSS THE SUBSURFACE OF THE PROPERTY, AND TO BOTTOM SUCH WHIPSTOCKED OR DIRECTIONALLY DRILLED WELLS, TUNNELS AND SHAFTS UNDER AND BENEATH OR BEYOND THE EXTERIOR LIMITS THEREOF, AND TO REDRILL, RETUNNEL, EQUIP, MAINTAIN, REPAIR, DEEPEN AND OPERATE ANY SUCH WELLS OR MINES; WITHOUT, HOWEVER, THE RIGHT TO DRILL, MINE, STORE, EXPLORE AND OPERATE THROUGH THE SURFACE OR THE UPPER 500 FEET OF THE SUBSURFACE OF THE PROPERTY AS RESERVED IN THE GRANT DEED RECORDED AUGUST 1, 2018 AS INSTRUMENT NO. 2018000280467 OF OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM ALL WATER RIGHTS, INCLUDING RIGHTS CLASSIFIED AS OVERLYING, RIPARIAN, APPROPRIATIVE OR OTHER CLASSIFICATION, DERIVED FROM USAGE, EXTRACTION OR DIVERSION UPON OR OTHERWISE PERTAINING TO THE ABOVE LAND AS CONVEYED TO IRVINE RANCH WATER DISTRICT BY QUITCLAIM DEED RECORDED JUNE 21, 2006 AS INSTRUMENT NO. 2006000416403 OF OFFICIAL RECORDS.

EXHIBIT B

DEVELOPMENT PLAN

[TO BE INSERTED - DEVELOPMENT PLAN SHALL CONSIST OF MASTER PLAN
00882754-PMP APPROVED BY THE IRVINE PLANNING COMMISSION ON MAY 4,
2023]

EXHIBIT C

EXISTING LAND USE REGULATIONS

[ON FILE WITH CITY CLERK; NOT ATTACHED FOR RECORDING PURPOSES]

EXHIBIT D

AFFORDABLE HOUSING SUMMARY

[Insert once final]

EXHIBIT E

ON-SITE RECREATION AMENITIES

Criteria for On-Site Recreation Requirements

In aggregate, recreation spaces will be provided on a per development basis as follows:

For developments with between 1 and 500 total units:

- 0.75 acres (32,670 square feet) of recreation space/common amenity areas

For developments with between 501 and 1000 total units:

- 1.0 acres (43,560 square feet) of recreation space/common amenity areas

For developments with between 1001 and 1500 total units:

- 1.25 acres (54,450 square feet) of recreation space/common amenity areas

Projects with more than 1,500 units are required to provide an additional 0.25-acre of land for each additional 500 units (or fraction thereof).

The minimum acreage totals described in this exhibit represent land only. The area applied to the minimum acreage requirement may not be located inside of or on top of a building and may not include “credit” for recreational improvements.

With the foregoing limits, all developments must include at least one recreational space that is at least 0.33 acres (14,520 square feet) in size.

Recreational space shall include, at a minimum: 1) swimming pools, spas and/or water features with a cumulative water surface equal to or greater than 5 square feet per unit; 2) indoor fitness space or exterior sport courts; and 3) designated restrooms, showers, and drinking fountains at each swimming pool.

Other recreational amenities may include, without limitation, interior and exterior gathering areas, shade features, dog runs, tot lots, co-working spaces, or club rooms. Even though not applied to the minimum acreage requirements of this exhibit, other recreation spaces can be within a building (e.g., fitness/co-working/club), or provided on top of buildings.

For each Project, the applicant shall illustrate the aforementioned recreation spaces through the submittal of a non-regulatory “Illustrative Onsite Amenity Exhibit” concurrently with the submission of the Master Plan application for the Project. The Illustrative Onsite Amenity Exhibit shall show the location(s) of all recreation spaces, the size of each space, and the quantity/type of physical improvements proposed.

EXHIBIT F

MEMORANDUM OF UNDERSTANDING
REGARDING AFFORDABLE HOUSING AND RELATED MATTERS
BETWEEN THE CITY OF IRVINE AND IRVINE COMPANY

[TO BE INSERTED]

**MEMORANDUM OF UNDERSTANDING
REGARDING AFFORDABLE HOUSING AND RELATED MATTERS
BETWEEN THE CITY OF IRVINE AND IRVINE COMPANY**

This Memorandum of Understanding (“MOU”) is entered into this 14th day of March, 2023 (the “Effective Date”), by and between the City of Irvine, a California municipal corporation (hereinafter the “City”), and The Irvine Company LLC, a Delaware limited liability company, and The Irvine Land Company LLC, a Delaware limited liability company, each on behalf of itself and each applicable affiliate thereof that owns the land within the City of Irvine where the affordable housing units referenced herein will be located (hereinafter “Irvine Company” or “Landowner”). The parties hereto may each individually be referred to as a “Party” and collectively as the “Parties.”

Recitals:

- A. For over 50 years, the City and Irvine Company have worked together within the framework of large scale master planning principles to create a safe, fiscally strong, culturally diverse master planned community with a balance of housing, jobs, and open space undeniably true to its foundation.
- B. The Parties’ relationship has included entering into significant agreements and memoranda of understanding, and the implementation of certain master affordable housing plans for particular areas in the City.
- C. Historically, the programs indicated in Recital B, and others like them, have resulted in affordable housing through developer and not-for-profit partner developments; extension of terms of affordability for existing homes; and, dedication of land for affordable housing purposes.
- D. On May 10, 2022, the City approved and, on May 24, 2022, the California Department of Housing and Community Development (HCD) certified the City of Irvine 2021-2029 (6th Cycle) General Plan Housing Element (the “Housing Element”) including an approach responding to the City’s Regional Housing Needs Allocation (RHNA). The Housing Element provides that, in addition to future “market-rate” housing supply, housing affordable to households within other specific income categories will be addressed through applicable State and local law.
- E. In the past several years, the State legislature has enacted and amended several housing laws, many of which purport to increase the stock of both affordable and market rate housing. These laws include expedited and/or ministerial review processes for certain entitlements and permits, and streamlined or exempted California Environmental Quality Act (CEQA) review for other City actions. These laws generally limit City control of local housing land use decisions, and must be accounted for when considering future development applications.
- F. In light of the foregoing, the Parties have determined it is in their mutual best interests to establish a comprehensive master planning approach for certain future Irvine

Company projects consistent with the applicable provisions of State and local laws, including the Housing Element and CEQA.

- G. The City intends for this MOU to operate as an overarching policy for the projects specified herein, and for applications and approvals for such projects to incorporate the provisions of this MOU.

Now, therefore, the Parties agree as follows:

1. **APPLICABILITY**. This MOU shall apply to pending (as of the Effective Date) and future Irvine Company housing proposals (including residential, and mixed-use projects) more specifically detailed in Exhibits 1 through 6 hereto (each a “Project” and collectively the “Projects”). The Parties may, in each of their discretion, agree to make other projects proposed during the 2021-2029 RHNA cycle subject to this MOU. The City Manager and/or his or her designee shall have the authority to agree to adding future projects to the scope of this MOU pursuant to this Section.
2. **TERM**. The term of this MOU shall be from the Effective Date until December 31, 2028. The City Manager and/or his or her designee, in his or her discretion, may approve Irvine Company requested extensions to the term of this MOU for the Projects.
3. **OBJECTIVES**. The Projects shall be proposed, considered, and executed pursuant to the following objectives:
 - 3.1. **Comprehensive Approach**. The Parties shall pursue a comprehensive master planned approach with respect to the Projects with a consistent affordable housing approach in alignment with those proposals (including but not limited to providing for the appropriate establishment and utilization of affordable housing credits to satisfy Irvine Company affordable housing obligations).
 - 3.2. **Affordability Compliance**. The Parties have considered and evaluated a variety of avenues for the provision of affordable housing for adoption in connection with each Project in a manner which complies with applicable laws. These avenues include, but are not be limited to:
 - 3.2.1. Incorporating strategies to provide additional housing development in areas not adversely impacting existing residential villages in the City;
 - 3.2.2. Providing housing in multi-use districts and/or commercial areas and areas proximate to major employment centers;
 - 3.2.3. Including both “on-site” and “off-site” affordable housing options in new developments, including, without limitation, in concert with not-for-profit housing providers;
 - 3.2.4. Including “off-site” affordable housing options in existing developments through the extension of terms of existing, expiring affordable units or conversion of existing market rate units;

- 3.2.5. Utilizing density bonuses, incentives, concessions, and waivers available under applicable provisions of the State Density Bonus Law and other federal, state, local and City laws and regulations. For the purposes of the Projects only, Irvine Company has proposed, and the City has reviewed a requested incentive for a waiver of Municipal Code Section 5-5-1004, as the same may be amended from time to time, as an incentive under the State Density Bonus Law. Based on the information currently available for each Project, the City acknowledges that, as-applied to the Projects, the requested incentive results in identifiable and actual cost reductions to provide for affordable housing costs provided that the Projects comply with this MOU and the other provisions of the State Density Bonus Law;
- 3.2.6. Reaching mutual agreement on the location of a site (see Exhibit 6 attached hereto) to accommodate affordable housing required pursuant to applicable provisions of the existing Planning Area (PA) 39 Development Agreement (Ordinance No. 06-15; "PA 39 DA"), and satisfying the remaining affordable housing land dedication requirements under the PA 39 DA; and
- 3.2.7. Developing a plan for the utilization of existing affordable housing credits established by prior agreements between the Parties, and applicable to the Projects.
- 3.3. **Sustainability**. As plans for delivery of needed housing progress, consideration will be given to evolving sustainability objectives including reduction of the use of natural gas and more specifically, new multi-family structures having all-electric appliances, rooftop solar generation, and electric heating and air conditioning.
4. **PROJECT REQUIREMENTS AND PROCESSING**. This MOU does not approve or require the City to approve any actual development, entitlement, or permit, or grant any other City approval, nor does this MOU require Irvine Company to develop the Projects. The City and Irvine Company will engage in a separate project review process for each Project, which will incorporate the objectives and understandings in this MOU. The Parties intend for the objectives and understandings of this MOU to be incorporated or reflected in the development, regulatory, and other applicable agreements between the City and Irvine Company related to the Projects. The following provisions apply to the Projects:
- 4.1. **Compliance with Applicable Laws**. Projects shall be proposed, processed, and executed in compliance with applicable laws and regulations including State and local housing laws, the Housing Element and CEQA. Each Party shall be responsible for its own compliance with applicable laws. Where deemed legally appropriate by the City, environmental review for the Project will "tier" off prior applicable CEQA review and documents certified by the City, including CEQA review with respect to the Housing Element and the applicable planning areas.
- 4.2. **Processing Schedule**. In addition to legal requirements regarding processing of land use applications, the City and Irvine Company will cooperate to develop a mutually acceptable schedule for City processing and consideration of the land use approvals, agreements, and associated documentation necessary for the Projects ("Land Use Approvals") in an expeditious and timely manner, while permitting the Parties to transact and negotiate in

good faith. The City and Irvine Company acknowledge that the time frames for such processing and consideration may be delayed, without fault of City, due to, among other reasons, acts and omissions of other governmental entities not involved in Land Use Approvals.

- 4.3. **Development Agreements.** As part of and in connection with the Land Use Approvals, the City shall process one or more development agreements securing vested development rights and the terms necessary to implement this MOU (each, a “**Development Agreement**”). Each Development Agreement will have a minimum initial term of ten (10) years, subject to any extensions as may be provided therein. The Development Agreement shall vest applicable development rights from the date of the Development Agreement.
- 4.4. **Affordable Housing Requirements.** The Projects shall comply with the requirements in this Section, and the applicable affordable housing requirements in state and, except as modified by the terms of this MOU, local laws, as the same may be vested in the relevant Development Agreement.

As of the Effective Date, and except as otherwise permitted in Chapter 2-3 of the City’s Zoning Ordinance, residential projects within the City must include at least five percent (5%) of the project affordable to households at Income Level II (as defined in the Housing Element), at least five percent (5%) of the project affordable to households at Income Level III (as defined in the Housing Element), and at least five percent (5%) of the project affordable to households at Income Level IV (as defined in the Housing Element). Except as otherwise modified by the terms of the applicable Development Agreement, affordable units shall comply with the applicable provisions of Chapter 2-3 of the City’s Zoning Ordinance as the same may be amended through the date of the applicable Development Agreement. By entering into this MOU, the City has determined that the affordable housing requirements set forth herein for the projects align with City policies related to the provision of affordable housing. It is the City’s intention that subsequent Land Use Approvals and the Development Agreement for each Project contain provisions aligning with these requirements.

Based on the information currently available for each Project, the City acknowledges that, as applied to the Projects, the following affordability requirements provide equivalent or enhanced affordable housing to the affordability requirements in Chapter 2-3 of the Irvine Municipal Code, and are appropriate for inclusion in the Development Agreement for each Project:

4.4.1. Affordability Levels.

i. Income Level II: 5% of non-density bonus units provided at each Project site (excluding the Technology Drive Site) for seventy five (75) years from the date the unit is held out for rent or purchase by an eligible household.

ii. Income Level II: 4.55% of non-density bonus units for each Project provided entirely at the Technology Drive Site for the lifetime of the Project at the Technology Drive Site subject to the requirements of Section 4.5 below¹.

iii. Income Level III: 4.55% of non-density bonus units for each Project provided entirely at the Technology Drive Site for the lifetime of the Project at the Technology Drive Site subject to the requirements of Section 4.5 below¹.

iv. Income Level IV: 10% of non-density bonus units provided at each Project site (excluding the Technology Drive Site) for seventy five (75) years from the date the unit is held out for rent or purchase by an eligible household. These units shall be new construction at each Project site.

v. Income Level IV: 5% of non-density bonus units for each Project provided on or off site (excluding the Technology Drive Site) for seventy five (75) years from the date the unit is held out for rent or purchase by an eligible household. These Section 4.4.1(v) units may be achieved through a combination of new construction at any of the Project sites (i.e., a Project site may contain a higher percentage, offset by a lower percentage at another Project site) or, at City's option and with Irvine Company's approval of the location, the extension of terms of existing, expiring affordable units for seventy five (75) years consistent with terms qualifying such units for credit against applicable RHNA requirements. Credit for extending the affordability term for expiring income restricted units shall be calculated based on then-applicable law as of the date of the applicable Development Agreement.

4.4.2. Unit Location and Size. Affordable units shall be reasonably dispersed throughout each Project. The proportional mix of the number of bedrooms per affordable unit shall remain generally consistent with the bedroom mix of the market rate units in each Project, except that affordable units may provide a larger proportion of affordable units with a higher bedroom count.

4.5. Technology Drive Site. Irvine Company intends to dedicate to the City or its designated land trust the 4.69-acre site identified in Exhibit 6 attached hereto (the "Technology Drive Site") to meet affordable housing obligations in Paragraph 4.4.1(ii) and (iii) of this MOU

¹ For the purposes of this MOU and the Land Use Approvals related to the Projects, the percentages set forth above are based on the assumption that the Technology Drive Site will be able to provide 160 Income Level II units and 160 Income Level III, no matter how many units are actually developed on the Technology Drive Site. Actual percentages will be based on actual units developed under this MOU.

and with the Amended and Restated Master Affordable Housing Plan for PA 39 (initially approved July 20, 2006, and last amended April 26, 2022; “PA 39 ARMAHP”). The Conveyance Agreement (as defined in Section 4.8 below) will include terms addressing satisfaction of dedication requirements under the PA 39 ARMAHP, the extinguishment of all ninety-two (92) Income Level III credits established in the PA 39 ARMAHP and the provision of credits to Irvine Company if the City does not grant the Land Use Approvals for a particular Project consistent with this MOU. A condition precedent of the terms and conditions of this MOU is that Irvine Company will provide to City reasonable evidence, to the reasonable satisfaction of the City, that the Technology Drive Site can physically accommodate the construction of at least 320 residential units at a commercially reasonable cost of construction taking into account all relevant development factors (excluding financing). The dedication of the Technology Drive Site shall occur no later than June 30, 2023 with one (1) option to extend by six (6) months to be approved at the discretion of the City Manager.

- 4.6. **Affordable Housing Plan.** The provisions of this MOU, each applicable Development Agreement, the applicable State Density Bonus Law Agreement, and the applicable Regulatory Agreement shall operate as the affordable housing plan for each Project. This affordable housing plan for each Project, reflecting in the aforementioned documents, shall meet the requirements of Chapter 2-3 of the Irvine Zoning Ordinance, as the same may be amended by the Development Agreement for the Project.
- 4.7. **Regulatory Agreement and Declaration of Covenants and Restrictions.** A mutually agreeable regulatory agreement and declaration of covenants and restrictions shall be required as a condition of development for each Project, concurrent with the requisite Land Use Approvals and Development Agreement (each a “Regulatory Agreement”). Each Regulatory Agreement will be recorded against the property(ies) where affordable units will be located and, prior to occupancy thereof, shall secure the affordability restrictions applicable to those properties. Each Regulatory Agreement shall guarantee the affordability of each affordable unit for the applicable affordability period.
- 4.8. **Agreement on Form of Development Agreement, State Density Bonus Law Agreement, Regulatory Agreement, and Conveyance Agreement.** Promptly after execution of this MOU, Irvine Company and the City shall meet and confer in order to determine, in good faith, reasonable template forms of Development Agreement, State Density Bonus Law Agreement and Regulatory Agreement to apply to all of the Projects (excluding the Technology Drive Site). Once the template for each agreement is approved by Irvine Company and the City, such approved template shall be utilized on each Project and subject only to those modifications required to insert Project-specific facts or to make any necessary modifications to the extent required to not conflict with applicable law, or as otherwise mutually approved by Irvine Company and the City. Irvine Company and City shall meet and confer in order to determine, in good faith, a reasonable template form of agreement (“Conveyance Agreement”) for the Technology Drive site subject to Section 4.5 above. A mutually agreeable template agreement for the four (4) agreements provided in this Section 4.8 shall be a condition precedent of the terms and conditions of this MOU. A form of Development Agreement pursuant to this Section shall be finalized on or before April 17, 2023 unless extended by mutual agreement of the Parties. A form

of State Density Bonus Law Agreement, Regulatory Agreement, and Conveyance Agreement pursuant to this Section shall be finalized on or before May 1, 2023 unless extended by mutual agreement of the Parties. The City Manager or designee shall have the authority to agree to extensions pursuant to this Section.

- 4.9. **On-Site Recreation.** Based on the information currently available for each Project, the City acknowledges that an incentive under the State Density Bonus Law waiving the requirements of City Municipal Code Section 5-5-1004, as amended, and any other applicable parkland exactions under the City’s Municipal Code, would result in actual and identifiable cost reductions for each Project, provided that the Project meets the other requirements of this MOU and State Density Bonus Law. In the event the City approves the Project and Irvine Company develops the Project, Irvine Company shall provide on-site recreation elements set forth in Exhibit 7.
- 4.10. **Public Benefit Payment.** In consideration for the expedited processing of Land Use Approvals, and other City understandings hereunder, a “Public Benefit Payment” from Landowner to the City in an amount not exceeding \$14,500.00 per unit, to be assessed no later than issuance of building permits for the applicable Project, will be included as a part of each Development Agreement. The per unit fee shall be adjusted on January 1, 2025 and annually thereafter based upon a calculation of the change in the Engineering News-Record (ENR) Construction Cost Index (CCI) between January 1, 2024 and the January of the year in which the fee is paid, provided, however, that the Public Benefit Payment shall never be less than \$14,500.00 per unit. The Public Benefit Payment may be used at the sole discretion of the City for municipal purposes.

[signatures on following page]

Executed this ____ day of _____, 2023.
Apr 17, 2023

“CITY”

CITY OF IRVINE,
a California municipal corporation

By: *Oliver Chi*
Oliver Chi
Its: City Manager

ATTEST:

Carl Petersen
Carl Petersen, City Clerk

Approved as to Form:

Jeff Melching
Jeff Melching, City Attorney

IRVINE COMPANY”

The Irvine Company LLC and The Irvine Land
Company LLC

By: *Jeffrey S. Davis*
Name: Jeffrey S. Davis
Title: Senior Vice President, Entitlement

By: *Todd Keller*
Name: Todd Keller
Title: Division President, Apartment Development

Exhibit 1:

Planning Area (PA) 4 - The Market Place

- Up to 1,261 Total Units (inclusive of density bonus units)
- Minimum onsite recreation requirement = 1.25 acres pursuant to Exhibit 7 attached hereto

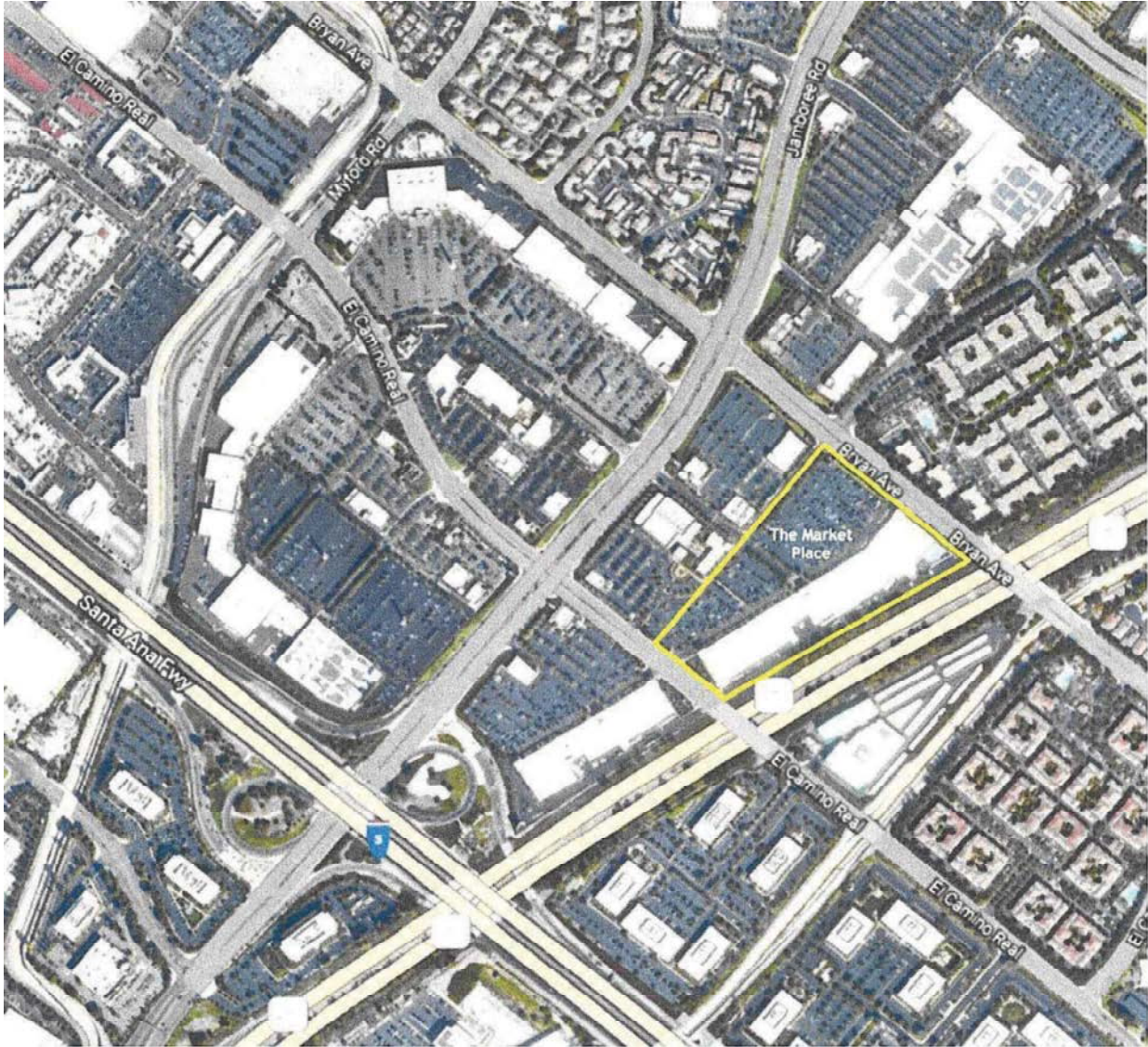


Exhibit 2:

PA 33 - Lot 103

- Up to 652 Total Units (inclusive of density bonus units)
- Minimum onsite recreation requirement = 1.0 acre pursuant to Exhibit 7 attached hereto



Exhibit 3:

PA 33 - Lot 106

- Up to 244 Total Units (inclusive of density bonus units)
- Minimum onsite recreation requirement = 0.75 acre pursuant to Exhibit 7 attached hereto



Exhibit 4:

PA 31 - Discovery Park

- Up to 1,459 Total Units (inclusive of density bonus units)
- Minimum onsite recreation requirement = 1.25 acres pursuant to Exhibit 7 attached hereto

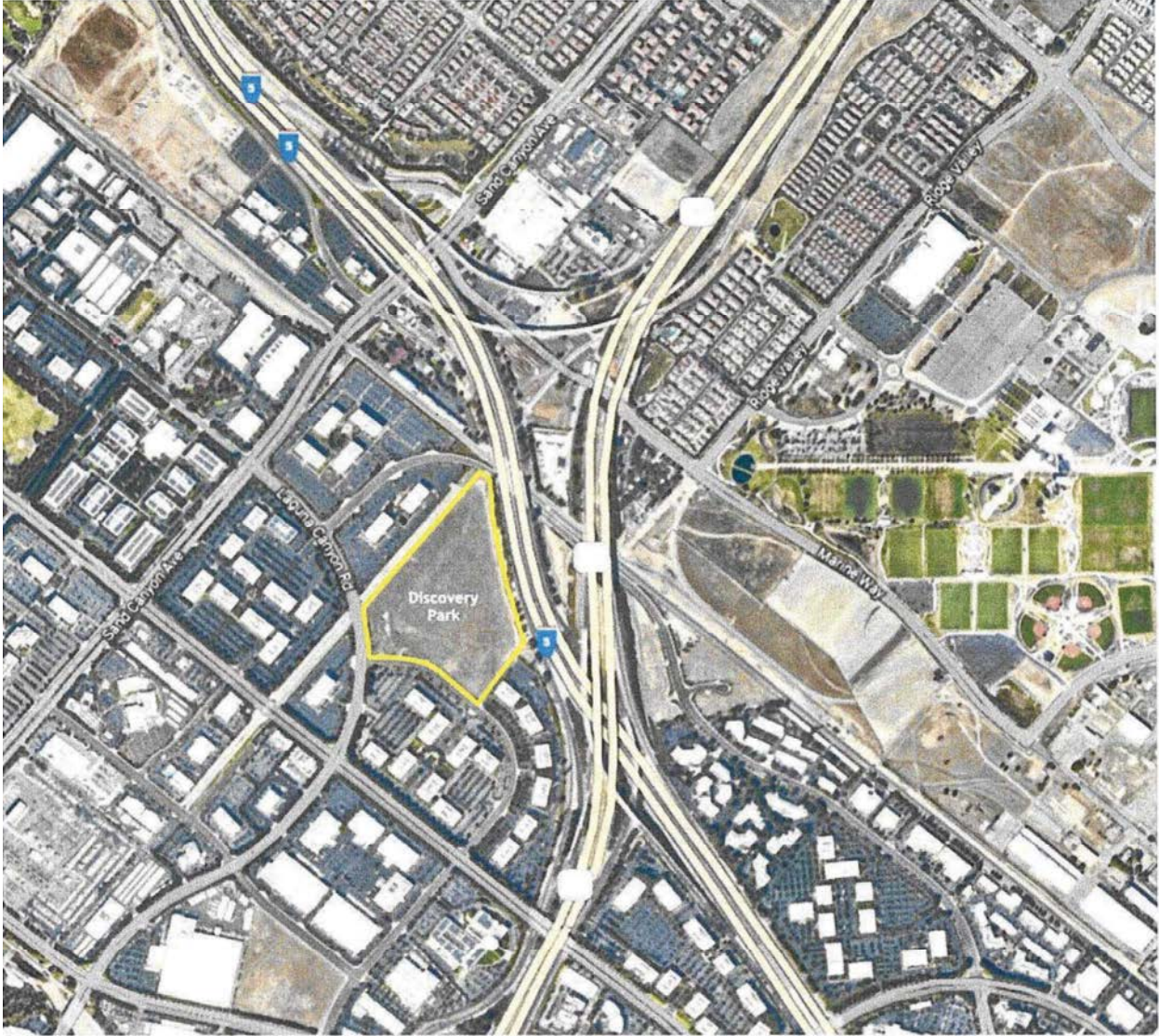


Exhibit 5:

PA 39 - Lot 10

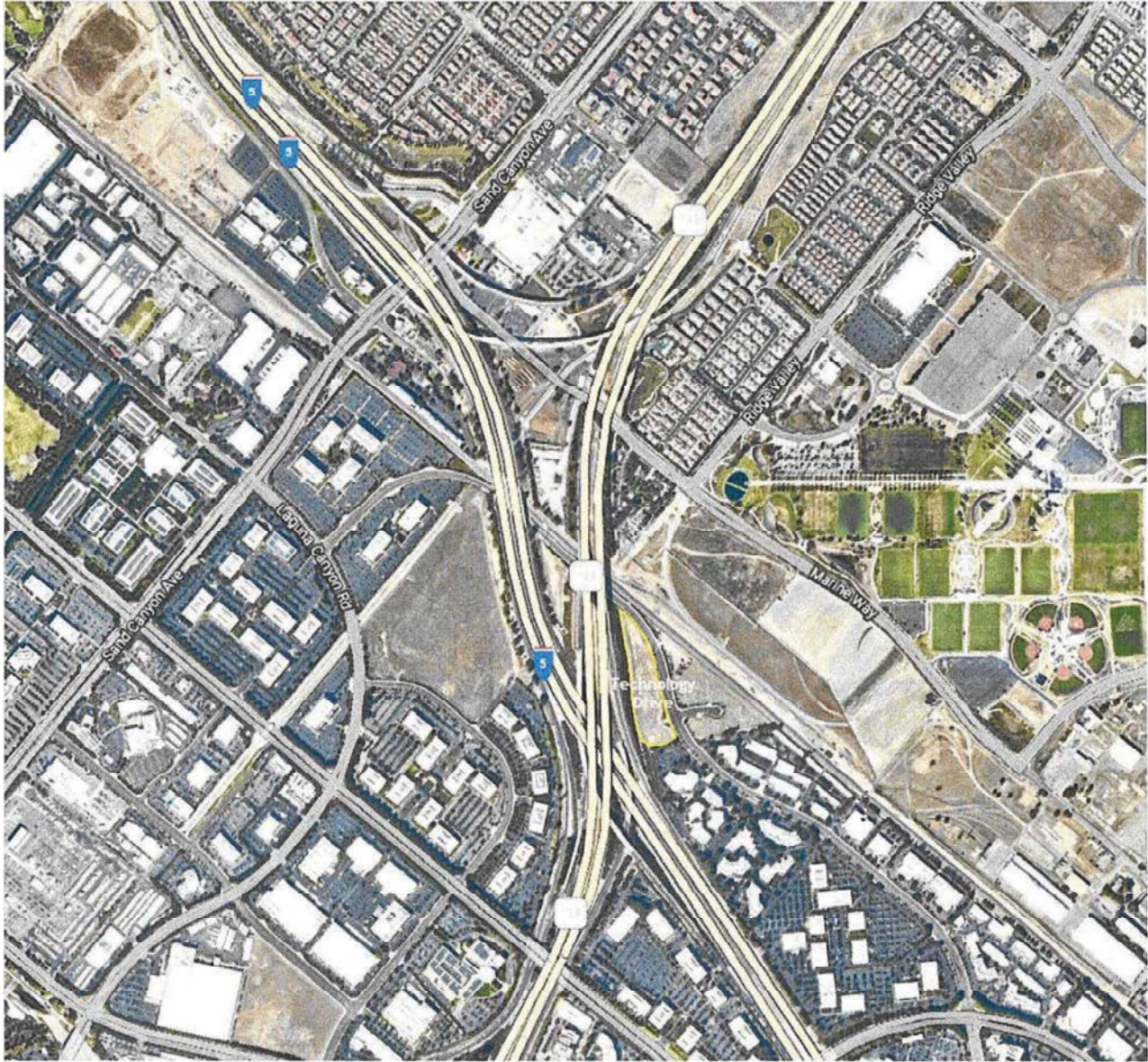
- Up to 600 Total Units (inclusive of density bonus units)
- Minimum onsite recreation requirement = 1.0 acre pursuant to Exhibit 7 attached hereto



Exhibit 6:

PA 33- Technology Drive

- 100% Affordable Site
- 320 Units (160 Income Level II units and 160 Income Level III units)²



² Actual number of units to be approved by the City and developed on the site are TBD.

Exhibit 7:

Criteria for On-Site Recreation Requirements

In aggregate, recreation spaces will be provided on a per development basis as follows:

For developments with between 1 and 500 total units:

- 0.75 acres (32,670 square feet) of recreation space/common amenity areas

For developments with between 501 and 1000 total units:

- 1.0 acres (43,560 square feet) of recreation space/common amenity areas

For developments with between 1001 and 1500 total units:

- 1.25 acres (54,450 square feet) of recreation space/common amenity areas

Projects with more than 1,500 units are required to provide an additional 0.25-acre of land for each additional 500 units (or fraction thereof).

The minimum acreage totals described in this exhibit represent land only. The area applied to the minimum acreage requirement may not be located inside of or on top of a building and may not include “credit” for recreational improvements.

With the foregoing limits, all developments must include at least one recreational space that is at least 0.33 acres (14,520 square feet) in size.

Recreational space shall include, at a minimum: 1) swimming pools, spas and/or water features with a cumulative water surface equal to or greater than 5 square feet per unit; 2) indoor fitness space or exterior sport courts; and 3) designated restrooms, showers, and drinking fountains at each swimming pool.

Other recreational amenities may include, without limitation, interior and exterior gathering areas, shade features, dog runs, tot lots, co-working spaces, or club rooms. Even though not applied to the minimum acreage requirements of this exhibit, other recreation spaces can be within a building (e.g., fitness/co-working/club), or provided on top of buildings.

For each Project, the applicant shall illustrate the aforementioned recreation spaces through the submittal of a non-regulatory “Illustrative Onsite Amenity Exhibit” concurrently with the submission of the Master Plan application for the Project. The Illustrative Onsite Amenity Exhibit shall show the location(s) of all recreation spaces, the size of each space, and the quantity/type of physical improvements proposed.

Memo

To: City Council

Via: Oliver Chi, City Manager *Oliver Chi*

From: Tim Gehrich, Community Development Director *TG*

Date: June 8, 2023

Re: Memo for Agenda Item 4.11 – SECOND READING AND ADOPTION OF ORDINANCE NO. 23-11 AND ORDINANCE NO. 23-12 APPROVING A GENERAL PLAN AMENDMENT, A ZONE CHANGE AND A DEVELOPMENT AGREEMENT FOR IRVINE MARKET PLACE RESIDENTIAL DEVELOPMENT LOWER PETERS CANYON (PLANNING AREA 4)

On May 23, 2023, the City Council considered a General Plan Amendment, Zone Change, and Development Agreement for a new residential development at the Irvine Market Place. At 3:15 p.m. on the day of the City Council meeting, City staff received public correspondence from Supporters Alliance for Environmental Responsibility ("SAFER") (Attachment 1). Based on City policy, e-comments must be submitted at least two hours prior to commencement of the meeting to be distributed to the City Council members at the meeting.

As the letter was submitted less than two hours prior to the meeting, City staff was only able to mention in their presentation that the 193-page document would be reviewed, and that City Council members would receive a response to the SAFER letter prior to the second reading of the Zoning Change and Development Agreement applications for the Irvine Market Place residential development.

The basis for SAFER's letter asserts that the City did not perform adequate California Environmental Quality Act (CEQA) analysis for the project. Contrary to the statements made in SAFER's letter, the prepared Addendum to the PA 4 Environmental Impact Report is adequate to serve as the environmental document for the Irvine Market Place project and satisfies requirements of CEQA.

In-depth responses to the assertions made in SAFER's letter have been prepared and are included as Attachment 2.

Attachments:

1. Public Correspondence from SAFER dated May 23, 2023
2. City's Response to SAFER's Letter

cc: City Clerk; City Attorney



T 510.836.4200
F 510.836.4205

1939 Harrison Street, Ste. 150
Oakland, CA 94612

www.lozeaudrury.com
Amalia@lozeaudrury.com

VIA EMAIL ONLY

May 23, 2023

Farrah N. Khan, Mayor
Tammy Kim, Vice Mayor
Larry Agran, Councilmember
Mike Carroll, Councilmember
Kathleen Treseder, PhD, Councilmember
City Council
City of Irvine
1 Civic Center Plaza
Irvine, CA 92606-5207
clerk@cityofirvine.org

Ann Wu
Senior Planner
Community Development Department
City of Irvine
1 Civic Center Plaza
Irvine, CA 92606-5207
awuu@cityofirvine.org

**Re: Irvine Market Place Development & Addendum to the Lower Peters Canyon
Specific Plan Environmental Impact Report
CITY COUNCIL AGENDA ITEM 3.1 (May 23, 2023)**

Dear Mayor Khan and Honorable City Councilmembers:

This comment is submitted on behalf of Supporters Alliance for Environmental Responsibility (“SAFER”) and its members living or working in and around the City of Irvine (“City”) regarding the Irvine Market Place Residential Development Project (General Plan Amendment 00863325-PGA, Zone Change 00870374-PZC, Development Agreement 00900866-PDA, and Master Plan 00882754-PMP) (“Project”) to be heard as Agenda Item 3.1 at the City Council’s May 23, 2023 meeting.

On May 4, 2023, the Planning Commission approved the Project’s Master Plan (which SAFER timely appealed) and recommended that the City Council approve the Project’s General Plan Amendment, Zone Change, and Development Agreement. SAFER is concerned that the City’s reliance on the 2023 Addendum to the 1995 Lower Peters Canyon Specific Plan Environmental Impact Report (SCH No. 94041030) (“1995 Specific Plan EIR”) violates the California Environmental Quality Act (“CEQA”). Because the Project proposes 969 additional residential units that were not analyzed by the 1995 Specific Plan EIR, the Project is outside of the scope of the 1995 Specific Plan EIR and the use of an addendum is improper. Therefore, SAFER respectfully requests that the City Council refrain from approving the Project at this time and, instead, direct staff to prepare an initial study followed by a Project-specific EIR or negative declaration as required by CEQA prior to Project approval.

ATTACHMENT 1

PROJECT DESCRIPTION AND BACKGROUND

The Project proposes the development of 1,261 residential units within Planning Area 4 (“PA4” or Lower Peters Canyon), resulting in a net increase of 969 units over previously approved uses. PA4 encompasses approximately 1,409 acres in the northern portion of the City, and is bound by 1-5 to the southwest, Jamboree Road to the northwest, Culver Drive to the southeast, and Portola Parkway to the northeast. The Project site encompasses approximately 15.5 acres and is bound by Bryan Avenue to the northeast, State Route 261 to the southeast, El Camino Real to the southwest, and commercial uses to the northwest.

The Project’s Master Plan proposes three five-story apartment buildings, which feature a six-story central garage wrapped with residential units. The Master Plan consists of 1,261 total residential units with 413 units in Building 1, 430 units in Building 2, and 418 units in Building 3.

In 1995, the County of Orange approved and adopted a Final Environmental Impact Report for the Lower Peters Canyon Specific Plan (SCH No. 9401030) (“1995 Specific Plan EIR” or “1995 EIR”). In 2003, the City approved and adopted an Addendum to the Lower Peters Canyon Specific Plan Program Environmental Impact Report (“2003 Addendum”). The 1995 Specific Plan EIR was a program EIR which analyzed the development of 10,568 residential dwelling units, 696,000 square feet of retail commercial uses, a special use park, a community park, six neighborhood parks, a library, four elementary schools, one middle school, one high school, and associated road and drainage improvements and other infrastructure. The 2003 Addendum evaluated environmental impacts associated with a General Plan Amendment, a Zone Change, and Master Plans, which allowed for multi-family residential development in PA 4 Sector 8 instead of previously designated commercial uses.

LEGAL STANDARD

CEQA contains a strong presumption in favor of requiring a lead agency to prepare an EIR. This presumption is reflected in the fair argument standard. Under that standard, a lead agency must prepare an EIR whenever substantial evidence in the whole record before the agency supports a fair argument that a project may have a significant effect on the environment. (Pub. Res. Code § 21082.2; *Laurel Heights Improvement Ass’n v. Regents of the University of California* (1993) 6 Cal.4th 1112, 1123; *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 75, 82; *Quail Botanical Gardens v. City of Encinitas* (1994) 29 Cal.App.4th 1597, 1602.)

CEQA permits agencies to ‘tier’ CEQA documents, in which general matters and environmental effects are considered in a document “prepared for a policy, plan, program or ordinance followed by narrower or site-specific [environmental review] which incorporate by reference the discussion in any prior [environmental review] and which concentrate on the environmental effects which (a) are capable of being mitigated, or (b) were not analyzed as

significant effects on the environment in the prior [EIR].” (Pub. Res. Code (“PRC”) § 21068.5.) “[T]iering is appropriate when it helps a public agency to focus upon the issues ripe for decision at each level of environmental review and in order to exclude duplicative analysis of environmental effects examined in previous [environmental reviews].” (*Id.* § 21093.) CEQA regulations strongly promote tiering of environmental review.

Where a program EIR has been prepared, such as the 1995 Specific Plan EIR, “[l]ater activities in the program must be examined in light of the program [document] to determine whether an additional environmental document must be prepared.” (14 CCR § 15168(c).) The first consideration is whether the activity proposed is covered by the program. (14 CCR § 15168(c)(2).) If a later project is outside the scope of the program, then it is treated as a separate project and the previous environmental review may not be relied upon in further review. (*See Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307, 1320–21.) The second consideration is whether the “later activity would have effects that were not examined in the program.” (14 CCR § 15168(c)(1).) A program environmental review may only serve “to the extent that it contemplates and adequately analyzes the potential environmental impacts of the project” (*Sierra Nevada Conservation v. County of El Dorado* (2012) 202 Cal.App.4th 1156, 1171 [quoting *Citizens for Responsible Equitable Envtl. Dev. v. City of San Diego Redevelopment Agency* (2005) 134 Cal.App.4th 598, 615].) If the program environmental review does not evaluate the environmental impacts of the project, a tiered [CEQA document] must be completed before the project is approved. (*Id.* at 1184.)

Pursuant to Guidelines sections 15162(a) and 15168(c), a project is not within the scope of a previous program EIR, and subsequent environmental review is necessary, where:

- (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
- (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
 - (A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - (C) Mitigation measures or alternatives previously found not to be feasible would, in fact, be feasible and would substantially reduce one or more

- significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
- (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Where a later project is outside the scope of a previous program EIR, an agency must prepare an initial study to determine “whether the later project may cause significant effects on the environment that were not examined in the prior environmental impact report.” (PRC § 21094(c); see *Sierra Club, supra*, 6 Cal.App.4th at 1321.) If there is a fair argument that the Project may result in new significant impacts, the agency must prepare a tiered EIR. Under the fair argument standard, an EIR must be prepared “whenever it can be fairly argued on the basis of substantial evidence that the project may have significant environmental impact. (*Sierra Club, supra*, 6 Cal.App.4th at 1316.) “[I]f there is substantial evidence in the record that the later project may arguably have a significant adverse effect on the environment which was not examined in the prior program EIR, doubts must be resolved in favor of environmental review and the agency must prepare a new tiered EIR, notwithstanding the existence of contrary evidence.” (*Id.* at 1319.)

DISCUSSION

I. Under CEQA, an EIR or negative declaration is required for the Project rather than an addendum.

The City has improperly relied upon CEQA’s subsequent review provisions. (PRC § 21166; 14 CCR §§ 15162, 15164.) Where a previous EIR has been certified for a project, CEQA’s subsequent review provisions determine whether “[a] subsequent EIR shall be prepared for *that* project.” (14 CCR 15162 [emphasis added].) This is not the same project that was previously analyzed. The proposed Project is a different, and far larger project, adding an additional 969 units. This new project exceeds the scope of the analysis of the 1995 Specific Plan EIR. No EIR has ever been prepared for *this* Project and, as a result, the use of CEQA’s subsequent review provisions and the 2023 Addendum are improper.

In addition, because the 1995 Specific Plan EIR was a programmatic EIR for the entire Lower Peters Canyon Specific Plan, CEQA review of this subsequent Project is governed by CEQA Guidelines section 15168, which provides that a subsequent EIR is unnecessary only where a proposed activity is “within the scope of the project covered by the program EIR.” (14 CCR § 15168(c).) The Project is outside the scope of the 1995 EIR because the Project proposes a net increase of 969 residential units beyond what was analyzed in the 1995 Specific Plan EIR for PA 4 and will result in new significant impacts. The fact that this Project requires a general plan amendment and a zoning change further underscores the fact that the Project is beyond the scope of the analysis and context of the 1995 EIR. Because the Project is outside the scope of the

1995 Specific Plan EIR, CEQA's subsequent review provisions do not apply and the addendum is improper. (*Sierra Club, supra*, 6 Cal.App.4th at 1320-21.) Instead, the City is required to prepare an initial study to determine whether to prepare a tiered EIR or negative declaration. (*Id.* [citing PRC §§ 21094(c); see also 14 CCR § 15152(f).])

II. An EIR or MND is required because the Project will cause new significant air quality impacts and health-risk impacts.

Air quality experts Matt Hagemann, P.G., C.Hg., and Paul Rosenfeld, Ph.D., of Soil/Water/Air Protection Enterprise ("SWAPE") have reviewed the 1995 EIR, 2003 Addendum, and 2023 Addendum. SWAPE's comment and CV are attached as **Exhibit A**.

As discussed below and set forth in SWAPE's comment, the proposed Project will have significant air quality and health-risk impacts. Due to these new significant impacts, the 1995 EIR "will require major revisions" and a subsequent EIR or MND is required for the Project under Guidelines section 15162. (14 CCR § 15162(a)(1).) As a result, the Project is outside the scope of the 1995 EIR and 2003 Addendum, and an initial study is required to determine whether to prepare an EIR or an MND for the Project. (14 CCR § 15168(c)(2)).

a. The 2023 Addendum inaccurately modeled the Project's emissions and cannot be relied upon to determine the Project's air quality impacts.

SWAPE found that the 2023 Addendum incorrectly estimated the Project's construction and operational emissions and therefore cannot be relied upon to determine the significance of the Project's impacts on local and regional air quality. The 2023 Addendum relies on emissions calculated from the California Emissions Estimator Version CalEEMod 2020.4.0 ("CalEEMod"). (2023 Addendum, p. 70). This model, which is used to generate a project's construction and operational emissions, relies on recommended default values based on site specific information related to a number of factors. (Ex. A, p. 3-4). CEQA requires any changes to the default values to be justified by substantial evidence. (*Id.*).

SWAPE reviewed the 2023 Addendum's CalEEMod output files and found that several of the values input into the model were inconsistent with information provided elsewhere in the 2023 Addendum. (Ex. A at 4). Specifically, SWAPE found that the following values used in the 2023 Addendum's air quality analysis were either inconsistent with information provided in the 2023 Addendum or otherwise unjustified:

1. Unsubstantiated Reductions to Architectural and Area Coating Emission Factors. (Ex. A, p. 4-5);
2. Unsubstantiated Changes to Individual Construction Phase Lengths. (Ex. A, p. 5-7);
3. Unsubstantiated Reduction to Number of Gas Fireplaces. (Ex. A, p. 7-8);
4. Incorrect Application of Tier 4 Final Emissions Standards. (Ex. A, p. 8-11);
5. Incorrect Application of Operational Energy-Related Mitigation Measure. (Ex. A, p. 11);

6. Incorrect Application of Operational Area-Related Mitigation Measures. (Ex. A, p. 11-12).

Based on the issues listed above, the 2023 Addendum's analysis of air quality cannot be relied upon to determine the significance of impacts.

b. An updated air model analysis found that the Project will have a significant air quality impact.

To more accurately determine the Project's construction-related and operational emissions, SWAPE prepared an updated CalEEMod model using more site-specific information and corrected input parameters. (*See* Ex. A, p. 12-13). SWAPE's updated analysis found that the Project's construction-related ROG emissions totaled 214.3 lbs/day, significantly exceeding the South Coast Air Quality Management District ("SCAQMD") 75 lbs/day significance threshold. (*Id.* at 13).

SWAPE's model demonstrates that the Project would result in new significant air quality impacts, which bring the Project outside the scope of the 1995 EIR and 2003 Addendum. (14 CCR §§ 15162(a)(1), 15168(c)(2).) An initial study followed by an EIR or an MND is therefore required for this Project. (*Id.*)

c. The 2023 Addendum failed to adequately analyze the Project's potential air quality impacts from diesel particulate matter emissions.

One of the primary emissions of concern regarding health effects for land development projects is diesel particulate matter ("DPM"), which can be released during Project construction and operation. DPM consists of fine particles with a diameter less than 2.5 micrometers including a subgroup of ultrafine particles (with a diameter less than 0.1 micrometers). Diesel exhaust also contains a variety of harmful gases and cancer-causing substances. Exposure to DPM is a recognized health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. According to the California Air Resources Board ("CARB"), DPM exposure may lead to the following adverse health effects: aggravated asthma; chronic bronchitis; increased respiratory and cardiovascular hospitalizations; decreased lung function in children; lung cancer; and premature deaths for those with heart or lung disease.¹

The City prepared a Health Risk Assessment ("HRA") as part of the 2023 Addendum and concluded that the maximum cancer risk posed by the Project to nearby sensitive receptors as a result of construction would be 5.95 in one million and would therefore not exceed the CEQA significance threshold on 10 in one million. (Ex. A, p. 13). SWAPE identifies three reasons for

¹ *See* CARB Resources - Overview: Diesel Exhaust & Health, available at <https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health>.

why the 2023 Addendum's evaluation of health risk impacts and less-than-significant conclusion is incorrect. (*Id.*)

First, the 2023 Addendum's construction HRA is flawed due to the inputting of several incorrect values into the CalEEMod analysis, as described above. (Ex. A, p. 14). The 2023 Addendum's HRA therefore uses an underestimated DPM concentration, which led to an underestimate of the Project's cancer risk. The HRA cannot be relied upon to determine impacts of the Project. (*Id.*)

Second, the 2023 Addendum fails to mention or provide the exposure assumptions for the HRA, such as age sensitivity factors or fraction of time at home. (Ex. A, p. 14). Without accurately substantiating these assumptions, the HRA may underestimate the cancer risk to nearby sensitive receptors from Project construction. (*Id.*)

Lastly, the HRA uses the incorrect equation when calculating the Project's cancer risks, and is therefore inconsistent with guidance set forth by the Office of Environmental Health Hazard Assessment ("OEHHA"), the organization responsible for providing guidance on conducting HRAs in California. (*Id.*; OEHHA, February 2015, *available at*: http://oehha.ca.gov/air/hot_spots/hotspots2015.html.)

For the above reasons, the 2023 Addendum's analysis of health impacts from DPM is inaccurate and cannot be relied upon to determine significance. Therefore, the City lacks substantial evidence to determine that the Project does not require a subsequent EIR. (14 CCR §§ 15162(a)(1), 15168(c)(2)).

IV. An EIR is Required Because New Mitigation Measures Are Available to Address the Project's Air Quality Impacts.

Pursuant to CEQA Guidelines section 15162, a subsequent EIR is required where new information since the certification of the 1995 EIR and 2003 Addendum demonstrates that mitigation measures "which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure." (14 CCR § 15168(a)(3)(D).)

The 2023 Addendum states there are no mitigation measures previously found infeasible which are different from those previously analyzed and which the City has failed to adopt. (2023 Addendum, p.3). However, SWAPE's review determined that the 1995 EIR and 2003 Addendum only incorporate one mitigation measure to address the proposed Project's significant and unavoidable air quality impact, Measure S-5, which requires grading activities to be in compliance with SCAQMD and City standards. (Ex. A, p. 3; 2023 Addendum, p. 67, 68). SWAPE notes that there are now considerably different mitigation measures aside from that one which would substantially reduce the Project's significant air quality impacts. (Ex. A, p. 3.)

SWAPE's recommended measures include use of Tier 4 equipment and use of high efficiency enhanced filtration units, among others. (Ex. A, p. 15-17.)

SWAPE has presented new information regarding mitigation measures which are considerably different from those analyzed in the 1995 EIR and 2003 Addendum, which would substantially reduce the Project's significant and unavoidable air quality impacts, and which the Project proponents have failed to implement. A subsequent EIR is therefore required prior to approval for the Project. (14 CCR § 15168(a)(3)(D).)

V. An EIR is Required Because of New Information Regarding the Project's Significant Impacts on Indoor Air Quality from Formaldehyde Emissions.

Certified Industrial Hygienist, Francis "Bud" Offermann, PE, CIH, has conducted a review of the Project. Mr. Offermann is a leading expert on indoor air quality, in particular emissions of formaldehyde, and has published extensively on the topic. As discussed below and set forth in Mr. Offermann's comment, the Project's emissions of formaldehyde will result in significant cancer risks to future employees working at the Project. Mr. Offermann's comment and CV are attached as **Exhibit B**.

Importantly, the 1995 Program EIR did not address indoor air quality impacts or formaldehyde emissions. Because these impacts were not previously analyzed at all, the fair argument standard applies and an EIR is required to address and mitigate this impact.

Formaldehyde is a known human carcinogen and is listed by the State of California as a Toxic Air Contaminant ("TAC"). The SCAQMD has established a significance threshold of health risks for carcinogenic TACs of 10 per million. (Ex. B, p. 2.)

Mr. Offermann explains that many composite wood products typically used in home, apartment, and office building construction contain formaldehyde-based glues which off-gas formaldehyde over a very long time period. He states, "The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particle board. These materials are commonly used in residential, office, and retail building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims." (Ex. B, pp. 2-3.)

Mr. Offermann concludes that future employees of the Project will be exposed to a cancer risk from formaldehyde of approximately 17.7 per million, *even assuming* that all materials are compliant with the California Air Resources Board's formaldehyde airborne toxics control measure. (Ex. B, p. 4.) This exceeds SCAQMD's CEQA significance threshold for airborne cancer risk of 10 per million. Importantly, Mr. Offermann's conclusions are based on studies conducted in 2019 and therefore were not available when the 1995 Program EIR was approved.

Mr. Offermann concludes that these significant environmental impacts must be analyzed and mitigation measures should be imposed to reduce the risk of formaldehyde exposure. (Ex. B, pp. 4-5, 11-13.) He prescribes a methodology for estimating the Project’s formaldehyde emissions in order to do a more project-specific health risk assessment. (*Id.*, pp. 5-9.) Mr. Offermann also suggests several feasible mitigation measures, such as requiring the use of composite wood products manufactured with CARB approved no-added formaldehyde (NAF) resins, which are readily available. (*Id.*, pp. 11-13.)

When a Project exceeds a duly adopted CEQA significance threshold, as here, this alone establishes substantial evidence that the project will have a significant adverse environmental impact. Indeed, in many instances, such air quality thresholds are the only criteria reviewed and treated as dispositive in evaluating the significance of a project’s air quality impacts. (See, e.g. *Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 960 [County applies Air District’s “published CEQA quantitative criteria” and “threshold level of cumulative significance”]; see also *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 110-111 [“A ‘threshold of significance’ for a given environmental effect is simply that level at which the lead agency finds the effects of the project to be significant”].)

The California Supreme Court made clear the substantial importance that an air district significance threshold plays in providing substantial evidence of a significant adverse impact. (*Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 327 [“As the [South Coast Air Quality Management] District’s established significance threshold for NOx is 55 pounds per day, these estimates [of NOx emissions of 201 to 456 pounds per day] constitute substantial evidence supporting a fair argument for a significant adverse impact.”].) Since expert evidence demonstrates that the Project will exceed the SCAQMD’s CEQA significance threshold, there is substantial evidence that an “unstudied, potentially significant environmental effect[]” exists. (See *San Mateo Gardens, supra*, 1 Cal.5th at 958.)

The City has a duty to investigate issues relating to a project’s potential environmental impacts. (See *County Sanitation Dist. No. 2 v. County of Kern* (2005) 127 Cal.App.4th 1544, 1597–98. [“[U]nder CEQA, the lead agency bears a burden to investigate potential environmental impacts.”].) This is especially true for TACs. The proposed Project will have significant impacts on air quality and health risks by emitting cancer-causing levels of formaldehyde into the air that will expose future employees to cancer risks potentially in excess of SCAQMD’s threshold of significance for cancer health risks of 10 per million.

- a. The Project’s significant impacts to human health from indoor emissions of formaldehyde as well as the mitigation measures available to reduce that impact are new information that could not have been known prior to 2019.**

As discussed above, the Project will result in a significant impact to human health from indoor emissions of formaldehyde. This potential indoor air quality impact could not have been

known until 2019 when the first study was published showing that buildings using composite wood products that comply with California Air Resources Board (“CARB”) formaldehyde standards vastly exceed CEQA significance thresholds for cancer risk. Therefore, this impact was not known and could not have been known when the 1995 EIR was approved. When scientific information was not available at the time of prior CEQA review, more recent studies showing that a project may have more serious human health or environmental impacts constitute significant new information requiring a subsequent EIR rather than an addendum. (*Security Env't'l Sys. v South Coast Air Quality Mgmt. Dist.* (1991) 229 Cal.App.3d 110, 124; *Meridian Ocean Sys. v. State Lands Com.* (1990) 222 Cal.App.3d 153, 169). As such, the 2023 Addendum is improper under CEQA Guidelines sections 15162 and 15164 and an EIR is required. (*See* 14 CCR §§ 15162(a)(3), 15164(a).)

Additionally, Mr. Offermann suggests mitigating the Project’s indoor air quality impacts by requiring all composite wood products used in construction of the Project to be manufactured with CARB-approved no-added formaldehyde (NAF) resins. (Ex. B, pp. 11-13.) Because indoor air quality impacts were not analyzed in the 1995 EIR, the City has not considered the use of NAF composite wood products. Furthermore, such products have only become readily available recently and, thus, could not have been considered in 1995. Because the 2023 Addendum does not adopt any measures to reduce indoor formaldehyde emissions, an EIR is required.

VI. The Project Requires a New EIR and Statement of Overriding Considerations Due to the Remaining Significant and Unavoidable Impacts.

In addition to the requirement for a new EIR due to the identification of new significant impacts and availability of new mitigation measures, an EIR is also required for the Project due to impacts that remain significant and unavoidable. When a prior EIR, such as the 1995 Specific Plan EIR, admits significant and unavoidable impacts, a later project requires its own EIR and statement of overriding considerations for any impacts that remain significant and unavoidable. (*Communities for a Better Env't. v. Cal. Res. Agency* (2002) 103 Cal.App.4th 98, 124-25.)

The 1995 EIR found significant and unavoidable impacts to cultural resources, aesthetics, air quality, natural resources, and water quality. (1995 EIR, pp. 1-5, 1-6 to 1-7.)

With regard to the Project’s air quality impacts, the 2023 Addendum concluded that “the [2023 Addendum] identified a slight reduction in air quality emissions compared to the [1995 EIR]. No new or substantially more severe air quality impacts were identified in the [2023 Addendum].” (2023 Addendum, p. 67.) Later, the 2023 Addendum’s air quality section clarifies that regional construction emissions would be reduced with the proposed Project as compared to the 1995 EIR. (2023 Addendum, p. 70-72.) Therefore, the remaining air quality emissions from the proposed Project remain significant and unavoidable, as concluded in the 1995 EIR. Additionally, the 2023 Addendum does not state that regional construction emissions have been brought to a less than significant level, just that they have been reduced, therefore those emissions are also likely still significant and unavoidable.

Even though air quality impacts were found significant and unavoidable in the 1995 EIR and the City adopted a statement of overriding considerations at that time, the City cannot “adopt one statement of overriding considerations for a prior, more general EIR, and then avoid future political accountability by approving later, more specific projects with significant unavoidable impacts pursuant to the prior EIR and statement of overriding considerations.” (*Communities for a Better Env't., supra*, 103 Cal.App.4th at 124.)

This also applies to the Project’s cultural resources and agricultural and forestry resources, which were previously found significant and unavoidable, and for which the 2023 Addendum stated the analysis had not changed from that of the 1995 EIR. (2023 Addendum, pp. 67, 84).

Therefore, the Project requires its own EIR and statement of overriding considerations to ensure that the City “go on the record and explain specifically why they are approving the later project despite *its* significant unavoidable impacts.” (*Communities for a Better Env't., supra*, 103 Cal.App.4th at 125.)

CONCLUSION

For the reasons above, SAFER respectfully requests that the City Council refrain from approving the Project at this time and, instead, direct staff to prepare an initial study followed by a Project-specific EIR or negative declaration as required by CEQA.

Sincerely,



Amalia Bowley Fuentes
Lozeau Drury LLP

EXHIBIT A



Technical Consultation, Data Analysis and
Litigation Support for the Environment

2656 29th Street, Suite 201
Santa Monica, CA 90405

Matt Hagemann, P.G., C.Hg.
(949) 887-9013
mhagemann@swape.com

Paul E. Rosenfeld, PhD
(310) 795-2335
prosenfeld@swape.com

May 22, 2022

Adam Frankel
Lozeau | Drury LLP
1939 Harrison Street, Suite 150
Oakland, CA 94618

Subject: Comments on the Planning Area 4 – The Market Place Project

Dear Mr. Frankel,

We have reviewed the Addendum to the Lower Peters Canyon Specific Plan Final Environmental Impact Report No. 557 (“Addendum”) for the Planning Area 4 General Plan Amendment (Case No. 00863325-Pga), Zone Change (Case No. 00870374-Pzc), The Market Place Master Plan (Case No. 00882754-Pmp), Tentative Parcel Map No. 2022-162 (Case No. 00884832-Ptp), and Development Agreement (Case No. 00900866-PDA), all referred to as the Planning Area 4 – The Market Place Project (“Project”) located in the City of Irvine (“City”). The Project proposes to demolish 198,594-square-feet (“SF”) of the existing commercial uses and construct 1,261 residential dwelling units on the 15.5-acre site.

Our review concludes that the Addendum fails to adequately evaluate the Project’s air quality and health risk impacts. As a result, emissions and health risk impacts associated with construction and operation of the proposed Project may be underestimated and inadequately addressed. A subsequent Environmental Impact Report (“EIR”) should be prepared to adequately assess and mitigate the potential air quality and health risk impacts that the project may have on the environment.

Air Quality

Incorrect Reliance on CEQA Guidelines § 15162

The Addendum claims that supplemental environmental review is not required for the Project pursuant to CEQA Guidelines § 15162. Specifically, according to CEQA Guidelines § 15162:

“Pursuant to Public Resources Code (PRC) Section 21166 and Section 15162 of the CEQA Guidelines, no subsequent EIR may be required for the Project unless the City determines, on the basis of substantial evidence, that one or more of the following conditions are met:

- A. When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following: [...]
- (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
 - (a) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - (b) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - (c) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
 - (d) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative” (p. 2).

As stated by the Addendum, a subsequent EIR should be prepared if the Project has new or more severe impacts, or there are mitigation measures that are considerably different from those analyzed in the previous EIR that would substantially reduce one or more significant effects on the environment. Here, regarding the above-mentioned conditions, the Addendum states:

“As detailed in Section 4 of this Addendum, with incorporation of applicable standards/requirements and mitigation measures from the Previous Environmental Documentation, and adherence to the City of Irvine Standard Conditions of Approval (SCs), no new significant impacts would result from the development of the Project compared to the previously-approved development in PA 4, nor are there any substantial increases in the severity of environmental impacts identified in the Previous Environmental Documentation. The impacts would be the same as or similar to the impacts resulting from the previously-approved PA 4 development evaluated in the Previous Environmental Documentation. Further, there are no mitigation measures or alternatives previously found not to be feasible in the Previous Environmental Documentation that would in fact be feasible, or that are considerably different from those analyzed in the Previous Environmental Documentation, that would substantially reduce one or more significant effects of the Project, and that the project proponent declines to adopt. Therefore, the City, as the lead agency, has determined that none of the conditions listed

above with respect to the Project have occurred, and an Addendum is the appropriate level of environmental review” (p. 3).

As demonstrated above, the Addendum claims that there are no new significant impacts or mitigation measures to reduce such impacts. However, subsequent environmental review is required pursuant to CEQA Guidelines 15162, as the Project’s air quality analysis is insufficient for the following four reasons.

- (1) The Addendum fails to consider or incorporate additional mitigation measures;
- (2) The Addendum relies upon an incorrect and unsubstantiated air model;
- (3) SWAPE’s updated analysis indicates a potentially significant air quality impact; and
- (4) The Addendum fails to adequately evaluate the Project’s diesel particulate matter emissions.

1) Additional Mitigation Measures Available to Reduce Significant Air Quality Impacts

According to section A.(3)(d) of CEQA Guidelines § 15162, a subsequent EIR should be prepared if there are mitigation measures that are considerably different from those analyzed in the previous EIR that would substantially reduce one or more significant effects on the environment. Regarding applicable mitigation measures, the Addendum states:

“Further, there are no mitigation measures or alternatives previously found not to be feasible in the Previous Environmental Documentation that would in fact be feasible, or that are considerably different from those analyzed in the Previous Environmental Documentation, that would substantially reduce one or more significant effects of the Project, and that the project proponent declines to adopt” (p. 3).

However, review of Addendum demonstrates that the 1995 Lower Peters Canyon Specific Plan EIR (“1995 EIR”) and the 2003 Addendum to the Lower Peters Canyon Specific Plan Program EIR (“2003 Addendum”) only incorporate Mitigation Measure (“MM”) S-5 to address the significant-and-unavoidable air quality impact conclusion (p. 67, 68). However, there are considerably different mitigation measures aside from MM S-5 that would substantially reduce the significant air quality impact. Furthermore, as demonstrated below, updated modeling demonstrates that the proposed Project would result in a potentially significant air quality impact beyond that demonstrated in the 1995 EIR and 2003 Addendum. Additional feasible mitigation measures are suggested in the section of this letter titled “Feasible Mitigation Measures Available to Reduce Emissions.” The Project should not be approved until a subsequent EIR is prepared, incorporating all feasible mitigation to reduce emissions to less-than-significant levels, pursuant to CEQA Guidelines § 15162.

2) Unsubstantiated Input Parameters Used to Estimate Project Emissions

The Addendum’s air quality analysis relies on emissions calculated with the California Emissions Estimator Model (“CalEEMod”) Version 2020.4.0 (p. 70).¹ CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is

¹ “CalEEMod Version 2020.4.0.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/download-model>.

known, the user can change the default values and input project-specific values, but the California Environmental Quality Act (“CEQA”) requires that such changes be justified by substantial evidence. Once all of the values are inputted into the model, the Project's construction and operational emissions are calculated, and "output files" are generated. These output files disclose to the reader what parameters are utilized in calculating the Project's air pollutant emissions and make known which default values are changed as well as provide justification for the values selected.

When reviewing the Project’s CalEEMod output files, provided in the Air Quality and Energy Analysis (“AQ Analysis”) as Appendix C to the Addendum, we found that several model inputs were not consistent with information disclosed in the Project documents. As a result, the Project’s construction and operational emissions are underestimated. A subsequent EIR should be prepared to include an updated air quality analysis that adequately evaluates the impacts that construction and operation of the Project will have on local and regional air quality.

Unsubstantiated Reductions to Architectural and Area Coating Emission Factors

Review of the CalEEMod output files demonstrates that the “The Market Place Project - Proposed Project” model includes several reductions to the default architectural and area coating emission factors (see excerpt below) (Appendix C, pp. 28, 66, 100).

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	100	0
tblAreaCoating	Area_EF_Nonresidential_Interior	100	0
tblAreaCoating	Area_EF_Parking	100	0
tblAreaCoating	Area_EF_Residential_Exterior	50	0
tblAreaCoating	Area_EF_Residential_Interior	50	0

As demonstrated above, the architectural and area coating emission factors are reduced from the default values of 100- and 50- to 0-grams per liter (“g/L”). As previously mentioned, the CalEEMod User’s Guide requires any changes to model defaults be justified.² According to the “User Entered Comments & Non-Default Data” table, the justification provided for these changes is:

“The proposed project would use zero VOC paint” (Appendix C, pp. 27, 65, 99).

Furthermore, the Addendum states:

“Additionally, zero volatile organic compound (VOC) paint would be used for architectural coatings” (p. 47).

² “CalEEMod User’s Guide Version 2020.4.0.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user-s-guide>, p. 1, 14.

However, regardless of the Addendum’s claim that the Project will use zero VOC paint, the reductions to the architectural and area coating emission factors remain unsubstantiated. According to the Association of Environmental Professionals (“AEP”) *CEQA Portal Topic Paper* on mitigation measures:

“While not ‘mitigation’, a good practice is to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP). Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact.”³

As demonstrated above, project design features that are not formally included as mitigation measures may be eliminated from the Project’s design altogether. Until the Addendum explicitly requires the use of zero VOC paints, we cannot verify that they would be implemented, monitored, and enforced on the Project site. As a result, the revised values included in the model are unsupported.

These unsubstantiated reductions present an issue, as CalEEMod uses the architectural and area coating emission factors to calculate the Project’s reactive organic gas/volatile organic compound emissions.⁴ By including unsubstantiated reductions to the default architectural coating emission factors, the model may underestimate the Project’s construction-related and operational ROG/VOC emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Individual Construction Phase Lengths

Review of the CalEEMod output files demonstrates that “The Market Place Project - Proposed Project” model includes several changes to the default individual construction phase lengths (see excerpt below) (Appendix C, pp. 29, 67, 101).

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	130.00
tblConstructionPhase	NumDays	300.00	500.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	30.00	60.00
tblConstructionPhase	NumDays	20.00	40.00
tblConstructionPhase	NumDays	10.00	20.00

As a result of these changes, the model includes the following construction schedule (see excerpt below) (Appendix C, pp. 33-34, 71, 105).

³ “CEQA Portal Topic Paper Mitigation Measures.” AEP, February 2020, *available at*: <https://cegaportal.org/tp/CEQA%20Mitigation%202020.pdf>, p. 6.

⁴ “CalEEMod User’s Guide Version 2020.4.0.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user-s-guide>, p. 36, 42.

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days
1	Demolition	Demolition	10/2/2023	11/10/2023	5	30
2	Site Preparation	Site Preparation	11/27/2023	12/22/2023	5	20
3	Grading	Grading	12/25/2023	3/15/2024	5	60
4	Building Construction	Building Construction	3/18/2024	2/13/2026	5	500
5	Paving	Paving	2/16/2026	4/10/2026	5	40
6	Architectural Coating	Architectural Coating	2/16/2026	8/14/2026	5	130

As demonstrated above, the demolition phase is increased by 50%, from the default value of 20 to 30 days; the site preparation phase is increased by 100%, from the default value of 10 to 20 days; the grading phase is increased by 100%, from the default value of 30 to 60 days; the building construction phase is increased by 67%, from the default value of 300 to 500 days; the paving phase is increased by 100%, from the default value of 20 to 40 days; and the architectural coating phase is increased by 550%, from the default value of 20 to 130 days. As previously mentioned, the CalEEMod User’s Guide requires any changes to model defaults be justified.⁵ According to the “User Entered Comments & Non-Default Data” table, the justification provided for these changes is:

“Construction would begin in October 2023 and be completed in August 2026” (Appendix C, pp. 27, 65, 99).

Furthermore, regarding the Project’s anticipated construction schedule, the Addendum states:

“For purposes of analysis in this Addendum, it is estimated that construction of the Project would be initiated in October 2023 and would be complete by August 2026” (p. 47).

However, the changes to the individual construction phase lengths remain unsubstantiated. While the Addendum indicates the duration of Project construction would be approximately 34 months, the Addendum fails to discuss the *individual* construction phase lengths whatsoever. According to the CalEEMod User’s Guide:

“CalEEMod was also designed to allow the user to change the defaults to reflect site- or project-specific information, when available, provided that the information is supported by substantial evidence as required by CEQA.”⁶

As the Addendum fails to provide substantial evidence to support the revised individual construction phase lengths, we cannot verify the changes. Instead, the model should have proportionately altered the individual phase lengths to match the proposed 34-month construction duration.⁷

⁵ “CalEEMod User’s Guide Version 2020.4.0.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user-s-guide>, p. 1.

⁶ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user-s-guide>, p. 13, 14.

⁷ See Attachment A for corrected construction schedule.

These unsubstantiated changes present an issue, as the construction emissions are improperly spread out over a longer period of time for some phases, but not for others. According to the CalEEMod User’s Guide, each construction phase is associated with different emissions activities (see excerpt below).⁸

Demolition involves removing buildings or structures.

Site Preparation involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading.

Grading involves the cut and fill of land to ensure that the proper base and slope is created for the foundation.

Building Construction involves the construction of the foundation, structures and buildings.

Architectural Coating involves the application of coatings to both the interior and exterior of buildings or structures, the painting of parking lot or parking garage striping, associated signage and curbs, and the painting of the walls or other components such as stair railings inside parking structures.

Paving involves the laying of concrete or asphalt such as in parking lots, roads, driveways, or sidewalks.

By disproportionately extending several phase lengths without proper justification, the model assumes there are a greater number of days to complete the construction activities required by the prolonged phases. As a result, there will be less construction activities required per day and, consequently, less pollutants emitted per day. Therefore, the model may underestimate the peak daily emissions associated with construction and should not be relied upon to determine Project significance.

Unsubstantiated Reduction to Number of Gas Fireplaces

Review of the CalEEMod output files demonstrates that “The Market Place Project - Proposed Project” model includes several changes to the default fireplace values (see excerpt below) (Appendix C, pp. 29, 67, 101).

Table Name	Column Name	Default Value	New Value
tblFireplaces	NumberGas	1,071.85	0.00
tblFireplaces	NumberNoFireplace	126.10	1,261.00
tblFireplaces	NumberWood	63.05	0.00

As demonstrated above, the model assumes that the Project would not include any gas fireplaces. As previously mentioned, the CalEEMod User’s Guide requires any changes to model defaults be justified.⁹ According to the “User Entered Comments & Non-Default Data” table, the justification provided for these changes is:

“The proposed project would not include woodstoves or fireplaces” (Appendix C, pp. 27, 65, 99).

⁸ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user's-guide>, p. 32.

⁹ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/caleemod/user's-guide>, p. 1, 14.

However, this justification is insufficient, as the Addendum fails to mention or explicitly require the Project not to include gas fireplaces. As previously discussed, the CalEEMod User's Guide requires changes to be supported by substantial evidence.¹⁰ As the Addendum fails to provide substantial evidence to support the assumption that no gas fireplaces would be included in the Project design, we cannot verify the changes.

This potential underestimation presents an issue, as CalEEMod uses the number of gas fireplaces to calculate the Project's area-source operational emissions.¹¹ By including unsubstantiated reductions to the gas fireplace values, the model may underestimate the Project's area-source operational emissions and should not be relied upon to determine Project significance.

Incorrect Application of Tier 4 Final Emissions Standards

Review of the CalEEMod output files demonstrates that the "The Market Place Project - Proposed Project" model assumes that the Project's off-road construction equipment fleet would meet Tier 4 Final emissions standards (see excerpt below) (Appendix C, pp. 28, 66, 100).

¹⁰ "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 13, 14.

¹¹ "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 40-41.

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

As previously mentioned, the CalEEMod User’s Guide requires any changes to model defaults be justified.¹² According to the “User Entered Comments and Non-Default Data” table, the justification provided for these changes is:

“Assuming compliance with SCAQMD Rule 403 measures and use of Tier 4 construction equipment” (Appendix C, pp. 28, 41, 83).

Furthermore, the Addendum states that “Tier 4 construction equipment would be used during construction” (p. 47). However, the inclusion of Tier 4 Final emissions standards remains unsupported for two reasons.

First, as previously discussed, according to the AEP *CEQA Portal Topic Paper* on mitigation measures:

¹² “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, available at: <https://www.aqmd.gov/calceemod/user's-guide>, p. 1, 14.

“While not ‘mitigation’, a good practice is to include those project design feature(s) that address environmental impacts in the mitigation monitoring and reporting program (MMRP). Often the MMRP is all that accompanies building and construction plans through the permit process. If the design features are not listed as important to addressing an environmental impact, it is easy for someone not involved in the original environmental process to approve a change to the project that could eliminate one or more of the design features without understanding the resulting environmental impact.”¹³

As demonstrated above, project design features that are not formally included in the mitigation monitoring and reporting program (“MMRP”) may be eliminated from the Project’s design altogether. As the use of Tier 4 construction equipment is not formally included as a mitigation measure, we cannot guarantee that the emission standards would be implemented, monitored, and enforced on the Project site. Therefore, the model’s inclusion of Tier 4 emission standards is unsupported.

Second, the use of Tier 4 *Final* emissions standards is unsubstantiated. As demonstrated above, the Addendum fails to specifically require the more efficient Tier 4 *Final* emission standards. The United States Environmental Protection Agency (“U.S. EPA”) has slowly adopted more stringent standards to lower the emissions from off-road construction equipment. Since 1994, Tier 1, Tier 2, Tier 3, Tier 4 Interim, and Tier 4 Final construction equipment have been phased in over time. Tier 4 Final represents the cleanest burning equipment and therefore has the lowest emissions compared to other tiers, including Tier 4 Interim equipment (see excerpt below):

Maximum horsepower	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015+	
25shp<50																						
50shp<75																						
75shp<100																						
100shp<175																						
175shp<300																						
300shp<600																						
600shp<750																						
Mobile Machines > 750hp																						
750hp<GEN ≤1200hp																						
GEN>1200 hp																						

Source: derived from California Air Resources Board, http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls.

- a) When ARB and USEPA standards differ, the standards shown here represent the more stringent of the two.
- b) Standards given for all sizes of Tier 1 engines are hydrocarbons/oxides of nitrogen (NOx)/carbon monoxide (CO)/particulate matter (PM) in grams per brakehorsepower per hour (g/bhp-hr).
- c) Standards given for all sizes of Tier 2 and Tier 3 engines, and Tier 4 engines below 75 horsepower are non-methane hydrocarbons (NMHC)+NOx/CO/PM in g/bhp-hr.
- d) Standards given for Tier 4 engines above 75 horsepower are NMHC/NOx/CO/PM in g/bhp-hr.
- e) Engine families in this power category may alternately meet Tier 3 PM standards (0.30 g/bhp-hr) from 2008-2011 in exchange for introducing final PM standards in 2012.
- f) The implementation schedule shown is the three-year alternate NOx approach. Other schedules are available.
- g) Certain manufacturers have agreed to comply with these standards by 2005.



As demonstrated in the figure above, Tier 4 Interim equipment has higher emission levels than Tier 4 Final equipment. Therefore, by modeling construction emissions assuming a full Tier 4 Final equipment

¹³ “CEQA Portal Topic Paper Mitigation Measures.” AEP, February 2020, available at: <https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf>, p. 6.

fleet, the Addendum fails to account for higher emissions that may occur as a result of the use of Tier 4 Interim equipment. Until a subsequent EIR is prepared explicitly requiring Tier 4 *Final* engines during all phases of construction in a formal mitigation measure, the model should not be relied upon to determine Project significance.

Incorrect Application of Operational Energy-Related Mitigation Measure

Review of the CalEEMod output files demonstrates that “The Market Place Project - Proposed Project” model includes the following energy-related operational mitigation measure (see excerpt below) (Appendix C, pp. 55, 93, 127).

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

As previously mentioned, the CalEEMod User’s Guide requires any changes to model defaults be justified.¹⁴ According to the “User Entered Comments & Non-Default Data” table, the justification provided for the inclusion of this energy-related operational mitigation measure is:

“The proposed project’s solar PV system would provide approximately 10% of the total project electrical load,” respectively (Appendix C, pp. 28, 41, 83).

Furthermore, the Addendum states that the Project would incorporate “photovoltaic (PV) systems located on roofs and top deck of the parking garages” (p. 11). However, the inclusion of the above-mentioned operational mitigation measure remains unsubstantiated as the Addendum fails to explicitly require on-site solar panels in a formal mitigation measure. As previously discussed, project design features may be eliminated from the Project’s design.¹⁵ As the use of renewable energy is not included as a mitigation measure, we cannot guarantee that it would be implemented, monitored, and enforced on the Project site, and its inclusion in the model is incorrect. By including an operational mitigation measure without properly committing to its implementation, the model may underestimate the Project’s operational energy-related emissions and should not be relied upon to determine Project significance.

Incorrect Application of Operational Area-Related Mitigation Measures

Review of the CalEEMod output files demonstrates that “The Market Place Project - Proposed Project” model includes the following area-related operational mitigation measures (see excerpt below) (Appendix C, pp. 58, 95, 129).

¹⁴ “CalEEMod User’s Guide.” California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 1, 14.

¹⁵ “CEQA Portal Topic Paper Mitigation Measures.” AEP, February 2020, *available at*: <https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf>, p. 6.

6.1 Mitigation Measures Area

Use Electric Lawnmower
Use Electric Leafblower
Use Electric Chainsaw
Use Low VOC Paint - Residential Interior
Use Low VOC Paint - Residential Exterior
Use Low VOC Paint - Non-Residential Interior
Use Low VOC Paint - Non-Residential Exterior
No Hearths Installed

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.¹⁶ According to the "User Entered Comments & Non-Default Data" table, the justification provided for the inclusion of this area-related operational mitigation measures is:

"Assuming no hearth, the use of zero VOC paint, and the use of electric landscaping equipment" (Appendix C, pp. 28, 41, 83).

However, the inclusion of the above-mentioned operational mitigation measures remains unsubstantiated, as none of them are incorporated as formal mitigation measures. Furthermore, the Addendum fails to mention or discuss the use of electric gardening equipment or lack of hearths whatsoever. As a result, the model may underestimate the Project's area-related operational emissions and should not be relied upon to determine Project significance.

3) Updated Analysis Indicates Potentially Significant Air Quality Impact

In an effort to more accurately estimate Project's construction-related and operational emissions, we prepared an updated CalEEMod model, using the Project-specific information provided by the Addendum. In our updated model, we omitted the unsubstantiated changes to the architectural and area coating emission factors and number of gas fireplaces, proportionately altered the individual construction phase lengths to match the proposed duration of 34 months, and excluded the incorrect Tier 4 Final emission standards as well as the operational energy- and area-related operational mitigation measures.¹⁷

¹⁶ "CalEEMod User's Guide." California Air Pollution Control Officers Association (CAPCOA), May 2021, *available at*: <https://www.aqmd.gov/caleemod/user's-guide>, p. 1, 14.

¹⁷ See Attachment B for CalEEMod output files.

Our updated analysis estimates that the Project’s combined construction-related VOC emissions exceed the applicable South Coast Air Quality Management District (“SCAQMD”) threshold of 75 pounds per day (“lbs/day”), as referenced by the Addendum (p. 72, Table 4.3-1) (see table below).¹⁸

SWAPE Criteria Air Pollutant Emissions	
Construction	ROG (lbs/day)
Addendum	4.2
SWAPE	214.3
% Increase	5,002%
SCAQMD Threshold	75
<i>Exceeds?</i>	Yes

As demonstrated above, the Project’s combined construction-related VOC emissions, as estimated by SWAPE, increase by approximately 5,002% and exceed the applicable SCAQMD significance threshold. Thus, our model demonstrates that the Project would result in a potentially significant air quality impact that was not previously identified or addressed in the Addendum. As a result, a subsequent EIR should be prepared to adequately assess and mitigate the potential air quality impacts that the Project may have on the environment.

4) Diesel Particulate Matter Emissions Inadequately Evaluated

The Addendum conducts a health risk analysis (“HRA”) evaluating impacts from exposure to diesel particulate matter (“DPM”) emissions during Project construction. Specifically, the Addendum estimates that the maximum cancer risk posed to nearby, existing residential sensitive receptors as a result of Project construction would be 5.95 in one million, which would not exceed the CEQA significance threshold of 10 in one million (see excerpt below) (p. 76, Table 4.3-5).

Table 4.3-5 Health Risks from Project Construction to Off-site Receptors

Location	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index
Residential Receptor Risk	5.95	0.007	0.000
Worker Receptor Risk	0.18	0.006	0.000
School Receptor Risk	0.06	0.000	0.000
SCAQMD Significance Threshold	10.0 in one million	1.0	1.0
Significant?	No	No	No

Source: (LSA, 2023a)

¹⁸ “CEQA Air Quality Handbook.” SLOCAPCD, April 2012, available at: <https://www.slocleanair.org/rules-regulations/land-use-ceqa.php>. See also: https://storage.googleapis.com/slocleanair-org/images/cms/upload/files/CEQA_Handbook_2012_v2%20%28Updated%20MemoTable1-1_July2021%29_LinkedwithMemo.pdf, p. 2-2.

However, the Addendum’s evaluation of the Project’s potential health risk impacts, as well as the subsequent less-than-significant impact conclusion, is unreliable for two reasons.

First, the Addendum’s construction HRA is incorrect, as it relies upon emissions estimates from a flawed air model, as discussed above in the section titled “Unsubstantiated Input Parameters Used to Estimate Project Emissions.” As such, the HRA utilizes a potentially underestimated DPM concentration to calculate the health risk associated with Project construction. As a result, the Addendum’s HRA and resulting cancer risk should not be relied upon to determine Project significance.

Second, the Addendum fails to mention or provide the exposure assumptions for the HRA, such as the age sensitivity factors (“ASF”) or fraction of time at home (“FAH”) values whatsoever. Until the Addendum substantiates the use of correct exposure assumptions, the HRA may underestimate the cancer risk posed to nearby, existing sensitive receptors because of Project construction. Furthermore, according to the *Risk Assessment Guidelines* provided by the Office of Environmental Health Hazard Assessment (“OEHHA”), the organization responsible for providing guidance on conducting HRAs in California, the Addendum’s models should have used the following equation:¹⁹

A. Equation 8.2.4 A: $RISK_{inh-res} = DOSE_{air} \times CPF \times ASF \times ED/AT \times FAH$

- 7. $RISK_{inh-res}$ = Residential inhalation cancer risk
- 8. $DOSE_{air}$ = Daily inhalation dose (mg/kg-day)
- 9. CPF = Inhalation cancer potency factor (mg/kg-day⁻¹)
- 10. ASF = Age sensitivity factor for a specified age group (unitless)
- 11. ED = Exposure duration (in years) for a specified age group
- 12. AT = Averaging time for lifetime cancer risk (years)
- 13. FAH = Fraction of time spent at home (unitless)

However, the Addendum and associated documents fail to include a dose and risk equation to calculate the Project’s construction cancer risks. As such, we cannot verify that the Addendum’s HRA is accurate, and the Project’s cancer risks may be underestimated.

Mitigation

Feasible Mitigation Measures Available to Reduce Emissions

Our analysis demonstrates that the Project would result in potentially significant air quality impacts that should be mitigated further. In an effort to reduce the Project’s emissions, we recommend consideration of the following measures from SCAG’s 2020 *RTP/SCS PEIR’s Air Quality Project Level Mitigation Measures* (“PMM-AQ-1”) as described below:²⁰

¹⁹ “Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments.” OEHHA, February 2015, available at: <https://oehha.ca.gov/media/downloads/crn/2015guidancemanual.pdf>, p. 8-7 Equation 8.2.4.

²⁰ “4.0 Mitigation Measures.” Connect SoCal Program Environmental Impact Report Addendum #1, September 2020, available at: https://scag.ca.gov/sites/main/files/file-attachments/fpeir_connectsocial_addendum_4_mitigationmeasures.pdf?1606004420, p. 4.0-2 – 4.0-10; 4.0-19 –

SCAG RTP/SCS 2020-2045

Air Quality Project Level Mitigation Measures – PMM-AQ-1:

In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the *State CEQA Guidelines*, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to violating air quality standards. Such measures may include the following or other comparable measures identified by the Lead Agency:

- a) Minimize land disturbance.
- b) Suspend grading and earth moving when wind gusts exceed 25 miles per hour unless the soil is wet enough to prevent dust plumes.
- c) Cover trucks when hauling dirt.
- d) Stabilize the surface of dirt piles if not removed immediately.
- e) Limit vehicular paths on unpaved surfaces and stabilize any temporary roads.
- f) Minimize unnecessary vehicular and machinery activities.
- g) Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.
- h) Revegetate disturbed land, including vehicular paths created during construction to avoid future off-road vehicular activities.
- j) Require contractors to assemble a comprehensive inventory list (i.e., make, model, engine year, horsepower, emission rates) of all heavy-duty off-road (portable and mobile) equipment (50 horsepower and greater) that could be used an aggregate of 40 or more hours for the construction project. Prepare a plan for approval by the applicable air district demonstrating achievement of the applicable percent reduction for a CARB-approved fleet.
- k) Ensure that all construction equipment is properly tuned and maintained.
- l) Minimize idling time to 5 minutes—saves fuel and reduces emissions.
- m) Provide an operational water truck on-site at all times. Use watering trucks to minimize dust; watering should be sufficient to confine dust plumes to the project work areas. Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.
- n) Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
- o) Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly and ensure safety at construction sites.
- p) As appropriate require that portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, obtain CARB Portable Equipment Registration with the state or a local district permit. Arrange appropriate consultations with the CARB or the District to determine registration and permitting requirements prior to equipment operation at the site.
- q) Require projects within 500 feet of residences, hospitals, or schools to use Tier 4 equipment for all engines above 50 horsepower (hp) unless the individual project can demonstrate that Tier 4 engines would not be required to mitigate emissions below significance thresholds.

4.0-23; See also: “Certified Final Connect SoCal Program Environmental Impact Report.” Southern California Association of Governments (SCAG), May 2020, available at: <https://scag.ca.gov/peir>.

r) Projects located within the South Coast Air Basin should consider applying for South Coast AQMD “SOON” funds which provides funds to applicable fleets for the purchase of commercially available low-emission heavy-duty engines to achieve near-term reduction of NOx emissions from in-use off-road diesel vehicles.
s) Projects located within AB 617 communities should review the applicable Community Emissions Reduction Plan (CERP) for additional mitigation that can be applied to individual projects.
t) Where applicable, projects should provide information about air quality related programs to schools, including the Environmental Justice Community Partnerships (EJCP), Clean Air Ranger Education (CARE), and Why Air Quality Matters programs.
u) Projects should work with local cities and counties to install adequate signage that prohibits truck idling in certain locations (e.g., near schools and sensitive receptors).
y) Projects that will introduce sensitive receptors within 500 feet of freeways and other sources should consider installing high efficiency of enhanced filtration units, such as Minimum Efficiency Reporting Value (MERV) 13 or better. Installation of enhanced filtration units can be verified during occupancy inspection prior to the issuance of an occupancy permit.
z) Develop an ongoing monitoring, inspection, and maintenance program for the MERV filters.
aa) Consult the SCAG Environmental Justice Toolbox for potential measures to address impacts to low-income and/or minority communities.
bb) The following criteria related to diesel emissions shall be implemented on by individual project sponsors as appropriate and feasible: <ul style="list-style-type: none"> - Diesel nonroad vehicles on site for more than 10 total days shall have either (1) engines that meet EPA on road emissions standards or (2) emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85% - Diesel generators on site for more than 10 total days shall be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%. - Nonroad diesel engines on site shall be Tier 2 or higher. - Diesel nonroad construction equipment on site for more than 10 total days shall have either (1) engines meeting EPA Tier 4 nonroad emissions standards or (2) emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85% for engines for 50 hp and greater and by a minimum of 20% for engines less than 50 hp. - Emission control technology shall be operated, maintained, and serviced as recommended by the emission control technology manufacturer. - Diesel vehicles, construction equipment, and generators on site shall be fueled with ultra-low sulfur diesel fuel (ULSD) or a biodiesel blend approved by the original engine manufacturer with sulfur content of 15 ppm or less. - The construction contractor shall maintain a list of all diesel vehicles, construction equipment, and generators to be used on site. The list shall include the following: <ul style="list-style-type: none"> i. Contractor and subcontractor name and address, plus contact person responsible for the vehicles or equipment. ii. Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation. iii. For the emission control technology installed: technology type, serial number, make, model, manufacturer, EPA/CARB verification number/level, and installation date and hour-meter reading on installation date. - The contractor shall establish generator sites and truck-staging zones for vehicles waiting to load or unload material on site. Such zones shall be located where diesel emissions have the least impact on abutters, the general public, and especially sensitive receptors such as hospitals, schools, daycare facilities, elderly housing, and convalescent facilities. - The contractor shall maintain a monthly report that, for each on road diesel vehicle, nonroad construction equipment, or generator onsite, includes:

- i. Hour-meter readings on arrival on-site, the first and last day of every month, and on off-site date.
- ii. Any problems with the equipment or emission controls.
- iii. Certified copies of fuel deliveries for the time period that identify:
 - 1. Source of supply
 - 2. Quantity of fuel
 - 3. Quantity of fuel, including sulfur content (percent by weight)

cc) Project should exceed Title-24 Building Envelope Energy Efficiency Standards (California Building Standards Code). The following measures can be used to increase energy efficiency:

- Provide pedestrian network improvements, such as interconnected street network, narrower roadways and shorter block lengths, sidewalks, accessibility to transit and transit shelters, traffic calming measures, parks and public spaces, minimize pedestrian barriers.
- Provide traffic calming measures, such as:
 - i. Marked crosswalks
 - ii. Count-down signal timers
 - iii. Curb extensions
 - iv. Speed tables
 - iv. Raised crosswalks
 - v. Raised intersections
 - vi. Median islands
 - vii. Tight corner radii
 - viii. Roundabouts or mini-circles
 - ix. On-street parking
 - x. Chicanes/chokers
- Create urban non-motorized zones
- Provide bike parking in non-residential and multi-unit residential projects
- Dedicate land for bike trails
- Limit parking supply through:
 - i. Elimination (or reduction) of minimum parking requirements
 - ii. Creation of maximum parking requirements
 - iii. Provision of shared parking
- Require residential area parking permit.
- Provide ride-sharing programs
 - i. Designate a certain percentage of parking spacing for ride sharing vehicles
 - ii. Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles
 - iii. Providing a web site or messaging board for coordinating rides
 - iv. Permanent transportation management association membership and finding requirement.

These measures offer a cost-effective, feasible way to incorporate lower-emitting design features into the proposed Project, which subsequently, reduce emissions released during Project construction and operation. A subsequent EIR should be prepared to include all feasible mitigation measures, as well as include an updated air quality analysis to ensure that the necessary mitigation measures are implemented to reduce emissions to below thresholds. The subsequent EIR should also demonstrate a commitment to the implementation of these measures prior to Project approval, to ensure that the Project's potentially significant emissions are reduced to the maximum extent possible.

Disclaimer

SWAPE has received limited discovery regarding this project. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of

care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,

A handwritten signature in blue ink that reads "Matt Hagemann".

Matt Hagemann, P.G., C.Hg.

A handwritten signature in blue ink that reads "Paul Rosenfeld".

Paul E. Rosenfeld, Ph.D.

Attachment A: Construction Schedule Calculations

Attachment B: Updated CalEEMod Output Files

Attachment C: Matt Hagemann CV

Attachment D: Paul Rosenfeld CV

Construction Schedule Calculations						
Phase	Default Phase Length	Construction Duration	%	Construction Duration	Revised Phase Length	
Demolition	20	557	0.0359	1047	38	
Site Preparation	10	557	0.0180	1047	19	
Grading	30	557	0.0539	1047	56	
Construction	300	557	0.5386	1047	564	
Paving	20	557	0.0359	1047	38	
Architectural Coating	20	557	0.0359	1047	38	

	Total Default Construction Duration	Revised Construction Duration
Start Date	10/2/2023	10/2/2023
End Date	4/11/2025	8/14/2026
Total Days	557	1047

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

The Market Place - Proposed Project
Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	2,006.00	Space	0.00	802,400.00	0
Apartments Mid Rise	1,261.00	Dwelling Unit	15.50	1,261,000.00	3606

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	30
Climate Zone	8			Operational Year	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the Addendum's model.

Land Use - Consistent with the Addendum's model.

Construction Phase - See SWAPE comment regarding "Unsubstantiated Changes to Individual Construction Phase Lengths."

Grading - Consistent with the Addendum's model.

Demolition - Consistent with the Addendum's model.

Architectural Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors"

Vehicle Trips - Consistent with the Addendum's model.

Woodstoves - See SWAPE comment regarding "Unsubstantiated Reduction to Number of Gas Fireplaces." No wood-burning appliances consistent with the Addendum's model.

Area Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors"

Energy Use - Consistent with the Addendum's model.

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction Off-road Equipment Mitigation - See SWAPE comment regarding "Incorrect Application of Tier 4 Final Emissions Standards." SCAQMD Rule 403 measures consistent with the Addendum's model.

Area Mitigation - See SWAPE comment regarding "Incorrect Application of Operational Area-Related Mitigation Measures."

Energy Mitigation - See SWAPE comment regarding "Incorrect Application of Operational Energy-Related Mitigation Measures."

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	38.00
tblConstructionPhase	NumDays	300.00	564.00
tblConstructionPhase	NumDays	20.00	38.00
tblConstructionPhase	NumDays	30.00	56.00
tblConstructionPhase	NumDays	20.00	38.00
tblConstructionPhase	NumDays	10.00	19.00
tblConstructionPhase	PhaseEndDate	4/11/2025	8/19/2026
tblConstructionPhase	PhaseEndDate	2/14/2025	5/5/2026
tblConstructionPhase	PhaseEndDate	10/27/2023	11/22/2023
tblConstructionPhase	PhaseEndDate	12/22/2023	3/6/2024
tblConstructionPhase	PhaseEndDate	3/14/2025	6/26/2026
tblConstructionPhase	PhaseEndDate	11/10/2023	12/19/2023
tblConstructionPhase	PhaseStartDate	3/15/2025	6/27/2026
tblConstructionPhase	PhaseStartDate	12/23/2023	3/7/2024
tblConstructionPhase	PhaseStartDate	11/11/2023	12/20/2023
tblConstructionPhase	PhaseStartDate	2/15/2025	5/6/2026
tblConstructionPhase	PhaseStartDate	10/28/2023	11/23/2023
tblEnergyUse	NT24NG	5,516.00	1,379.00
tblFireplaces	NumberGas	1,071.85	1,134.90
tblFireplaces	NumberWood	63.05	0.00
tblGrading	MaterialExported	0.00	7,500.00
tblLandUse	LotAcreage	18.05	0.00
tblLandUse	LotAcreage	33.18	15.50

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	HO_TL	8.70	9.00
tblVehicleTrips	HS_TL	5.90	9.00
tblVehicleTrips	HW_TL	14.70	9.00
tblVehicleTrips	ST_TR	4.91	6.92
tblVehicleTrips	SU_TR	4.09	6.92
tblVehicleTrips	WD_TR	5.44	6.92
tblWoodstoves	NumberCatalytic	63.05	0.00
tblWoodstoves	NumberNoncatalytic	63.05	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0842	0.8738	0.6956	1.6900e-003	0.4129	0.0371	0.4500	0.1377	0.0344	0.1721	0.0000	152.7454	152.7454	0.0386	4.9400e-003	155.1802
2024	0.6185	3.5495	6.4509	0.0214	1.8880	0.1106	1.9986	0.5325	0.1033	0.6358	0.0000	1,984.7210	1,984.7210	0.1575	0.1013	2,018.8507
2025	0.6197	3.1581	6.7392	0.0234	2.0023	0.0838	2.0862	0.5367	0.0788	0.6155	0.0000	2,172.2521	2,172.2521	0.1350	0.1158	2,210.1455
2026	4.2934	1.2584	2.6529	8.6800e-003	0.7379	0.0376	0.7755	0.1977	0.0353	0.2329	0.0000	804.3404	804.3404	0.0587	0.0394	817.5425
Maximum	4.2934	3.5495	6.7392	0.0234	2.0023	0.1106	2.0862	0.5367	0.1033	0.6358	0.0000	2,172.2521	2,172.2521	0.1575	0.1158	2,210.1455

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0842	0.8738	0.6956	1.6900e-003	0.4129	0.0371	0.4500	0.1377	0.0344	0.1721	0.0000	152.7452	152.7452	0.0386	4.9400e-003	155.1800
2024	0.6185	3.5495	6.4509	0.0214	1.8880	0.1106	1.9986	0.5325	0.1033	0.6358	0.0000	1,984.7205	1,984.7205	0.1575	0.1013	2,018.8502
2025	0.6197	3.1581	6.7392	0.0234	2.0023	0.0838	2.0862	0.5367	0.0788	0.6155	0.0000	2,172.2517	2,172.2517	0.1350	0.1158	2,210.1451
2026	4.2934	1.2584	2.6529	8.6800e-003	0.7379	0.0376	0.7755	0.1977	0.0353	0.2329	0.0000	804.3402	804.3402	0.0587	0.0394	817.5424
Maximum	4.2934	3.5495	6.7392	0.0234	2.0023	0.1106	2.0862	0.5367	0.1033	0.6358	0.0000	2,172.2517	2,172.2517	0.1575	0.1158	2,210.1451

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-2-2023	1-1-2024	0.9753	0.9753
2	1-2-2024	4-1-2024	1.1620	1.1620
3	4-2-2024	7-1-2024	0.9680	0.9680
4	7-2-2024	10-1-2024	0.9789	0.9789
5	10-2-2024	1-1-2025	1.0083	1.0083
6	1-2-2025	4-1-2025	0.9374	0.9374
7	4-2-2025	7-1-2025	0.9191	0.9191
8	7-2-2025	10-1-2025	0.9295	0.9295

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

9	10-2-2025	1-1-2026	0.9584	0.9584
10	1-2-2026	4-1-2026	0.9242	0.9242
11	4-2-2026	7-1-2026	0.9014	0.9014
12	7-2-2026	9-30-2026	3.7757	3.7757
		Highest	3.7757	3.7757

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.4341	0.3852	13.1176	2.1900e-003		0.0912	0.0912		0.0912	0.0912	0.0000	293.8237	293.8237	0.0257	5.0000e-003	295.9550
Energy	0.0477	0.4075	0.1734	2.6000e-003		0.0329	0.0329		0.0329	0.0329	0.0000	2,103.3847	2,103.3847	0.1468	0.0253	2,114.6055
Mobile	3.7298	3.9782	36.6955	0.0839	9.5610	0.0580	9.6190	2.5521	0.0539	2.6060	0.0000	7,752.6527	7,752.6527	0.4928	0.3355	7,864.9600
Waste						0.0000	0.0000		0.0000	0.0000	117.7469	0.0000	117.7469	6.9586	0.0000	291.7131
Water						0.0000	0.0000		0.0000	0.0000	26.0653	291.7776	317.8430	2.7018	0.0662	405.1148
Total	9.2116	4.7709	49.9865	0.0887	9.5610	0.1822	9.7431	2.5521	0.1781	2.7302	143.8123	10,441.6386	10,585.4509	10.3256	0.4321	10,972.3483

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.4341	0.3852	13.1176	2.1900e-003		0.0912	0.0912		0.0912	0.0912	0.0000	293.8237	293.8237	0.0257	5.0000e-003	295.9550
Energy	0.0477	0.4075	0.1734	2.6000e-003		0.0329	0.0329		0.0329	0.0329	0.0000	2,103.3847	2,103.3847	0.1468	0.0253	2,114.6055
Mobile	3.7298	3.9782	36.6955	0.0839	9.5610	0.0580	9.6190	2.5521	0.0539	2.6060	0.0000	7,752.6527	7,752.6527	0.4928	0.3355	7,864.9600
Waste						0.0000	0.0000		0.0000	0.0000	117.7469	0.0000	117.7469	6.9586	0.0000	291.7131
Water						0.0000	0.0000		0.0000	0.0000	26.0653	291.7776	317.8430	2.7018	0.0662	405.1148
Total	9.2116	4.7709	49.9865	0.0887	9.5610	0.1822	9.7431	2.5521	0.1781	2.7302	143.8123	10,441.6386	10,585.4509	10.3256	0.4321	10,972.3483

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/2/2023	11/22/2023	5	38	
2	Site Preparation	Site Preparation	11/23/2023	12/19/2023	5	19	
3	Grading	Grading	12/20/2023	3/6/2024	5	56	

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4	Building Construction	Building Construction	3/7/2024	5/5/2026	5	564
5	Paving	Paving	5/6/2026	6/26/2026	5	38
6	Architectural Coating	Architectural Coating	6/27/2026	8/19/2026	5	38

Acres of Grading (Site Preparation Phase): 28.5

Acres of Grading (Grading Phase): 168

Acres of Paving: 0

Residential Indoor: 2,553,525; Residential Outdoor: 851,175; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 48,144 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	903.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	938.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,245.00	266.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	249.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0977	0.0000	0.0977	0.0148	0.0000	0.0148	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0431	0.4082	0.3732	7.4000e-004		0.0190	0.0190		0.0176	0.0176	0.0000	64.5849	64.5849	0.0181	0.0000	65.0371
Total	0.0431	0.4082	0.3732	7.4000e-004	0.0977	0.0190	0.1167	0.0148	0.0176	0.0324	0.0000	64.5849	64.5849	0.0181	0.0000	65.0371

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.2000e-004	0.0566	0.0185	2.5000e-004	7.7500e-003	3.5000e-004	8.1000e-003	2.1300e-003	3.3000e-004	2.4600e-003	0.0000	26.2055	26.2055	2.6400e-003	4.2000e-003	27.5243
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	5.8000e-004	8.2900e-003	3.0000e-005	3.1300e-003	2.0000e-005	3.1400e-003	8.3000e-004	1.0000e-005	8.5000e-004	0.0000	2.3789	2.3789	6.0000e-005	6.0000e-005	2.3974
Total	1.7200e-003	0.0572	0.0268	2.8000e-004	0.0109	3.7000e-004	0.0112	2.9600e-003	3.4000e-004	3.3100e-003	0.0000	28.5844	28.5844	2.7000e-003	4.2600e-003	29.9217

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0977	0.0000	0.0977	0.0148	0.0000	0.0148	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0431	0.4082	0.3732	7.4000e-004		0.0190	0.0190		0.0176	0.0176	0.0000	64.5849	64.5849	0.0181	0.0000	65.0370
Total	0.0431	0.4082	0.3732	7.4000e-004	0.0977	0.0190	0.1167	0.0148	0.0176	0.0324	0.0000	64.5849	64.5849	0.0181	0.0000	65.0370

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.2000e-004	0.0566	0.0185	2.5000e-004	7.7500e-003	3.5000e-004	8.1000e-003	2.1300e-003	3.3000e-004	2.4600e-003	0.0000	26.2055	26.2055	2.6400e-003	4.2000e-003	27.5243
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	5.8000e-004	8.2900e-003	3.0000e-005	3.1300e-003	2.0000e-005	3.1400e-003	8.3000e-004	1.0000e-005	8.5000e-004	0.0000	2.3789	2.3789	6.0000e-005	6.0000e-005	2.3974
Total	1.7200e-003	0.0572	0.0268	2.8000e-004	0.0109	3.7000e-004	0.0112	2.9600e-003	3.4000e-004	3.3100e-003	0.0000	28.5844	28.5844	2.7000e-003	4.2600e-003	29.9217

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1867	0.0000	0.1867	0.0960	0.0000	0.0960	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0253	0.2615	0.1733	3.6000e-004		0.0120	0.0120		0.0111	0.0111	0.0000	31.7782	31.7782	0.0103	0.0000	32.0351
Total	0.0253	0.2615	0.1733	3.6000e-004	0.1867	0.0120	0.1988	0.0960	0.0111	0.1070	0.0000	31.7782	31.7782	0.0103	0.0000	32.0351

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.5000e-004	4.9700e-003	2.0000e-005	1.8800e-003	1.0000e-005	1.8900e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.4273	1.4273	3.0000e-005	3.0000e-005	1.4384
Total	4.8000e-004	3.5000e-004	4.9700e-003	2.0000e-005	1.8800e-003	1.0000e-005	1.8900e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.4273	1.4273	3.0000e-005	3.0000e-005	1.4384

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1867	0.0000	0.1867	0.0960	0.0000	0.0960	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0253	0.2615	0.1733	3.6000e-004		0.0120	0.0120		0.0111	0.0111	0.0000	31.7781	31.7781	0.0103	0.0000	32.0351
Total	0.0253	0.2615	0.1733	3.6000e-004	0.1867	0.0120	0.1988	0.0960	0.0111	0.1070	0.0000	31.7781	31.7781	0.0103	0.0000	32.0351

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.5000e-004	4.9700e-003	2.0000e-005	1.8800e-003	1.0000e-005	1.8900e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.4273	1.4273	3.0000e-005	3.0000e-005	1.4384
Total	4.8000e-004	3.5000e-004	4.9700e-003	2.0000e-005	1.8800e-003	1.0000e-005	1.8900e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.4273	1.4273	3.0000e-005	3.0000e-005	1.4384

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1136	0.0000	0.1136	0.0229	0.0000	0.0229	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0133	0.1381	0.1122	2.5000e-004		5.7000e-003	5.7000e-003		5.2400e-003	5.2400e-003	0.0000	21.8141	21.8141	7.0600e-003	0.0000	21.9905
Total	0.0133	0.1381	0.1122	2.5000e-004	0.1136	5.7000e-003	0.1193	0.0229	5.2400e-003	0.0282	0.0000	21.8141	21.8141	7.0600e-003	0.0000	21.9905

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4000e-004	8.4000e-003	2.7500e-003	4.0000e-005	1.1500e-003	5.0000e-005	1.2000e-003	3.2000e-004	5.0000e-005	3.6000e-004	0.0000	3.8888	3.8888	3.9000e-004	6.2000e-004	4.0845
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	1.6000e-004	2.3300e-003	1.0000e-005	8.8000e-004	0.0000	8.8000e-004	2.3000e-004	0.0000	2.4000e-004	0.0000	0.6678	0.6678	2.0000e-005	2.0000e-005	0.6729
Total	3.7000e-004	8.5600e-003	5.0800e-003	5.0000e-005	2.0300e-003	5.0000e-005	2.0800e-003	5.5000e-004	5.0000e-005	6.0000e-004	0.0000	4.5565	4.5565	4.1000e-004	6.4000e-004	4.7574

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1136	0.0000	0.1136	0.0229	0.0000	0.0229	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0133	0.1381	0.1122	2.5000e-004		5.7000e-003	5.7000e-003		5.2400e-003	5.2400e-003	0.0000	21.8141	21.8141	7.0600e-003	0.0000	21.9904
Total	0.0133	0.1381	0.1122	2.5000e-004	0.1136	5.7000e-003	0.1193	0.0229	5.2400e-003	0.0282	0.0000	21.8141	21.8141	7.0600e-003	0.0000	21.9904

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4000e-004	8.4000e-003	2.7500e-003	4.0000e-005	1.1500e-003	5.0000e-005	1.2000e-003	3.2000e-004	5.0000e-005	3.6000e-004	0.0000	3.8888	3.8888	3.9000e-004	6.2000e-004	4.0845
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	1.6000e-004	2.3300e-003	1.0000e-005	8.8000e-004	0.0000	8.8000e-004	2.3000e-004	0.0000	2.4000e-004	0.0000	0.6678	0.6678	2.0000e-005	2.0000e-005	0.6729
Total	3.7000e-004	8.5600e-003	5.0800e-003	5.0000e-005	2.0300e-003	5.0000e-005	2.0800e-003	5.5000e-004	5.0000e-005	6.0000e-004	0.0000	4.5565	4.5565	4.1000e-004	6.4000e-004	4.7574

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2340	0.0000	0.2340	0.0891	0.0000	0.0891	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0772	0.7771	0.6654	1.4900e-003		0.0321	0.0321		0.0295	0.0295	0.0000	130.8469	130.8469	0.0423	0.0000	131.9048
Total	0.0772	0.7771	0.6654	1.4900e-003	0.2340	0.0321	0.2661	0.0891	0.0295	0.1186	0.0000	130.8469	130.8469	0.0423	0.0000	131.9048

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.1000e-004	0.0500	0.0169	2.2000e-004	6.9000e-003	3.2000e-004	7.2200e-003	1.8900e-003	3.1000e-004	2.2000e-003	0.0000	23.0129	23.0129	2.3800e-003	3.6900e-003	24.1733
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2800e-003	8.7000e-004	0.0130	4.0000e-005	5.2700e-003	3.0000e-005	5.3000e-003	1.4000e-003	2.0000e-005	1.4200e-003	0.0000	3.8795	3.8795	8.0000e-005	9.0000e-005	3.9085
Total	2.0900e-003	0.0509	0.0299	2.6000e-004	0.0122	3.5000e-004	0.0125	3.2900e-003	3.3000e-004	3.6200e-003	0.0000	26.8924	26.8924	2.4600e-003	3.7800e-003	28.0818

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2340	0.0000	0.2340	0.0891	0.0000	0.0891	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0772	0.7771	0.6654	1.4900e-003		0.0321	0.0321		0.0295	0.0295	0.0000	130.8467	130.8467	0.0423	0.0000	131.9047
Total	0.0772	0.7771	0.6654	1.4900e-003	0.2340	0.0321	0.2661	0.0891	0.0295	0.1186	0.0000	130.8467	130.8467	0.0423	0.0000	131.9047

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.1000e-004	0.0500	0.0169	2.2000e-004	6.9000e-003	3.2000e-004	7.2200e-003	1.8900e-003	3.1000e-004	2.2000e-003	0.0000	23.0129	23.0129	2.3800e-003	3.6900e-003	24.1733
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2800e-003	8.7000e-004	0.0130	4.0000e-005	5.2700e-003	3.0000e-005	5.3000e-003	1.4000e-003	2.0000e-005	1.4200e-003	0.0000	3.8795	3.8795	8.0000e-005	9.0000e-005	3.9085
Total	2.0900e-003	0.0509	0.0299	2.6000e-004	0.0122	3.5000e-004	0.0125	3.2900e-003	3.3000e-004	3.6200e-003	0.0000	26.8924	26.8924	2.4600e-003	3.7800e-003	28.0818

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1575	1.4385	1.7299	2.8800e-003		0.0656	0.0656		0.0617	0.0617	0.0000	248.0785	248.0785	0.0587	0.0000	249.5451
Total	0.1575	1.4385	1.7299	2.8800e-003		0.0656	0.0656		0.0617	0.0617	0.0000	248.0785	248.0785	0.0587	0.0000	249.5451

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0278	1.0418	0.4165	5.0300e-003	0.1793	5.3700e-003	0.1847	0.0517	5.1300e-003	0.0569	0.0000	502.2299	502.2299	0.0306	0.0724	524.5764
Worker	0.3539	0.2413	3.6094	0.0117	1.4624	7.2100e-003	1.4696	0.3884	6.6400e-003	0.3950	0.0000	1,076.6733	1,076.6733	0.0235	0.0251	1,084.7426
Total	0.3817	1.2831	4.0258	0.0168	1.6418	0.0126	1.6543	0.4401	0.0118	0.4519	0.0000	1,578.9032	1,578.9032	0.0541	0.0975	1,609.3189

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1575	1.4385	1.7299	2.8800e-003		0.0656	0.0656		0.0617	0.0617	0.0000	248.0783	248.0783	0.0587	0.0000	249.5448
Total	0.1575	1.4385	1.7299	2.8800e-003		0.0656	0.0656		0.0617	0.0617	0.0000	248.0783	248.0783	0.0587	0.0000	249.5448

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0278	1.0418	0.4165	5.0300e-003	0.1793	5.3700e-003	0.1847	0.0517	5.1300e-003	0.0569	0.0000	502.2299	502.2299	0.0306	0.0724	524.5764
Worker	0.3539	0.2413	3.6094	0.0117	1.4624	7.2100e-003	1.4696	0.3884	6.6400e-003	0.3950	0.0000	1,076.6733	1,076.6733	0.0235	0.0251	1,084.7426
Total	0.3817	1.2831	4.0258	0.0168	1.6418	0.0126	1.6543	0.4401	0.0118	0.4519	0.0000	1,578.9032	1,578.9032	0.0541	0.0975	1,609.3189

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0334	1.2643	0.5058	6.0100e-003	0.2187	6.5800e-003	0.2253	0.0631	6.3000e-003	0.0694	0.0000	601.0737	601.0737	0.0378	0.0870	627.9555
Worker	0.4078	0.2665	4.1344	0.0138	1.7836	8.4000e-003	1.7920	0.4737	7.7300e-003	0.4814	0.0000	1,268.5235	1,268.5235	0.0261	0.0288	1,277.7565
Total	0.4412	1.5308	4.6402	0.0198	2.0023	0.0150	2.0173	0.5367	0.0140	0.5508	0.0000	1,869.5972	1,869.5972	0.0639	0.1158	1,905.7120

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0334	1.2643	0.5058	6.0100e-003	0.2187	6.5800e-003	0.2253	0.0631	6.3000e-003	0.0694	0.0000	601.0737	601.0737	0.0378	0.0870	627.9555
Worker	0.4078	0.2665	4.1344	0.0138	1.7836	8.4000e-003	1.7920	0.4737	7.7300e-003	0.4814	0.0000	1,268.5235	1,268.5235	0.0261	0.0288	1,277.7565
Total	0.4412	1.5308	4.6402	0.0198	2.0023	0.0150	2.0173	0.5367	0.0140	0.5508	0.0000	1,869.5972	1,869.5972	0.0639	0.1158	1,905.7120

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0609	0.5549	0.7158	1.2000e-003		0.0235	0.0235		0.0221	0.0221	0.0000	103.2042	103.2042	0.0243	0.0000	103.8107
Total	0.0609	0.5549	0.7158	1.2000e-003		0.0235	0.0235		0.0221	0.0221	0.0000	103.2042	103.2042	0.0243	0.0000	103.8107

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0112	0.4280	0.1719	2.0100e-003	0.0746	2.2400e-003	0.0768	0.0215	2.1500e-003	0.0237	0.0000	201.0387	201.0387	0.0130	0.0292	210.0732
Worker	0.1320	0.0831	1.3332	4.5700e-003	0.6082	2.7300e-003	0.6109	0.1615	2.5100e-003	0.1640	0.0000	419.2518	419.2518	8.1300e-003	9.3100e-003	422.2292
Total	0.1432	0.5111	1.5051	6.5800e-003	0.6828	4.9700e-003	0.6878	0.1830	4.6600e-003	0.1877	0.0000	620.2905	620.2905	0.0212	0.0385	632.3024

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0609	0.5549	0.7158	1.2000e-003		0.0235	0.0235		0.0221	0.0221	0.0000	103.2040	103.2040	0.0243	0.0000	103.8105
Total	0.0609	0.5549	0.7158	1.2000e-003		0.0235	0.0235		0.0221	0.0221	0.0000	103.2040	103.2040	0.0243	0.0000	103.8105

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0112	0.4280	0.1719	2.0100e-003	0.0746	2.2400e-003	0.0768	0.0215	2.1500e-003	0.0237	0.0000	201.0387	201.0387	0.0130	0.0292	210.0732
Worker	0.1320	0.0831	1.3332	4.5700e-003	0.6082	2.7300e-003	0.6109	0.1615	2.5100e-003	0.1640	0.0000	419.2518	419.2518	8.1300e-003	9.3100e-003	422.2292
Total	0.1432	0.5111	1.5051	6.5800e-003	0.6828	4.9700e-003	0.6878	0.1830	4.6600e-003	0.1877	0.0000	620.2905	620.2905	0.0212	0.0385	632.3024

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0174	0.1631	0.2770	4.3000e-004		7.9500e-003	7.9500e-003		7.3200e-003	7.3200e-003	0.0000	38.0366	38.0366	0.0123	0.0000	38.3441
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0174	0.1631	0.2770	4.3000e-004		7.9500e-003	7.9500e-003		7.3200e-003	7.3200e-003	0.0000	38.0366	38.0366	0.0123	0.0000	38.3441

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.3000e-004	6.8600e-003	2.0000e-005	3.1300e-003	1.0000e-005	3.1400e-003	8.3000e-004	1.0000e-005	8.4000e-004	0.0000	2.1567	2.1567	4.0000e-005	5.0000e-005	2.1720
Total	6.8000e-004	4.3000e-004	6.8600e-003	2.0000e-005	3.1300e-003	1.0000e-005	3.1400e-003	8.3000e-004	1.0000e-005	8.4000e-004	0.0000	2.1567	2.1567	4.0000e-005	5.0000e-005	2.1720

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0174	0.1631	0.2770	4.3000e-004		7.9500e-003	7.9500e-003		7.3200e-003	7.3200e-003	0.0000	38.0365	38.0365	0.0123	0.0000	38.3441
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0174	0.1631	0.2770	4.3000e-004		7.9500e-003	7.9500e-003		7.3200e-003	7.3200e-003	0.0000	38.0365	38.0365	0.0123	0.0000	38.3441

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.3000e-004	6.8600e-003	2.0000e-005	3.1300e-003	1.0000e-005	3.1400e-003	8.3000e-004	1.0000e-005	8.4000e-004	0.0000	2.1567	2.1567	4.0000e-005	5.0000e-005	2.1720
Total	6.8000e-004	4.3000e-004	6.8600e-003	2.0000e-005	3.1300e-003	1.0000e-005	3.1400e-003	8.3000e-004	1.0000e-005	8.4000e-004	0.0000	2.1567	2.1567	4.0000e-005	5.0000e-005	2.1720

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.0568					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2500e-003	0.0218	0.0344	6.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	4.8512	4.8512	2.6000e-004	0.0000	4.8578
Total	4.0600	0.0218	0.0344	6.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	4.8512	4.8512	2.6000e-004	0.0000	4.8578

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0113	7.1000e-003	0.1139	3.9000e-004	0.0519	2.3000e-004	0.0522	0.0138	2.1000e-004	0.0140	0.0000	35.8013	35.8013	6.9000e-004	7.9000e-004	36.0555
Total	0.0113	7.1000e-003	0.1139	3.9000e-004	0.0519	2.3000e-004	0.0522	0.0138	2.1000e-004	0.0140	0.0000	35.8013	35.8013	6.9000e-004	7.9000e-004	36.0555

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.0568					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2500e-003	0.0218	0.0344	6.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	4.8512	4.8512	2.6000e-004	0.0000	4.8578
Total	4.0600	0.0218	0.0344	6.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	4.8512	4.8512	2.6000e-004	0.0000	4.8578

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0113	7.1000e-003	0.1139	3.9000e-004	0.0519	2.3000e-004	0.0522	0.0138	2.1000e-004	0.0140	0.0000	35.8013	35.8013	6.9000e-004	7.9000e-004	36.0555
Total	0.0113	7.1000e-003	0.1139	3.9000e-004	0.0519	2.3000e-004	0.0522	0.0138	2.1000e-004	0.0140	0.0000	35.8013	35.8013	6.9000e-004	7.9000e-004	36.0555

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.7298	3.9782	36.6955	0.0839	9.5610	0.0580	9.6190	2.5521	0.0539	2.6060	0.0000	7,752.6527	7,752.6527	0.4928	0.3355	7,864.9600
Unmitigated	3.7298	3.9782	36.6955	0.0839	9.5610	0.0580	9.6190	2.5521	0.0539	2.6060	0.0000	7,752.6527	7,752.6527	0.4928	0.3355	7,864.9600

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	8,726.12	8,726.12	8726.12	25,380,287	25,380,287
Enclosed Parking with Elevator	0.00	0.00	0.00		
Total	8,726.12	8,726.12	8,726.12	25,380,287	25,380,287

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	9.00	9.00	9.00	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.547453	0.060181	0.185039	0.126487	0.024236	0.006679	0.014707	0.004926	0.000662	0.000378	0.024745	0.000705	0.003801
Enclosed Parking with Elevator	0.547453	0.060181	0.185039	0.126487	0.024236	0.006679	0.014707	0.004926	0.000662	0.000378	0.024745	0.000705	0.003801

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,631.493 1	1,631.493 1	0.1377	0.0167	1,639.909 7
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,631.493 1	1,631.493 1	0.1377	0.0167	1,639.909 7
NaturalGas Mitigated	0.0477	0.4075	0.1734	2.6000e-003		0.0329	0.0329		0.0329	0.0329	0.0000	471.8916	471.8916	9.0400e-003	8.6500e-003	474.6958
NaturalGas Unmitigated	0.0477	0.4075	0.1734	2.6000e-003		0.0329	0.0329		0.0329	0.0329	0.0000	471.8916	471.8916	9.0400e-003	8.6500e-003	474.6958

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	8.84291e+006	0.0477	0.4075	0.1734	2.6000e-003		0.0329	0.0329		0.0329	0.0329	0.0000	471.8916	471.8916	9.0400e-003	8.6500e-003	474.6958
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0477	0.4075	0.1734	2.6000e-003		0.0329	0.0329		0.0329	0.0329	0.0000	471.8916	471.8916	9.0400e-003	8.6500e-003	474.6958

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	8.84291e+006	0.0477	0.4075	0.1734	2.6000e-003		0.0329	0.0329		0.0329	0.0329	0.0000	471.8916	471.8916	9.0400e-003	8.6500e-003	474.6958
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0477	0.4075	0.1734	2.6000e-003		0.0329	0.0329		0.0329	0.0329	0.0000	471.8916	471.8916	9.0400e-003	8.6500e-003	474.6958

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	4.83446e+006	857.3699	0.0724	8.7700e-003	861.7929
Enclosed Parking with Elevator	4.36506e+006	774.1232	0.0653	7.9200e-003	778.1168
Total		1,631.4931	0.1377	0.0167	1,639.9097

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	4.83446e+006	857.3699	0.0724	8.7700e-003	861.7929
Enclosed Parking with Elevator	4.36506e+006	774.1232	0.0653	7.9200e-003	778.1168
Total		1,631.4931	0.1377	0.0167	1,639.9097

6.0 Area Detail

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.4341	0.3852	13.1176	2.1900e-003		0.0912	0.0912		0.0912	0.0912	0.0000	293.8237	293.8237	0.0257	5.0000e-003	295.9550
Unmitigated	5.4341	0.3852	13.1176	2.1900e-003		0.0912	0.0912		0.0912	0.0912	0.0000	293.8237	293.8237	0.0257	5.0000e-003	295.9550

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.6085					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0275	0.2353	0.1001	1.5000e-003		0.0190	0.0190		0.0190	0.0190	0.0000	272.5316	272.5316	5.2200e-003	5.0000e-003	274.1512
Landscaping	0.3924	0.1499	13.0175	6.9000e-004		0.0722	0.0722		0.0722	0.0722	0.0000	21.2920	21.2920	0.0205	0.0000	21.8038
Total	5.4341	0.3852	13.1176	2.1900e-003		0.0912	0.0912		0.0912	0.0912	0.0000	293.8237	293.8237	0.0257	5.0000e-003	295.9550

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.6085					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0275	0.2353	0.1001	1.5000e-003		0.0190	0.0190		0.0190	0.0190	0.0000	272.5316	272.5316	5.2200e-003	5.0000e-003	274.1512
Landscaping	0.3924	0.1499	13.0175	6.9000e-004		0.0722	0.0722		0.0722	0.0722	0.0000	21.2920	21.2920	0.0205	0.0000	21.8038
Total	5.4341	0.3852	13.1176	2.1900e-003		0.0912	0.0912		0.0912	0.0912	0.0000	293.8237	293.8237	0.0257	5.0000e-003	295.9550

7.0 Water Detail

7.1 Mitigation Measures Water

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	317.8430	2.7018	0.0662	405.1148
Unmitigated	317.8430	2.7018	0.0662	405.1148

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	82.1592 / 51.796	317.8430	2.7018	0.0662	405.1148
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		317.8430	2.7018	0.0662	405.1148

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	82.1592 / 51.796	317.8430	2.7018	0.0662	405.1148
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		317.8430	2.7018	0.0662	405.1148

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	117.7469	6.9586	0.0000	291.7131
Unmitigated	117.7469	6.9586	0.0000	291.7131

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	580.06	117.7469	6.9586	0.0000	291.7131
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		117.7469	6.9586	0.0000	291.7131

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	580.06	117.7469	6.9586	0.0000	291.7131
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		117.7469	6.9586	0.0000	291.7131

9.0 Operational Offroad

The Market Place - Proposed Project - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

**The Market Place - Proposed Project
Orange County, Summer**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	2,006.00	Space	0.00	802,400.00	0
Apartments Mid Rise	1,261.00	Dwelling Unit	15.50	1,261,000.00	3606

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	30
Climate Zone	8			Operational Year	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the Addendum's model.

Land Use - Consistent with the Addendum's model.

Construction Phase - See SWAPE comment regarding "Unsubstantiated Changes to Individual Construction Phase Lengths."

Grading - Consistent with the Addendum's model.

Demolition - Consistent with the Addendum's model.

Architectural Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors"

Vehicle Trips - Consistent with the Addendum's model.

Woodstoves - See SWAPE comment regarding "Unsubstantiated Reduction to Number of Gas Fireplaces." No wood-burning appliances consistent with the Addendum's model.

Area Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors"

Energy Use - Consistent with the Addendum's model.

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction Off-road Equipment Mitigation - See SWAPE comment regarding "Incorrect Application of Tier 4 Final Emissions Standards." SCAQMD Rule 403 measures consistent with the Addendum's model.

Area Mitigation - See SWAPE comment regarding "Incorrect Application of Operational Area-Related Mitigation Measures."

Energy Mitigation - See SWAPE comment regarding "Incorrect Application of Operational Energy-Related Mitigation Measures."

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	38.00
tblConstructionPhase	NumDays	300.00	564.00
tblConstructionPhase	NumDays	20.00	38.00
tblConstructionPhase	NumDays	30.00	56.00
tblConstructionPhase	NumDays	20.00	38.00
tblConstructionPhase	NumDays	10.00	19.00
tblConstructionPhase	PhaseEndDate	4/11/2025	8/19/2026
tblConstructionPhase	PhaseEndDate	2/14/2025	5/5/2026
tblConstructionPhase	PhaseEndDate	10/27/2023	11/22/2023
tblConstructionPhase	PhaseEndDate	12/22/2023	3/6/2024
tblConstructionPhase	PhaseEndDate	3/14/2025	6/26/2026
tblConstructionPhase	PhaseEndDate	11/10/2023	12/19/2023
tblConstructionPhase	PhaseStartDate	3/15/2025	6/27/2026
tblConstructionPhase	PhaseStartDate	12/23/2023	3/7/2024
tblConstructionPhase	PhaseStartDate	11/11/2023	12/20/2023
tblConstructionPhase	PhaseStartDate	2/15/2025	5/6/2026
tblConstructionPhase	PhaseStartDate	10/28/2023	11/23/2023
tblEnergyUse	NT24NG	5,516.00	1,379.00
tblFireplaces	NumberGas	1,071.85	1,134.90
tblFireplaces	NumberWood	63.05	0.00
tblGrading	MaterialExported	0.00	7,500.00
tblLandUse	LotAcreage	18.05	0.00
tblLandUse	LotAcreage	33.18	15.50

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	HO_TL	8.70	9.00
tblVehicleTrips	HS_TL	5.90	9.00
tblVehicleTrips	HW_TL	14.70	9.00
tblVehicleTrips	ST_TR	4.91	6.92
tblVehicleTrips	SU_TR	4.09	6.92
tblVehicleTrips	WD_TR	5.44	6.92
tblWoodstoves	NumberCatalytic	63.05	0.00
tblWoodstoves	NumberNoncatalytic	63.05	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.4130	36.5478	29.3462	0.0734	19.8582	1.4385	21.1253	10.1558	1.3239	11.3215	0.0000	7,273.3973	7,273.3973	2.0565	0.2469	7,377.2464
2024	5.0307	34.3910	55.3809	0.1877	15.6170	1.3499	16.3477	4.1801	1.2424	5.0377	0.0000	19,218.7834	19,218.7834	2.0569	0.9849	19,541.1890
2025	4.7377	23.5430	53.1150	0.1828	15.6170	0.6423	16.2592	4.1801	0.6037	4.7838	0.0000	18,731.4510	18,731.4510	1.1354	0.9598	19,045.8615
2026	214.2747	23.3214	51.2880	0.1785	15.6169	0.6391	16.2560	4.1801	0.6007	4.7809	0.0000	18,292.0511	18,292.0511	1.1204	0.9369	18,599.2637
Maximum	214.2747	36.5478	55.3809	0.1877	19.8582	1.4385	21.1253	10.1558	1.3239	11.3215	0.0000	19,218.7834	19,218.7834	2.0569	0.9849	19,541.1890

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703
Energy	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919
Mobile	21.1616	20.0939	201.6680	0.4746	53.4799	0.3191	53.7990	14.2548	0.2967	14.5515		48,340.1258	48,340.1258	2.9031	1.9424	48,991.5370
Total	54.2403	42.3517	314.7689	0.6145	53.4799	2.5991	56.0790	14.2548	2.5767	16.8316	0.0000	75,411.3200	75,411.3200	3.5989	2.4353	76,226.9992

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703
Energy	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919
Mobile	21.1616	20.0939	201.6680	0.4746	53.4799	0.3191	53.7990	14.2548	0.2967	14.5515		48,340.1258	48,340.1258	2.9031	1.9424	48,991.5370
Total	54.2403	42.3517	314.7689	0.6145	53.4799	2.5991	56.0790	14.2548	2.5767	16.8316	0.0000	75,411.3200	75,411.3200	3.5989	2.4353	76,226.9992

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/2/2023	11/22/2023	5	38	
2	Site Preparation	Site Preparation	11/23/2023	12/19/2023	5	19	
3	Grading	Grading	12/20/2023	3/6/2024	5	56	
4	Building Construction	Building Construction	3/7/2024	5/5/2026	5	564	
5	Paving	Paving	5/6/2026	6/26/2026	5	38	
6	Architectural Coating	Architectural Coating	6/27/2026	8/19/2026	5	38	

Acres of Grading (Site Preparation Phase): 28.5

Acres of Grading (Grading Phase): 168

Acres of Paving: 0

Residential Indoor: 2,553,525; Residential Outdoor: 851,175; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 48,144 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	903.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	938.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,245.00	266.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	249.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.1444	0.0000	5.1444	0.7789	0.0000	0.7789			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280		3,746.9840	3,746.9840	1.0494		3,773.2183
Total	2.2691	21.4844	19.6434	0.0388	5.1444	0.9975	6.1419	0.7789	0.9280	1.7069		3,746.9840	3,746.9840	1.0494		3,773.2183

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0495	2.8319	0.9708	0.0133	0.4144	0.0182	0.4327	0.1135	0.0174	0.1309		1,519.7741	1,519.7741	0.1533	0.2438	1,596.2574
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0422	0.0270	0.4581	1.4100e-003	0.1677	8.5000e-004	0.1685	0.0445	7.9000e-004	0.0453		143.0043	143.0043	3.1400e-003	3.0900e-003	144.0035
Total	0.0918	2.8589	1.4289	0.0147	0.5821	0.0191	0.6012	0.1580	0.0182	0.1762		1,662.7784	1,662.7784	0.1565	0.2469	1,740.2609

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.1444	0.0000	5.1444	0.7789	0.0000	0.7789			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280	0.0000	3,746.9840	3,746.9840	1.0494		3,773.2183
Total	2.2691	21.4844	19.6434	0.0388	5.1444	0.9975	6.1419	0.7789	0.9280	1.7069	0.0000	3,746.9840	3,746.9840	1.0494		3,773.2183

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0495	2.8319	0.9708	0.0133	0.4144	0.0182	0.4327	0.1135	0.0174	0.1309		1,519.7741	1,519.7741	0.1533	0.2438	1,596.2574
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0422	0.0270	0.4581	1.4100e-003	0.1677	8.5000e-004	0.1685	0.0445	7.9000e-004	0.0453		143.0043	143.0043	3.1400e-003	3.0900e-003	144.0035
Total	0.0918	2.8589	1.4289	0.0147	0.5821	0.0191	0.6012	0.1580	0.0182	0.1762		1,662.7784	1,662.7784	0.1565	0.2469	1,740.2609

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	2.6595	27.5242	18.2443	0.0381	19.6570	1.2660	20.9230	10.1025	1.1647	11.2672		3,687.308 1	3,687.308 1	1.1926		3,717.121 9

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0507	0.0324	0.5497	1.7000e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		171.6051	171.6051	3.7700e-003	3.7100e-003	172.8042
Total	0.0507	0.0324	0.5497	1.7000e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		171.6051	171.6051	3.7700e-003	3.7100e-003	172.8042

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	2.6595	27.5242	18.2443	0.0381	19.6570	1.2660	20.9230	10.1025	1.1647	11.2672	0.0000	3,687.308 1	3,687.308 1	1.1926		3,717.121 9

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0507	0.0324	0.5497	1.7000e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		171.6051	171.6051	3.7700e-003	3.7100e-003	172.8042
Total	0.0507	0.0324	0.5497	1.7000e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		171.6051	171.6051	3.7700e-003	3.7100e-003	172.8042

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2187	0.0000	9.2187	3.6561	0.0000	3.6561			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105		6,011.4777	6,011.4777	1.9442		6,060.0836
Total	3.3217	34.5156	28.0512	0.0621	9.2187	1.4245	10.6432	3.6561	1.3105	4.9666		6,011.4777	6,011.4777	1.9442		6,060.0836

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0349	1.9961	0.6843	9.4000e-003	0.2921	0.0129	0.3050	0.0800	0.0123	0.0923		1,071.2472	1,071.2472	0.1081	0.1718	1,125.1582
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0563	0.0360	0.6108	1.8900e-003	0.2236	1.1400e-003	0.2247	0.0593	1.0500e-003	0.0603		190.6723	190.6723	4.1900e-003	4.1200e-003	192.0046
Total	0.0912	2.0322	1.2950	0.0113	0.5157	0.0140	0.5297	0.1393	0.0133	0.1526		1,261.9196	1,261.9196	0.1123	0.1760	1,317.1628

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2187	0.0000	9.2187	3.6561	0.0000	3.6561			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836
Total	3.3217	34.5156	28.0512	0.0621	9.2187	1.4245	10.6432	3.6561	1.3105	4.9666	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0349	1.9961	0.6843	9.4000e-003	0.2921	0.0129	0.3050	0.0800	0.0123	0.0923		1,071.2472	1,071.2472	0.1081	0.1718	1,125.1582
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0563	0.0360	0.6108	1.8900e-003	0.2236	1.1400e-003	0.2247	0.0593	1.0500e-003	0.0603		190.6723	190.6723	4.1900e-003	4.1200e-003	192.0046
Total	0.0912	2.0322	1.2950	0.0113	0.5157	0.0140	0.5297	0.1393	0.0133	0.1526		1,261.9196	1,261.9196	0.1123	0.1760	1,317.1628

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2187	0.0000	9.2187	3.6561	0.0000	3.6561			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	3.2181	32.3770	27.7228	0.0621	9.2187	1.3354	10.5541	3.6561	1.2286	4.8846		6,009.7487	6,009.7487	1.9437		6,058.3405

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0345	1.9817	0.6994	9.2500e-003	0.2921	0.0134	0.3055	0.0800	0.0128	0.0928		1,056.5669	1,056.5669	0.1095	0.1696	1,109.8423
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0529	0.0324	0.5683	1.8300e-003	0.2236	1.0800e-003	0.2246	0.0593	1.0000e-003	0.0603		184.6170	184.6170	3.8000e-003	3.8500e-003	185.8600
Total	0.0874	2.0141	1.2677	0.0111	0.5157	0.0145	0.5302	0.1393	0.0138	0.1531		1,241.1838	1,241.1838	0.1133	0.1734	1,295.7023

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2187	0.0000	9.2187	3.6561	0.0000	3.6561			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	3.2181	32.3770	27.7228	0.0621	9.2187	1.3354	10.5541	3.6561	1.2286	4.8846	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0345	1.9817	0.6994	9.2500e-003	0.2921	0.0134	0.3055	0.0800	0.0128	0.0928		1,056.5669	1,056.5669	0.1095	0.1696	1,109.8423
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0529	0.0324	0.5683	1.8300e-003	0.2236	1.0800e-003	0.2246	0.0593	1.0000e-003	0.0603		184.6170	184.6170	3.8000e-003	3.8500e-003	185.8600
Total	0.0874	2.0141	1.2677	0.0111	0.5157	0.0145	0.5302	0.1393	0.0138	0.1531		1,241.1838	1,241.1838	0.1133	0.1734	1,295.7023

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2646	9.2948	3.8364	0.0470	1.7008	0.0501	1.7509	0.4895	0.0479	0.5374		5,170.6772	5,170.6772	0.3156	0.7451	5,400.5974
Worker	3.2945	2.0141	35.3777	0.1137	13.9162	0.0674	13.9836	3.6906	0.0620	3.7527		11,492.4072	11,492.4072	0.2365	0.2398	11,569.7839
Total	3.5591	11.3089	39.2141	0.1607	15.6170	0.1174	15.7344	4.1801	0.1099	4.2900		16,663.0845	16,663.0845	0.5521	0.9849	16,970.3813

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2646	9.2948	3.8364	0.0470	1.7008	0.0501	1.7509	0.4895	0.0479	0.5374		5,170.6772	5,170.6772	0.3156	0.7451	5,400.5974
Worker	3.2945	2.0141	35.3777	0.1137	13.9162	0.0674	13.9836	3.6906	0.0620	3.7527		11,492.4072	11,492.4072	0.2365	0.2398	11,569.7839
Total	3.5591	11.3089	39.2141	0.1607	15.6170	0.1174	15.7344	4.1801	0.1099	4.2900		16,663.0845	16,663.0845	0.5521	0.9849	16,970.3813

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2607	9.2490	3.8210	0.0460	1.7008	0.0503	1.7511	0.4895	0.0481	0.5376		5,073.877 0	5,073.877 0	0.3196	0.7342	5,300.663 1
Worker	3.1096	1.8243	33.2094	0.1098	13.9162	0.0644	13.9806	3.6906	0.0593	3.7499		11,101.09 97	11,101.09 97	0.2149	0.2256	11,173.70 04
Total	3.3703	11.0733	37.0304	0.1559	15.6170	0.1147	15.7317	4.1801	0.1074	4.2875		16,174.97 66	16,174.97 66	0.5344	0.9598	16,474.36 34

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2607	9.2490	3.8210	0.0460	1.7008	0.0503	1.7511	0.4895	0.0481	0.5376		5,073.877 0	5,073.877 0	0.3196	0.7342	5,300.663 1
Worker	3.1096	1.8243	33.2094	0.1098	13.9162	0.0644	13.9806	3.6906	0.0593	3.7499		11,101.09 97	11,101.09 97	0.2149	0.2256	11,173.70 04
Total	3.3703	11.0733	37.0304	0.1559	15.6170	0.1147	15.7317	4.1801	0.1074	4.2875		16,174.97 66	16,174.97 66	0.5344	0.9598	16,474.36 34

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2569	9.1826	3.8088	0.0451	1.7008	0.0503	1.7511	0.4895	0.0481	0.5376		4,976.648 6	4,976.648 6	0.3232	0.7230	5,200.173 8
Worker	2.9480	1.6691	31.3946	0.1064	13.9162	0.0612	13.9774	3.6906	0.0564	3.7470		10,758.92 82	10,758.92 82	0.1963	0.2140	10,827.59 18
Total	3.2049	10.8518	35.2033	0.1515	15.6169	0.1116	15.7285	4.1801	0.1045	4.2846		15,735.57 68	15,735.57 68	0.5195	0.9369	16,027.76 56

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2569	9.1826	3.8088	0.0451	1.7008	0.0503	1.7511	0.4895	0.0481	0.5376		4,976.648 6	4,976.648 6	0.3232	0.7230	5,200.173 8
Worker	2.9480	1.6691	31.3946	0.1064	13.9162	0.0612	13.9774	3.6906	0.0564	3.7470		10,758.92 82	10,758.92 82	0.1963	0.2140	10,827.59 18
Total	3.2049	10.8518	35.2033	0.1515	15.6169	0.1116	15.7285	4.1801	0.1045	4.2846		15,735.57 68	15,735.57 68	0.5195	0.9369	16,027.76 56

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0355	0.0201	0.3783	1.2800e-003	0.1677	7.4000e-004	0.1684	0.0445	6.8000e-004	0.0451		129.6256	129.6256	2.3600e-003	2.5800e-003	130.4529
Total	0.0355	0.0201	0.3783	1.2800e-003	0.1677	7.4000e-004	0.1684	0.0445	6.8000e-004	0.0451		129.6256	129.6256	2.3600e-003	2.5800e-003	130.4529

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.745 2	2,206.745 2	0.7137		2,224.587 8
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.745 2	2,206.745 2	0.7137		2,224.587 8

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0355	0.0201	0.3783	1.2800e-003	0.1677	7.4000e-004	0.1684	0.0445	6.8000e-004	0.0451		129.6256	129.6256	2.3600e-003	2.5800e-003	130.4529
Total	0.0355	0.0201	0.3783	1.2800e-003	0.1677	7.4000e-004	0.1684	0.0445	6.8000e-004	0.0451		129.6256	129.6256	2.3600e-003	2.5800e-003	130.4529

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	213.5142					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	213.6851	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.5896	0.3338	6.2789	0.0213	2.7832	0.0123	2.7955	0.7381	0.0113	0.7494		2,151.7856	2,151.7856	0.0393	0.0428	2,165.5184
Total	0.5896	0.3338	6.2789	0.0213	2.7832	0.0123	2.7955	0.7381	0.0113	0.7494		2,151.7856	2,151.7856	0.0393	0.0428	2,165.5184

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	213.5142					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	213.6851	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.5896	0.3338	6.2789	0.0213	2.7832	0.0123	2.7955	0.7381	0.0113	0.7494		2,151.7856	2,151.7856	0.0393	0.0428	2,165.5184
Total	0.5896	0.3338	6.2789	0.0213	2.7832	0.0123	2.7955	0.7381	0.0113	0.7494		2,151.7856	2,151.7856	0.0393	0.0428	2,165.5184

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	21.1616	20.0939	201.6680	0.4746	53.4799	0.3191	53.7990	14.2548	0.2967	14.5515		48,340.1258	48,340.1258	2.9031	1.9424	48,991.5370
Unmitigated	21.1616	20.0939	201.6680	0.4746	53.4799	0.3191	53.7990	14.2548	0.2967	14.5515		48,340.1258	48,340.1258	2.9031	1.9424	48,991.5370

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	8,726.12	8,726.12	8726.12	25,380,287	25,380,287
Enclosed Parking with Elevator	0.00	0.00	0.00		
Total	8,726.12	8,726.12	8,726.12	25,380,287	25,380,287

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	9.00	9.00	9.00	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.547453	0.060181	0.185039	0.126487	0.024236	0.006679	0.014707	0.004926	0.000662	0.000378	0.024745	0.000705	0.003801
Enclosed Parking with Elevator	0.547453	0.060181	0.185039	0.126487	0.024236	0.006679	0.014707	0.004926	0.000662	0.000378	0.024745	0.000705	0.003801

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919
NaturalGas Unmitigated	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	24227.2	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	24.2272	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919

6.0 Area Detail

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703
Unmitigated	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2229					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	25.2520					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	2.2030	18.8260	8.0111	0.1202		1.5221	1.5221		1.5221	1.5221	0.0000	24,033.1765	24,033.1765	0.4606	0.4406	24,175.9936
Landscaping	3.1394	1.1991	104.1398	5.5100e-003		0.5774	0.5774		0.5774	0.5774		187.7635	187.7635	0.1805		192.2766
Total	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2229					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	25.2520					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	2.2030	18.8260	8.0111	0.1202		1.5221	1.5221		1.5221	1.5221	0.0000	24,033.1765	24,033.1765	0.4606	0.4406	24,175.9936
Landscaping	3.1394	1.1991	104.1398	5.5100e-003		0.5774	0.5774		0.5774	0.5774		187.7635	187.7635	0.1805		192.2766
Total	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703

7.0 Water Detail

7.1 Mitigation Measures Water

The Market Place - Proposed Project - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

**The Market Place - Proposed Project
Orange County, Winter**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	2,006.00	Space	0.00	802,400.00	0
Apartments Mid Rise	1,261.00	Dwelling Unit	15.50	1,261,000.00	3606

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	30
Climate Zone	8			Operational Year	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the Addendum's model.

Land Use - Consistent with the Addendum's model.

Construction Phase - See SWAPE comment regarding "Unsubstantiated Changes to Individual Construction Phase Lengths."

Grading - Consistent with the Addendum's model.

Demolition - Consistent with the Addendum's model.

Architectural Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors"

Vehicle Trips - Consistent with the Addendum's model.

Woodstoves - See SWAPE comment regarding "Unsubstantiated Reduction to Number of Gas Fireplaces." No wood-burning appliances consistent with the Addendum's model.

Area Coating - See SWAPE comment regarding "Unsubstantiated Reductions to Architectural and Area Coating Emission Factors"

Energy Use - Consistent with the Addendum's model.

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction Off-road Equipment Mitigation - See SWAPE comment regarding "Incorrect Application of Tier 4 Final Emissions Standards." SCAQMD Rule 403 measures consistent with the Addendum's model.

Area Mitigation - See SWAPE comment regarding "Incorrect Application of Operational Area-Related Mitigation Measures."

Energy Mitigation - See SWAPE comment regarding "Incorrect Application of Operational Energy-Related Mitigation Measures."

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	38.00
tblConstructionPhase	NumDays	300.00	564.00
tblConstructionPhase	NumDays	20.00	38.00
tblConstructionPhase	NumDays	30.00	56.00
tblConstructionPhase	NumDays	20.00	38.00
tblConstructionPhase	NumDays	10.00	19.00
tblConstructionPhase	PhaseEndDate	4/11/2025	8/19/2026
tblConstructionPhase	PhaseEndDate	2/14/2025	5/5/2026
tblConstructionPhase	PhaseEndDate	10/27/2023	11/22/2023
tblConstructionPhase	PhaseEndDate	12/22/2023	3/6/2024
tblConstructionPhase	PhaseEndDate	3/14/2025	6/26/2026
tblConstructionPhase	PhaseEndDate	11/10/2023	12/19/2023
tblConstructionPhase	PhaseStartDate	3/15/2025	6/27/2026
tblConstructionPhase	PhaseStartDate	12/23/2023	3/7/2024
tblConstructionPhase	PhaseStartDate	11/11/2023	12/20/2023
tblConstructionPhase	PhaseStartDate	2/15/2025	5/6/2026
tblConstructionPhase	PhaseStartDate	10/28/2023	11/23/2023
tblEnergyUse	NT24NG	5,516.00	1,379.00
tblFireplaces	NumberGas	1,071.85	1,134.90
tblFireplaces	NumberWood	63.05	0.00
tblGrading	MaterialExported	0.00	7,500.00
tblLandUse	LotAcreage	18.05	0.00
tblLandUse	LotAcreage	33.18	15.50

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	HO_TL	8.70	9.00
tblVehicleTrips	HS_TL	5.90	9.00
tblVehicleTrips	HW_TL	14.70	9.00
tblVehicleTrips	ST_TR	4.91	6.92
tblVehicleTrips	SU_TR	4.09	6.92
tblVehicleTrips	WD_TR	5.44	6.92
tblWoodstoves	NumberCatalytic	63.05	0.00
tblWoodstoves	NumberNoncatalytic	63.05	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.4161	36.6362	29.3119	0.0733	19.8582	1.4385	21.1253	10.1558	1.3239	11.3215	0.0000	7,265.2496	7,265.2496	2.0565	0.2473	7,369.2238
2024	5.3393	34.4787	53.1171	0.1823	15.6170	1.3499	16.3480	4.1801	1.2424	5.0378	0.0000	18,678.0217	18,678.0217	2.0569	1.0018	19,005.6047
2025	5.0387	24.1353	51.0153	0.1777	15.6170	0.6426	16.2595	4.1801	0.6039	4.7841	0.0000	18,210.4999	18,210.4999	1.1404	0.9758	18,529.7848
2026	214.3355	23.8964	49.3197	0.1735	15.6169	0.6394	16.2563	4.1801	0.6010	4.7811	0.0000	17,788.1808	17,788.1808	1.1251	0.9520	18,100.0164
Maximum	214.3355	36.6362	53.1171	0.1823	19.8582	1.4385	21.1253	10.1558	1.3239	11.3215	0.0000	18,678.0217	18,678.0217	2.0569	1.0018	19,005.6047

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703
Energy	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919
Mobile	20.9767	21.5742	200.5621	0.4566	53.4799	0.3192	53.7991	14.2548	0.2968	14.5516		46,519.1725	46,519.1725	3.0036	2.0227	47,197.0248
Total	54.0553	43.8320	313.6631	0.5965	53.4799	2.5992	56.0792	14.2548	2.5768	16.8317	0.0000	73,590.3667	73,590.3667	3.6994	2.5156	74,432.4870

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703
Energy	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919
Mobile	20.9767	21.5742	200.5621	0.4566	53.4799	0.3192	53.7991	14.2548	0.2968	14.5516		46,519.1725	46,519.1725	3.0036	2.0227	47,197.0248
Total	54.0553	43.8320	313.6631	0.5965	53.4799	2.5992	56.0792	14.2548	2.5768	16.8317	0.0000	73,590.3667	73,590.3667	3.6994	2.5156	74,432.4870

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/2/2023	11/22/2023	5	38	
2	Site Preparation	Site Preparation	11/23/2023	12/19/2023	5	19	
3	Grading	Grading	12/20/2023	3/6/2024	5	56	
4	Building Construction	Building Construction	3/7/2024	5/5/2026	5	564	
5	Paving	Paving	5/6/2026	6/26/2026	5	38	
6	Architectural Coating	Architectural Coating	6/27/2026	8/19/2026	5	38	

Acres of Grading (Site Preparation Phase): 28.5

Acres of Grading (Grading Phase): 168

Acres of Paving: 0

Residential Indoor: 2,553,525; Residential Outdoor: 851,175; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 48,144 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	903.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	938.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	1,245.00	266.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	249.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.1444	0.0000	5.1444	0.7789	0.0000	0.7789			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280		3,746.9840	3,746.9840	1.0494		3,773.2183
Total	2.2691	21.4844	19.6434	0.0388	5.1444	0.9975	6.1419	0.7789	0.9280	1.7069		3,746.9840	3,746.9840	1.0494		3,773.2183

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0466	2.9524	0.9814	0.0134	0.4144	0.0183	0.4327	0.1135	0.0175	0.1310		1,521.1479	1,521.1479	0.1532	0.2440	1,597.6936
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0462	0.0297	0.4267	1.3500e-003	0.1677	8.5000e-004	0.1685	0.0445	7.9000e-004	0.0453		136.1673	136.1673	3.2200e-003	3.2900e-003	137.2272
Total	0.0928	2.9821	1.4081	0.0147	0.5821	0.0191	0.6012	0.1580	0.0183	0.1762		1,657.3151	1,657.3151	0.1564	0.2473	1,734.9209

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.1444	0.0000	5.1444	0.7789	0.0000	0.7789			0.0000			0.0000
Off-Road	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280	0.0000	3,746.9840	3,746.9840	1.0494		3,773.2183
Total	2.2691	21.4844	19.6434	0.0388	5.1444	0.9975	6.1419	0.7789	0.9280	1.7069	0.0000	3,746.9840	3,746.9840	1.0494		3,773.2183

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0466	2.9524	0.9814	0.0134	0.4144	0.0183	0.4327	0.1135	0.0175	0.1310		1,521.1479	1,521.1479	0.1532	0.2440	1,597.6936
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0462	0.0297	0.4267	1.3500e-003	0.1677	8.5000e-004	0.1685	0.0445	7.9000e-004	0.0453		136.1673	136.1673	3.2200e-003	3.2900e-003	137.2272
Total	0.0928	2.9821	1.4081	0.0147	0.5821	0.0191	0.6012	0.1580	0.0183	0.1762		1,657.3151	1,657.3151	0.1564	0.2473	1,734.9209

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	2.6595	27.5242	18.2443	0.0381	19.6570	1.2660	20.9230	10.1025	1.1647	11.2672		3,687.308 1	3,687.308 1	1.1926		3,717.121 9

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0554	0.0356	0.5121	1.6200e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		163.4007	163.4007	3.8600e-003	3.9400e-003	164.6727
Total	0.0554	0.0356	0.5121	1.6200e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		163.4007	163.4007	3.8600e-003	3.9400e-003	164.6727

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	2.6595	27.5242	18.2443	0.0381	19.6570	1.2660	20.9230	10.1025	1.1647	11.2672	0.0000	3,687.308 1	3,687.308 1	1.1926		3,717.121 9

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0554	0.0356	0.5121	1.6200e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		163.4007	163.4007	3.8600e-003	3.9400e-003	164.6727
Total	0.0554	0.0356	0.5121	1.6200e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		163.4007	163.4007	3.8600e-003	3.9400e-003	164.6727

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2187	0.0000	9.2187	3.6561	0.0000	3.6561			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105		6,011.4777	6,011.4777	1.9442		6,060.0836
Total	3.3217	34.5156	28.0512	0.0621	9.2187	1.4245	10.6432	3.6561	1.3105	4.9666		6,011.4777	6,011.4777	1.9442		6,060.0836

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0329	2.0811	0.6918	9.4100e-003	0.2921	0.0129	0.3050	0.0800	0.0123	0.0923		1,072.2155	1,072.2155	0.1080	0.1720	1,126.1705
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0616	0.0396	0.5690	1.8000e-003	0.2236	1.1400e-003	0.2247	0.0593	1.0500e-003	0.0603		181.5564	181.5564	4.2900e-003	4.3800e-003	182.9697
Total	0.0944	2.1206	1.2607	0.0112	0.5157	0.0140	0.5297	0.1393	0.0134	0.1527		1,253.7719	1,253.7719	0.1123	0.1764	1,309.1402

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2187	0.0000	9.2187	3.6561	0.0000	3.6561			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836
Total	3.3217	34.5156	28.0512	0.0621	9.2187	1.4245	10.6432	3.6561	1.3105	4.9666	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0329	2.0811	0.6918	9.4100e-003	0.2921	0.0129	0.3050	0.0800	0.0123	0.0923		1,072.2155	1,072.2155	0.1080	0.1720	1,126.1705
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0616	0.0396	0.5690	1.8000e-003	0.2236	1.1400e-003	0.2247	0.0593	1.0500e-003	0.0603		181.5564	181.5564	4.2900e-003	4.3800e-003	182.9697
Total	0.0944	2.1206	1.2607	0.0112	0.5157	0.0140	0.5297	0.1393	0.0134	0.1527		1,253.7719	1,253.7719	0.1123	0.1764	1,309.1402

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2187	0.0000	9.2187	3.6561	0.0000	3.6561			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	3.2181	32.3770	27.7228	0.0621	9.2187	1.3354	10.5541	3.6561	1.2286	4.8846		6,009.7487	6,009.7487	1.9437		6,058.3405

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0325	2.0662	0.7067	9.2600e-003	0.2921	0.0134	0.3055	0.0800	0.0129	0.0929		1,057.5395	1,057.5395	0.1093	0.1698	1,110.8592
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0580	0.0355	0.5300	1.7400e-003	0.2236	1.0800e-003	0.2246	0.0593	1.0000e-003	0.0603		175.8049	175.8049	3.9000e-003	4.1000e-003	177.1233
Total	0.0905	2.1018	1.2367	0.0110	0.5157	0.0145	0.5302	0.1393	0.0139	0.1531		1,233.3444	1,233.3444	0.1132	0.1739	1,287.9825

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2187	0.0000	9.2187	3.6561	0.0000	3.6561			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	3.2181	32.3770	27.7228	0.0621	9.2187	1.3354	10.5541	3.6561	1.2286	4.8846	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0325	2.0662	0.7067	9.2600e-003	0.2921	0.0134	0.3055	0.0800	0.0129	0.0929		1,057.5395	1,057.5395	0.1093	0.1698	1,110.8592
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0580	0.0355	0.5300	1.7400e-003	0.2236	1.0800e-003	0.2246	0.0593	1.0000e-003	0.0603		175.8049	175.8049	3.9000e-003	4.1000e-003	177.1233
Total	0.0905	2.1018	1.2367	0.0110	0.5157	0.0145	0.5302	0.1393	0.0139	0.1531		1,233.3444	1,233.3444	0.1132	0.1739	1,287.9825

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2553	9.7102	3.9572	0.0471	1.7008	0.0503	1.7512	0.4895	0.0481	0.5377		5,178.4699	5,178.4699	0.3148	0.7468	5,408.8693
Worker	3.6125	2.2111	32.9932	0.1083	13.9162	0.0674	13.9836	3.6906	0.0620	3.7527		10,943.8528	10,943.8528	0.2426	0.2551	11,025.9277
Total	3.8677	11.9213	36.9503	0.1553	15.6170	0.1177	15.7347	4.1801	0.1102	4.2903		16,122.3228	16,122.3228	0.5573	1.0018	16,434.7970

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2553	9.7102	3.9572	0.0471	1.7008	0.0503	1.7512	0.4895	0.0481	0.5377		5,178.4699	5,178.4699	0.3148	0.7468	5,408.8693
Worker	3.6125	2.2111	32.9932	0.1083	13.9162	0.0674	13.9836	3.6906	0.0620	3.7527		10,943.8528	10,943.8528	0.2426	0.2551	11,025.9277
Total	3.8677	11.9213	36.9503	0.1553	15.6170	0.1177	15.7347	4.1801	0.1102	4.2903		16,122.3228	16,122.3228	0.5573	1.0018	16,434.7970

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2513	9.6633	3.9391	0.0461	1.7008	0.0506	1.7514	0.4895	0.0484	0.5379		5,081.688 7	5,081.688 7	0.3187	0.7359	5,308.943 8
Worker	3.4199	2.0023	30.9915	0.1046	13.9162	0.0644	13.9806	3.6906	0.0593	3.7499		10,572.33 68	10,572.33 68	0.2207	0.2399	10,649.34 29
Total	3.6713	11.6657	34.9306	0.1507	15.6170	0.1150	15.7320	4.1801	0.1077	4.2878		15,654.02 56	15,654.02 56	0.5394	0.9758	15,958.28 67

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2513	9.6633	3.9391	0.0461	1.7008	0.0506	1.7514	0.4895	0.0484	0.5379		5,081.688 7	5,081.688 7	0.3187	0.7359	5,308.943 8
Worker	3.4199	2.0023	30.9915	0.1046	13.9162	0.0644	13.9806	3.6906	0.0593	3.7499		10,572.33 68	10,572.33 68	0.2207	0.2399	10,649.34 29
Total	3.6713	11.6657	34.9306	0.1507	15.6170	0.1150	15.7320	4.1801	0.1077	4.2878		15,654.02 56	15,654.02 56	0.5394	0.9758	15,958.28 67

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2475	9.5951	3.9244	0.0451	1.7008	0.0506	1.7513	0.4895	0.0484	0.5379		4,984.456 9	4,984.456 9	0.3223	0.7246	5,208.441 4
Worker	3.2522	1.8317	29.3107	0.1014	13.9162	0.0612	13.9774	3.6906	0.0564	3.7470		10,247.24 96	10,247.24 96	0.2018	0.2275	10,320.07 69
Total	3.4996	11.4267	33.2351	0.1465	15.6169	0.1118	15.7287	4.1801	0.1047	4.2848		15,231.70 65	15,231.70 65	0.5241	0.9520	15,528.51 83

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2475	9.5951	3.9244	0.0451	1.7008	0.0506	1.7513	0.4895	0.0484	0.5379		4,984.456 9	4,984.456 9	0.3223	0.7246	5,208.441 4
Worker	3.2522	1.8317	29.3107	0.1014	13.9162	0.0612	13.9774	3.6906	0.0564	3.7470		10,247.24 96	10,247.24 96	0.2018	0.2275	10,320.07 69
Total	3.4996	11.4267	33.2351	0.1465	15.6169	0.1118	15.7287	4.1801	0.1047	4.2848		15,231.70 65	15,231.70 65	0.5241	0.9520	15,528.51 83

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0392	0.0221	0.3531	1.2200e-003	0.1677	7.4000e-004	0.1684	0.0445	6.8000e-004	0.0451		123.4608	123.4608	2.4300e-003	2.7400e-003	124.3383
Total	0.0392	0.0221	0.3531	1.2200e-003	0.1677	7.4000e-004	0.1684	0.0445	6.8000e-004	0.0451		123.4608	123.4608	2.4300e-003	2.7400e-003	124.3383

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.745 2	2,206.745 2	0.7137		2,224.587 8
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.745 2	2,206.745 2	0.7137		2,224.587 8

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0392	0.0221	0.3531	1.2200e-003	0.1677	7.4000e-004	0.1684	0.0445	6.8000e-004	0.0451		123.4608	123.4608	2.4300e-003	2.7400e-003	124.3383
Total	0.0392	0.0221	0.3531	1.2200e-003	0.1677	7.4000e-004	0.1684	0.0445	6.8000e-004	0.0451		123.4608	123.4608	2.4300e-003	2.7400e-003	124.3383

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	213.5142					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	213.6851	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.6504	0.3663	5.8621	0.0203	2.7832	0.0123	2.7955	0.7381	0.0113	0.7494		2,049.4499	2,049.4499	0.0404	0.0455	2,064.0154
Total	0.6504	0.3663	5.8621	0.0203	2.7832	0.0123	2.7955	0.7381	0.0113	0.7494		2,049.4499	2,049.4499	0.0404	0.0455	2,064.0154

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	213.5142					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	213.6851	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.6504	0.3663	5.8621	0.0203	2.7832	0.0123	2.7955	0.7381	0.0113	0.7494		2,049.4499	2,049.4499	0.0404	0.0455	2,064.0154
Total	0.6504	0.3663	5.8621	0.0203	2.7832	0.0123	2.7955	0.7381	0.0113	0.7494		2,049.4499	2,049.4499	0.0404	0.0455	2,064.0154

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	20.9767	21.5742	200.5621	0.4566	53.4799	0.3192	53.7991	14.2548	0.2968	14.5516		46,519.17 25	46,519.17 25	3.0036	2.0227	47,197.02 48
Unmitigated	20.9767	21.5742	200.5621	0.4566	53.4799	0.3192	53.7991	14.2548	0.2968	14.5516		46,519.17 25	46,519.17 25	3.0036	2.0227	47,197.02 48

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	8,726.12	8,726.12	8726.12	25,380,287	25,380,287
Enclosed Parking with Elevator	0.00	0.00	0.00		
Total	8,726.12	8,726.12	8,726.12	25,380,287	25,380,287

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	9.00	9.00	9.00	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.547453	0.060181	0.185039	0.126487	0.024236	0.006679	0.014707	0.004926	0.000662	0.000378	0.024745	0.000705	0.003801
Enclosed Parking with Elevator	0.547453	0.060181	0.185039	0.126487	0.024236	0.006679	0.014707	0.004926	0.000662	0.000378	0.024745	0.000705	0.003801

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919
NaturalGas Unmitigated	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	24227.2	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	24.2272	0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.2613	2.2327	0.9501	0.0143		0.1805	0.1805		0.1805	0.1805		2,850.2543	2,850.2543	0.0546	0.0523	2,867.1919

6.0 Area Detail

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703
Unmitigated	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2229					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	25.2520					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	2.2030	18.8260	8.0111	0.1202		1.5221	1.5221		1.5221	1.5221	0.0000	24,033.1765	24,033.1765	0.4606	0.4406	24,175.9936
Landscaping	3.1394	1.1991	104.1398	5.5100e-003		0.5774	0.5774		0.5774	0.5774		187.7635	187.7635	0.1805		192.2766
Total	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.2229					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	25.2520					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	2.2030	18.8260	8.0111	0.1202		1.5221	1.5221		1.5221	1.5221	0.0000	24,033.1765	24,033.1765	0.4606	0.4406	24,175.9936
Landscaping	3.1394	1.1991	104.1398	5.5100e-003		0.5774	0.5774		0.5774	0.5774		187.7635	187.7635	0.1805		192.2766
Total	32.8174	20.0251	112.1509	0.1257		2.0995	2.0995		2.0995	2.0995	0.0000	24,220.9399	24,220.9399	0.6412	0.4406	24,368.2703

7.0 Water Detail

7.1 Mitigation Measures Water

The Market Place - Proposed Project - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation



2656 29th Street, Suite 201
Santa Monica, CA 90405

Matt Hagemann, P.G., C.Hg.
(949) 887-9013
mhagemann@swape.com

Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

**Geologic and Hydrogeologic Characterization
Investigation and Remediation Strategies
Litigation Support and Testifying Expert
Industrial Stormwater Compliance
CEQA Review**

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.

B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist

California Certified Hydrogeologist

Qualified SWPPP Developer and Practitioner

Professional Experience:

Matt has 30 years of experience in environmental policy, contaminant assessment and remediation, stormwater compliance, and CEQA review. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) and directed efforts to improve hydrogeologic characterization and water quality monitoring. For the past 15 years, as a founding partner with SWAPE, Matt has developed extensive client relationships and has managed complex projects that include consultation as an expert witness and a regulatory specialist, and a manager of projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2014, 2017;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt’s responsibilities have included:

- Lead analyst and testifying expert in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at more than 100 industrial facilities.
- Expert witness on numerous cases including, for example, perfluorooctanoic acid (PFOA) contamination of groundwater, MTBE litigation, air toxins at hazards at a school, CERCLA compliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.

With Komex H2O Science Inc., Matt’s duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted

public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nationwide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9.

Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, *Oxygenates in Water: Critical Information and Research Needs*.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific

principles into the policy-making process.

- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt is currently a part time geology instructor at Golden West College in Huntington Beach, California where he taught from 2010 to 2014 and in 2017.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Colorado.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal representatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F.** 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukunaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Clean up at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examinations, 2009-2011.



Technical Consultation, Data Analysis and
Litigation Support for the Environment

SOIL WATER AIR PROTECTION ENTERPRISE
2656 29th Street, Suite 201
Santa Monica, California 90405
Attn: Paul Rosenfeld, Ph.D.
Mobil: (310) 795-2335
Office: (310) 452-5555
Fax: (310) 452-5550
Email: prosenfeld@swape.com

Paul Rosenfeld, Ph.D.

Principal Environmental Chemist

Chemical Fate and Transport & Air Dispersion Modeling

Risk Assessment & Remediation Specialist

Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on volatile organic compound filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Focus on wastewater treatment.

Professional Experience

Dr. Rosenfeld has over 25 years of experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, industrial, military and agricultural sources, unconventional oil drilling operations, and locomotive and construction engines. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities. Dr. Rosenfeld has also successfully modeled exposure to contaminants distributed by water systems and via vapor intrusion.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, creosote, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at sites and has testified as an expert witness on numerous cases involving exposure to soil, water and air contaminants from industrial, railroad, agricultural, and military sources.

Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H₂O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

Publications:

Rosenfeld P. E., Spaeth K., Hallman R., Bressler R., Smith, G., (2022) Cancer Risk and Diesel Exhaust Exposure Among Railroad Workers. *Water Air Soil Pollution*. **233**, 171.

Remy, L.L., Clay T., Byers, V., **Rosenfeld P. E.** (2019) Hospital, Health, and Community Burden After Oil Refinery Fires, Richmond, California 2007 and 2012. *Environmental Health*. 18:48

Simons, R.A., Seo, Y. **Rosenfeld, P.**, (2015) Modeling the Effect of Refinery Emission On Residential Property Value. *Journal of Real Estate Research*. 27(3):321-342

Chen, J. A, Zapata A. R., Sutherland A. J., Molmen, D.R., Chow, B. S., Wu, L. E., **Rosenfeld, P. E.**, Hesse, R. C., (2012) Sulfur Dioxide and Volatile Organic Compound Exposure To A Community In Texas City Texas Evaluated Using Aermol and Empirical Data. *American Journal of Environmental Science*, 8(6), 622-632.

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste*. Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2010). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences*. 113–125.

Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.** (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health*. 73(6), 34-46.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries*. Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*. Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P.** (2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. *WIT Transactions on Ecology and the Environment, Air Pollution*, 123 (17), 319-327.

Tam L. K., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. *Organohalogen Compounds*, 70, 002252-002255.

Tam L. K., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. *Organohalogen Compounds*, 70, 000527-000530.

Hensley, A.R. A. Scott, J. J. J. Clark, **Rosenfeld, P.E.** (2007). Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility. *Environmental Research*. 105, 194-197.

Rosenfeld, P.E., J. J. J. Clark, A. R. Hensley, M. Suffet. (2007). The Use of an Odor Wheel Classification for Evaluation of Human Health Risk Criteria for Compost Facilities. *Water Science & Technology* 55(5), 345-357.

Rosenfeld, P. E., M. Suffet. (2007). The Anatomy Of Odour Wheels For Odours Of Drinking Water, Wastewater, Compost And The Urban Environment. *Water Science & Technology* 55(5), 335-344.

Sullivan, P. J. Clark, J.J.J., Agardy, F. J., **Rosenfeld, P.E.** (2007). *Toxic Legacy, Synthetic Toxins in the Food, Water, and Air in American Cities*. Boston Massachusetts: Elsevier Publishing

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash. *Water Science and Technology*. 49(9),171-178.

Rosenfeld P. E., J.J. Clark, I.H. (Mel) Suffet (2004). The Value of An Odor-Quality-Wheel Classification Scheme For The Urban Environment. *Water Environment Federation's Technical Exhibition and Conference (WEFTEC) 2004*. New Orleans, October 2-6, 2004.

Rosenfeld, P.E., and Suffet, I.H. (2004). Understanding Odorants Associated With Compost, Biomass Facilities, and the Land Application of Biosolids. *Water Science and Technology*. 49(9), 193-199.

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash, *Water Science and Technology*, 49(9), 171-178.

Rosenfeld, P. E., Grey, M. A., Sellew, P. (2004). Measurement of Biosolids Odor and Odorant Emissions from Windrows, Static Pile and Biofilter. *Water Environment Research*. 76(4), 310-315.

Rosenfeld, P.E., Grey, M and Suffet, M. (2002). Compost Demonstration Project, Sacramento California Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Integrated Waste Management Board Public Affairs Office, Publications Clearinghouse (MS-6)*, Sacramento, CA Publication #442-02-008.

Rosenfeld, P.E., and C.L. Henry. (2001). Characterization of odor emissions from three different biosolids. *Water Soil and Air Pollution*. 127(1-4), 173-191.

Rosenfeld, P.E., and Henry C. L., (2000). Wood ash control of odor emissions from biosolids application. *Journal of Environmental Quality*. 29, 1662-1668.

Rosenfeld, P.E., C.L. Henry and D. Bennett. (2001). Wastewater dewatering polymer affect on biosolids odor emissions and microbial activity. *Water Environment Research*. 73(4), 363-367.

Rosenfeld, P.E., and C.L. Henry. (2001). Activated Carbon and Wood Ash Sorption of Wastewater, Compost, and Biosolids Odorants. *Water Environment Research*, 73, 388-393.

Rosenfeld, P.E., and Henry C. L., (2001). High carbon wood ash effect on biosolids microbial activity and odor. *Water Environment Research*. 131(1-4), 247-262.

Chollack, T. and **P. Rosenfeld**. (1998). Compost Amendment Handbook For Landscaping. Prepared for and distributed by the City of Redmond, Washington State.

Rosenfeld, P. E. (1992). The Mount Liamuiga Crater Trail. *Heritage Magazine of St. Kitts*, 3(2).

Rosenfeld, P. E. (1993). High School Biogas Project to Prevent Deforestation On St. Kitts. *Biomass Users Network*, 7(1).

Rosenfeld, P. E. (1998). Characterization, Quantification, and Control of Odor Emissions From Biosolids Application To Forest Soil. Doctoral Thesis. University of Washington College of Forest Resources.

Rosenfeld, P. E. (1994). Potential Utilization of Small Diameter Trees on Sierra County Public Land. Masters thesis reprinted by the Sierra County Economic Council. Sierra County, California.

Rosenfeld, P. E. (1991). How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelors Thesis. University of California.

Presentations:

Rosenfeld, P.E., "The science for Perfluorinated Chemicals (PFAS): What makes remediation so hard?" Law Seminars International, (May 9-10, 2018) 800 Fifth Avenue, Suite 101 Seattle, WA.

Rosenfeld, P.E., Sutherland, A; Hesse, R.; Zapata, A. (October 3-6, 2013). Air dispersion modeling of volatile organic emissions from multiple natural gas wells in Decatur, TX. *44th Western Regional Meeting, American Chemical Society*. Lecture conducted from Santa Clara, CA.

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Atrazine: A Persistent Pesticide in Urban Drinking Water. *Urban Environmental Pollution*. Lecture conducted from Boston, MA.

Feng, L.; Gonzalez, J.; Sok, H.L.; Sutherland, A.J.; Waller, C.C.; Wisdom-Stack, T.; Sahai, R.K.; La, M.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Bringing Environmental Justice to East St. Louis, Illinois. *Urban Environmental Pollution*. Lecture conducted from Boston, MA.

Rosenfeld, P.E. (April 19-23, 2009). Perfluorooctanoic Acid (PFOA) and Perfluoroactane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*, Lecture conducted from Tuscon, AZ.

Rosenfeld, P.E. (April 19-23, 2009). Cost to Filter Atrazine Contamination from Drinking Water in the United States" Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*. Lecture conducted from Tuscon, AZ.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P.** (20-22 July, 2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. Brebbia, C.A. and Popov, V., eds., *Air Pollution XVII: Proceedings of the Seventeenth International Conference on Modeling, Monitoring and Management of Air Pollution*. Lecture conducted from Tallinn, Estonia.

Rosenfeld, P. E. (October 15-18, 2007). Moss Point Community Exposure To Contaminants From A Releasing Facility. *The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant. *The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions. *The 23rd Annual International Conferences on Soils Sediment and Water*. Lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld P. E. (March 2007). Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP). *The Association for Environmental Health and Sciences (AEHS) Annual Meeting*. Lecture conducted from San Diego, CA.

Rosenfeld P. E. (March 2007). Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florida, Alabama. *The AEHS Annual Meeting*. Lecture conducted from San Diego, CA.

Hensley A.R., Scott, A., **Rosenfeld P.E.**, Clark, J.J.J. (August 21 – 25, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*. Lecture conducted from Radisson SAS Scandinavia Hotel in Oslo Norway.

Hensley A.R., Scott, A., **Rosenfeld P.E.**, Clark, J.J.J. (November 4-8, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *APHA 134 Annual Meeting & Exposition*. Lecture conducted from Boston Massachusetts.

Paul Rosenfeld Ph.D. (October 24-25, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. Mealey's C8/PFOA. *Science, Risk & Litigation Conference*. Lecture conducted from The Rittenhouse Hotel, Philadelphia, PA.

Paul Rosenfeld Ph.D. (September 19, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, *Toxicology and Remediation PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. (September 19, 2005). Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP. *PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel in Irvine, California.

Paul Rosenfeld Ph.D. (September 26-27, 2005). Fate, Transport and Persistence of PDBEs. *Mealey's Groundwater Conference*. Lecture conducted from Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. (June 7-8, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. *International Society of Environmental Forensics: Focus On Emerging Contaminants*. Lecture conducted from Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Fate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals. *2005 National Groundwater Association Ground Water And Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation. *2005 National Groundwater Association Ground Water and Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. (May 5-6, 2004). Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. *National Groundwater Association. Environmental Law Conference*. Lecture conducted from Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D. (March 2004). Perchlorate Toxicology. *Meeting of the American Groundwater Trust*. Lecture conducted from Phoenix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse (2004). Perchlorate Contamination of the Colorado River. *Meeting of tribal representatives*. Lecture conducted from Parker, AZ.

Paul Rosenfeld, Ph.D. (April 7, 2004). A National Damage Assessment Model For PCE and Dry Cleaners. *Drycleaner Symposium. California Ground Water Association*. Lecture conducted from Radison Hotel, Sacramento, California.

Rosenfeld, P. E., Grey, M., (June 2003) Two stage biofilter for biosolids composting odor control. *Seventh International In Situ And On Site Bioremediation Symposium Battelle Conference Orlando, FL*.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. (February 20-21, 2003) Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. *National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants..* Lecture conducted from Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. (February 6-7, 2003). Underground Storage Tank Litigation and Remediation. *California CUPA Forum*. Lecture conducted from Marriott Hotel, Anaheim California.

Paul Rosenfeld, Ph.D. (October 23, 2002) Underground Storage Tank Litigation and Remediation. *EPA Underground Storage Tank Roundtable*. Lecture conducted from Sacramento California.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Understanding Odor from Compost, *Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Using High Carbon Wood Ash to Control Compost Odor. *Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Grey, M. A. (September 22-24, 2002). Biocycle Composting For Coastal Sage Restoration. *Northwest Biosolids Management Association*. Lecture conducted from Vancouver Washington..

Rosenfeld, P.E. and Grey, M. A. (November 11-14, 2002). Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Soil Science Society Annual Conference*. Lecture conducted from Indianapolis, Maryland.

Rosenfeld, P.E. (September 16, 2000). Two stage biofilter for biosolids composting odor control. *Water Environment Federation*. Lecture conducted from Anaheim California.

Rosenfeld, P.E. (October 16, 2000). Wood ash and biofilter control of compost odor. *Biofest*. Lecture conducted from Ocean Shores, California.

Rosenfeld, P.E. (2000). Bioremediation Using Organic Soil Amendments. *California Resource Recovery Association*. Lecture conducted from Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. *Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings*. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. (1999). An evaluation of ash incorporation with biosolids for odor reduction. *Soil Science Society of America*. Lecture conducted from Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Brown and Caldwell*. Lecture conducted from Seattle Washington.

Rosenfeld, P.E., C.L. Henry. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. *Biofest*. Lecture conducted from Lake Chelan, Washington.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. (1997). Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. *Soil Science Society of America*. Lecture conducted from Anaheim California.

Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 2010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focused on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course in Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5, 2002. Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded:

California Integrated Waste Management Board. \$41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: \$10,000 grant awarded to San Diego State University. Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. \$100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. \$20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: \$10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: \$15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. \$500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993

Deposition and/or Trial Testimony:

In the Superior Court of the State of California, County of San Bernardino
Billy Wildrick, Plaintiff vs. BNSF Railway Company
Case No. CIVDS1711810
Rosenfeld Deposition 10-17-2022

In the State Court of Bibb County, State of Georgia
Richard Hutcherson, Plaintiff vs Norfolk Southern Railway Company
Case No. 10-SCCV-092007
Rosenfeld Deposition 10-6-2022

In the Civil District Court of the Parish of Orleans, State of Louisiana
Millard Clark, Plaintiff vs. Dixie Carriers, Inc. et al.
Case No. 2020-03891
Rosenfeld Deposition 9-15-2022

In The Circuit Court of Livingston County, State of Missouri, Circuit Civil Division
Shirley Ralls, Plaintiff vs. Canadian Pacific Railway and Soo Line Railroad
Case No. 18-LV-CC0020
Rosenfeld Deposition 9-7-2022

In The Circuit Court of the 13th Judicial Circuit Court, Hillsborough County, Florida Civil Division
Jonny C. Daniels, Plaintiff vs. CSX Transportation Inc.
Case No. 20-CA-5502
Rosenfeld Deposition 9-1-2022

In The Circuit Court of St. Louis County, State of Missouri
Kieth Luke et. al. Plaintiff vs. Monsanto Company et. al.
Case No. 19SL-CC03191
Rosenfeld Deposition 8-25-2022

In The Circuit Court of the 13th Judicial Circuit Court, Hillsborough County, Florida Civil Division
Jeffery S. Lamotte, Plaintiff vs. CSX Transportation Inc.
Case No. NO. 20-CA-0049
Rosenfeld Deposition 8-22-2022

In State of Minnesota District Court, County of St. Louis Sixth Judicial District
Greg Bean, Plaintiff vs. Soo Line Railroad Company
Case No. 69-DU-CV-21-760
Rosenfeld Deposition 8-17-2022

In United States District Court Western District of Washington at Tacoma, Washington
John D. Fitzgerald Plaintiff vs. BNSF
Case No. 3:21-cv-05288-RJB
Rosenfeld Deposition 8-11-2022

In Circuit Court of the Sixth Judicial Circuit, Macon Illinois
Rocky Bennyhoff Plaintiff vs. Norfolk Southern
Case No. 20-L-56
Rosenfeld Deposition 8-3-2022

In Court of Common Pleas, Hamilton County Ohio
Joe Briggins Plaintiff vs. CSX
Case No. A2004464
Rosenfeld Deposition 6-17-2022

In the Superior Court of the State of California, County of Kern
George LaFazia vs. BNSF Railway Company.
Case No. BCV-19-103087
Rosenfeld Deposition 5-17-2022

In the Circuit Court of Cook County Illinois
Bobby Earles vs. Penn Central et. al.
Case No. 2020-L-000550
Rosenfeld Deposition 4-16-2022

In United States District Court Easter District of Florida
Albert Hartman Plaintiff vs. Illinois Central
Case No. 2:20-cv-1633
Rosenfeld Deposition 4-4-2022

In the Circuit Court of the 4th Judicial Circuit, in and For Duval County, Florida
Barbara Steele vs. CSX Transportation
Case No.16-219-Ca-008796
Rosenfeld Deposition 3-15-2022

In United States District Court Easter District of New York
Romano et al. vs. Northrup Grumman Corporation
Case No. 16-cv-5760
Rosenfeld Deposition 3-10-2022

In the Circuit Court of Cook County Illinois
Linda Benjamin vs. Illinois Central
Case No. No. 2019 L 007599
Rosenfeld Deposition 1-26-2022

In the Circuit Court of Cook County Illinois
Donald Smith vs. Illinois Central
Case No. No. 2019 L 003426
Rosenfeld Deposition 1-24-2022

In the Circuit Court of Cook County Illinois
Jan Holeman vs. BNSF
Case No. 2019 L 000675
Rosenfeld Deposition 1-18-2022

In the State Court of Bibb County State of Georgia
Dwayne B. Garrett vs. Norfolk Southern
Case No. 20-SCCV-091232
Rosenfeld Deposition 11-10-2021

In the Circuit Court of Cook County Illinois
Joseph Ruepke vs. BNSF
Case No. 2019 L 007730
Rosenfeld Deposition 11-5-2021

In the United States District Court For the District of Nebraska
Steven Gillett vs. BNSF
Case No. 4:20-cv-03120
Rosenfeld Deposition 10-28-2021

In the Montana Thirteenth District Court of Yellowstone County
James Eadus vs. Soo Line Railroad and BNSF
Case No. DV 19-1056
Rosenfeld Deposition 10-21-2021

In the Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al.cvs. Cerro Flow Products, Inc.
Case No. 0i9-L-2295
Rosenfeld Deposition 5-14-2021
Trial October 8-4-2021

In the Circuit Court of Cook County Illinois
Joseph Rafferty vs. Consolidated Rail Corporation and National Railroad Passenger Corporation d/b/a
AMTRAK,
Case No. 18-L-6845
Rosenfeld Deposition 6-28-2021

In the United States District Court For the Northern District of Illinois
Theresa Romcoe vs. Northeast Illinois Regional Commuter Railroad Corporation d/b/a METRA Rail
Case No. 17-cv-8517
Rosenfeld Deposition 5-25-2021

In the Superior Court of the State of Arizona In and For the Cunty of Maricopa
Mary Tryon et al. vs. The City of Pheonix v. Cox Cactus Farm, L.L.C., Utah Shelter Systems, Inc.
Case No. CV20127-094749
Rosenfeld Deposition 5-7-2021

In the United States District Court for the Eastern District of Texas Beaumont Division
Robinson, Jeremy et al vs. CNA Insurance Company et al.
Case No. 1:17-cv-000508
Rosenfeld Deposition 3-25-2021

In the Superior Court of the State of California, County of San Bernardino
Gary Garner, Personal Representative for the Estate of Melvin Garner vs. BNSF Railway Company.
Case No. 1720288
Rosenfeld Deposition 2-23-2021

In the Superior Court of the State of California, County of Los Angeles, Spring Street Courthouse
Benny M Rodriguez vs. Union Pacific Railroad, A Corporation, et al.
Case No. 18STCV01162
Rosenfeld Deposition 12-23-2020

In the Circuit Court of Jackson County, Missouri
Karen Cornwell, Plaintiff, vs. Marathon Petroleum, LP, Defendant.
Case No. 1716-CV10006
Rosenfeld Deposition 8-30-2019

In the United States District Court For The District of New Jersey
Duarte et al, Plaintiffs, vs. United States Metals Refining Company et. al. Defendant.
Case No. 2:17-cv-01624-ES-SCM
Rosenfeld Deposition 6-7-2019

In the United States District Court of Southern District of Texas Galveston Division
M/T Carla Maersk vs. Conti 168., Schiffahrts-GMBH & Co. Bulker KG MS “Conti Perdido” Defendant.
Case No. 3:15-CV-00106 consolidated with 3:15-CV-00237
Rosenfeld Deposition 5-9-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
Carole-Taddeo-Bates et al., vs. Ifran Khan et al., Defendants
Case No. BC615636
Rosenfeld Deposition 1-26-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
The San Gabriel Valley Council of Governments et al. vs El Adobe Apts. Inc. et al., Defendants
Case No. BC646857
Rosenfeld Deposition 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiffs vs. The 3M Company et al., Defendants
Case No. 1:16-cv-02531-RBJ
Rosenfeld Deposition 3-15-2018 and 4-3-2018

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosiences, LLC, et al., Defendants
Cause No. 1923
Rosenfeld Deposition 11-17-2017

In The Superior Court of the State of California In And For The County Of Contra Costa
Simons et al., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No. C12-01481
Rosenfeld Deposition 11-20-2017

In The Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition 8-23-2017

In United States District Court For The Southern District of Mississippi
Guy Manuel vs. The BP Exploration et al., Defendants
Case No. 1:19-cv-00315-RHW
Rosenfeld Deposition 4-22-2020

In The Superior Court of the State of California, For The County of Los Angeles
Warrn Gilbert and Penny Gilbert, Plaintiff vs. BMW of North America LLC
Case No. LC102019 (c/w BC582154)
Rosenfeld Deposition 8-16-2017, Trail 8-28-2018

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., Plaintiffs, vs. Meritor Inc., et al., Defendants
Case No. 4:16-cv-52-DMB-JVM
Rosenfeld Deposition July 2017

In The Superior Court of the State of Washington, County of Snohomish
Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No. 13-2-03987-5
Rosenfeld Deposition, February 2017
Trial March 2017

In The Superior Court of the State of California, County of Alameda
Charles Spain., Plaintiff vs. Thermo Fisher Scientific, et al., Defendants
Case No. RG14711115
Rosenfeld Deposition September 2015

In The Iowa District Court In And For Poweshiek County
Russell D. Winburn, et al., Plaintiffs vs. Doug Hoksbergen, et al., Defendants
Case No. LALA002187
Rosenfeld Deposition August 2015

In The Circuit Court of Ohio County, West Virginia
Robert Andrews, et al. v. Antero, et al.
Civil Action No. 14-C-30000
Rosenfeld Deposition June 2015

In The Iowa District Court for Muscatine County
Laurie Freeman et. al. Plaintiffs vs. Grain Processing Corporation, Defendant
Case No. 4980
Rosenfeld Deposition May 2015

In the Circuit Court of the 17th Judicial Circuit, in and For Broward County, Florida
Walter Hinton, et. al. Plaintiff, vs. City of Fort Lauderdale, Florida, a Municipality, Defendant.
Case No. CACE07030358 (26)
Rosenfeld Deposition December 2014

In the County Court of Dallas County Texas
Lisa Parr et al, Plaintiff, vs. Aruba et al, Defendant.
Case No. cc-11-01650-E
Rosenfeld Deposition: March and September 2013
Rosenfeld Trial April 2014

In the Court of Common Pleas of Tuscarawas County Ohio
John Michael Abicht, et al., Plaintiffs, vs. Republic Services, Inc., et al., Defendants
Case No. 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)
Rosenfeld Deposition October 2012

In the United States District Court for the Middle District of Alabama, Northern Division
James K. Benefield, et al., Plaintiffs, vs. International Paper Company, Defendant.
Civil Action No. 2:09-cv-232-WHA-TFM
Rosenfeld Deposition July 2010, June 2011

In the Circuit Court of Jefferson County Alabama
Jaeante Moss Anthony, et al., Plaintiffs, vs. Drummond Company Inc., et al., Defendants
Civil Action No. CV 2008-2076
Rosenfeld Deposition September 2010

In the United States District Court, Western District Lafayette Division
Ackle et al., Plaintiffs, vs. Citgo Petroleum Corporation, et al., Defendants.
Case No. 2:07CV1052
Rosenfeld Deposition July 2009

EXHIBIT B



INDOOR ENVIRONMENTAL ENGINEERING



1448 Pine Street, Suite 103 San Francisco, California 94109

Telephone: (415) 567-7700

E-mail: offermann@IEE-SF.com

<http://www.iee-sf.com>

Date: May 15, 2023

To: Adam Frankel
Lozeau | Drury LLP
1939 Harrison Street, Suite 150
Oakland, California 94612

From: Francis J. Offermann PE CIH

Subject: Indoor Air Quality: Irvine Market Place Project, Irvine, CA
(IEE File Reference: P-4710)

Pages: 19

Indoor Air Quality Impacts

Indoor air quality (IAQ) directly impacts the comfort and health of building occupants, and the achievement of acceptable IAQ in newly constructed and renovated buildings is a well-recognized design objective. For example, IAQ is addressed by major high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014). Indoor air quality in homes is particularly important because occupants, on average, spend approximately ninety percent of their time indoors with the majority of this time spent at home (EPA, 2011). Some segments of the population that are most susceptible to the effects of poor IAQ, such as the very young and the elderly, occupy their homes almost continuously. Additionally, an increasing number of adults are working from home at least some of the time during the workweek. Indoor air quality also is a serious concern for workers in hotels, offices and other business establishments.

The concentrations of many air pollutants often are elevated in homes and other buildings relative to outdoor air because many of the materials and products used indoors contain

and release a variety of pollutants to air (Hodgson et al., 2002; Offermann and Hodgson, 2011). With respect to indoor air contaminants for which inhalation is the primary route of exposure, the critical design and construction parameters are the provision of adequate ventilation and the reduction of indoor sources of the contaminants.

Indoor Formaldehyde Concentrations Impact. In the California New Home Study (CNHS) of 108 new homes in California (Offermann, 2009), 25 air contaminants were measured, and formaldehyde was identified as the indoor air contaminant with the highest cancer risk as determined by the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), No Significant Risk Levels (NSRL) for carcinogens. The NSRL is the daily intake level calculated to result in one excess case of cancer in an exposed population of 100,000 (i.e., ten in one million cancer risk) and for formaldehyde is 40 µg/day. The NSRL concentration of formaldehyde that represents a daily dose of 40 µg is 2 µg/m³, assuming a continuous 24-hour exposure, a total daily inhaled air volume of 20 m³, and 100% absorption by the respiratory system. All of the CNHS homes exceeded this NSRL concentration of 2 µg/m³. The median indoor formaldehyde concentration was 36 µg/m³, and ranged from 4.8 to 136 µg/m³, which corresponds to a median exceedance of the 2 µg/m³ NSRL concentration of 18 and a range of 2.3 to 68.

Therefore, the cancer risk of a resident living in a California home with the median indoor formaldehyde concentration of 36 µg/m³, is 180 per million as a result of formaldehyde alone. The CEQA significance threshold for airborne cancer risk is 10 per million, as established by the San Diego Air Quality Management District (SDAQMD, 2015).

Besides being a human carcinogen, formaldehyde is also a potent eye and respiratory irritant. In the CNHS, many homes exceeded the non-cancer reference exposure levels (RELs) prescribed by California Office of Environmental Health Hazard Assessment (OEHHA, 2017b). The percentage of homes exceeding the RELs ranged from 98% for the Chronic REL of 9 µg/m³ to 28% for the Acute REL of 55 µg/m³.

The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and

particleboard. These materials are commonly used in building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims.

In January 2009, the California Air Resources Board (CARB) adopted an airborne toxics control measure (ATCM) to reduce formaldehyde emissions from composite wood products, including hardwood plywood, particleboard, medium density fiberboard, and also furniture and other finished products made with these wood products (California Air Resources Board 2009). While this formaldehyde ATCM has resulted in reduced emissions from composite wood products sold in California, they do not preclude that homes built with composite wood products meeting the CARB ATCM will have indoor formaldehyde concentrations below cancer and non-cancer exposure guidelines.

A follow up study to the California New Home Study (CNHS) was conducted in 2016-2018 (Singer et. al., 2019), and found that the median indoor formaldehyde in new homes built after 2009 with CARB Phase 2 Formaldehyde ATCM materials had lower indoor formaldehyde concentrations, with a median indoor concentrations of $22.4 \mu\text{g}/\text{m}^3$ (18.2 ppb) as compared to a median of $36 \mu\text{g}/\text{m}^3$ found in the 2007 CNHS. Unlike in the CNHS study where formaldehyde concentrations were measured with pumped DNPH samplers, the formaldehyde concentrations in the HENGH study were measured with passive samplers, which were estimated to under-measure the true indoor formaldehyde concentrations by approximately 7.5%. Applying this correction to the HENGH indoor formaldehyde concentrations results in a median indoor concentration of $24.1 \mu\text{g}/\text{m}^3$, which is 33% lower than the $36 \mu\text{g}/\text{m}^3$ found in the 2007 CNHS.

Thus, while new homes built after the 2009 CARB formaldehyde ATCM have a 33% lower median indoor formaldehyde concentration and cancer risk, the median lifetime cancer risk is still 120 per million for homes built with CARB compliant composite wood products. This median lifetime cancer risk is more than 12 times the OEHHA 10 in a million cancer risk threshold (OEHHA, 2017a).

With respect to the Irvine Market Place Project, Irvine, CA, the buildings consist of residential spaces.

The residential occupants will potentially have continuous exposure (e.g. 24 hours per day, 52 weeks per year). These exposures are anticipated to result in significant cancer risks resulting from exposures to formaldehyde released by the building materials and furnishing commonly found in residential construction.

Because these residences will be constructed with CARB Phase 2 Formaldehyde ATCM materials, and be ventilated with the minimum code required amount of outdoor air, the indoor residential formaldehyde concentrations are likely similar to those concentrations observed in residences built with CARB Phase 2 Formaldehyde ATCM materials, which is a median of 24.1 $\mu\text{g}/\text{m}^3$ (Singer et. al., 2020)

Assuming that the residential occupants inhale 20 m^3 of air per day, the average 70-year lifetime formaldehyde daily dose is 482 $\mu\text{g}/\text{day}$ for continuous exposure in the residences. This exposure represents a cancer risk of 120 per million, which is more than 12 times the CEQA cancer risk of 10 per million. For occupants that do not have continuous exposure, the cancer risk will be proportionally less but still substantially over the CEQA cancer risk of 10 per million (e.g. for 12/hour/day occupancy, more than 6 times the CEQA cancer risk of 10 per million).

In addition, we note that the average outdoor air concentration of formaldehyde in California is 3 ppb, or 3.7 $\mu\text{g}/\text{m}^3$, (California Air Resources Board, 2004), and thus represents an average pre-existing background airborne cancer risk of 1.85 per million. Thus, the indoor air formaldehyde exposures describe above exacerbate this pre-existing risk resulting from outdoor air formaldehyde exposures.

Additionally, the SCAQMD's Multiple Air Toxics Exposure Study ("MATES V") identifies an existing cancer risk at the Project site of 736 per million due to the site's elevated ambient air contaminant concentrations, which are due to the area's high levels of vehicle traffic. These impacts would further exacerbate the pre-existing cancer risk to the building occupants, which result from exposure to formaldehyde in both indoor and outdoor air.

Appendix A, Indoor Formaldehyde Concentrations and the CARB Formaldehyde ATCM, provides analyses that show utilization of CARB Phase 2 Formaldehyde ATCM materials will not ensure acceptable cancer risks with respect to formaldehyde emissions from composite wood products.

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde that meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

The following describes a method that should be used, prior to construction in the environmental review under CEQA, for determining whether the indoor concentrations resulting from the formaldehyde emissions of specific building materials/furnishings selected exceed cancer and non-cancer guidelines. Such a design analyses can be used to identify those materials/furnishings prior to the completion of the City's CEQA review and project approval, that have formaldehyde emission rates that contribute to indoor concentrations that exceed cancer and non-cancer guidelines, so that alternative lower emitting materials/furnishings may be selected and/or higher minimum outdoor air ventilation rates can be increased to achieve acceptable indoor concentrations and incorporated as mitigation measures for this project.

Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment

This formaldehyde emissions assessment should be used in the environmental review under CEQA to assess the indoor formaldehyde concentrations from the proposed loading of building materials/furnishings, the area-specific formaldehyde emission rate data for building materials/furnishings, and the design minimum outdoor air ventilation

rates. This assessment allows the applicant (and the City) to determine, before the conclusion of the environmental review process and the building materials/furnishings are specified, purchased, and installed, if the total chemical emissions will exceed cancer and non-cancer guidelines, and if so, allow for changes in the selection of specific material/furnishings and/or the design minimum outdoor air ventilations rates such that cancer and non-cancer guidelines are not exceeded.

1.) Define Indoor Air Quality Zones. Divide the building into separate indoor air quality zones, (IAQ Zones). IAQ Zones are defined as areas of well-mixed air. Thus, each ventilation system with recirculating air is considered a single zone, and each room or group of rooms where air is not recirculated (e.g. 100% outdoor air) is considered a separate zone. For IAQ Zones with the same construction material/furnishings and design minimum outdoor air ventilation rates. (e.g. hotel rooms, apartments, condominiums, etc.) the formaldehyde emission rates need only be assessed for a single IAQ Zone of that type.

2.) Calculate Material/Furnishing Loading. For each IAQ Zone, determine the building material and furnishing loadings (e.g., m² of material/m² floor area, units of furnishings/m² floor area) from an inventory of all potential indoor formaldehyde sources, including flooring, ceiling tiles, furnishings, finishes, insulation, sealants, adhesives, and any products constructed with composite wood products containing urea-formaldehyde resins (e.g., plywood, medium density fiberboard, particleboard).

3.) Calculate the Formaldehyde Emission Rate. For each building material, calculate the formaldehyde emission rate (µg/h) from the product of the area-specific formaldehyde emission rate (µg/m²-h) and the area (m²) of material in the IAQ Zone, and from each furnishing (e.g. chairs, desks, etc.) from the unit-specific formaldehyde emission rate (µg/unit-h) and the number of units in the IAQ Zone.

NOTE: As a result of the high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014), most manufacturers of building materials furnishings sold in the United States conduct chemical emission rate tests using the California Department of Health “Standard Method for the Testing and

Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers,” (CDPH, 2017), or other equivalent chemical emission rate testing methods. Most manufacturers of building furnishings sold in the United States conduct chemical emission rate tests using ANSI/BIFMA M7.1 Standard Test Method for Determining VOC Emissions (BIFMA, 2018), or other equivalent chemical emission rate testing methods.

CDPH, BIFMA, and other chemical emission rate testing programs, typically certify that a material or furnishing does not create indoor chemical concentrations in excess of the maximum concentrations permitted by their certification. For instance, the CDPH emission rate testing requires that the measured emission rates when input into an office, school, or residential model do not exceed one-half of the OEHHA Chronic Exposure Guidelines (OEHHA, 2017b) for the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017). These certifications themselves do not provide the actual area-specific formaldehyde emission rate (i.e., $\mu\text{g}/\text{m}^2\text{-h}$) of the product, but rather provide data that the formaldehyde emission rates do not exceed the maximum rate allowed for the certification. Thus, for example, the data for a certification of a specific type of flooring may be used to calculate that the area-specific emission rate of formaldehyde is less than $31 \mu\text{g}/\text{m}^2\text{-h}$, but not the actual measured specific emission rate, which may be 3, 18, or $30 \mu\text{g}/\text{m}^2\text{-h}$. These area-specific emission rates determined from the product certifications of CDPH, BIFA, and other certification programs can be used as an initial estimate of the formaldehyde emission rate.

If the actual area-specific emission rates of a building material or furnishing is needed (i.e. the initial emission rates estimates from the product certifications are higher than desired), then that data can be acquired by requesting from the manufacturer the complete chemical emission rate test report. For instance if the complete CDPH emission test report is requested for a CDHP certified product, that report will provide the actual area-specific emission rates for not only the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017), but also all of the cancer and reproductive/developmental chemicals listed in the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), all of the toxic air contaminants (TACs) in the California Air

Resources Board Toxic Air Contamination List (CARB, 2011), and the 10 chemicals with the greatest emission rates.

Alternatively, a sample of the building material or furnishing can be submitted to a chemical emission rate testing laboratory, such as Berkeley Analytical Laboratory (<https://berkeleyanalytical.com>), to measure the formaldehyde emission rate.

4.) Calculate the Total Formaldehyde Emission Rate. For each IAQ Zone, calculate the total formaldehyde emission rate (i.e. $\mu\text{g/h}$) from the individual formaldehyde emission rates from each of the building material/furnishings as determined in Step 3.

5.) Calculate the Indoor Formaldehyde Concentration. For each IAQ Zone, calculate the indoor formaldehyde concentration ($\mu\text{g/m}^3$) from Equation 1 by dividing the total formaldehyde emission rates (i.e. $\mu\text{g/h}$) as determined in Step 4, by the design minimum outdoor air ventilation rate (m^3/h) for the IAQ Zone.

$$C_{in} = \frac{E_{total}}{Q_{oa}} \quad (\text{Equation 1})$$

where:

C_{in} = indoor formaldehyde concentration ($\mu\text{g/m}^3$)

E_{total} = total formaldehyde emission rate ($\mu\text{g/h}$) into the IAQ Zone.

Q_{oa} = design minimum outdoor air ventilation rate to the IAQ Zone (m^3/h)

The above Equation 1 is based upon mass balance theory, and is referenced in Section 3.10.2 “Calculation of Estimated Building Concentrations” of the California Department of Health “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers”, (CDPH, 2017).

6.) Calculate the Indoor Exposure Cancer and Non-Cancer Health Risks. For each IAQ Zone, calculate the cancer and non-cancer health risks from the indoor formaldehyde concentrations determined in Step 5 and as described in the OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines; Guidance Manual for Preparation of Health Risk Assessments (OEHHA, 2015).

7.) Mitigate Indoor Formaldehyde Exposures of exceeding the CEQA Cancer and/or Non-Cancer Health Risks. In each IAQ Zone, provide mitigation for any formaldehyde exposure risk as determined in Step 6, that exceeds the CEQA cancer risk of 10 per million or the CEQA non-cancer Hazard Quotient of 1.0.

Provide the source and/or ventilation mitigation required in all IAQ Zones to reduce the health risks of the chemical exposures below the CEQA cancer and non-cancer health risks.

Source mitigation for formaldehyde may include:

- 1.) reducing the amount materials and/or furnishings that emit formaldehyde
- 2.) substituting a different material with a lower area-specific emission rate of formaldehyde

Ventilation mitigation for formaldehyde emitted from building materials and/or furnishings may include:

- 1.) increasing the design minimum outdoor air ventilation rate to the IAQ Zone.

NOTE: Mitigating the formaldehyde emissions through use of less material/furnishings, or use of lower emitting materials/furnishings, is the preferred mitigation option, as mitigation with increased outdoor air ventilation increases initial and operating costs associated with the heating/cooling systems.

Further, we are not asking that the builder “speculate” on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers,” (CDPH, 2017), and use the procedure described earlier above (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off

gassing of formaldehyde.

Outdoor Air Ventilation Impact. Another important finding of the CNHS, was that the outdoor air ventilation rates in the homes were very low. Outdoor air ventilation is a very important factor influencing the indoor concentrations of air contaminants, as it is the primary removal mechanism of all indoor air generated contaminants. Lower outdoor air exchange rates cause indoor generated air contaminants to accumulate to higher indoor air concentrations. Many homeowners rarely open their windows or doors for ventilation as a result of their concerns for security/safety, noise, dust, and odor concerns (Price, 2007). In the CNHS field study, 32% of the homes did not use their windows during the 24-hour Test Day, and 15% of the homes did not use their windows during the entire preceding week. Most of the homes with no window usage were homes in the winter field session. Thus, a substantial percentage of homeowners never open their windows, especially in the winter season. The median 24-hour measurement was 0.26 air changes per hour (ach), with a range of 0.09 ach to 5.3 ach. A total of 67% of the homes had outdoor air exchange rates below the minimum California Building Code (2001) requirement of 0.35 ach. Thus, the relatively tight envelope construction, combined with the fact that many people never open their windows for ventilation, results in homes with low outdoor air exchange rates and higher indoor air contaminant concentrations.

The Irvine Market Place Project is close to roads with moderate to high traffic (e.g., Bryan Avenue, El Camino Real, Jamboree Road, SR-261, etc.), and thus the Project site is a sound impacted site.

According to the Noise and Vibration Technical Memorandum for The Market Place Project in Irvine, Orange County, California (LSA, 2023), only two 24-hour measurements of the ambient noise level were made on August 4-5, 2022. Table H states that the existing ambient noise levels range from 65.9 dBA to 66.3 dBA CNEL.

However, these acoustic measurements are only 24-hour measurements, made on a single day, August 4-5, 2022, during the pandemic when traffic activity was reduced. In order to design the building for this Project such that interior noise levels are acceptable, an acoustic study of the existing and future ambient noise levels needs to be conducted. An

acoustic study should be conducted to assess the local ambient sound levels (i.e., dBA CNEL or Ldn) over a one-week period so that the building envelope and windows can be designed with a sufficient STC such that the indoor noise levels are acceptable.

As a result of the high outdoor noise levels, the current project will require a mechanical supply of outdoor air ventilation to allow for a habitable interior environment with closed windows and doors. Such a ventilation system would allow windows and doors to be kept closed at the occupant's discretion to control exterior noise within building interiors.

PM_{2.5} Outdoor Concentrations Impact. An additional impact of the nearby motor vehicle traffic associated with this project, are the outdoor concentrations of PM_{2.5}. According to the Noise and Vibration Technical Memorandum for The Market Place Project in Irvine, Orange County, California (LSA, 2023), the Project is located in the South Coast Air Basin, which is a State and Federal non-attainment area for PM_{2.5}.

An air quality analyses should be conducted to determine the concentrations of PM_{2.5} in the outdoor and indoor air that people inhale each day. This air quality analyses needs to consider the cumulative impacts of the project related emissions, existing and projected future emissions from local PM_{2.5} sources (e.g. stationary sources, motor vehicles, and airport traffic) upon the outdoor air concentrations at the Project site. If the outdoor concentrations are determined to exceed the California and National annual average PM_{2.5} exceedence concentration of 12 µg/m³, or the National 24-hour average exceedence concentration of 35 µg/m³, then the buildings need to have a mechanical supply of outdoor air that has air filtration with sufficient removal efficiency, such that the indoor concentrations of outdoor PM_{2.5} particles is less than the California and National PM_{2.5} annual and 24-hour standards.

It is my experience that based on the projected high traffic noise levels, the annual average concentration of PM_{2.5} will exceed the California and National PM_{2.5} annual and 24-hour standards and warrant installation of high efficiency air filters (i.e. MERV 13 or higher) in all mechanically supplied outdoor air ventilation systems.

Indoor Air Quality Impact Mitigation Measures

The following are recommended mitigation measures to minimize the impacts upon indoor quality:

Indoor Formaldehyde Concentrations Mitigation. Use only composite wood materials (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins (CARB, 2009). CARB Phase 2 certified composite wood products, or ultra-low emitting formaldehyde (ULEF) resins, do not insure indoor formaldehyde concentrations that are below the CEQA cancer risk of 10 per million. Only composite wood products manufactured with CARB approved no-added formaldehyde (NAF) resins, such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

Alternatively, conduct the previously described Pre-Construction Building Material/Furnishing Chemical Emissions Assessment, to determine that the combination of formaldehyde emissions from building materials and furnishings do not create indoor formaldehyde concentrations that exceed the CEQA cancer and non-cancer health risks.

It is important to note that we are not asking that the builder “speculate” on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers”, (CDPH, 2017), and use the procedure described above (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Outdoor Air Ventilation Mitigation. Provide each habitable room with a continuous mechanical supply of outdoor air that meets or exceeds the California 2016 Building

Energy Efficiency Standards (California Energy Commission, 2015) requirements of the greater of 15 cfm/occupant or 0.15 cfm/ft² of floor area. Following installation of the system conduct testing and balancing to insure that required amount of outdoor air is entering each habitable room and provide a written report documenting the outdoor airflow rates. Do not use exhaust only mechanical outdoor air systems, use only balanced outdoor air supply and exhaust systems or outdoor air supply only systems. Provide a manual for the occupants or maintenance personnel, that describes the purpose of the mechanical outdoor air system and the operation and maintenance requirements of the system.

PM_{2.5} Outdoor Air Concentration Mitigation. Install air filtration with sufficient PM_{2.5} removal efficiency (e.g. MERV 13 or higher) to filter the outdoor air entering the mechanical outdoor air supply systems, such that the indoor concentrations of outdoor PM_{2.5} particles are less than the California and National PM_{2.5} annual and 24-hour standards. Install the air filters in the system such that they are accessible for replacement by the occupants or maintenance personnel. Include in the mechanical outdoor air ventilation system manual instructions on how to replace the air filters and the estimated frequency of replacement.

References

BIFA. 2018. BIFMA Product Safety and Performance Standards and Guidelines.
www.bifma.org/page/standardsoverview

California Air Resources Board. 2004. Formaldehyde in the Home.
<https://ww3.arb.ca.gov/research/indoor/formaldgl08-04.pdf>

California Air Resources Board. 2009. Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products. California Environmental Protection Agency, Sacramento, CA.
<https://www.arb.ca.gov/regact/2007/compwood07/fro-final.pdf>

California Air Resources Board. 2011. Toxic Air Contaminant Identification List. California Environmental Protection Agency, Sacramento, CA. <https://www.arb.ca.gov/toxics/id/taclist.htm>

California Building Code. 2001. California Code of Regulations, Title 24, Part 2 Volume 1, Appendix Chapter 12, Interior Environment, Division 1, Ventilation, Section 1207: 2001 California Building Code, California Building Standards Commission. Sacramento, CA.

California Building Standards Commission (2014). 2013 California Green Building Standards Code. California Code of Regulations, Title 24, Part 11. California Building Standards Commission, Sacramento, CA <http://www.bsc.ca.gov/Home/CALGreen.aspx>.

California Energy Commission, PIER Program. CEC-500-2007-033. Final Report, ARB Contract 03-326. Available at: www.arb.ca.gov/research/apr/past/03-326.pdf.

California Energy Commission, 2015. 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings, California Code of Regulations, Title 24, Part 6. <http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf>

CDPH. 2017. Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers, Version 1.1. California Department of Public Health, Richmond, CA. <https://www.cdph.ca.gov/Programs/CCDCPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx>. Environmental Impact Report. SCH No. 2018011001.

EPA. 2011. Exposure Factors Handbook: 2011 Edition, Chapter 16 – Activity Factors. Report EPA/600/R-09/052F, September 2011. U.S. Environmental Protection Agency, Washington, D.C.

Hodgson, A. T., D. Beal, J.E.R. McIlvaine. 2002. Sources of formaldehyde, other aldehydes and terpenes in a new manufactured house. *Indoor Air* 12: 235–242.

LSA. 2023. Noise and Vibration Technical Memorandum for The Market Place Project in Irvine, Orange County, California.

OEHHA (Office of Environmental Health Hazard Assessment). 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines; Guidance Manual for Preparation of Health Risk Assessments.

OEHHA (Office of Environmental Health Hazard Assessment). 2017a. Proposition 65 Safe Harbor Levels. No Significant Risk Levels for Carcinogens and Maximum Allowable Dose Levels for Chemicals Causing Reproductive Toxicity. Available at: <http://www.oehha.ca.gov/prop65/pdf/safeharbor081513.pdf>

OEHHA - Office of Environmental Health Hazard Assessment. 2017b. All OEHHA Acute, 8-hour and Chronic Reference Exposure Levels. Available at: <http://oehha.ca.gov/air/allrels.html>

Offermann, F. J. 2009. Ventilation and Indoor Air Quality in New Homes. California Air Resources Board and California Energy Commission, PIER Energy-Related Environmental Research Program. Collaborative Report. CEC-500-2009-085. <https://www.arb.ca.gov/research/apr/past/04-310.pdf>

Offermann, F. J. and A. T. Hodgson. 2011. Emission Rates of Volatile Organic Compounds in New Homes. Proceedings Indoor Air 2011 (12th International Conference on Indoor Air Quality and Climate 2011), June 5-10, 2011, Austin, TX.

San Diego Air Quality Management District (SDAQMD). 2015. California Environmental Quality Act Air Quality Handbook. San Diego Air Quality Management District.

Singer, B.C, Chan, W.R, Kim, Y., Offermann, F.J., and Walker I.S. 2020. Indoor Air Quality in California Homes with Code-Required Mechanical Ventilation. Indoor Air, Vol 30, Issue 5, 885-899.

USGBC. 2014. LEED BD+C Homes v4. U.S. Green Building Council, Washington, D.C.
<http://www.usgbc.org/credits/homes/v4>

APPENDIX A

INDOOR FORMALDEHYDE CONCENTRATIONS AND THE CARB FORMALDEHYDE ATCM

With respect to formaldehyde emissions from composite wood products, the CARB ATCM regulations of formaldehyde emissions from composite wood products, do not assure healthful indoor air quality. The following is the stated purpose of the CARB ATCM regulation - *The purpose of this airborne toxic control measure is to “reduce formaldehyde emissions from composite wood products, and finished goods that contain composite wood products, that are sold, offered for sale, supplied, used, or manufactured for sale in California”*. In other words, the CARB ATCM regulations do not “assure healthful indoor air quality”, but rather “reduce formaldehyde emissions from composite wood products”.

Just how much protection do the CARB ATCM regulations provide building occupants from the formaldehyde emissions generated by composite wood products? Definitely some, but certainly the regulations do not “*assure healthful indoor air quality*” when CARB Phase 2 products are utilized. As shown in the Chan 2019 study of new California homes, the median indoor formaldehyde concentration was of $22.4 \mu\text{g}/\text{m}^3$ (18.2 ppb), which corresponds to a cancer risk of 112 per million for occupants with continuous exposure, which is more than 11 times the CEQA cancer risk of 10 per million.

Another way of looking at how much protection the CARB ATCM regulations provide building occupants from the formaldehyde emissions generated by composite wood products is to calculate the maximum number of square feet of composite wood product that can be in a residence without exceeding the CEQA cancer risk of 10 per million for occupants with continuous occupancy.

For this calculation I utilized the floor area (2,272 ft²), the ceiling height (8.5 ft), and the number of bedrooms (4) as defined in Appendix B (New Single-Family Residence Scenario) of the Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers, Version 1.1, 2017, California

Department of Public Health, Richmond, CA. <https://www.cdph.ca.gov/Programs/CCDC/DEODC/EHLB/IAQ/Pages/VOC.aspx>.

For the outdoor air ventilation rate I used the 2019 Title 24 code required mechanical ventilation rate (ASHRAE 62.2) of 106 cfm (180 m³/h) calculated for this model residence. For the composite wood formaldehyde emission rates I used the CARB ATCM Phase 2 rates.

The calculated maximum number of square feet of composite wood product that can be in a residence, without exceeding the CEQA cancer risk of 10 per million for occupants with continuous occupancy are as follows for the different types of regulated composite wood products.

Medium Density Fiberboard (MDF) – 15 ft² (0.7% of the floor area), or
Particle Board – 30 ft² (1.3% of the floor area), or
Hardwood Plywood – 54 ft² (2.4% of the floor area), or
Thin MDF – 46 ft² (2.0 % of the floor area).

For offices and hotels the calculated maximum amount of composite wood product (% of floor area) that can be used without exceeding the CEQA cancer risk of 10 per million for occupants, assuming 8 hours/day occupancy, and the California Mechanical Code minimum outdoor air ventilation rates are as follows for the different types of regulated composite wood products.

Medium Density Fiberboard (MDF) – 3.6 % (offices) and 4.6% (hotel rooms), or
Particle Board – 7.2 % (offices) and 9.4% (hotel rooms), or
Hardwood Plywood – 13 % (offices) and 17% (hotel rooms), or
Thin MDF – 11 % (offices) and 14 % (hotel rooms)

Clearly the CARB ATCM does not regulate the formaldehyde emissions from composite wood products such that the potentially large areas of these products, such as for flooring, baseboards, interior doors, window and door trims, and kitchen and bathroom cabinetry,

could be used without causing indoor formaldehyde concentrations that result in CEQA cancer risks that substantially exceed 10 per million for occupants with continuous occupancy.

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde that meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

If CARB Phase 2 compliant or ULEF composite wood products are utilized in construction, then the resulting indoor formaldehyde concentrations should be determined in the design phase using the specific amounts of each type of composite wood product, the specific formaldehyde emission rates, and the volume and outdoor air ventilation rates of the indoor spaces, and all feasible mitigation measures employed to reduce this impact (e.g. use less formaldehyde containing composite wood products and/or incorporate mechanical systems capable of higher outdoor air ventilation rates). See the procedure described earlier (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Alternatively, and perhaps a simpler approach, is to use only composite wood products (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins.

Francis (Bud) J. Offermann III PE, CIH

Indoor Environmental Engineering

1448 Pine Street, Suite 103, San Francisco, CA 94109

Phone: 415-567-7700

Email: Offermann@iee-sf.com

<http://www.iee-sf.com>

Education

M.S. Mechanical Engineering (1985)
Stanford University, Stanford, CA.

Graduate Studies in Air Pollution Monitoring and Control (1980)
University of California, Berkeley, CA.

B.S. in Mechanical Engineering (1976)
Rensselaer Polytechnic Institute, Troy, N.Y.

Professional Experience

President: Indoor Environmental Engineering, San Francisco, CA. December, 1981 - present.

Direct team of environmental scientists, chemists, and mechanical engineers in conducting State and Federal research regarding indoor air quality instrumentation development, building air quality field studies, ventilation and air cleaning performance measurements, and chemical emission rate testing.

Provide design side input to architects regarding selection of building materials and ventilation system components to ensure a high quality indoor environment.

Direct Indoor Air Quality Consulting Team for the winning design proposal for the new State of Washington Ecology Department building.

Develop a full-scale ventilation test facility for measuring the performance of air diffusers; ASHRAE 129, Air Change Effectiveness, and ASHRAE 113, Air Diffusion Performance Index.

Develop a chemical emission rate testing laboratory for measuring the chemical emissions from building materials, furnishings, and equipment.

Principle Investigator of the California New Homes Study (2005-2007). Measured ventilation and indoor air quality in 108 new single family detached homes in northern and southern California.

Develop and teach IAQ professional development workshops to building owners, managers, hygienists, and engineers.

Air Pollution Engineer: Earth Metrics Inc., Burlingame, CA, October, 1985 to March, 1987.

Responsible for development of an air pollution laboratory including installation a forced choice olfactometer, tracer gas electron capture chromatograph, and associated calibration facilities. Field team leader for studies of fugitive odor emissions from sewage treatment plants, entrainment of fume hood exhausts into computer chip fabrication rooms, and indoor air quality investigations.

Staff Scientist: Building Ventilation and Indoor Air Quality Program, Energy and Environment Division, Lawrence Berkeley Laboratory, Berkeley, CA. January, 1980 to August, 1984.

Deputy project leader for the Control Techniques group; responsible for laboratory and field studies aimed at evaluating the performance of indoor air pollutant control strategies (i.e. ventilation, filtration, precipitation, absorption, adsorption, and source control).

Coordinated field and laboratory studies of air-to-air heat exchangers including evaluation of thermal performance, ventilation efficiency, cross-stream contaminant transfer, and the effects of freezing/defrosting.

Developed an *in situ* test protocol for evaluating the performance of air cleaning systems and introduced the concept of effective cleaning rate (ECR) also known as the Clean Air Delivery Rate (CADR).

Coordinated laboratory studies of portable and ducted air cleaning systems and their effect on indoor concentrations of respirable particles and radon progeny.

Co-designed an automated instrument system for measuring residential ventilation rates and radon concentrations.

Designed hardware and software for a multi-channel automated data acquisition system used to evaluate the performance of air-to-air heat transfer equipment.

Assistant Chief Engineer: Alta Bates Hospital, Berkeley, CA, October, 1979 to January, 1980.

Responsible for energy management projects involving installation of power factor correction capacitors on large inductive electrical devices and installation of steam meters on physical plant steam lines. Member of Local 39, International Union of Operating Engineers.

Manufacturing Engineer: American Precision Industries, Buffalo, NY, October, 1977 to October, 1979.

Responsible for reorganizing the manufacturing procedures regarding production of shell and tube heat exchangers. Designed customized automatic assembly, welding, and testing equipment. Designed a large paint spray booth. Prepared economic studies justifying new equipment purchases. Safety Director.

Project Engineer: Arcata Graphics, Buffalo, N.Y. June, 1976 to October, 1977.

Responsible for the design and installation of a bulk ink storage and distribution system and high speed automatic counting and marking equipment. Also coordinated material handling studies which led to the purchase and installation of new equipment.

PROFESSIONAL ORGANIZATION MEMBERSHIP

American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)

- Chairman of SPC-145P, Standards Project Committee - Test Method for Assessing the Performance of Gas Phase Air Cleaning Equipment (1991-1992)
- Member SPC-129P, Standards Project Committee - Test Method for Ventilation Effectiveness (1986-97)
 - Member of Drafting Committee
- Member Environmental Health Committee (1992-1994, 1997-2001, 2007-2010)
 - Chairman of EHC Research Subcommittee
 - Member of Man Made Mineral Fiber Position Paper Subcommittee
 - Member of the IAQ Position Paper Committee
 - Member of the Legionella Position Paper Committee
 - Member of the Limiting Indoor Mold and Dampness in Buildings Position Paper Committee
- Member SSPC-62, Standing Standards Project Committee - Ventilation for Acceptable Indoor Air Quality (1992 to 2000)
 - Chairman of Source Control and Air Cleaning Subcommittee
- Chairman of TC-4.10, Indoor Environmental Modeling (1988-92)
 - Member of Research Subcommittee
- Chairman of TC-2.3, Gaseous Air Contaminants and Control Equipment (1989-92)
 - Member of Research Subcommittee

American Society for Testing and Materials (ASTM)

- D-22 Sampling and Analysis of Atmospheres
 - Member of Indoor Air Quality Subcommittee
- E-06 Performance of Building Constructions

American Board of Industrial Hygiene (ABIH)

American Conference of Governmental Industrial Hygienists (ACGIH)

- Bioaerosols Committee (2007-2013)

American Industrial Hygiene Association (AIHA)

Cal-OSHA Indoor Air Quality Advisory Committee

International Society of Indoor Air Quality and Climate (ISIAQ)

- Co-Chairman of Task Force on HVAC Hygiene

U. S. Green Building Council (USGBC)

- Member of the IEQ Technical Advisory Group (2007-2009)
- Member of the IAQ Performance Testing Work Group (2010-2012)

Western Construction Consultants (WESTCON)

PROFESSIONAL CREDENTIALS

Licensed Professional Engineer - Mechanical Engineering

Certified Industrial Hygienist - American Board of Industrial Hygienists

SCIENTIFIC MEETINGS AND SYMPOSIA

Biological Contamination, Diagnosis, and Mitigation, Indoor Air'90, Toronto, Canada, August, 1990.

Models for Predicting Air Quality, Indoor Air'90, Toronto, Canada, August, 1990.

Microbes in Building Materials and Systems, Indoor Air '93, Helsinki, Finland, July, 1993.

Microorganisms in Indoor Air Assessment and Evaluation of Health Effects and Probable Causes, Walnut Creek, CA, February 27, 1997.

Controlling Microbial Moisture Problems in Buildings, Walnut Creek, CA, February 27, 1997.

Scientific Advisory Committee, Roomvent 98, 6th International Conference on Air Distribution in Rooms, KTH, Stockholm, Sweden, June 14-17, 1998.

Moisture and Mould, Indoor Air '99, Edinburgh, Scotland, August, 1999.

Ventilation Modeling and Simulation, Indoor Air '99, Edinburgh, Scotland, August, 1999.

Microbial Growth in Materials, Healthy Buildings 2000, Espoo, Finland, August, 2000.

Co-Chair, Bioaerosols X- Exposures in Residences, Indoor Air 2002, Monterey, CA, July 2002.

Healthy Indoor Environments, Anaheim, CA, April 2003.

Chair, Environmental Tobacco Smoke in Multi-Family Homes, Indoor Air 2008, Copenhagen, Denmark, July 2008.

Co-Chair, ISIAQ Task Force Workshop; HVAC Hygiene, Indoor Air 2002, Monterey, CA, July 2002.

Chair, ETS in Multi-Family Housing: Exposures, Controls, and Legalities Forum, Healthy Buildings 2009, Syracuse, CA, September 14, 2009.

Chair, Energy Conservation and IAQ in Residences Workshop, Indoor Air 2011, Austin, TX, June 6, 2011.

Chair, Electronic Cigarettes: Chemical Emissions and Exposures Colloquium, Indoor Air 2016, Ghent, Belgium, July 4, 2016.

SPECIAL CONSULTATION

Provide consultation to the American Home Appliance Manufacturers on the development of a standard for testing portable air cleaners, AHAM Standard AC-1.

Served as an expert witness and special consultant for the U.S. Federal Trade Commission regarding the performance claims found in advertisements of portable air cleaners and residential furnace filters.

Conducted a forensic investigation for a San Mateo, CA pro se defendant, regarding an alleged homicide where the victim was kidnapped in a steamer trunk. Determined the air exchange rate in the steamer trunk and how long the person could survive.

Conducted *in situ* measurement of human exposure to toluene fumes released during nailpolish application for a plaintiffs attorney pursuing a California Proposition 65 product labeling case. June, 1993.

Conducted a forensic *in situ* investigation for the Butte County, CA Sheriff's Department of the emissions of a portable heater used in the bedroom of two twin one year old girls who suffered simultaneous crib death.

Consult with OSHA on the 1995 proposed new regulation regarding indoor air quality and environmental tobacco smoke.

Consult with EPA on the proposed Building Alliance program and with OSHA on the proposed new OSHA IAQ regulation.

Johnson Controls Audit/Certification Expert Review; Milwaukee, WI. May 28-29, 1997.

Winner of the nationally published 1999 Request for Proposals by the State of Washington to conduct a comprehensive indoor air quality investigation of the Washington State Department of Ecology building in Lacey, WA.

Selected by the State of California Attorney General's Office in August, 2000 to conduct a comprehensive indoor air quality investigation of the Tulare County Court House.

Lawrence Berkeley Laboratory IAQ Experts Workshop: "Cause and Prevention of Sick Building Problems in Offices: The Experience of Indoor Environmental Quality Investigators", Berkeley, California, May 26-27, 2004.

Provide consultation and chemical emission rate testing to the State of California Attorney General's Office in 2013-2015 regarding the chemical emissions from e-cigarettes.

PEER-REVIEWED PUBLICATIONS :

F.J.Offermann, C.D.Hollowell, and G.D.Roseme, "Low-Infiltration Housing in Rochester, New York: A Study of Air Exchange Rates and Indoor Air Quality," *Environment International*, 8, pp. 435-445, 1982.

W.W.Nazaroff, F.J.Offermann, and A.W.Robb, "Automated System for Measuring Air Exchange Rate and Radon Concentration in Houses," *Health Physics*, 45, pp. 525-537, 1983.

F.J.Offermann, W.J.Fisk, D.T.Grimrud, B.Pedersen, and K.L.Revzan, "Ventilation Efficiencies of Wall- or Window-Mounted Residential Air-to-Air Heat Exchangers," *ASHRAE Annual Transactions*, 89-2B, pp 507-527, 1983.

W.J.Fisk, K.M.Archer, R.E Chant, D. Hekmat, F.J.Offermann, and B.Pedersen, "Onset of Freezing in Residential Air-to-Air Heat Exchangers," *ASHRAE Annual Transactions*, 91-1B, 1984.

W.J.Fisk, K.M.Archer, R.E Chant, D. Hekmat, F.J.Offermann, and B.Pedersen, "Performance of Residential Air-to-Air Heat Exchangers During Operation with Freezing and Periodic Defrosts," *ASHRAE Annual Transactions*, 91-1B, 1984.

F.J.Offermann, R.G.Sextro, W.J.Fisk, D.T.Grimrud, W.W.Nazaroff, A.V.Nero, and K.L.Revzan, "Control of Respirable Particles with Portable Air Cleaners," *Atmospheric Environment*, Vol. 19, pp.1761-1771, 1985.

R.G.Sextro, F.J.Offermann, W.W.Nazaroff, A.V.Nero, K.L.Revzan, and J.Yater, "Evaluation of Indoor Control Devices and Their Effects on Radon Progeny Concentrations," *Atmospheric Environment*, *12*, pp. 429-438, 1986.

W.J. Fisk, R.K.Spencer, F.J.Offermann, R.K.Spencer, B.Pedersen, R.Sextro, "Indoor Air Quality Control Techniques," *Noyes Data Corporation*, Park Ridge, New Jersey, (1987).

F.J.Offermann, "Ventilation Effectiveness and ADPI Measurements of a Forced Air Heating System," *ASHRAE Transactions* , Volume 94, Part 1, pp 694-704, 1988.

F.J.Offermann and D. Int-Hout "Ventilation Effectiveness Measurements of Three Supply/Return Air Configurations," *Environment International* , Volume 15, pp 585-592 1989.

F.J. Offermann, S.A. Loiselle, M.C. Quinlan, and M.S. Rogers, "A Study of Diesel Fume Entrainment in an Office Building," *IAQ '89*, The Human Equation: Health and Comfort, pp 179-183, ASHRAE, Atlanta, GA, 1989.

R.G.Sextro and F.J.Offermann, "Reduction of Residential Indoor Particle and Radon Progeny Concentrations with Ducted Air Cleaning Systems," submitted to *Indoor Air*, 1990.

S.A.Loiselle, A.T.Hodgson, and F.J.Offermann, "Development of An Indoor Air Sampler for Polycyclic Aromatic Compounds", *Indoor Air* , Vol 2, pp 191-210, 1991.

F.J.Offermann, S.A.Loiselle, A.T.Hodgson, L.A. Gundel, and J.M. Daisey, "A Pilot Study to Measure Indoor Concentrations and Emission Rates of Polycyclic Aromatic Compounds", *Indoor Air* , Vol 4, pp 497-512, 1991.

F.J. Offermann, S. A. Loiselle, R.G. Sextro, "Performance Comparisons of Six Different Air Cleaners Installed in a Residential Forced Air Ventilation System," *IAQ'91*, Healthy Buildings, pp 342-350, ASHRAE, Atlanta, GA (1991).

F.J. Offermann, J. Daisey, A. Hodgson, L. Gundell, and S. Loiselle, "Indoor Concentrations and Emission Rates of Polycyclic Aromatic Compounds", *Indoor Air*, Vol 4, pp 497-512 (1992).

F.J. Offermann, S. A. Loiselle, R.G. Sextro, "Performance of Air Cleaners Installed in a Residential Forced Air System," *ASHRAE Journal*, pp 51-57, July, 1992.

F.J. Offermann and S. A. Loiselle, "Performance of an Air-Cleaning System in an Archival Book Storage Facility," *IAQ'92*, ASHRAE, Atlanta, GA, 1992.

S.B. Hayward, K.S. Liu, L.E. Alevantis, K. Shah, S. Loiselle, F.J. Offermann, Y.L. Chang, L. Webber, "Effectiveness of Ventilation and Other Controls in Reducing Exposure to ETS in Office Buildings," *Indoor Air '93*, Helsinki, Finland, July 4-8, 1993.

F.J. Offermann, S. A. Loiselle, G. Ander, H. Lau, "Indoor Contaminant Emission Rates Before and After a Building Bake-out," *IAQ'93*, Operating and Maintaining Buildings for Health, Comfort, and Productivity, pp 157-163, ASHRAE, Atlanta, GA, 1993.

L.E. Alevantis, Hayward, S.B., Shah, S.B., Loiselle, S., and Offermann, F.J. "Tracer Gas Techniques for Determination of the Effectiveness of Pollutant Removal From Local Sources," *IAQ '93*, Operating and Maintaining Buildings for Health, Comfort, and Productivity, pp 119-129, ASHRAE, Atlanta, GA, 1993.

L.E. Alevantis, Liu, L.E., Hayward, S.B., Offermann, F.J., Shah, S.B., Leiserson, K. Tsao, E., and Huang, Y., "Effectiveness of Ventilation in 23 Designated Smoking Areas in California Buildings," *IAQ '94*, Engineering Indoor Environments, pp 167-181, ASHRAE, Atlanta, GA, 1994.

L.E. Alevantis, Offermann, F.J., Loiselle, S., and Macher, J.M., "Pressure and Ventilation Requirements of Hospital Isolation Rooms for Tuberculosis (TB) Patients: Existing Guidelines in the United States and a Method for Measuring Room Leakage", Ventilation and Indoor air quality in Hospitals, M. Maroni, editor, Kluwer Academic publishers, Netherlands, 1996.

F.J. Offermann, M. A. Waz, A.T. Hodgson, and H.M. Ammann, "Chemical Emissions from a Hospital Operating Room Air Filter," *IAQ'96*, Paths to Better Building Environments, pp 95-99, ASHRAE, Atlanta, GA, 1996.

F.J. Offermann, "Professional Malpractice and the Sick Building Investigator," *IAQ'96*, Paths to Better Building Environments, pp 132-136, ASHRAE, Atlanta, GA, 1996.

F.J. Offermann, "Standard Method of Measuring Air Change Effectiveness," *Indoor Air*, Vol 1, pp.206-211, 1999.

F. J. Offermann, A. T. Hodgson, and J. P. Robertson, "Contaminant Emission Rates from PVC Backed Carpet Tiles on Damp Concrete", Healthy Buildings 2000, Espoo, Finland, August 2000.

K.S. Liu, L.E. Alevantis, and F.J. Offermann, "A Survey of Environmental Tobacco Smoke Controls in California Office Buildings", *Indoor Air*, Vol 11, pp. 26-34, 2001.

F.J. Offermann, R. Colfer, P. Radzinski, and J. Robertson, "Exposure to Environmental Tobacco Smoke in an Automobile", *Indoor Air* 2002, Monterey, California, July 2002.

F. J. Offermann, J.P. Robertson, and T. Webster, "The Impact of Tracer Gas Mixing on Airflow Rate Measurements in Large Commercial Fan Systems", *Indoor Air* 2002, Monterey, California, July 2002.

M. J. Mendell, T. Brennan, L. Hathon, J.D. Odom, F.J. Offermann, B.H. Turk, K.M. Wallingford, R.C. Diamond, W.J. Fisk, "Causes and prevention of Symptom Complaints

in Office Buildings: Distilling the Experience of Indoor Environmental Investigators”, submitted to Indoor Air 2005, Beijing, China, September 4-9, 2005.

F.J. Offermann, “Ventilation and IAQ in New Homes With and Without Mechanical Outdoor Air Systems”, Healthy Buildings 2009, Syracuse, CA, September 14, 2009.

F.J. Offermann, “ASHRAE 62.2 Intermittent Residential Ventilation: What’s It Good For, Intermittently Poor IAQ”, IAQVEC 2010, Syracuse, CA, April 21, 2010.

F.J. Offermann and A.T. Hodgson, “Emission Rates of Volatile Organic Compounds in New Homes”, Indoor Air 2011, Austin, TX, June, 2011.

P. Jenkins, R. Johnson, T. Phillips, and F. Offermann, “Chemical Concentrations in New California Homes and Garages”, Indoor Air 2011, Austin, TX, June, 2011.

W. J. Mills, B. J. Grigg, F. J. Offermann, B. E. Gustin, and N. E. Spingarm, “Toluene and Methyl Ethyl Ketone Exposure from a Commercially Available Contact Adhesive”, Journal of Occupational and Environmental Hygiene, 9:D95-D102 May, 2012.

F. J. Offermann, R. Maddalena, J. C. Offermann, B. C. Singer, and H. Wilhelm, “The Impact of Ventilation on the Emission Rates of Volatile Organic Compounds in Residences”, HB 2012, Brisbane, AU, July, 2012.

F. J. Offermann, A. T. Hodgson, P. L. Jenkins, R. D. Johnson, and T. J. Phillips, “Attached Garages as a Source of Volatile Organic Compounds in New Homes”, HB 2012, Brisbane, CA, July, 2012.

R. Maddalena, N. Li, F. Offermann, and B. Singer, “Maximizing Information from Residential Measurements of Volatile Organic Compounds”, HB 2012, Brisbane, AU, July, 2012.

W. Chen, A. Persily, A. Hodgson, F. Offermann, D. Poppendieck, and K. Kumagai, “Area-Specific Airflow Rates for Evaluating the Impacts of VOC emissions in U.S. Single-Family Homes”, Building and Environment, Vol. 71, 204-211, February, 2014.

F. J. Offermann, A. Eagan A. C. Offermann, and L. J. Radonovich, “Infectious Disease Aerosol Exposures With and Without Surge Control Ventilation System Modifications”, Indoor Air 2014, Hong Kong, July, 2014.

F. J. Offermann, “Chemical Emissions from E-Cigarettes: Direct and Indirect Passive Exposures”, Building and Environment, Vol. 93, Part 1, 101-105, November, 2015.

F. J. Offermann, “Formaldehyde Emission Rates From Lumber Liquidators Laminate Flooring Manufactured in China”, Indoor Air 2016, Belgium, Ghent, July, 2016.

F. J. Offermann, “Formaldehyde and Acetaldehyde Emission Rates for E-Cigarettes”, Indoor Air 2016, Belgium, Ghent, July, 2016.

OTHER REPORTS:

W.J.Fisk, P.G.Cleary, and F.J.Offermann, "Energy Saving Ventilation with Residential Heat Exchangers," a Lawrence Berkeley Laboratory brochure distributed by the Bonneville Power Administration, 1981.

F.J.Offermann, J.R.Girman, and C.D.Hollowell, "Midway House Tightening Project: A Study of Indoor Air Quality," Lawrence Berkeley Laboratory, Berkeley, CA, Report LBL-12777, 1981.

F.J.Offermann, J.B.Dickinson, W.J.Fisk, D.T.Grimrud, C.D.Hollowell, D.L.Krinkle, and G.D.Roseme, "Residential Air-Leakage and Indoor Air Quality in Rochester, New York," Lawrence Berkeley Laboratory, Berkeley, CA, Report LBL-13100, 1982.

F.J.Offermann, W.J.Fisk, B.Pedersen, and K.L.Revzan, Residential Air-to-Air Heat Exchangers: A Study of the Ventilation Efficiencies of Wall- or Window- Mounted Units," Lawrence Berkeley Laboratory, Berkeley, CA, Report LBL-14358, 1982.

F.J.Offermann, W.J.Fisk, W.W.Nazaroff, and R.G.Sextro, "A Review of Portable Air Cleaners for Controlling Indoor Concentrations of Particulates and Radon Progeny," An interim report for the Bonneville Power Administration, 1983.

W.J.Fisk, K.M.Archer, R.E.Chant, D.Hekmat, F.J.Offermann, and B.S. Pedersen, "Freezing in Residential Air-to-Air Heat Exchangers: An Experimental Study," Lawrence Berkeley Laboratory, Berkeley, CA, Report LBL-16783, 1983.

R.G.Sextro, W.W.Nazaroff, F.J.Offermann, and K.L.Revzan, "Measurements of Indoor Aerosol Properties and Their Effect on Radon Progeny," Proceedings of the American Association of Aerosol Research Annual Meeting, April, 1983.

F.J.Offermann, R.G.Sextro, W.J.Fisk, W.W. Nazaroff, A.V.Nero, K.L.Revzan, and J.Yater, "Control of Respirable Particles and Radon Progeny with Portable Air Cleaners," Lawrence Berkeley Laboratory, Berkeley, CA, Report LBL-16659, 1984.

W.J.Fisk, R.K.Spencer, D.T.Grimrud, F.J.Offermann, B.Pedersen, and R.G.Sextro, "Indoor Air Quality Control Techniques: A Critical Review," Lawrence Berkeley Laboratory, Berkeley, CA, Report LBL-16493, 1984.

F.J.Offermann, J.R.Girman, and R.G.Sextro, "Controlling Indoor Air Pollution from Tobacco Smoke: Models and Measurements," Indoor Air, Proceedings of the 3rd International Conference on Indoor Air Quality and Climate, Vol 1, pp 257-264, Swedish Council for Building Research, Stockholm (1984), Lawrence Berkeley Laboratory, Berkeley, CA, Report LBL-17603, 1984.

R.Otto, J.Girman, F.Offermann, and R.Sextro, "A New Method for the Collection and Comparison of Respirable Particles in the Indoor Environment," Lawrence Berkeley Laboratory, Berkeley, CA, Special Director Fund's Study, 1984.

A.T.Hodgson and F.J.Offermann, "Examination of a Sick Office Building," Lawrence Berkeley Laboratory, Berkeley, CA, an informal field study, 1984.

R.G.Sextro, F.J.Offermann, W.W.Nazaroff, and A.V.Nero, "Effects of Aerosol Concentrations on Radon Progeny," *Aerosols, Science, & Technology, and Industrial Applications of Airborne Particles*, editors B.Y.H.Liu, D.Y.H.Pui, and H.J.Fissan, p525, Elsevier, 1984.

K.Sexton, S.Hayward, F.Offermann, R.Sextro, and L.Weber, "Characterization of Particulate and Organic Emissions from Major Indoor Sources, Proceedings of the Third International Conference on Indoor Air Quality and Climate, Stockholm, Sweden, August 20-24, 1984.

F.J.Offermann, "Tracer Gas Measurements of Laboratory Fume Entrainment at a Semiconductor Manufacturing Plant," an Indoor Environmental Engineering R&D Report, 1986.

F.J.Offermann, "Tracer Gas Measurements of Ventilation Rates in a Large Office Building," an Indoor Environmental Engineering R&D Report, 1986.

F.J.Offermann, "Measurements of Volatile Organic Compounds in a New Large Office Building with Adhesive Fastened Carpeting," an Indoor Environmental Engineering R&D Report, 1986.

F.J.Offermann, "Designing and Operating Healthy Buildings", an Indoor Environmental Engineering R&D Report, 1986.

F.J.Offermann, "Measurements and Mitigation of Indoor Spray-Applied Pesticides", an Indoor Environmental Engineering R&D Report, 1988.

F.J.Offermann and S. Loiselle, "Measurements and Mitigation of Indoor Mold Contamination in a Residence", an Indoor Environmental Engineering R&D Report, 1989.

F.J.Offermann and S. Loiselle, "Performance Measurements of an Air Cleaning System in a Large Archival Library Storage Facility", an Indoor Environmental Engineering R&D Report, 1989.

F.J. Offermann, J.M. Daisey, L.A. Gundel, and A.T. Hodgson, S. A. Loiselle, "Sampling, Analysis, and Data Validation of Indoor Concentrations of Polycyclic Aromatic Hydrocarbons", Final Report, Contract No. A732-106, California Air Resources Board, March, 1990.

L.A. Gundel, J.M. Daisey, and F.J. Offermann, "A Sampling and Analytical Method for Gas Phase Polycyclic Aromatic Hydrocarbons", Proceedings of the 5th International Conference on Indoor Air Quality and Climate, Indoor Air '90, July 29-August 1990.

A.T. Hodgson, J.M. Daisey, and F.J. Offermann "Development of an Indoor Sampling and Analytical Method for Particulate Polycyclic Aromatic Hydrocarbons", Proceedings of the 5th International Conference on Indoor Air Quality and Climate, Indoor Air '90, July 29-August, 1990.

F.J. Offermann, J.O. Sateri, "Tracer Gas Measurements in Large Multi-Room Buildings", Indoor Air '93, Helsinki, Finland, July 4-8, 1993.

F.J. Offermann, M. T. O'Flaherty, and M. A. Waz "Validation of ASHRAE 129 - Standard Method of Measuring Air Change Effectiveness", Final Report of ASHRAE Research Project 891, December 8, 1997.

S.E. Guffey, F.J. Offermann et. al., "Proceedings of the Workshop on Ventilation Engineering Controls for Environmental Tobacco smoke in the Hospitality Industry", U.S. Department of Labor Occupational Safety and Health Administration and ACGIH, 1998.

F.J. Offermann, R.J. Fiskum, D. Kosar, and D. Mudaari, "A Practical Guide to Ventilation Practices & Systems for Existing Buildings", *Heating/Piping/Air Conditioning Engineering* supplement to April/May 1999 issue.

F.J. Offermann, P. Pasanen, "Workshop 18: Criteria for Cleaning of Air Handling Systems", Healthy Buildings 2000, Espoo, Finland, August 2000.

F.J. Offermann, Session Summaries: Building Investigations, and Design & Construction, Healthy Buildings 2000, Espoo, Finland, August 2000.

F.J. Offermann, "The IAQ Top 10", Engineered Systems, November, 2008.

L. Kincaid and F.J. Offermann, "Unintended Consequences: Formaldehyde Exposures in Green Homes, AIHA Synergist, February, 2010.

F.J. Offermann, "IAQ in Air Tight Homes", ASHRAE Journal, November, 2010.

F.J. Offermann, "The Hazards of E-Cigarettes", ASHRAE Journal, June, 2014.

PRESENTATIONS :

"Low-Infiltration Housing in Rochester, New York: A Study of Air Exchange Rates and Indoor Air Quality," Presented at the International Symposium on Indoor Air Pollution, Health and Energy Conservation, Amherst, MA, October 13-16, 1981.

"Ventilation Efficiencies of Wall- or Window-Mounted Residential Air-to-Air Heat Exchangers," Presented at the American Society of Heating, Refrigeration, and Air Conditioning Engineers Summer Meeting, Washington, DC, June, 1983.

"Controlling Indoor Air Pollution from Tobacco Smoke: Models and Measurements," Presented at the Third International Conference on Indoor Air Quality and Climate, Stockholm, Sweden, August 20-24, 1984.

"Indoor Air Pollution: An Emerging Environmental Problem", Presented to the Association of Environmental Professionals, Bar Area/Coastal Region 1, Berkeley, CA, May 29, 1986.

"Ventilation Measurement Techniques," Presented at the Workshop on Sampling and Analytical Techniques, Georgia Institute of Technology, Atlanta, Georgia, September 26, 1986 and September 25, 1987.

"Buildings That Make You Sick: Indoor Air Pollution", Presented to the Sacramento Association of Professional Energy Managers, Sacramento, CA, November 18, 1986.

"Ventilation Effectiveness and Indoor Air Quality", Presented to the American Society of Heating, Refrigeration, and Air Conditioning Engineers Northern Nevada Chapter, Reno, NV, February 18, 1987, Golden Gate Chapter, San Francisco, CA, October 1, 1987, and the San Jose Chapter, San Jose, CA, June 9, 1987.

"Tracer Gas Techniques for Studying Ventilation," Presented at the Indoor Air Quality Symposium, Georgia Tech Research Institute, Atlanta, GA, September 22-24, 1987.

"Indoor Air Quality Control: What Works, What Doesn't," Presented to the Sacramento Association of Professional Energy Managers, Sacramento, CA, November 17, 1987.

"Ventilation Effectiveness and ADPI Measurements of a Forced Air Heating System," Presented at the American Society of Heating, Refrigeration, and Air Conditioning Engineers Winter Meeting, Dallas, Texas, January 31, 1988.

"Indoor Air Quality, Ventilation, and Energy in Commercial Buildings", Presented at the Building Owners & Managers Association of Sacramento, Sacramento, CA, July 21, 1988.

"Controlling Indoor Air Quality: The New ASHRAE Ventilation Standards and How to Evaluate Indoor Air Quality", Presented at a conference "Improving Energy Efficiency and Indoor Air Quality in Commercial Buildings," National Energy Management Institute, Reno, Nevada, November 4, 1988.

"A Study of Diesel Fume Entrainment Into an Office Building," Presented at Indoor Air '89: The Human Equation: Health and Comfort, American Society of Heating, Refrigeration, and Air Conditioning Engineers, San Diego, CA, April 17-20, 1989.

"Indoor Air Quality in Commercial Office Buildings," Presented at the Renewable Energy Technologies Symposium and International Exposition, Santa Clara, CA June 20, 1989.

"Building Ventilation and Indoor Air Quality", Presented to the San Joaquin Chapter of the American Society of Heating, Refrigeration, and Air Conditioning Engineers, September 7, 1989.

"How to Meet New Ventilation Standards: Indoor Air Quality and Energy Efficiency," a workshop presented by the Association of Energy Engineers; Chicago, IL, March 20-21, 1989; Atlanta, GA, May 25-26, 1989; San Francisco, CA, October 19-20, 1989; Orlando, FL, December 11-12, 1989; Houston, TX, January 29-30, 1990; Washington D.C., February 26-27, 1990; Anchorage, Alaska, March 23, 1990; Las Vegas, NV, April 23-24, 1990; Atlantic City, NJ, September 27-28, 1991; Anaheim, CA, November 19-20, 1991; Orlando, FL, February 28 - March 1, 1991; Washington, DC, March 20-21, 1991; Chicago, IL, May 16-17, 1991; Lake Tahoe, NV, August 15-16, 1991; Atlantic City, NJ, November 18-19, 1991; San Jose, CA, March 23-24, 1992.

"Indoor Air Quality," a seminar presented by the Anchorage, Alaska Chapter of the American Society of Heating, Refrigeration, and Air Conditioning Engineers, March 23, 1990.

"Ventilation and Indoor Air Quality", Presented at the 1990 HVAC & Building Systems Congress, Santa Clara, CA, March 29, 1990.

"Ventilation Standards for Office Buildings", Presented to the South Bay Property Managers Association, Santa Clara, May 9, 1990.

"Indoor Air Quality", Presented at the Responsive Energy Technologies Symposium & International Exposition (RETSIE), Santa Clara, CA, June 20, 1990.

"Indoor Air Quality - Management and Control Strategies", Presented at the Association of Energy Engineers, San Francisco Bay Area Chapter Meeting, Berkeley, CA, September 25, 1990.

"Diagnosing Indoor Air Contaminant and Odor Problems", Presented at the ASHRAE Annual Meeting, New York City, NY, January 23, 1991.

"Diagnosing and Treating the Sick Building Syndrome", Presented at the Energy 2001, Oklahoma, OK, March 19, 1991.

"Diagnosing and Mitigating Indoor Air Quality Problems" a workshop presented by the Association of Energy Engineers, Chicago, IL, October 29-30, 1990; New York, NY, January 24-25, 1991; Anaheim, April 25-26, 1991; Boston, MA, June 10-11, 1991; Atlanta, GA, October 24-25, 1991; Chicago, IL, October 3-4, 1991; Las Vegas, NV, December 16-17, 1991; Anaheim, CA, January 30-31, 1992; Atlanta, GA, March 5-6, 1992; Washington, DC, May 7-8, 1992; Chicago, IL, August 19-20, 1992; Las Vegas,

NV, October 1-2, 1992; New York City, NY, October 26-27, 1992, Las Vegas, NV, March 18-19, 1993; Lake Tahoe, CA, July 14-15, 1994; Las Vegas, NV, April 3-4, 1995; Lake Tahoe, CA, July 11-12, 1996; Miami, FL, December 9-10, 1996.

"Sick Building Syndrome and the Ventilation Engineer", Presented to the San Jose Engineers Club, May, 21, 1991.

"Duct Cleaning: Who Needs It ? How Is It Done ? What Are The Costs ?" What Are the Risks ?, Moderator of Forum at the ASHRAE Annual Meeting, Indianapolis ID, June 23, 1991.

"Operating Healthy Buildings", Association of Plant Engineers, Oakland, CA, November 14, 1991.

"Duct Cleaning Perspectives", Moderator of Seminar at the ASHRAE Semi-Annual Meeting, Indianapolis, IN, June 24, 1991.

"Duct Cleaning: The Role of the Environmental Hygienist," ASHRAE Annual Meeting, Anaheim, CA, January 29, 1992.

"Emerging IAQ Issues", Fifth National Conference on Indoor Air Pollution, University of Tulsa, Tulsa, OK, April 13-14, 1992.

"International Symposium on Room Air Convection and Ventilation Effectiveness", Member of Scientific Advisory Board, University of Tokyo, July 22-24, 1992.

"Guidelines for Contaminant Control During Construction and Renovation Projects in Office Buildings," Seminar paper at the ASHRAE Annual Meeting, Chicago, IL, January 26, 1993.

"Outside Air Economizers: IAQ Friend or Foe", Moderator of Forum at the ASHRAE Annual Meeting, Chicago, IL, January 26, 1993.

"Orientation to Indoor Air Quality," an EPA two and one half day comprehensive indoor air quality introductory workshop for public officials and building property managers; Sacramento, September 28-30, 1992; San Francisco, February 23-24, 1993; Los Angeles, March 16-18, 1993; Burbank, June 23, 1993; Hawaii, August 24-25, 1993; Las Vegas, August 30, 1993; San Diego, September 13-14, 1993; Phoenix, October 18-19, 1993; Reno, November 14-16, 1995; Fullerton, December 3-4, 1996; Fresno, May 13-14, 1997.

"Building Air Quality: A Guide for Building Owners and Facility Managers," an EPA one half day indoor air quality introductory workshop for building owners and facility managers. Presented throughout Region IX 1993-1995.

"Techniques for Airborne Disease Control", EPRI Healthcare Initiative Symposium; San Francisco, CA; June 7, 1994.

“Diagnosing and Mitigating Indoor Air Quality Problems”, CIHC Conference; San Francisco, September 29, 1994.

”Indoor Air Quality: Tools for Schools,” an EPA one day air quality management workshop for school officials, teachers, and maintenance personnel; San Francisco, October 18-20, 1994; Cerritos, December 5, 1996; Fresno, February 26, 1997; San Jose, March 27, 1997; Riverside, March 5, 1997; San Diego, March 6, 1997; Fullerton, November 13, 1997; Santa Rosa, February 1998; Cerritos, February 26, 1998; Santa Rosa, March 2, 1998.

ASHRAE 62 Standard “Ventilation for Acceptable IAQ”, ASCR Convention; San Francisco, CA, March 16, 1995.

“New Developments in Indoor Air Quality: Protocol for Diagnosing IAQ Problems”, AIHA-NC; March 25, 1995.

"Experimental Validation of ASHRAE SPC 129, Standard Method of Measuring Air Change Effectiveness", 16th AIVC Conference, Palm Springs, USA, September 19-22, 1995.

“Diagnostic Protocols for Building IAQ Assessment”, American Society of Safety Engineers Seminar: ‘Indoor Air Quality – The Next Door’; San Jose Chapter, September 27, 1995; Oakland Chapter, 9, 1997.

“Diagnostic Protocols for Building IAQ Assessment”, Local 39; Oakland, CA, October 3, 1995.

“Diagnostic Protocols for Solving IAQ Problems”, CSU-PPD Conference; October 24, 1995.

“Demonstrating Compliance with ASHRAE 62-1989 Ventilation Requirements”, AIHA; October 25, 1995.

“IAQ Diagnostics: Hands on Assessment of Building Ventilation and Pollutant Transport”, EPA Region IX; Phoenix, AZ, March 12, 1996; San Francisco, CA, April 9, 1996; Burbank, CA, April 12, 1996.

“Experimental Validation of ASHRAE 129P: Standard Method of Measuring Air Change Effectiveness”, Room Vent ‘96 / International Symposium on Room Air Convection and Ventilation Effectiveness”; Yokohama, Japan, July 16-19, 1996.

“IAQ Diagnostic Methodologies and RFP Development”, CCEHSA 1996 Annual Conference, Humboldt State University, Arcata, CA, August 2, 1996.

“The Practical Side of Indoor Air Quality Assessments”, California Industrial Hygiene Conference ‘96, San Diego, CA, September 2, 1996.

“ASHRAE Standard 62: Improving Indoor Environments”, Pacific Gas and Electric Energy Center, San Francisco, CA, October 29, 1996.

“Operating and Maintaining Healthy Buildings”, April 3-4, 1996, San Jose, CA; July 30, 1997, Monterey, CA.

“IAQ Primer”, Local 39, April 16, 1997; Amdahl Corporation, June 9, 1997; State Compensation Insurance Fund’s Safety & Health Services Department, November 21, 1996.

“Tracer Gas Techniques for Measuring Building Air Flow Rates”, ASHRAE, Philadelphia, PA, January 26, 1997.

“How to Diagnose and Mitigate Indoor Air Quality Problems”; Women in Waste; March 19, 1997.

“Environmental Engineer: What Is It?”, Monte Vista High School Career Day; April 10, 1997.

“Indoor Environment Controls: What’s Hot and What’s Not”, Shaklee Corporation; San Francisco, CA, July 15, 1997.

“Measurement of Ventilation System Performance Parameters in the US EPA BASE Study”, Healthy Buildings/IAQ’97, Washington, DC, September 29, 1997.

“Operations and Maintenance for Healthy and Comfortable Indoor Environments”, PASMA; October 7, 1997.

“Designing for Healthy and Comfortable Indoor Environments”, Construction Specification Institute, Santa Rosa, CA, November 6, 1997.

“Ventilation System Design for Good IAQ”, University of Tulsa 10th Annual Conference, San Francisco, CA, February 25, 1998.

“The Building Shell”, Tools For Building Green Conference and Trade Show, Alameda County Waste Management Authority and Recycling Board, Oakland, CA, February 28, 1998.

“Identifying Fungal Contamination Problems In Buildings”, The City of Oakland Municipal Employees, Oakland, CA, March 26, 1998.

“Managing Indoor Air Quality in Schools: Staying Out of Trouble”, CASBO, Sacramento, CA, April 20, 1998.

“Indoor Air Quality”, CSOOC Spring Conference, Visalia, CA, April 30, 1998.

“Particulate and Gas Phase Air Filtration”, ACGIH/OSHA, Ft. Mitchell, KY, June 1998.

“Building Air Quality Facts and Myths”, The City of Oakland / Alameda County Safety Seminar, Oakland, CA, June 12, 1998.

“Building Engineering and Moisture”, Building Contamination Workshop, University of California Berkeley, Continuing Education in Engineering and Environmental Management, San Francisco, CA, October 21-22, 1999.

“Identifying and Mitigating Mold Contamination in Buildings”, Western Construction Consultants Association, Oakland, CA, March 15, 2000; AIG Construction Defect Seminar, Walnut Creek, CA, May 2, 2001; City of Oakland Public Works Agency, Oakland, CA, July 24, 2001; Executive Council of Homeowners, Alamo, CA, August 3, 2001.

“Using the EPA BASE Study for IAQ Investigation / Communication”, Joint Professional Symposium 2000, American Industrial Hygiene Association, Orange County & Southern California Sections, Long Beach, October 19, 2000.

“Ventilation,” Indoor Air Quality: Risk Reduction in the 21st Century Symposium, sponsored by the California Environmental Protection Agency/Air Resources Board, Sacramento, CA, May 3-4, 2000.

“Workshop 18: Criteria for Cleaning of Air Handling Systems”, Healthy Buildings 2000, Espoo, Finland, August 2000.

“Closing Session Summary: ‘Building Investigations’ and ‘Building Design & Construction’, Healthy Buildings 2000, Espoo, Finland, August 2000.

“Managing Building Air Quality and Energy Efficiency, Meeting the Standard of Care”, BOMA, MidAtlantic Environmental Hygiene Resource Center, Seattle, WA, May 23rd, 2000; San Antonio, TX, September 26-27, 2000.

“Diagnostics & Mitigation in Sick Buildings: When Good Buildings Go Bad,” University of California Berkeley, September 18, 2001.

“Mold Contamination: Recognition and What To Do and Not Do”, Redwood Empire Remodelers Association; Santa Rosa, CA, April 16, 2002.

“Investigative Tools of the IAQ Trade”, Healthy Indoor Environments 2002; Austin, TX; April 22, 2002.

“Finding Hidden Mold: Case Studies in IAQ Investigations”, AIHA Northern California Professionals Symposium; Oakland, CA, May 8, 2002.

“Assessing and Mitigating Fungal Contamination in Buildings”, Cal/OSHA Training; Oakland, CA, February 14, 2003 and West Covina, CA, February 20-21, 2003.

“Use of External Containments During Fungal Mitigation”, Invited Speaker, ACGIH Mold Remediation Symposium, Orlando, FL, November 3-5, 2003.

Building Operator Certification (BOC), 106-IAQ Training Workshops, Northwest Energy Efficiency Council; Stockton, CA, December 3, 2003; San Francisco, CA, December 9, 2003; Irvine, CA, January 13, 2004; San Diego, January 14, 2004; Irwindale, CA, January 27, 2004; Downey, CA, January 28, 2004; Santa Monica, CA, March 16, 2004; Ontario, CA, March 17, 2004; Ontario, CA, November 9, 2004, San Diego, CA, November 10, 2004; San Francisco, CA, November 17, 2004; San Jose, CA, November 18, 2004; Sacramento, CA, March 15, 2005.

“Mold Remediation: The National QUEST for Uniformity Symposium”, Invited Speaker, Orlando, Florida, November 3-5, 2003.

“Mold and Moisture Control”, Indoor Air Quality workshop for The Collaborative for High Performance Schools (CHPS), San Francisco, December 11, 2003.

“Advanced Perspectives In Mold Prevention & Control Symposium”, Invited Speaker, Las Vegas, Nevada, November 7-9, 2004.

“Building Sciences: Understanding and Controlling Moisture in Buildings”, American Industrial Hygiene Association, San Francisco, CA, February 14-16, 2005.

“Indoor Air Quality Diagnostics and Healthy Building Design”, University of California Berkeley, Berkeley, CA, March 2, 2005.

“Improving IAQ = Reduced Tenant Complaints”, Northern California Facilities Exposition, Santa Clara, CA, September 27, 2007.

“Defining Safe Building Air”, Criteria for Safe Air and Water in Buildings, ASHRAE Winter Meeting, Chicago, IL, January 27, 2008.

“Update on USGBC LEED and Air Filtration”, Invited Speaker, NAFA 2008 Convention, San Francisco, CA, September 19, 2008.

“Ventilation and Indoor air Quality in New California Homes”, National Center of Healthy Housing, October 20, 2008.

“Indoor Air Quality in New Homes”, California Energy and Air Quality Conference, October 29, 2008.

“Mechanical Outdoor air Ventilation Systems and IAQ in New Homes”, ACI Home Performance Conference, Kansas City, MO, April 29, 2009.

“Ventilation and IAQ in New Homes with and without Mechanical Outdoor Air Systems”, Healthy Buildings 2009, Syracuse, CA, September 14, 2009.

“Ten Ways to Improve Your Air Quality”, Northern California Facilities Exposition, Santa Clara, CA, September 30, 2009.

“New Developments in Ventilation and Indoor Air Quality in Residential Buildings”, Westcon meeting, Alameda, CA, March 17, 2010.

“Intermittent Residential Mechanical Outdoor Air Ventilation Systems and IAQ”, ASHRAE SSPC 62.2 Meeting, Austin, TX, April 19, 2010.

“Measured IAQ in Homes”, ACI Home Performance Conference, Austin, TX, April 21, 2010.

“Respiration: IEQ and Ventilation”, AIHce 2010, How IH Can LEED in Green buildings, Denver, CO, May 23, 2010.

“IAQ Considerations for Net Zero Energy Buildings (NZEB)”, Northern California Facilities Exposition, Santa Clara, CA, September 22, 2010.

“Energy Conservation and Health in Buildings”, Berkeley High School Green Career Week, Berkeley, CA, April 12, 2011.

“What Pollutants are Really There ?”, ACI Home Performance Conference, San Francisco, CA, March 30, 2011.

“Energy Conservation and Health in Residences Workshop”, Indoor Air 2011, Austin, TX, June 6, 2011.

“Assessing IAQ and Improving Health in Residences”, US EPA Weatherization Plus Health, September 7, 2011.

“Ventilation: What a Long Strange Trip It’s Been”, Westcon, May 21, 2014.

“Chemical Emissions from E-Cigarettes: Direct and Indirect Passive Exposures”, Indoor Air 2014, Hong Kong, July, 2014.

“Infectious Disease Aerosol Exposures With and Without Surge Control Ventilation System Modifications”, Indoor Air 2014, Hong Kong, July, 2014.

“Chemical Emissions from E-Cigarettes”, IMF Health and Welfare Fair, Washington, DC, February 18, 2015.

“Chemical Emissions and Health Hazards Associated with E-Cigarettes”, Roswell Park Cancer Institute, Buffalo, NY, August 15, 2014.

“Formaldehyde Indoor Concentrations, Material Emission Rates, and the CARB ATCM”, Harris Martin’s Lumber Liquidators Flooring Litigation Conference, WQ Minneapolis Hotel, May 27, 2015.

“Chemical Emissions from E-Cigarettes: Direct and Indirect Passive Exposure”, FDA Public Workshop: Electronic Cigarettes and the Public Health, Hyattsville, MD June 2, 2015.

“Creating Healthy Homes, Schools, and Workplaces”, Chautauqua Institution, Athenaeum Hotel, August 24, 2015.

“Diagnosing IAQ Problems and Designing Healthy Buildings”, University of California Berkeley, Berkeley, CA, October 6, 2015.

“Diagnosing Ventilation and IAQ Problems in Commercial Buildings”, BEST Center Annual Institute, Lawrence Berkeley National Laboratory, January 6, 2016.

“A Review of Studies of Ventilation and Indoor Air Quality in New Homes and Impacts of Environmental Factors on Formaldehyde Emission Rates From Composite Wood Products”, AIHce2016, May, 21-26, 2016.

“Admissibility of Scientific Testimony”, Science in the Court, Proposition 65 Clearinghouse Annual Conference, Oakland, CA, September 15, 2016.

“Indoor Air Quality and Ventilation”, ASHRAE Redwood Empire, Napa, CA, December 1, 2016.



Memorandum

Prepared for: Ann Wuu, Senior Planner, City of Irvine

Prepared by: Keith Lay, ICF

Date: June 5, 2023

Re: **Irvine Market Place Residential Development Project—Response to May 23, 2023, Letter from Lozeau Drury to Irvine City Council**

This memorandum provides responses to the air quality and health risk comments included in the letter submitted by Lozeau Drury, LLP on behalf of the Supporters Alliance for Environmental Responsibility (“SAFER”) (hereafter, “Lozeau Drury letter”) dated May 23, 2023, regarding the Irvine Market Place Residential Development Project (General Plan Amendment 00863325-PGA, Zone Change 00870374-PZC, Development Agreement 00900866-PDA, and Master Plan 00882754-PMP) (“Project”) that was heard as Agenda Item 3.1 at the City Council’s May 23, 2023 meeting. This memorandum only addresses the comments included in the Lozeau Drury letter related to the air quality and health risk assessment. Other comments are addressed in a separate memorandum.

ICF has reviewed the Lozeau Drury letter and the responses to the air quality and health risk comments that were prepared by LSA (LSA, June 1, 2023). LSA’s response to comment letter is included as Attachment A. As discussed below, the comments received in the Lozeau Drury letter did not raise any new issues about the Project’s air quality impacts or provide information indicating the Project would result in new impacts or impacts substantially greater in severity than disclosed in the Draft Addendum.

Comment II. An EIR or MND is required because the Project will cause new significant air quality impacts and health-risk impacts.

The commenter maintains that the proposed Project will have the following significant air quality and health-risk impacts.

a. The 2023 Addendum inaccurately modeled the Project’s emissions and cannot be relied upon to determine the Project’s air quality impacts.

The comment question the following six changes to the California Emissions Estimator Model (CalEEMod) modeling:

1. Reductions to Architectural and Area Coating Emission Factors;
2. Changes to Individual Construction Phase Lengths;
3. Reduction to Number of Gas Fireplaces;
4. Application of Tier 4 Final Emissions Standards;
5. Application of Operational Energy-Related Mitigation Measure; and

ATTACHMENT 2

6. Application of Operational Area-Related Mitigation Measures.

LSA's response to comment letter addressed all of these concerns and determined that the CalEEMod analysis was adequate as presented.

b. An updated air model analysis found that the Project will have a significant air quality impact.

LSA evaluated the CalEEMod analysis that was included in the comment letter and determined that the modeling incorrectly reverted back substantiated Project-specific changes made to CalEEMod and does not reflect the Project. In addition, LSA determined that the commenter did not provide any supporting documentation as to why the construction assumptions used in the Addendum analysis would not be representative of the Project's construction. Therefore, no changes to the analysis or significance determination included in the Addendum are required.

c. The 2023 Addendum failed to adequately analyze the Project's potential air quality impacts from diesel particulate matter emissions.

After reviewing the concerns included in the Lozeau Drury letter and the responses provided by LSA, ICF has determined that the health risk assessment included in the Draft Addendum was adequate. The Project would not result in any air quality impacts from diesel particulate matter emissions.

Comment IV. An EIR is Required Because New Mitigation Measures Are Available to Address the Project's Air Quality Impacts.

As discussed in LSA's response to comment letter, the proposed Project would not generate any new or substantially more severe air quality impacts and there were no mitigation measures previously determined to be infeasible that are now feasible. Therefore, the additional mitigation measures included in Lozeau Drury's letter are not required.

Comment V. An EIR is Required Because of New Information Regarding the Project's Significant Impacts on Indoor Air Quality from Formaldehyde Emissions.

As discussed in LSA's response to comment letter, indoor formaldehyde emissions would be a function of the building materials used. California has stringent regulations limiting formaldehyde emissions from composite wood products that are protective of public health. The Project will comply with the codes and regulations in California applicable to the Project's uses, which adequately address potential emissions and risks from building materials to ensure safe practices and healthy indoor air.



**Attachment A: The Market Place Project Air Quality Analysis - Response to Comments
prepared by LSA, June 1, 2023**



MEMORANDUM

DATE: June 1, 2023
To: Rick Hajost, Senior Manager, Irvine Company Apartment Development
FROM: Cara Cunningham, Associate
SUBJECT: The Market Place Project Air Quality Analysis - Response to Comments

LSA has reviewed comments submitted by Amalia Bowley Fuentes of Lozeau Drury LLP on behalf of Supporters Alliance for Environmental Responsibility (SAFER) on the Addendum to the Lower Peters Canyon Specific Plan Final EIR No. 557 for Planning Area 4 – The Market Place dated April 2023. LSA prepared the Air Quality and Energy Analysis for the proposed Market Place project dated March 2023 (Appendix C of the Addendum). The findings from the report were used as the basis for the findings in the Addendum. LSA reviewed the comments related to air quality and health risk impacts (pages 5 through 10 of the comment letter and related exhibits).

AIR QUALITY MODELING

The comment letter states that there were various changes to the California Emissions Estimator Model (CalEEMod) modeling conducted for the proposed project and asserts that these changes were either inconsistent with information provided in the Addendum or otherwise unjustified. These questioned changes include the following:

1. Reductions to Architectural and Area Coating Emission Factors;
2. Changes to Individual Construction Phase Lengths;
3. Reduction to Number of Gas Fireplaces;
4. Application of Tier 4 Final Emissions Standards;
5. Application of Operational Energy-Related Mitigation Measure; and
6. Application of Operational Area-Related Mitigation Measures.

Architectural and Area Coating Emissions Factors

The comment letter asserts that the use of zero volatile organic compound (VOC) paints are not formally included as mitigation measures, and therefore the use of zero VOC paints cannot be verified.

As identified on pages 47 and 71 of the Addendum and on page 8 of the Air Quality and Energy Analysis (Appendix C of the Addendum), zero VOC paint would be used for architectural coatings. Zero VOC paint is available from several paint brands and would be consistent with the assumptions included in the modeling. The use of zero VOC paint is considered part of the project, not mitigation, and would be included in construction documents and specifications. The CalEEMod User's Guide allows for the user to input site-specific information where available, including the VOC content of architectural coatings. Since the proposed project would utilize zero VOC paint, it was included in CalEEMod as a project feature. This analysis is adequate as presented.

Construction Phase Lengths

The comment letter states that there were various changes to the project construction schedule entered in CalEEMod and asserts that by altering and extending some of the individual construction phase lengths, the model assumes there are a greater number of days to complete the construction activities required by the extended phases resulting in less construction activities required per day and, consequently, less pollutants emitted per day.

The project's construction duration was based on the project applicant's anticipated construction schedule, which assumes that construction would begin in October 2023 and be completed by August 2026. This is consistent with the instructions in the CalEEMod User's Guide that directs the user to use site-specific phasing. As discussed in the CalEEMod User's Guide, pages 30 through 31, the construction tab contains default information obtained from a survey conducted by SCAQMD of construction sites with a range of project types and sizes and provides default construction equipment lists and phase length data based on the total lot acreage of a project. The User's Guide states: "If the user has more detailed site-specific equipment and phase information, the user should override the default values."

The analysis properly relied on project-specific construction phases which accurately reflect the required construction activities necessary for project buildout. The commenter has not provided any supporting documentation as to why the construction assumptions used in the analysis would not be representative of the project's construction. This analysis is adequate as presented.

Gas Fireplaces

This comment letter states that the CalEEMod assumes that the project would not include any gas fireplaces and that the Addendum fails to require the project not to include gas fireplaces. The comment letter asserts that as the Addendum fails to provide substantial evidence to support the assumption that no gas fireplaces would be included in the project design, the changes cannot be verified and that the CalEEMod model may underestimate the project's area-source operational emissions.

As shown on the unit/floor plans included in the Entitlement Package submitted to the City for approval, the proposed project would not include any fireplaces. As such, no gas fireplaces are included as part of the project, not mitigation. As noted in the CalEEMod User's Guide, the model allows the user to input the number and type of fireplaces, if any, included with the project. Since the proposed project would not include fireplaces, it was included in CalEEMod as a project feature. This analysis is adequate as presented.

Tier 4 Final Emissions Standards

The comment letter states that the use of Tier 4 Final construction equipment is not formally included as mitigation measures, and therefore the use of Tier 4 Final construction equipment cannot be verified.

As identified on page 71 of the Addendum and on page 8 of the Air Quality and Energy Analysis (Appendix C of the Addendum), the proposed project would utilize Tier 4 construction equipment. As such, the use of Tier 4 construction equipment is considered part of the project, not mitigation, and would be included in construction documents and specifications. The Applicant has confirmed that the construction equipment on the project would comply with Tier 4 Final emissions standards. As such, this analysis is adequate as presented.

Operational Energy-Related Mitigation Measure

The comment letter states that CalEEMod incorporates photovoltaic (PV) systems located on roofs and top deck of the parking garages as the Addendum fails to explicitly require on-site solar panels in a formal mitigation measure. The comment letter claims that by including an operational mitigation measure without properly committing to its implementation, the model may underestimate the project's operational energy-related emissions and should not be relied upon to determine project significance.

The project has committed to using PV systems. As identified on page 9 of the Air Quality and Energy Analysis (Appendix C of the Addendum), the analysis assumes that the solar PV systems would provide 10 percent of the total project electrical load. As such, the project's solar PV system is included as part of the project, not mitigation, and would be included in construction documents and specifications. Since the proposed project would provide the solar PV system to provide approximately 10 percent of the total project electrical load, it was included in CalEEMod as a project feature. This analysis is adequate as presented.

Operational Area-Related Mitigation Measures

The comment letter identifies that the following operational area-related features were included in CalEEMod: use electric lawnmower; use electric leaf blower, use electric chainsaw, use low VOC paint, and no hearths installed. The comment letter claims that the inclusion of the above-mentioned operational features is unsubstantiated, as none of them are incorporated as formal mitigation measures.

As discussed above, the project does not include gas fireplaces and the project has committed to use of zero VOC paint. The project has also committed to use of electric landscaping equipment. As

such, the use of electric landscaping equipment, zero VOC paint, and no fireplaces are considered part of the project, not mitigation, and would be included in construction documents and specifications. As such, this analysis is adequate as presented.

SIGNIFICANT AIR QUALITY IMPACT

The comment letter states that SWAPE prepared an updated CalEEMod model that purportedly demonstrates that the project would result in a potentially significant air quality impact that was not previously identified or addressed in the Addendum.

The CalEEMod model allows the user to change the default values and shows these changes in the “output files” after the model run. These output files are included as part of the Air Quality and Energy Analysis (Appendix C of the Addendum). CalEEMod was designed to allow the user to change the defaults to reflect site- or project-specific information, when available. The model provides several opportunities for the user to change the defaults in the model; and those changes require users to provide justification for all changes made to the default settings (e.g., reference more appropriate data sources). The assumptions outlined in the Air Quality and Energy Analysis provide justification for the more accurately estimated project-generated emissions.

The commenter’s Updated Analysis incorrectly reverted back substantiated project-specific changes made to CalEEMod and does not reflect the project. The commenter has not provided any supporting documentation as to why the construction assumptions used in the Addendum analysis would not be representative of the project’s construction. No additional analysis is warranted and the preparation of an EIR is not required.

DIESEL PARTICULATE MATTER EMISSIONS

The comment letter asserts that the construction health risk assessment (HRA) is flawed due to the inputting of several purportedly incorrect values into the CalEEMod analysis. In addition, the comment letter claims that the Addendum fails to mention or provide the exposure assumptions for the construction HRA, such as age sensitivity factors or fraction of time at home, and that the construction HRA uses the incorrect equation when calculating the project’s cancer risks, and is therefore inconsistent with guidance set forth by the Office of Environmental Health Hazard Assessment (OEHHA).

The construction HRA input parameters are included in Attachment B of the Air Quality and Energy Analysis (Appendix C of the Addendum). The construction HRA was prepared to evaluate construction-period health risk to off-site receptors, was performed for the proposed project. The equation for calculating cancer risk as well as exposure assumptions used in the construction HRA was based on and consistent with OEHHA guidance.

The following limits for maximum individual cancer risk (MICR) and noncancer acute and chronic Hazard Index (HI) from project emissions of TACs are based on regulatory guidance for use in determining the health risk for projects in the Basin:

- **MICR:** MICR is the estimated probability of a maximally exposed individual (MEI) contracting cancer as a result of exposure to TACs over a period of 30 years for adults and 9 years for

children in residential locations and over a period of 25 years for workers. The MICR calculations include multipathway consideration.

The cumulative increase in MICR that is the sum of the calculated MICR values for all TACs would be considered significant if it would result in an increased MICR greater than 10 in 1 million (1×10^{-5}) at any receptor location.

- **Chronic HI:** Chronic HI is the ratio of the estimated long-term level of exposure to a TAC for a potential MEI to its chronic reference exposure level. The chronic HI calculations include multipathway consideration.

The project would be considered to have a significant health risk impact if the cumulative increase in total chronic HI for any target organ system would exceed 1.0 at any receptor location.

- **Acute HI:** Acute HI is the ratio of the estimated maximum 1-hour concentration of a TAC for a potential MEI to its acute reference exposure level.

The project would be considered to have a significant health risk impact if the cumulative increase in total acute HI for any target organ system would exceed 1.0 at any receptor location.

For the purposes of an HRA, emissions are analyzed for acute health impacts, chronic, and carcinogenic health impacts. A multi-pathway assessment was conducted to evaluate the project's emissions during construction following the modeling techniques recommended in the OEHHA *Air Toxic Hot Spots Program Risk Assessment Guidelines*.¹ The OEHHA has determined that long-term exposure to diesel exhaust particulates poses the highest cancer risk of any toxic air contaminant (TAC) it has evaluated. Exposure to diesel exhaust can also have immediate health effects. For risk assessment procedures, the OEHHA specifies that the surrogate for whole diesel exhaust is diesel particulate matter (DPM). The HRA analyses used PM₁₀ emissions to represent DPM emissions, consistent with OEHHA guidance.

The conservative nature of this analysis is due primarily to the following three factors:

- The CARB-adopted diesel exhaust unit risk factor (URF) of 300 in 1 million per microgram per cubic meter ($\mu\text{g}/\text{m}^3$) is based on the upper 95th percentile of estimated risk for each of the epidemiological studies used to develop the URF. Therefore, the risk factor is already representative of the conservative risk posed by DPM.
- The risk estimates assume sensitive receptors would be subject to DPM 24 hours per day, 350 days per year. As a conservative measure, SCAQMD does not recognize indoor adjustments for

¹ California Environmental Protection Agency (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. March. Website: <https://oehha.ca.gov/air/air-toxics-hot-spots> (accessed May 2023).

residents. However, typical people spend the majority of their time indoors versus remaining outdoors 24 hours per day, 350 days per year.

- The exposure to DPM is assumed to be constant for the given period analyzed (i.e., 30 years for the residential receptors and 25 years for the worker receptors). However, emissions from DPM are expected to substantially decrease in the future with the implementation of standard regulatory requirements and technological advancement to reduce DPM.

A construction HRA, which evaluates construction-period health risk to off-site receptors, was performed for the proposed project. To estimate the potential cancer risk associated with construction of the proposed project from equipment exhaust (including DPM), a dispersion model was used to translate an emission rate from the source location to a concentration at the receptor location of interest (i.e., a nearby residence and worksites). The HRA analyses used PM₁₀ emissions to represent DPM emissions, consistent with OEHHA guidance¹. Dispersion modeling varies from a simpler, more conservative screening-level analysis to a more complex and refined detailed analysis. This refined assessment was conducted using the California Air Resources Board (CARB) exposure methodology with the air dispersion modeling performed using the USEPA dispersion model AERMOD. The model provides a detailed estimate of exhaust concentrations based on site and source geometry, source emissions strength, distance from the source to the receptor, and meteorological data. Meteorological and terrain model inputs are included in the AERMOD input files. In addition, health risk variables are included in the HARP2 model output files. AERMOD input parameters are included in Attachment B of the Air Quality and Energy Analysis.

The dose-response relationship for a specific pollutant describes the association between exposure and the observed response (health effect). In other words, the relationship estimates how different levels of exposure to a pollutant change the likelihood and severity of health effects. The dose-response relationship (the response occurring with increasing doses) varies with each pollutant, individual sensitivity, and type of health effect. Combining the results of the emission characterization and dispersion modeling described above with the dose-response assessment gives an estimate of the increased health risk for an individual exposed to the maximum predicted long-term concentrations of TACs.

The residential risk incorporates both the risk for a child living in a nearby residence for 9 years (the standard period of time for child risk) and an adult living in a nearby residence for 30 years (considered a conservative period of time for an individual to live in any one residence). The HRA modeling utilized discrete variants for daily breathing rates, exposure frequency, and exposure duration based on default rates as presented in the OEHHA guidance document entitled *Air Toxics*

¹ California Environmental Protection Agency (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments*. March. Website: http://oehha.ca.gov/air/hot_spots/hotspots2015.html (accessed May 2023).

*Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*¹ and guidance from SCAQMD.

The construction HRA analysis properly relied on OEHHA guidance and the commenter has not provided any supporting documentation as to why the construction health risk assumptions and calculations used in the Addendum would not be representative of the project's construction. The analysis is adequate as presented. No additional analysis is required.

NEW MITIGATION MEASURES

The comment letter includes a number of suggested mitigation measures to consider to reduce impacts related to air quality and health risk. As discussed throughout these responses, and the Addendum, the project was properly modeled and analyzed and the Addendum appropriately determined that the project would not generate any new or substantially more severe air quality impacts and there were no mitigation measures previously determined to be infeasible that are now feasible. Therefore, no additional mitigation is required.

The list of measures included in SAFER's comments are already included as part of the project, such as the use of Tier 4 equipment and inclusion of efficiency measures that exceed Title 24 building standards; are required by existing regulations applicable to the project (e.g., SCAQMD Rule 403, CARB requirements, and water quality regulations to minimize erosion and sedimentation); are consistent with existing MM S-5, such as regular watering during grading and suspension of grading operations during windy conditions; or are not applicable, such as measures for projects in AB 617 communities.

FORMALDEHYDE

Formaldehyde exposure would be a function of the specific building materials used. California has stringent regulations limiting formaldehyde emissions from composite wood products that are protective of public health. The project construction would use materials that comply with State requirements.

This concludes our response to comments. Please contact Cara Cunningham at cara.cunningham@lsa.net if you have any additional questions.

¹ California Environmental Protection Agency (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. March. Website: <https://oehha.ca.gov/air/air-toxics-hot-spots> (accessed May 2023).