INITIAL STUDY

Hawthorne Residential Project (TTM 37032)
9170 Indiana Avenue
City of Riverside

Prepared for:

City of Riverside Community & Economic Development Department
Planning Division

Prepared by:

LSA
1500 Iowa Avenue, Suite 200
Riverside, California 92507

August 2017

Exhibit 8

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INTRODUCTION

California Environmental Quality Act Compliance

This document serves as the Initial Study (IS) for the Hawthorne Residential Project Tentative Tract Map (TTM) 37032 (proposed project or project) in the City of Riverside (City), California. The City, through its Community & Economic Development Department, Planning Division (Division), is the lead agency responsible for the review and approval of the proposed project.

This Initial Study has been prepared by LSA Associates, Inc. (LSA) on behalf of the Division and is in conformance with Sections 15063 and 15064 of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.). The purpose of the Initial Study Environmental Evaluation is to provide the Lead Agency (the Division) with information to use as the basis for deciding whether to prepare an Environmental Impact Report (EIR) or a Negative Declaration.

As identified in the following analyses, project impacts related to various environmental issues either do not occur, are less than significant (when measured against established significance thresholds), or have been rendered less than significant through implementation of mitigation measures. Based on these analytical conclusions, this IS supports adoption of a Mitigated Negative Declaration (MND) for the proposed project as all potential significant impacts can be reduced to less than significant or less than significant with mitigation incorporated.

ENVIRONMENTAL CHECKLIST

1. **Case Numbers:** P16-0111, P16-0112, P16-0113, P16-0114, and P16-0883
2. **Project Title:** Hawthorne Residential Project Tentative Tract Map 37032
3. **Lead Agency:** City of Riverside
Community & Economic Development Department
Planning Division
3900 Main Street, 3rd Floor
Riverside, California 92522
4. **Contact Person:** Stephanie Tang, Senior Planner
Phone Number: (951) 826-3965
stang@riversideca.gov
5. **Project Location:** 9170 Indiana Avenue, Riverside, California 92503
6. **Project Applicant/Project Sponsor's Name and Address:** Steven Walker Communities, Inc.
Attn: Steve Berzansky
7111 Indiana Avenue, Suite 300
Riverside, California 92504
7. **General Plan Designation:** B/OP – Business/Office Park
8. **Zoning:** PF – Public Facilities
9. **Description of Project**:

The project site (TTM 37032) is located at 9170 Indiana Avenue, Riverside, California, in western Riverside County. The site consists of Assessor's Parcel Numbers (APNs) 233-170-001 and 233-180-007. The project site is located within an unsectioned portion of Township 3 South, Range 5 West within the *Riverside West, California* 7.5-minute quadrangle, as mapped by the U.S. Geological Survey (USGS).

The site is currently occupied by the former Hawthorne Elementary School, which was vacated in December 2008. The Superior Court of California, County of Riverside has used the site for the overflow of court hearings (civil jury trials) in the former elementary school classrooms from approximately 2010 to 2012. The vacant school complex includes eight buildings, several shade structures, playground equipment, many large trees, asphalt basketball courts, and several vacant and overgrown areas. The school's frontage along Indiana Avenue also features a surface parking lot and bus turnouts. Covered walkways link existing buildings. The site includes foundation slabs that previously accommodated portable classroom buildings, which have been removed. The main buildings total approximately 23,295 square feet. The project includes the demolition of all existing on-site classroom buildings and associated school facilities.

Subsequent to demolition activities, the project proposes the construction of 54 single-family detached homes and associated improvements on 6.85 acres. The proposed single-family lot size ranges from 2,853 square feet to 5,434 square feet. As detailed in Table 1.A, three floor plans are proposed ranging in size from 1,835 to 2,107 square feet. The project includes a central paseo to provide pedestrian access to a meandering trail located within the southern portion of the site. Recreational amenities located in this area include a tot lot, picnic tables, and shade structures.

Table 1.A: Proposed Residential Development

Plan	Units	Square Footage/unit	Total Square Footage
1	19	1,835	34,865
2	19	2,107	40,033
3	16	2,098	33,568
TOTAL	**54**		**108,466**

Nearly all of the runoff generated by this project will be routed to pervious, landscaped areas where it will infiltrate into the ground. The project would install four retention basins: two (1,715 and 1,827 square feet) located on either side of the entrance to the site, one (3,952 square feet) on the northwestern portion of the site (adjacent to Lot 22 along Indiana Avenue), and one (15,410 square feet) on the southern boundary of the site, adjacent to the Burlington Northern Santa Fe (BNSF) Railway.

The project site is surrounded primarily by residential development. The nearest residential use east of the project site has a garage located approximately 7.5 feet from the property line and the residence is located approximately 25 feet from the property line. Single-family residential development is located directly east of the site and across Indiana Avenue, to the north. State Route 91 (SR-91) parallels Indiana Avenue north of these residential uses. The BNSF Railway and a small segment of the Upper Riverside Canal are located directly south of the site. A Southern California Edison (SCE) electrical substation and storage yard and single-family residences are located south of the railway. The parcel west of the site is undeveloped.

In order to allow the proposed use, the project includes a General Plan (GP) Amendment from B/OP – Business/ Office Park to MDR – Medium Density Residential and a rezone from PF – Public Facilities to R-1-7000 – Single-Family Residential. The existing on-site and surrounding land use is identified below in Table 1.B.

10. **Surrounding land uses and setting: Briefly describe the project's surroundings:**

Table 1.B: Existing Land Uses and Land Use Designations

	Existing Land Use	General Plan Designation	Zoning Designation
Project Site	Vacant school	B/OP – Business/Office Park	PF – Public Facilities
North	Single-family homes	B/OP – Business/Office Park	R-1-7000 – Single-Family Residential
East	Single-family homes	B/OP – Business/Office Park	R-1-7000 – Single-Family Residential and PF – Public Facilities
South	BNSF Railway, SCE electrical substation, vacant land, and single-family residential homes further south	B/OP – Business/Office Park and MDR – Medium Density Residential	RWY – Railway, PF – Public Facilities, and R-1-7000 – Single-Family Residential
West	Vacant land	PF – Public Facilities	R-1-7000 – Single-Family Residential

11. **Other public agencies whose approval is required (e.g., permits, financial approval, or participation agreement.):**

    a. City of Riverside
    b. Regional Water Quality Control Board (RWQCB), Santa Ana Region – National Pollutant Discharge Elimination System (NPDES) Construction General Permit
    c. RWQCB, Santa Ana Region – Storm Water Pollution Prevention Plan (SWPPP)
    d. RWQCB, Santa Ana Region – 401 Water Quality Certification – Waste Discharge Requirement (WDR)
    e. South Coast Air Quality Management District (SCAQMD) – Dust Control Plan

12. **Other Reviews Incorporated by Reference in this Review:**

a. City of Riverside General Plan 2025 (GP 2025)
b. City of Riverside General Plan 2025 Final Program EIR (FPEIR)
c. Title 19, Zoning Code
d. Title 20, Cultural Resources

13. **Acronyms**

AB .... Assembly Bill
AERMOD .... American Meteorological Society/Environmental Protection Agency Regulatory Model
APN .... Assessor's Parcel Number
AQMP .... Air Quality Management Plan
ARB .... California Air Resources Board
ASHRAE .... American Society of Heating, Refrigerating and Air Conditioning Engineers
ASTM .... American Society for Testing and Materials
Basin .... South Coast Air Basin
BAU .... Business As Usual
BMP .... Best Management Practice
BNSF…………….. Burlington Northern Santa Fe
B/OP....................... Business/Office Park
C&D....................... Construction and Demolition
CalRecycle .... California Department of Resources Recycling and Recovery
CAP........................ Climate Action Plan
CAPCOA .... California Air Pollution Control Officers Association
CBC .... California Building Code
CCR .... California Code of Regulations
CEC........................ California Energy Commission
CEQA..................... California Environmental Quality Act
CHL .... California Historical Landmarks
CHRIS.................... California Historical Resources Information System
City......................... City of Riverside
CMP .... Congestion Management Plan
CNEL .... Community Noise Equivalent Level
CO .... Carbon monoxide
CPHI .... California Points of Historical Interest
CREC .... Controlled Recognized Environmental Conditions
DAMP .... Drainage Area Management Plan
dBA .... A-weighted decibels
Division.................. Planning Division
DOC .... California Department of Conservation
DPM....................... diesel particulate matter
EIC .... Eastern Information Center
EIR .... Environmental Impact Report
EO .... Executive Order
EOP .... Emergency Operations Plan
EPA .... United States Environmental Protection Agency
ESA .... Environmental Site Assessment
FEMA .... Federal Emergency Management Agency
FIND .... Facility Information Detail
FPEIR..................... Final Programmatic Environmental Impact Report
FRA........................ Federal Railroad Administration
FTA .... Federal Transit Administration
GAP .... Green accountability performance
GCC .... Global Climate Change
GHG .... Greenhouse Gas

GIS .... Geographic Information System
GP .... General Plan
GP 2025 .... General Plan 2025
HCM .... Highway Capacity Manual
HCP........................ Habitat Conservation Plan
HRA .... Health Risk Assessment
HREC..................... Historic Recognized Environmental Conditions
HRI......................... Historic Resource Inventory
HVAC .... Heating, Ventilation and Air-Conditioning
IS .... Initial Study
Lbs/day.................. Pounds per day
LHMP .... Local Hazard Mitigation Plan
L_{max}........................ maximum noise level
LOS........................ Level of Service
LSA .... LSA Associates, Inc.
LST .... Localized Significance Threshold
MATES.................. Multiple Air Toxics Exposure Studies
MBTA.................... Migratory Bird Treaty Act
MDR .... Medium Density Residential
MERV.................... Minimum Efficiency Reporting Value
MLD....................... Most Likely Descendant
MND .... Mitigated Negative Declaration
MS4........................ Municipal Separate Storm Sewer Systems
MSHCP.................. Western Riverside County Multiple Species Habitat Conservation Plan
MT CO_2e................ metric tons of carbon dioxide-equivalent gases
NAHC .... Native American Heritage Commission
NPDES................... National Pollutant Discharge Elimination System
NO_X........................ Nitrogen oxides
OEM....................... Office of Emergency Services
PEV .... plug-in electric vehicle
PF .... Public Facilities
PM_{10} .... Particulate matter less than 10 microns in size
$PM_{2.5}$....................... Particulate matter less than 2.5 microns in size
ppm .... parts per million
R-1-7000 .... Single-Family Residential
RCALUCP .... Riverside County Airport Land Use Compatibility Plan
RCP........................ Regional Comprehensive Plan
RCTC..................... Riverside County Transportation Commission
REC........................ Recognized Environmental Conditions
ROC .... Reactive Organic Compounds
RPU........................ Riverside Public Utilities
RRG .... Riverside Restorative Growthprint
RRG-CAP .... Riverside Restorative Growthprint Climate Action Plan
RRG-EPAP .... Riverside Restorative Growthprint Economic Prosperity Action Plan
RTP .... Regional Transportation Plan
RUSD..................... Riverside Unified School District
RWQCB................. Regional Water Quality Control Board
RWY .... Railway
SCAG..................... Southern California Association of Governments
SCAQMD .... South Coast Air Quality Management District
SCE .... Southern California Edison
SCRRA .... Southern California Regional Rail Authority
SKR........................ Stephens' Kangaroo Rat
SO_X .... Sulfur oxides

SR-91 .... State Route 91
SWPPP................... Storm Water Pollution Prevention Plan
SWRCB .... State Water Resources Control Board
TAC .... Toxic Air Contaminants
TTM....................... Tentative Tract Map
USGS .... United States Geological Survey
UWMP................... Urban Water Management Plan
VOC....................... Volatile Organic Compounds
WDR...................... Waste Discharge Requirement
WRCOG................. Western Riverside Council of Governments

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FIGURE 1

Legend

Project Boundary

N

0 250 500

FEET

SOURCE: Bing Aerial, 2016; ESRI Streetmap, 2013/Riverside County, 2015.

Hawthorne Residential Project
Initial Study/Mitigated Negative Declaration

Regional and Project Location

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FIGURE 2

N

0 60 120
FEET

SOURCE: KTGY Group, Inc. Architecture+Planning, 2/9/2016; ESRI World Imagery, 2015

Hawthorne Residential Project
Initial Study/Mitigated Negative Declaration

Illustrative Site Plan

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Photograph 1: *South view.*

Photograph 2: *Southeast view.*

Photograph 3: *Northwest view.*

Photograph 4: *Playground/Railroad view.*

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FIGURE 3

Hawthorne Residential Project
Initial Study/Mitigated Negative Declaration

Site Photographs

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture & Forest Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology and Soils
☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials	☐ Hydrology and Water Quality
☐ Land Use and Planning	☐ Mineral Resources	☐ Noise
☐ Population and Housing	☐ Public Service	☐ Recreation
☐ Transportation and Traffic	☐ Tribal Cultural Resources	☐ Utility Systems
☐ Mandatory Findings of Significance		

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation, which reflects the independent judgment of the City of Riverside, it is recommended that:

The City of Riverside finds that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	☐
The City of Riverside finds that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	☒
The City of Riverside finds that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	☐
The City of Riverside finds that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	☐
The City of Riverside finds that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	☐

Signature *Stephanie Tang* Date August 23, 2017

Printed Name & Title Stephanie Tang For City of Riverside

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
   a. **Earlier Analysis Used.** Identify and state where they are available for review.
   b. **Impacts Adequately Addressed.** Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c. **Mitigation Measures.** For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8) The explanation of each issue should identify:
   a. The significance criteria or threshold, if any, used to evaluate each question; and
   b. The mitigation measure identified, if any, to reduce the impact to less than significance.

9) Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, has consultation begun?

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code Section 21082.3(c) contains provisions specific to confidentiality.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS. Would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒

1a. Response: ***(Source: General Plan 2025 Figure CCM-4 – Master Plan of Roadways, General Plan 2025 FPEIR Figure 5.1-1 – Scenic and Special Boulevards and Parkways, Table 5.1-A – Scenic and Special Boulevards, and Table 5.1-B – Scenic Parkways)***

No Impact. There are no scenic vistas visible from the project site. The project site is located within an urbanized area surrounded by existing development. Views from public areas in the vicinity of the project site are dominated by vacant lands mixed with single-family homes, a substation, ornamental landscape, and utility poles. Therefore, the project will have **no impact** directly, indirectly, or cumulatively to scenic vistas. No mitigation is required.

b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒

1b. Response: ***(Source: General Plan 2025 Figure CCM-4 – Master Plan of Roadways, General Plan 2025 FPEIR Figure 5.1-1 – Scenic and Special Boulevards and Parkways, Table 5.1-A – Scenic and Special Boulevards, Table 5.1-B – Scenic Parkways, the City's Urban Forest Tree Policy Manual, Title 20 – Cultural Resources, and Caltrans 2011)***

No Impact. There are no state scenic highways located near the project site. As designated by the City's GP 2025, the proposed project is not located along or within view of a scenic boulevard, parkway, or special boulevard. The nearest scenic boulevard to the project site is Van Buren Boulevard, which is located approximately 0.3 mile west of the project site. Existing development immediately west, northwest, and southwest of the project site blocks views of the site from Van Buren Boulevard. Therefore, the project will have **no impact** directly, indirectly, or cumulatively to scenic resources within a state scenic highway. No mitigation is required.

c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐

1c. Response: ***(Source: General Plan 2025, General Plan 2025 FPEIR, Zoning Code, and Citywide Design Guidelines and Sign Guidelines)***

Less Than Significant Impact. The site is currently developed with a vacant school. The existing land uses adjacent to the project site include single-family homes to the north and east; BNSF Railway followed by a substation, vacant land, and single-family homes to the south; and vacant land followed by single-family homes to the west. The proposed project includes demolition of the existing school facilities and construction of 54 single-family homes and associated improvements within an existing residential area. Therefore, the proposed project would not degrade the existing visual character of the area. The project will have a **less than significant impact** directly, indirectly, and cumulatively related to visual character and quality of the site and surrounding area. No mitigation is required.

d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

1d. Response: ***(Source: General Plan 2025, Chapter 19.556 – Lighting, Citywide Design Guidelines and Sign Guidelines, and Title 19 – Article VIII – Chapter 19.710 – Design Review)***

Less Than Significant Impact. The project site is located in an area with existing outdoor lighting sources. Currently, sources of nighttime light originate from the vacant school, railroad operations, residential uses and streetlights. New sources of light and glare may be present during project construction, but would be temporary and would cease upon construction completion. The proposed lighting on the project site would include lighting typical of a residential neighborhood, including lights from inside and outside the homes, entrance lighting, and streetlights. The proposed lighting would be directed, oriented, and shielded to prevent light from shining onto the adjacent properties. Although the lighting proposed by the project would increase lighting on the project site compared to current conditions, the lighting would not result in substantial

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

light or glare compared to surrounding development. Any new lighting proposed or required for the project will be constructed in accordance with *Chapter 19.556 – Lighting* of the City's Municipal Code. Additionally, any exterior building materials would be constructed in accordance with *Chapter 19.710 – Design Review* of the City's Municipal Code. As such, the project will have **less than significant impacts** directly, indirectly, or cumulatively that would adversely affect day or nighttime views due to glare and lighting. No mitigation is required.

2. AGRICULTURE AND FOREST RESOURCES.

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation (DOC) as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information complied by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and the forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project:

a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒

2a. Response: ***(Source: General Plan 2025 – Figure OS-2 – Agricultural Suitability and Department of Conservation 2016a)***

No Impact. The proposed project will be constructed within the existing vacant school site. The subject site is designated "Urban and Built-Up Land" by the DOC Farmland Mapping and Monitoring Program and as depicted in Figure OS-2, Agricultural Suitability, in the City's General Plan 2025. The DOC defines "Urban and Built-Up Land" as occupied structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. Since the site is already developed and is not located on any designated Farmland, no conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use would occur. Therefore, the project will have **no impact** directly, indirectly, or cumulatively to Farmland. No mitigation is required.

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

2b. Response: ***(Source: CADME, General Plan 2025– Figure OS-3 - Williamson Act Preserves, General Plan 2025 FPEIR – Figure 5.2-4 – Proposed Zones Permitting Agricultural Uses, Title 19, and Department of Conservation 2016b)***

No Impact. The project site is zoned PF – Public Facilities; thus, the site is not zoned for agricultural use. According to the DOC's Williamson Act map and Figure OS-3, Williamson Act Preserves, in the City's General Plan 2025, there are no Williamson Act contracts on the project site. Therefore, the project will have **no impact** directly, indirectly, or cumulatively to agricultural use or Williamson Act contract lands. No mitigation is required.

c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒

2c. Response: ***(Source: GIS Map – Forest Data)***

No Impact. The project site is zoned PF – Public Facilities; thus, the site is not zoned for forest land. No forest land, timberland, or Timberland Production areas are on the project site as the site is currently developed with a vacant school. Therefore, **no impacts** to forest land or timberland will occur from this project directly, indirectly, or cumulatively. No mitigation is required.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

2d. Response: ***(Source: GIS Map – Forest Data)***

No Impact. The project site is currently developed with a vacant school and is not considered forest land. Therefore, **no impacts** to forest land will occur from this project directly, indirectly, or cumulatively. No mitigation is required.

e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

2e. Response: ***(Source: General Plan 2025 – Figure OS-2 – Agricultural Suitability, Figure OS-3 – Williamson Act Preserves, General Plan 2025 FPEIR – Appendix I – Designated Farmland Table, Title 19 – Article V – Chapter 19.100 – Residential Zones – RC Zone and RA-5 Zone)***

No Impact. The proposed project will be constructed within the existing vacant school site. The subject site is designated "Urban and Built-Up Land" by the DOC Farmland Mapping and Monitoring Program and as depicted in Figure OS-2, Agricultural Suitability, in the City's General Plan 2025. Since the site is already developed and is not located on any designated Farmland, no conversion of Farmland to non-agricultural use would occur. No forest land is on site; therefore, **no impacts** will occur from this project directly, indirectly, or cumulatively related to conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. No mitigation is required.

3. AIR QUALITY.

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐

3a. Response: ***(Sources: Air Quality and Greenhouse Gas Analysis (Appendix A); General Plan 2025*, LU – 141 Land Use)**

Less Than Significant Impact. The project site is located in the South Coast Air Basin (Basin), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The SCAQMD and the SCAG are responsible for formulating and implementing the Air Quality Management Plan (AQMP), which has a 20-year horizon for the Basin. The SCAQMD and SCAG must update the AQMP every three years. The current regional air quality plan is the Final 2016 AQMP adopted by the SCAQMD on March 10, 2017. The Final 2016 AQMP proposes policies and measures currently contemplated by responsible agencies to achieve Federal standards for healthful air quality in the Basin and those portions of the Salton Sea Air Basin that are under SCAQMD jurisdiction. This Final Plan also addresses several Federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. This Final Plan builds upon the approaches taken in the 2012 AQMP for the Basin for the attainment of the Federal ozone air quality standard.[1] The Basin is currently a Federal and State nonattainment area for particulate matter less than 10 microns in size (PM_{10}), particulate matter less than 2.5 microns in size ($PM_{2.5}$), and ozone.

The Final 2016 AQMP proposes attainment demonstration of the Federal $PM_{2.5}$ standards through a more focused control of sulfur oxides (SO_X), directly-emitted $PM_{2.5}$, and nitrogen oxides (NO_X) supplemented with volatile organic compounds (VOC) by 2015. The 8-hour ozone control strategy builds upon the $PM_{2.5}$ strategy, augmented with additional NOx and VOC reductions to meet the standard by 2024 assuming a bump-up[2] is obtained.

[1] *Final 2013 Air Quality Management Plan,* South Coast Air Quality Management District, February 2014.
[2] A "bump-up" is a voluntary reclassification of a nonattainment area to a higher classification allowing for an extension of an attainment deadline.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Consistency with the AQMP for the Basin means that a project would be consistent with the goals, objectives, and assumptions in the respective plan to achieve the Federal and State air quality standards. Pursuant to the methodology provided in Chapter 12 of the 1993 SCAQMD *CEQA Air Quality Handbook*, consistency with the AQMP is affirmed when a project:

(1) does not increase the frequency or severity of an air quality standards violation or cause a new violation; and

(2) is consistent with the growth assumptions in the AQMP. For the proposed project to be consistent with the AQMP adopted by the SCAQMD, the pollutants emitted from the project should not exceed the SCAQMD daily threshold or cause a significant impact on air quality, or the project must already have been included in the AQMP projections. Additionally, if feasible mitigation measures are implemented and shown to reduce the impact level from significant to less than significant, a project may be deemed consistent with the AQMP. The proposed uses are not currently consistent with the zoning designation for the project site, which is PF – Public Facilities or the existing General Plan designation, which is B/OP – Business/Office Park. The project, if approved, would rezone the site to R-1-7000 – Single-Family Residential and predesignate the General Plan land use to MDR – Medium Density Residential. Properties directly east, south, and north (across Indiana Avenue) of the site are designated B/OP – Business Office Park Designation or PF – Public Facilities. Despite this designation, single-family uses have been developed east and north of Indiana Avenue.

According to the *CEQA Air Quality Handbook*, consistency with AQMP growth assumptions must be analyzed for new or amended General Plan elements, Specific Plans, and significant projects. The proposed project will build new residential uses in close proximity to existing residential uses.

Although the existing General Plan land use designation of the site (B/OP – Business Office Park) allows the development and operation of a variety of non-residential uses (e.g., research/development and related flexible space, laboratories, offices; support commercial, and light industrial uses[3]), it is not intended to accommodate the proposed residential uses. The General Plan currently designates properties to the southeast (across the railroad tracks) and east (across Jackson Street) as MDR – Medium Density Residential. The proposed change in General Plan is generally consistent with nearby residential designation(s).

The City's General Plan 2025 is consistent with the SCAG Regional Comprehensive Plan Guidelines and the SCAQMD AQMP. In addition, the proposed project is not considered a significant project (e.g., airports, electrical generating facilities, petroleum and gas refineries, designation of oil drilling districts, water ports, solid waste disposal sites, and offshore drilling facilities). It is reasonable that school or business/office park uses (the existing General Plan land use designation for the site) were assumed in the development of the AQMP. Comparing traffic generated by former school uses to that occurring with development of the project, a 35 percent reduction in daily trips (from 787 to 514 daily trips) and a proportional reduction in air pollutant emissions would occur. As vehicle emissions generate a greater share of air pollutants than stationary uses, it is reasonable to conclude the air pollutant emissions from the proposed project are within the amount previously assumed for the site in the AQMP; therefore, the project (including the change in land use designation) would be consistent with the AQMP. Furthermore, as discussed in Response 3b, below, the project-specific short-term construction and long-term pollutant emissions would be less than the emissions thresholds established in the SCAQMD's *CEQA Air Quality Handbook*; therefore, the project would not result in an increase in the frequency or severity of any air quality standards violation and will not cause a new air quality standard violation.

For these reasons, the proposed project is consistent with the regional AQMP. Therefore, the project will have a **less than significant impact** directly, indirectly, or cumulatively to the implementation of an AQMP. No mitigation is required.

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐

[3] The Business/Office Park (B/OP) designation provides for single or mixed light industrial uses that do not create nuisances due to odor, dust, noise or heavy truck traffic. Suitable uses include corporate and general business offices, research and development, light manufacturing, light industrial, and small warehouse uses (up to 10,000 square feet per site). Although most business parks are controlled through deed restrictions or single ownership of multi-tenant space, business park standards can be applied to existing parcels in separate ownership. Common features of business parks are high quality design, building materials, landscaping, and absence of nuisances. The maximum intensity of development is a floor-area ratio of 1.5.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

3b. Response: ***(Source: Air Quality and Greenhouse Gas Analysis (Appendix A); Health Risk Assessment (Appendix B); CEQA Air Quality Handbook, South Coast Air Quality Management District (SCAQMD), April 1993; Traffic Impact Analysis, Hawthorne Residential Project (Appendix I))***

Less Than Significant With Mitigation Incorporated. The proposed project would generate pollutant emissions associated with construction activities, vehicle trip generation, power and gas consumption, and stationary activities. However, the discussion below demonstrates the proposed project will implement **Standard Conditions AQ-1 through AQ-4** (listed at the end of this response) to ensure compliance with pertinent SCAQMD, applicable California Code of Regulations (CCR), and California Department of Resources Recycling and Recovery (CalRecycle) Sustainable (Green) Building Program regulations. With implementation of **Standard Conditions AQ-1 through AQ-4**, the project will not exceed SCAQMD significance thresholds. Specific criteria for determining whether the potential air quality impacts of a project are significant are set forth in the SCAQMD's *CEQA Air Quality Handbook* (April 1993). The criteria include emission thresholds and compliance with State and national air quality standards.

The SCAQMD has conducted four Multiple Air Toxics Exposure Studies (MATES), the most recent being MATES IV (SCAQMD, 2015).[4] These are monitoring and evaluation studies conducted in the Basin. The MATES IV Study includes a monitoring program, an updated emissions inventory of toxic air contaminants (TAC), and a modeling effort to characterize risk across the Basin. The MATES studies do not provide land use development recommendations. The modeling program includes a network of 10 fixed sites used to monitor TACs once every six days for one year. The nearest MATES IV fixed monitoring station was located at 5888 Mission Boulevard in the City of Jurupa Valley, approximately 5.9 miles northwest of the site. In addition to the 10 fixed sites, mobile monitoring platforms were deployed that focused on local scale studies at locations for short time periods. For the modeling analysis conducted for the MATES IV study, emissions over the Basin were estimated and allocated to 2 kilometer by 2 kilometer (1.2 mile × 1.2 mile) geographic grids. A regional dispersion model was used to estimate the annual average concentrations in each grid cell.

The MATES IV Study data for the project vicinity comprehensively reflect increased TAC-source cancer risks affecting the City and project site, including increased cancer risks due to freeway, roadway, and rail line pollutant sources. Based on the SCAQMD's MATES IV Carcinogenic Risk Interactive Map[5] (refer to Figure 4), the northern corner of the site is located within a grid cell with an estimated carcinogenic risk of 801 to 1,000 per million. The balance of the site has an estimated carcinogenic risk of 501 to 800 per million. While these are very high risk levels, the average risk level is now about 65 percent lower than the estimated risk shown in the MATES III report for the 2004–2006 time period, which reflects the success of various control strategies to reduce exposure to air toxics in the region.

The project proposes single-family residential land uses that would be located approximately 200 feet southeast of the 10-lane State Route 91. Additionally, the project is approximately 50 feet north of an existing double-tracked rail line utilized by BNSF Railway trains, Amtrak passenger rail, and the Riverside Transit Agency Metrolink passenger rail. The 2005 ARB guidance noted information made available through the MATES-IV Study, City's Policy AQ-1.3, and configuration and design of the project would suggest that further assessment of the existing freeway-source and railroad-source pollutant impacts are warranted. An Air Toxic Health Risk Assessment (HRA) (Appendix B) has been prepared for the project. This HRA is intended to:[6]

- Disaggregate potential freeway-source and railroad-source air pollutant health effects from other background conditions identified in the MATES IV Study;
- Comply with the City's Air Quality Element of the *General Plan 2025*; and
- Identify means to reduce the specific effects of freeway-source and railroad-source pollutants at the project site.

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4 Final Report, *Multiple Air Toxics Exposure Study in the South Coast Air Basin*, South Coast Air Quality Management District, May 2015.

5 http://www3.aqmd.gov/webappl/OI.Web/OI.aspx?jurisdictionID=AQMD.gov&shareID=73f55d6b-82cc-4c41-b779-4c48c9a8b15b, site accessed March 1, 2017.

6 In 2009, the California Air Pollution Control Officers Association (CAPCOA) published guidance on assessing the health risk impacts from and to proposed land use projects, focusing on the acute, chronic, and cancer impacts of sources affected by California Environmental Quality Act (CEQA) and recommending procedures to identify when a project should undergo further risk evaluation, how to conduct the HRA, how to engage the public, what to do with the results from the HRA, and what mitigation measures may be appropriate for various land use projects. In 2015, six years after the CAPCOA guidance document was released in 2009, an important CEQA case (*California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369) established that CEQA does not require the analysis of the existing air environment on a project.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Figure 4: MATES IV Interactive Map – Project Site

As directed by the SCAQMD, all stationary sources of TAC within 0.25 mile of the project are included in the HRA. A survey of the SCAQMD Facility Information Detail (FIND) database shows that there are no permitted facilities emitting TAC within 0.25 mile of the site. Vehicle traffic on Indiana Avenue and SR-91 is a TAC source within range of the project site. The total daily traffic for Indiana Avenue is sourced from the project Traffic Study (LSA 2017) and for SR-91, it was sourced from Caltrans for 2014 (the most recent year available). The most important TAC to consider in an HRA is Diesel Particulate Matter (DPM); therefore, it was assumed the percentage of diesel-powered vehicles was consistent with the EMFAC2014[7] data for the region. It was further assumed that all the trucks were the type that resulted in the greatest exhaust emissions and highest health risk levels.

Trains passing on the tracks to the south of the project site are also sources of TACs within range of the project site. Emissions data from the United States Environmental Protection Agency (EPA)[8] were used to characterize these train emissions. Based on communications received from the Southern California Regional Rail Authority (SCRRA),[9] 25 Metrolink, 2 Amtrak, and 74 BNSF Railway trains pass the project site daily. Metrolink began transitioning to Tier 4 locomotives in 2013, so for this HRA, locomotives are assumed to be a mixture of Tiers 1 through 4. Tier 4 locomotives reduce particulate matter and nitrogen oxide emissions by up to 85 percent compared to the lower tiers. It was assumed Amtrak locomotives are the same as Metrolink. BNSF Railway freight trains typically have multiple 4400 HP locomotives per train. For this HRA, an average of two locomotives per BNSF Railway freight train was assumed. Further, for the purpose of this HRA, while BNSF has already upgraded its locomotives to perform at Tier 2 levels, it was assumed that over the 30-year period of this HRA, BNSF would continue to upgrade its locomotive performance levels. For this HRA, it was assumed that using 75 percent of the locomotives as Tier 2 and 25 percent as Tier 4 was representative.

7 The ARB maintains the Emission Factors (EMFAC) model, which is approved by EPA for developing on-road motor vehicle emission inventories and conformity analyses in California. EMFAC models on-road mobile source emissions under multiple temporal and spatial scales; it produces composite emission factors for specific California geographic areas.

8 United States Locomotive Emissions Standards, www.dieselnet.com/standards/us/loco.php (accessed December 2016).

9 Correspondence from SCRRA to Stephanie Tang, January 10, 2017.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

In order to assess the impact of TAC emissions on individuals who will live in the proposed residences, air dispersion modeling utilizing the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was performed. The model is approved by the EPA when estimating the air quality impacts associated with point and fugitive sources in simple and complex terrain. The model was used to calculate the annual average and short duration (i.e., 1 hour) pollutant concentrations associated with each emitting source. The ARB's HARP 2 model is a tool that assists with the programmatic requirements of the Air Toxics "Hot Spots" Program (AB 2588). HARP 2 was used to translate the TAC concentrations from AERMOD into long-term carcinogenic and chronic and short-term acute health risk levels following the guidance in the SCAQMD Risk Assessment Guidelines. Refer to Appendix B for input files and locations of all emissions sources and receptors.

Per the site-specific HRA, a child living at the proposed project site for nine years would be exposed to an unmitigated inhalation cancer risk of no more than 813 in 1 million. An adult living at the proposed project site for 30 years would be exposed to an unmitigated inhalation cancer risk of no more than 1,170 in 1 million. The Chronic Hazard Index for both the children and adults would be 0.26 (see Table 3.A).

Table 3.A: Health Risk Levels for the Residents of the Proposed Project

Location	Maximum Cancer Risk (risk per million)[12]	Maximum Noncancer Chronic Risk[1]	Maximum Noncancer Acute Risk (Hazard Index)
Children (9-year exposure)	813	0.26	0.014
Adults (30-year exposure) (MICR)	1170		

Source: Table A, *Health Risk Assessment* (Appendix B).
Note:
[1] The Maximum Cancer Risk and Maximum Noncancer Risks noted in the table represents the ambient/baseline, as the proposed project does not add any emissions of Toxic Air Contaminant (TAC). Thus, there is no marginal/incremental increase of TAC with implementation of the proposed project.
[2] Based on the South Coast Air Quality Management District's MATES IV Study, the project site is located within a grid cell with an estimated carcinogenic risk of 501 to 1,000 per million. The California Environmental Quality Act (CEQA) case (California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369) established that CEQA does not require the analysis of the existing air environment on a project. As noted above, the proposed project does not add any emissions of TAC.
MICR = maximum individual cancer risk

It should be noted that though the results of this HRA are higher than the SCAQMD threshold for carcinogenic health risk of 10 in a million, the health risk level is attributed to the existing sources such as frequent nearby Metrolink and BNSF freight trains and heavy traffic on the nearby SR-91 freeway. As described above, the project area has been measured to have a carcinogenic risk level of 501 to 1,000 per million in the MATES IV study.[10]

For perspective, the estimated incidence of cancer over a lifetime in the U.S. population is in the range of 1 in 4 to 1 in 3. This translates into a risk of about 300,000 in a million. It has also been estimated that the bulk of cancers from known risk factors are associated with lifestyle factors such as tobacco use, diet, and being overweight. As stated in the Final MATES IV Report, it is estimated that of all cancers associated with known risk factors; approximately 30 percent were related to tobacco, while approximately 30 percent were related to diet and obesity. Exposure to environmental pollution was associated with approximately 2 percent of all cancers.[11]

Although the proposed project will not add any emissions of TAC, a feasible measure that could be implemented to reduce these health risks would be to install air filtration systems in the residences to provide protection while indoors (**Mitigation Measure AQ-1**). The health risk levels shown in Table 3.A assume no protection from being indoors, as typical homes provide little filtration of TACs. Air filtration systems are available with efficiencies equal to or exceeding a Minimum Efficiency Reporting Value (MERV) 16 as defined by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 52.2. The average particle size efficiency (PSE) removal based on ASHRAE Standard 52.2 for MERV 16 is approximately 95% for 0.3 to 1.0 μg/m^3 (DPM) and 95% for 1.0 to 10 μg/m^3 (PM_{10} and $PM_{2.5}$). The project shall install such systems on the residences to reduce the exposure to the ambient TACs. Table 3.B shows the reduced health

[10] South Coast Air Quality Management District (SCAQMD), 2015, *MATES IV Multiple Air Toxics Exposure Study.* http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iv (accessed December 2016).
[11] Page 1-3, *Final Report, Multiple Air Toxics Exposure Study in the South Coast Air Basin*, South Coast Air Quality Management District, May 2015.

risk levels that would result. With MERV 16 filtration, the exposure to TACs for these residents would be substantially lower than the ambient/baseline TAC concentration levels.

The incidence of cancer in any person is significantly more dependent on lifestyle choices rather than environmental factors. The sources of the pollutants are out of the control of the project. The only way to reduce the health risk levels is to reduce the exposure. As detailed in Table 3.B, the installation of in-house filtration systems would significantly reduce health risk exposures within the project site. While there is no certainty that house filtration systems will be optimally maintained, these systems represent the only feasible means of reducing the exposure.

Table 3.B: Health Risk Levels for the Residents of the Proposed Project with MERV 16 Air Filtration Systems

Location	Maximum Cancer Risk (risk per million)[12]	Maximum Noncancer Chronic Risk[2]	Maximum Noncancer Acute Risk (Hazard Index)
Children (9-year exposure)	41	0.013	0.0007
Adults (30-year exposure) (MICR)	58		

Source: Table B, *Health Risk Assessment* (Appendix B).
Note:
[1] Based on the South Coast Air Quality Management District's MATES IV Study, the project site is located within a grid cell with an estimated carcinogenic risk of 501 to 1,000 per million. The California Environmental Quality Act (CEQA) case (California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369) established that CEQA does not require the analysis of the existing air environment on a project. The proposed project does not add any emissions of TAC.
[2] The Maximum Cancer Risk with MERV 16 Air Filtration Systems substantially reduces the ambient/baseline Toxic Air Contaminant concentration levels shown in Table A.
MICR = maximum individual cancer risk

The health risks identified are only an approximation of potential health risk. Additionally, **Mitigation Measure AQ-2** would ensure the buyers of homes within the project site are provided sufficient notice on potential health risk. Although the proposed project does not add any emissions of TAC, implementation of **Mitigation Measures AQ-1 and AQ-2** would ensure impacts are **less than significant.**

Short-Term (Construction) Emissions. Air quality impacts could occur during construction of the proposed project from demolition activities, site preparation, soil disturbance, building construction, architectural coating, paving, and emissions from equipment exhaust. Major sources of emissions during grading and site preparation include (1) exhaust emissions from construction vehicles, (2) equipment and fugitive dust generated by construction vehicles and equipment traveling over exposed surfaces, and (3) soil disturbances from grading and backfilling. The following summarizes construction emissions and associated impacts of the proposed project.

Equipment Exhaust and Related Construction Activities. Construction activities produce combustion emissions from various sources (e.g., demolition, grading, site preparation, utility engines, tenant improvements, and motor vehicles transporting the construction crew). Exhaust emissions from construction activities envisioned on site would vary daily as construction activity levels change. The use of construction equipment on site would result in localized exhaust emissions. Construction emissions were calculated using the California Emissions Estimator Model (CalEEMod Version 2016.3.1) and are summarized in Table 3.C.

As specified in **Standard Conditions AQ-1 through AQ-4**, below, the proposed project construction is required to comply with SCAQMD Rules 402 and 403, applicable California Code of Regulations, and CalRecycle Sustainable (Green) Building Program regulations, which include implementation of standard control measures for fugitive dust and construction equipment emissions. Table 3.C details that by complying with SCAQMD's standard control measures, construction equipment/vehicle emissions during construction periods would not exceed any of the SCAQMD-established daily emissions thresholds. Therefore, with implementation of **Standard Conditions AQ-1 through AQ-4**, short-term (construction) air quality impacts would be **less than significant**, and no mitigation is required.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 3.C: Short-Term Regional Construction Emissions

	Total Regional Pollutant Emissions (lbs/day)							
	VOC	NO_X	CO	SO_X	Fugitive PM_{10}	Exhaust PM_{10}	Fugitive $PM_{2.5}$	Exhaust $PM_{2.5}$
Year 2017	5.08	52.36	24.47	0.04	8.33	2.88	4.52	2.65
Year 2018	7.60	26.22	20.71	0.03	0.30	1.66	0.08	1.57
Maximum daily emissions	**7.60**	**52.36**	**24.47**	**0.04**	**8.33**	**2.88**	**4.52**	**2.65**
SCAQMD Pollutant Thresholds	**75**	**100**	**550**	**150**	**150**	**150**	**55**	**55**
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: Table H, *Air Quality and Greenhouse Gas Analysis* (Appendix A)
Notes: These estimates reflect control of fugitive dust required by SCAQMD Rule 403.
The values shown are the maximum summer or winter daily emissions results from CalEEMod.

CO = carbon monoxide
lbs/day = pounds per day
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur dioxide
VOC = volatile organic compounds

Fugitive Dust. Fugitive dust emissions are generally associated with land clearing and exposure of soils to the air and wind, as well as cut-and-fill grading operations. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations, and weather conditions at the time of construction. In accordance with **Standard Condition AQ-1**, the proposed project will be required to comply with SCAQMD Rules 402 and 403 to control fugitive dust. Table 3.C, above, lists total construction emissions (i.e., fugitive dust emissions and construction equipment exhausts). Since construction operations on site must comply with dust control and other measures prescribed by SCAQMD Rules 402 and 403 to ensure that short-term construction impacts are minimized, compliance with these rules is assumed in Table 3.C. Compliance with SCAQMD Rules 402 and 403, as specified in **Standard Condition AQ-1**, would ensure that fugitive dust (PM_{10} and $PM_{2.5}$) generation would be **less than significant**, and no mitigation is required.

Architectural Coatings. Architectural coatings contain volatile organic compounds (VOC) that are similar to reactive organic compounds (ROC) and are part of the ozone (O_3) precursors. Based on the proposed project, application of the architectural coatings, in conjunction with demolition, site preparation, grading, building construction, and paving, for the proposed peak construction day is estimated to result in a combined peak of 7.6 lbs/day of VOC. Therefore, this VOC emission would not exceed the SCAQMD VOC threshold of 75 lbs/day. Therefore, impacts due to application of architectural coating would be **less than significant**, and no mitigation is required.

Localized Impacts Analysis. The project site is surrounded primarily by residential development. The nearest residential use east of the project site has a garage located approximately 7.5 feet from the property line and the residence is located approximately 25 feet from the property line. As per the SCAQMD Localized Significance Threshold (LST) guidance, for receptors less than 82 feet (25 meters) away, LST screening thresholds at 82 feet (25 meters) are used as the SCAQMD-recommended LST thresholds. Table 3.D identifies the on-site construction emissions of CO, NOx, PM_{10}, and $PM_{2.5}$ and demonstrates that all concentrations of pollutants would be below the SCAQMD thresholds of significance. Therefore, short-term LST significant air quality impacts would be **less than significant**, and no mitigation is required.

Table 3.D: Construction Localized Significance Threshold Impacts

Emissions Sources	NOx	CO	PM_{10}	$PM_{2.5}$
On-site Emissions (lbs/day)	52	23	11	7.1
LST Thresholds	**253**	**1,461**	**12.0**	**7.3**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: Table I, *Air Quality and Greenhouse Gas Analysis* (Appendix A)

Source Receptor Area: Metropolitan Riverside County Area, 4.5 acres, 25 meter (82 feet) distance.

CO = carbon monoxide
lbs/day = pounds per day
LST = localized significance threshold
NOx = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Naturally Occurring Asbestos. The proposed project is located in the City of Riverside, Riverside County, which is among the counties found to have serpentine and ultramafic rock in their soils. However, no such rock materials have been found in the project area in the past 25 years. By following standard nuisance and dust control measures, as required by SCAQMD Rules 402 and 403 (refer to **Standard Condition AQ-1**), any naturally occurring asbestos that might be disturbed would not become airborne. Therefore, the potential risk for naturally occurring asbestos during project construction is small and **less than significant.** No mitigation is required.

Long-Term Project Operational Emissions. Long-term air pollutant emission impacts are those associated with stationary sources and mobile sources involving any project-related changes. The proposed project would result in area-, energy-, and mobile-source emissions. The stationary-source emissions would come from many sources, including the use of consumer products, landscape equipment, general energy, and solid waste.

As part of the *Air Quality and Greenhouse Gas Analysis* (Appendix A), long-term operational emissions associated with the existing site and the proposed project were calculated using CalEEMod Version 2016.3.1 and are shown in Table 3.E. Area sources include architectural coatings, consumer products, hearths, and landscaping. Energy sources include natural gas consumption for heating and cooking. Mobile-source emissions usually result from vehicle trips associated with a project. Table 3.E shows that the increase of all criteria pollutants as a result of the proposed project would not exceed the corresponding SCAQMD daily emission thresholds for any criteria pollutants.

In addition, the project design will incorporate **Standard Condition AQ-4** to ensure compliance with Title 24 of the California Code of Regulations established by the California Energy Commission (CEC) regarding energy conservation and green building standards. The project will include low-emission water heaters, and exterior windows will have window treatments for efficient energy conservation to reduce operational air pollutant emissions. Therefore, with implementation of **Standard Condition AQ-4**, project-related long-term air quality impacts would be **less than significant** and no mitigation is required.

Table 3.E: Opening Year Regional Operational Emissions

Source	Pollutant Emissions, lbs/day					
	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Proposed Scenario						
Area	2.58	0.95	4.86	<0.01	0.10	0.10
Energy	0.06	0.51	0.22	<0.01	0.04	0.04
Mobile	1.28	9.11	15.49	0.056	3.96	1.10
Total Project Emissions	**3.92**	**10.57**	**20.57**	**0.056**	**4.1**	**1.24**
SCAQMD Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Table J, *Air Quality and Greenhouse Gas Analysis* (Appendix A)
Note: The values provided are the maximum summer or winter daily emissions results from CalEEMod.

CO = carbon monoxide
lbs/day = pounds per day
NOx = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SCAQMD = South Coast Air Quality Management District
SOx = sulfur oxides
VOC = volatile organic compounds

Localized Impacts Analysis. Table 3.F details the calculated emissions for the proposed operational activities compared with the appropriate LSTs. By design, the localized impacts analysis only includes on-site sources; however, CalEEMod outputs do not separate on-site and off-site emissions for mobile sources. For a worst-case scenario assessment, the emissions shown in Table 3.F include all on-site project-related stationary sources and 5 percent of the project-related new mobile sources, which is an estimate of the amount of project-related new vehicle traffic that would occur on site. A total of 5 percent is considered conservative because the average trip lengths assumed are 14.7 miles for home to work, 5.9 miles for home to shopping, and 8.7 miles for other types of trips.[12] Table 3.F demonstrates the operational emission rates would not exceed the

[12] CalEEMod was developed for the California Air Pollution Officers Association (CAPCOA) in collaboration with the California Air Districts. Default data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California Air Districts to account for local requirements and conditions. http://www.aqmd.gov/caleemod/, site accessed August 16, 2017.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**

NOx, CO, PM_{10}, and $PM_{2.5}$ LSTs for the existing sensitive receptors located within the 82-foot minimum distance for LST analyses. Therefore, locally significant air quality impacts would be **less than significant** and no mitigation is required.

Table 3.F: Long-Term Operational Localized Significance Thresholds

Emissions Sources	NOx	CO	PM_{10}	$PM_{2.5}$
On-site emissions (lbs/day)	1	6	0.29	0.15
LST Thresholds	**270**	**1,577**	**4**	**2**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: Table K, *Air Quality and Greenhouse Gas Analysis* (Appendix A)

Source Receptor Area: Metropolitan Riverside County Area, 5 acres, 25 meter (82 feet) distance, on-site traffic 5 percent of total.

CO = carbon monoxide
lbs/day = pounds per day
LST = localized significance thresholds
NOx = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

Long-Term Microscale (CO Hotspot) Analysis. Local ambient air quality is most affected by CO emissions from motor vehicles. CO is typically the contaminant of greatest concern because it is the pollutant created in greatest abundance by motor vehicles and does not readily disperse into the air. Because CO does not readily disperse into the atmosphere, areas of vehicle congestion create pockets of high CO concentrations called "hotspots." These pockets have the potential to exceed the state 1-hour standard of 20 parts per million (ppm) of CO and/or the 8-hour standard of 9.0 ppm.

Vehicular trips associated with the proposed project would contribute to congestion at intersections and along roadway segments in the project vicinity. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels, affecting local sensitive receptors (e.g., residents, schoolchildren, the elderly, and hospital patients). In areas with high ambient background CO concentrations, modeling is recommended to determine a project's effect on local CO levels.

An assessment of project-related impacts on localized ambient air quality requires that future ambient air quality levels be projected. Existing CO concentrations in the immediate project vicinity are not available. Ambient CO levels monitored in the Riverside area station, showed a highest recorded 1-hour concentration of 4.1 ppm (the state standard is 20 ppm) and a highest 8-hour concentration of 2.0 ppm (the state standard is 9 ppm) during the past 3 years. The highest CO concentrations would normally occur during peak traffic hours; hence, CO impacts calculated under peak traffic conditions represent a worst-case analysis.

As described in the *Traffic Impact Analysis for the Hawthorne Residential Project* (Appendix I), all study area intersections currently operate at a satisfactory level of service (LOS). With addition of the project in the existing setting with recommended improvements, all study area intersections would continue to operate at satisfactory LOS.

CO levels have dropped dramatically throughout the basin over the last several decades. The entire basin is in attainment for the State standards for CO. The basin is designated as an attainment area under the State CO standards and as an attainment/maintenance area under the Federal CO standards. Baseline levels can accommodate substantial local emission increases without the creation of any CO "hotspots." It has been demonstrated in the regional CO attainment/maintenance plan that even the most congested intersection with the highest traffic volumes anywhere in the Basin no longer poses any risk of a CO "hotspot." Given the extremely low level of CO concentrations in the project area and the mitigation of traffic impacts at all study area intersections, project-related vehicles are not expected to contribute significantly to CO concentrations exceeding the State or Federal CO standards. Because no CO hotspot would occur, air quality impacts related to CO concentrations would be **less than significant**, and no mitigation is required.

Standard Conditions. The following Standard Conditions are regulatory requirements that would be implemented to reduce air quality impacts during construction.

Standard Condition AQ-1: **Compliance with SCAQMD Rules 402 and 403.** During construction, the construction contractor shall comply with the South Coast Air Quality Management District (SCAQMD) Rules 402 and 403 for controlling fugitive dust emissions and construction equipment emissions. In compliance with Rule 403, fugitive dust shall be controlled with best-available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, dust suppression techniques shall be implemented to prevent fugitive dust from creating a nuisance off site. The following applicable dust suppression techniques from Rule 403 shall be implemented during project construction:

- Nontoxic chemical soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Active sites shall be watered at least twice daily. (Locations where grading is to occur shall be thoroughly watered prior to earthmoving.)
- All trucks hauling dirt, sand, soil, or other loose materials shall be covered, or at least 2 feet (0.6 meter) of freeboard (vertical space between the top of the load and the top of the trailer) shall be maintained in accordance with the requirements of California Vehicle Code (CVC) Section 23114.
- Construction access roads shall be paved at least 100 feet (30 meters) onto the site from the main road.
- Traffic speeds on all unpaved roads shall be reduced to 15 miles per hour (mph) or less.

Additionally, the following construction emissions control measures from the SCAQMD CEQA Handbook are required to further minimize fugitive dust emissions:

- Disturbed areas shall be revegetated as quickly as possible.
- All excavating and grading operations shall be suspended when wind speeds (as instantaneous gusts) exceed 25 mph.
- All streets shall be swept once per day if visible soil materials are carried to adjacent streets (recommend water sweepers with reclaimed water).
- Wheel washer devices shall be installed at locations where vehicles enter and exit unpaved roads onto paved roads, or vehicles and any equipment leaving the site shall be washed each trip.
- All on-site roads shall be paved as soon as feasible, watered periodically, or chemically stabilized.
- The area disturbed by clearing, grading, earthmoving, or excavation operations shall be minimized at all times.
- The construction contractor shall select the construction equipment used on site based on low-emission factors and high-energy efficiency. The construction contractor shall ensure that construction-grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturers' specifications.
- The construction contractor shall utilize electric or diesel-powered equipment in lieu of gasoline-powered engines where feasible.
- The construction contractor shall ensure that construction-grading plans include a statement that work crews will shut off equipment when not in use. During smog season (May through October), the overall length of the construction period will be extended, thereby decreasing the size of the area prepared each day, to minimize vehicles and equipment operating at the same time.
- The construction contractor shall time the construction activities so as to not interfere with peak-hour traffic and minimize obstruction of through traffic lanes adjacent to the

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

site; if necessary, a flagperson shall be retained to maintain safety adjacent to existing roadways.

- The construction contractor shall support and encourage ridesharing and transit incentives for the construction crew.

Standard Condition AQ-2: **Compliance with Title 13, California Code of Regulations, Section 2449(d)(d).** Operators of applicable off-road vehicles (self-propelled diesel-fueled vehicles 25 horsepower and up that were not designed to be driven on-road) must limit idling to no more than five (5) minutes:

- All construction vehicles shall be prohibited from idling in excess of five (5) minutes, both on and off site.

Standard Condition AQ-3: **Compliance with applicable California Department of Resources Recycling and Recovery (CalRecycle) Sustainable (Green) Building Program Measures.**

- At least 50 percent of construction materials (including, but not limited to, soil, mulch, vegetation, concrete, lumber, metal, and cardboard) shall be recycle/reused.
- "Green building materials" (e.g., those materials that are rapidly renewable or resource-efficient, and recycled and manufactured in an environmentally friendly way) shall be used for at least 10 percent of the project, as specified on the California Department of Resources Recycling and Recovery website.

Standard Condition AQ-4: **Compliance with Title 24, Energy Conservation and Green Building Standards**. Project design shall comply with Title 24 of the California Code of Regulations established by the California Energy Commission (CEC) regarding energy conservation and green building standards. The project applicant shall incorporate the following into the final project building plans:

- Low-emission water heaters shall be used. Solar water heaters are encouraged.
- Exterior windows shall utilize window treatments for efficient energy conservation.

Mitigation Measures.

Mitigation Measure AQ-1 Prior to the issuance of building permits, the applicant shall provide to the City for review and approval, evidence that in-house filtration systems with efficiencies equal to or exceeding a Minimum Efficiency Reporting Value (MERV) 16 as defined by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 52.2 are installed in on-site residential structures.

Mitigation Measure AQ-2 Prior to the issuance of building permits, the applicant shall provide to the City for review and approval, a copy of a *Toxic Air Contaminant Disclosure* that will be presented to prospective buyers of real estate within the project site. The *Toxic Air Contaminant Disclosure* shall convey information to prospective buyers about potential TAC exposure at the project site. As approved by the City, the *Toxic Air Contaminant Disclosure* shall contain the language dictated by State law in conjunction with real estate transfer.

c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐

3c. Response: ***(Source: Air Quality and Greenhouse Gas Analysis (Appendix A), Traffic Impact Analysis for Hawthorne Residential Project (Appendix I))***

Less Than Significant Impact. The cumulative impacts analysis is based on projections in the regional AQMP. As described in the consistency analysis presented in Response 3a, above, the proposed project is consistent with the growth assumptions

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

in the City's General Plan 2025 and the regional AQMP. Although the existing General Plan land use designation of the site (B/OP – Business Office Park) allows the development and operation of a variety of non-residential uses (e.g., research/development and related flexible space, laboratories, offices; support commercial, and light industrial uses[13]), it is not intended to accommodate the proposed residential uses. The General Plan currently designates properties to the southeast (across the railroad tracks) and east (across Jackson Street) as MDR – Medium Density Residential. The proposed change in General Plan is generally consistent with nearby residential designation(s).

The City's General Plan 2025 is consistent with the SCAG Regional Comprehensive Plan Guidelines and the SCAQMD AQMP. In addition, the proposed project is not considered a significant project (e.g., airports, electrical generating facilities, petroleum and gas refineries, designation of oil drilling districts, water ports, solid waste disposal sites, and offshore drilling facilities). It is reasonable that school or business/office park uses (the existing General Plan land use designation for the site) were assumed in the development of the AQMP. Comparing traffic generated by former school uses to that occurring with development of the project, a 35 percent reduction in daily trips (from 787 to 514 daily trips) and a proportional reduction in air pollutant emissions would occur. As vehicle emissions generate a greater share of air pollutants than stationary uses, it is reasonable to conclude the air pollutant emissions from the proposed project are within the amount previously assumed for the site in the AQMP; therefore, the project (including the change in land use designation) would be consistent with the AQMP.

Further, as discussed in Response 3b, the proposed project does not increase the frequency or severity of an air quality standards violation or cause a new violation. This study area is described as the appropriate tool to evaluate discrete project-related circulation impacts for the City that encompasses the air quality impacts from the proposed project. As shown in the *Traffic Impact Analysis for Hawthorne Residential Project* (Appendix I), the proposed project would not result in any significant LOS change or intersection delay with the implementation of the recommended improvements detailed in Section 16-Traffic. Thus, the combined effects of the related projects would be less than significant. Because there is no cumulative significant impact and the proposed project is consistent with the growth assumptions in the 2012 RTP/SCS and the AQMP, the combined effects are not cumulatively significant. Therefore, there would be no cumulatively considerable net increase of the criteria pollutants that are in nonattainment status in the South Coast Air Basin. Long-term cumulative air quality impacts would be **less than significant** and no mitigation is required.

d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐

3d. Response: ***(Source: Air Quality and Greenhouse Gas Analysis (Appendix A); Health Risk Assessment (Appendix B))***

Less Than Significant With Mitigation Incorporated. The SCAQMD recommends the evaluation of localized NO_x, CO, PM_{10}, and $PM_{2.5}$ concentration-related impacts to sensitive receptors in the immediate vicinity of the project site. Sensitive receptors include but are not limited to residential land uses, schools, open space and parks, recreational facilities, hospitals, resident care facilities, daycare facilities, or other facilities that may house individuals with health conditions that would be affected by poor air quality.

The project site is surrounded primarily by single-family homes. The nearest residential use is located east of the project site with a garage located approximately 7.5 feet from the property line and the residence located approximately 25 feet from the property line. As per the SCAQMD LST guidance, for receptors less than 82 feet (25 meters) away, LST screening thresholds at 82 feet (25 meters) are used as the SCAQMD-recommended LST thresholds. Table 3.D above identifies the on-site construction emissions of CO, NOx, PM_{10}, and $PM_{2.5}$ and demonstrates that all concentrations of pollutants would be below the SCAQMD thresholds of significance. Therefore, short-term LST significant air quality impacts would be **less than significant**, and no mitigation is required.

13 The Business/Office Park (B/OP) designation provides for single or mixed light industrial uses that do not create nuisances due to odor, dust, noise or heavy truck traffic. Suitable uses include corporate and general business offices, research and development, light manufacturing, light industrial, and small warehouse uses (up to 10,000 square feet per site). Although most business parks are controlled through deed restrictions or single ownership of multi-tenant space, business park standards can be applied to existing parcels in separate ownership. Common features of business parks are high quality design, building materials, landscaping, and absence of nuisances. The maximum intensity of development is a floor-area ratio of 1.5.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 3.F above details the calculated emissions for the proposed operational activities compared with the appropriate LSTs. Table 3.F demonstrates the operational emission rates would not exceed the NOx, CO, PM_{10}, and $PM_{2.5}$ LSTs for the existing sensitive receptors located within the 82-foot minimum distance for LST analyses. Therefore, locally significant air quality impacts would be **less than significant** and no mitigation is required.

Construction of the proposed project would include the use of diesel-powered equipment that releases DPM, a toxic air contaminant with known carcinogenic and chronic health effects. For construction analyses, the emission of DPM is included in the exhaust PM_{10} emissions. Table 3.C, presented in Response 3.b, above, confirms that the exhaust PM_{10} emissions from construction would vary between year 2017 and 2018 of project construction. This DPM emissions rate is very low and, to determine the carcinogenic and chronic health risk levels, this emissions rate would be spread over a 30-year exposure period. This low average DPM emissions rate combined with the fact that the nearest sensitive receptors are approximately 25 feet from the project site means the construction health risk levels are very low and well below thresholds of significance.[14]

The SCAQMD health risk threshold is typically applicable to projects generating emissions that would affect nearby sensitive receptors. The basis for these thresholds is that if a project increases the health risk level relative to baseline conditions by less than the threshold itself, the impact would be less than significant. Specifically, CEQA court case California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369 established that CEQA does not require the analysis of the existing air environment on a project. As previously stated, the project does not add any emissions of TAC.

As indicated in Figure 4: *MATES IV Interactive Map – Project Site*, the proposed project would not expose individuals to health risk levels greater than those to which any individual in a residence near the project site would be exposed. The extreme northern corner of the project site is located within a grid cell with an estimated carcinogenic risk of 801 to 1,000 per million and the balance of the site has an estimated carcinogenic risk of 501 to 800 per million. According to the HRA (Appendix B), a child living at the proposed project for nine years would be exposed to an unmitigated inhalation cancer risk of no more than 813 in 1 million. Any adult at the proposed project for 30 years would be exposed to an unmitigated inhalation cancer risk of no more than 1,170 in 1 million. The results of this site-specific HRA are higher than the SCAQMD threshold for carcinogenic health risk of 10 in 1 million, but these health risk levels assume no protection from being indoors. As typical homes provide little filtration of TACs, and all individuals living in the vicinity of the proposed project would be exposed to these cancer risk levels. To address this issue, **Mitigation Measures AQ-1** and **AQ-2,** are presented to significantly reduce potential cancer risk with implementation of the proposed project.

With implementation of **Mitigation Measures AQ-1** and **AQ-2**, children would be exposed to a cancer risk of 41 in 1 million and adults would be exposed to a cancer risk of 58 in 1 million. As previously stated, the incidence of cancer in any person is significantly more dependent on lifestyle choices rather than environmental factors. As detailed in Table 3.B, the installation of in-house filtration systems would significantly reduce health risk exposures within the project site and thus substantially reduce TAC concentration levels from ambient/baseline conditions. **Mitigation Measure AQ-2** would ensure the buyers of homes within the project site are provided sufficient notice on potential health risk; therefore, in tandem with the substantial reduction in TAC achieved through implementation of **Mitigation Measure AQ-1**, implementation of the proposed project will result in **a less than significant impact**.

e. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

3e. Response: ***(Source: Air Quality and Greenhouse Gas Analysis (Appendix A))***

Less Than Significant Impact. Heavy-duty equipment operating on the project site during construction would emit odors, primarily from equipment exhaust. However, odors associated with the construction activity would be limited to the project site, would disperse quickly, and would cease to occur after construction is completed. Additionally, it is not likely that odors from construction would be noticeable beyond the project boundaries. No other sources of objectionable odors have been identified. The proposed project is a residential development, which does not typically produce objectionable odors. Therefore, project impacts related to objectionable odors would be **less than significant** and no mitigation is required.

[14] Although garages are 10 feet away from the project boundary, residential structures are approximately 25 feet away from the project boundary.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
4. BIOLOGICAL RESOURCES. Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

4a. Response: ***(Source: General Plan 2025 – Figure OS-6 – Stephens' Kangaroo Rat (SKR) Core Reserve and Other Habitat Conservation Plans (HCP), Figure OS-7 – MSHCP Cores and Linkages, Figure OS-8 – MSHCP Cell Areas, General Plan 2025 FPEIR Figure 5.4-2 – MSHCP Area Plans, Figure 5.4-4 – MSHCP Criteria Cells and Subunit Areas, Figure 5.4-6 – MSHCP Narrow Endemic Plant Species Survey Area, Figure 5.4-7 – MSHCP Criteria Area Species Survey Area, Figure 5.4-8 – MSHCP Burrowing Owl Survey Area, Riverside County Integrated Project Conservation Summary Report Generator, Results of Burrowing Owl Habitat Assessment for the Hawthorne School Site (Appendix C))***

Less Than Significant With Mitigation Incorporated. The project site is located on a previously developed/improved site within an urbanized area. A search of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) database identified no potential for candidate, sensitive, special-status species, or suitable habitat for such species on site. Existing parking areas contain ornamental landscaping, including trees, which may provide nesting habitat for birds.

Common native urban bird species that may nest in ornamental landscaping include lesser goldfinch (*Carduelis psaltria*), Brewer's blackbird (*Euphagus cyanocephalus*), northern mockingbird (*Mimus polyglottos*), common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), Anna's hummingbird (*Calypte anna*), house finch (*Carpodacus mexicanus*), and hooded oriole (*Icterus cucullatus*). In addition, there is reasonable potential for existing buildings to support nesting opportunities for native birds that are common in urbanized areas, such as American kestrel (*Falco sparverius*), house finch, black phoebe (*Sayornis nigricans*), cliff swallow (*Petrochelidon pyrrhonota*), northern rough-winged swallow (*Stelgidopteryx serripennis*), and white-throated swift (*Aeronautes saxatalis*). A habitat assessment was conducted on April 4, 2016 by LSA to determine the site's suitability to accommodate the burrowing owl (*Athene cunicularia*). The project site is developed and paved with unsuitable habitat conditions for burrowing owl due to the presence of several mature ornamental trees, tall dense vegetation, compacted soils, and lack of adjacent foraging grassland areas. No burrows potentially occupied by burrowing owl were found during the initial survey. Therefore, focused burrowing owl surveys are not required for the project because of the unsuitable site conditions. The site is unsuitable for burrowing owls due to lack of foraging areas on site and in the adjacent areas and the numerous buildings and trees that provide cover for avian and mammalian predators and increase risk of predation.

The ornamental trees and shrubs that occur in the developed area of the site may support nests utilized by birds protected under the Migratory Bird Treaty Act (MBTA) or the California Fish and Game Code (Sections 3503, 3503.5, and 3515). Thus, the potential exists for direct and indirect construction-related disturbance for nesting birds. **Mitigation Measure BIO-1** requires that a nesting bird survey be conducted prior to any ground-disturbing or demolition activities. The project will have a **less than significant impact with implementation of mitigation** directly, indirectly, and cumulatively on biological resources.

The project may have direct and indirect effects to migratory birds. Direct effects may result from the removal and destruction of nesting bird habitat (e.g., trees and shrubs) and indirect effects may result from increased noise and human presence during construction activities that may cause birds to abandon nests or that may negatively affect nestlings.

Mitigation Measure BIO-1: If project activities are planned during the bird nesting season (February 15 to August 31), nesting bird survey(s) consisting of up to three (3) site visits within the week prior to clearing and demolition activities shall be conducted to ensure birds protected under the MBTA are not disturbed by on-site activities. Any such survey(s) shall be conducted by a qualified biologist. If no active nests are found, no additional measures are required. If active nests are found, the nest locations shall be mapped by the biologist. The nesting bird species shall be documented and, to the degree feasible, the nesting stage (e.g., incubation of eggs, feeding of young, near

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
fledging) determined. Based on the species present and surrounding habitat, a no-disturbance buffer shall be established around each active nest. The buffer shall be identified by a qualified biologist and confirmed by the City. No construction or ground disturbance activities shall be conducted within the buffer until the biologist has determined the nest is no longer active and has informed the City and construction supervisor that activities may resume.				
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒

4b. Response: ***(Source: General Plan 2025 – Figure OS-6 – Stephens' Kangaroo Rat (SKR) Core Reserve and Other Habitat Conservation Plans (HCP), Figure OS-7 – MSHCP Cores and Linkages, Figure OS-8 – MSHCP Cell Areas, General Plan 2025 FPEIR Figure 5.4-2 – MSHCP Area Plans, Figure 5.4-4 – MSHCP Criteria Cells and Subunit Areas, Figure 5.4-6 – MSHCP Narrow Endemic Plant Species Survey Area, Figure 5.4-7 – MSHCP Criteria Area Species Survey Area, Figure 5.4-8 – MSHCP Burrowing Owl Survey Area, MSHCP Section 6.1.2 – Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools)***

No Impact. The project is located on a previously developed/improved site within an urbanized area. No riparian habitat or other sensitive natural community exists on site or within proximity to the project site. The project will have **no impact** on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service directly, indirectly, or cumulatively, and no mitigation is required.

c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒

4c. Response: ***(Source: City of Riverside GIS/CADME USGS Quad Map Layer)***

No Impact. The project is located on a previously developed/improved site within an urbanized area. The project site does not contain any drainage courses, inundated areas, wetland vegetation, or hydric soils and thus does not include U.S. Army Corps of Engineers jurisdictional drainages or wetlands. The proposed project would have **no impact** on Federally protected wetlands as defined by Section 404 of the Clean Water Act directly, indirectly, or cumulatively, and no mitigation is required.

d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒

4d. Response: ***(Source: MSHCP, General Plan 2025 – Figure OS-7 – MSHCP Cores and Linkage)***

No Impact. The project is located in an urbanized area and will not result in a barrier to the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Therefore, the project will have **no impact** to wildlife movement directly, indirectly, or cumulatively, and no mitigation is required.

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐

4e. Response: ***(Source: Urban Forestry Policy Manual)***

Less Than Significant Impact. The project site is located within an urbanized area and has been previously graded and developed. The project is required to comply with Riverside Municipal Code Section 16.72.040 establishing the MSHCP mitigation fee and Section 16.40.040 establishing the Threatened and Endangered Species Fees.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Any project within the City of Riverside's boundaries that proposes planting a street tree within a City right-of-way must follow the *Urban Forestry Policy Manual*, which documents guidelines for the planting, pruning, preservation, and removal of all trees in City rights-of-way. The specifications in the Manual are based on national standards for tree care established by the International Society of Arboriculture, the National Arborists Association, and the American National Standards Institute. Any future project will be in compliance with the *Urban Forestry Policy Manual* when planting a tree within a City right-of-way. The *Urban Forestry Policy Manual* does not relate to the ornamental landscaping on the project site. Therefore, impacts will be **less than significant**, and no mitigation is required.

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

4f. Response: ***(Source: MSHCP, General Plan 2025 – Figure OS-6 – Stephens' Kangaroo Rat (SKR) Core Reserve and Other Habitat Conservation Plans (HCP), Stephens' Kangaroo Rat Habitat Conservation Plan, Lake Mathews Multiple Species Habitat Conservation Plan and Natural Community Conservation Plan, and El Sobrante Landfill Habitat Conservation Plan)***

No Impact. The project site is located on a previously developed/improved site within an urbanized area. The City is a Permittee under the MSHCP; therefore, the project is subject to applicable provisions of the MSHCP. The project site is not located in an area subject to Cell Criteria under the MSHCP and, therefore, has no Conservation requirements toward building out the MSHCP Reserve. Therefore, the project will have **no impact** on the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan directly, indirectly, or cumulatively. No mitigation is required.

5. CULTURAL RESOURCES. Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5 of the CEQA Guidelines?	☐	☐	☐	☒

5a. Response: ***(Source: Cultural Resources Assessment-Hawthorne Elementary School Project, (Appendix D))***

No Impact. CEQA defines a "historical resource" as a resource that meets one or more of the following criteria: (1) is listed in, or determined eligible for listing in, the California Register of Historical Resources (California Register); (2) is listed in a local register of historical resources as defined in Public Resources Code (PRC) Section 5020.1(k); (3) is identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (4) is determined to be a historical resource by a project's Lead Agency (PRC Section 21084.1 and *State CEQA Guidelines* Section 15064.5[a]). A "substantial adverse change" to a historical resource, according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired."

The project site is currently developed with the closed Hawthorne Elementary School and its related parking, various walkways, and playgrounds. The project proposal includes demolition of the existing vacant elementary school and construction of 54 new single-family detached homes and related site improvements.

As part of the *Cultural Resources Assessment* (Appendix D) conducted for the project, it was determined that one historic-period resource, the former Hawthorne Elementary School, was identified within the project area and evaluated. It was determined that this built environment resource does not meet any of the criteria for listing in the National Register of California Register or for local designation. Therefore, it is not a "historical resource" as defined by CEQA. No archaeological resources were identified within the project area, which is both severely disturbed and partially obscured; therefore, the sensitivity of the site for potential subsurface resources is negligible. A segment of the Upper Riverside Canal (33-4495H) is adjacent to the southern boundary of the site and was found to be abandoned; this segment has sustained alterations and has lost integrity. Therefore, it is not historically significant individually and does not contribute to the significance of the larger resource. No further cultural resource investigations or monitoring are recommended. There are **no impacts** related to the demolition of the former Hawthorne Elementary School and no mitigation is required.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b. Cause a substantial adverse change in the significance of an archeological resource pursuant to § 15064.5 of the CEQA Guidelines?	☐	☐	☒	☐

5b. Response: ***(Source: General Plan 2025 FPEIR – Figures 5.5-1 Archaeological Sensitivity and 5.5-2 Prehistoric Cultural Resource Sensitivity; Cultural Resources Assessment-Hawthorne Elementary School Project, (Appendix D))***

Less Than Significant Impact. According to the Riverside General Plan 2025 FPEIR Figures 5.5-1 and 5.5-2, the project site is in an area of unknown archaeological and low prehistoric cultural resource sensitivity. As part of the *Cultural Resources Assessment* (Appendix D), a records search for the project was conducted at the Eastern Information Center (EIC), located at University of California, Riverside, on August 18, 2016. The records search included a review of all recorded historic and prehistoric archaeological sites within the 1-mile radius of the project site, as well as a review of known cultural resource survey and excavation reports. The EIC houses the pertinent archaeological and historic site and survey information necessary to determine whether cultural resources are known to exist within the project area. In addition, a pedestrian survey of all accessible exposed areas on the project site was conducted on August 31, 2016 The purpose of this survey was to identify and document, prior to the beginning of ground-disturbing activities, any cultural resources and thus also to identify any area(s) that might be sensitive for buried cultural resources.

The records search indicated that 12 cultural resources studies have been conducted and 26 cultural resources documented within one mile of the project site. These sites include 17 residences, 2 commercial properties, 1 utility building, the Arlington Branch Library and Fire Hall, 2 water conveyance canals, and 2 historic roads. No cultural resources have been documented on the project site. The results of the records search indicate that there are no previously recorded archaeological or historic resources within or near the project site. The entire project site has been previously disturbed and developed with school uses. No evidence of native soils was present in the project area. No archaeological resources were identified during the time of the pedestrian survey. Thus, the sensitivity of the project site for potential subsurface cultural resources is negligible. In the unlikely event that cultural resources are identified during earthmoving activities, those activities would be halted in the vicinity of the find until it can be assessed for significance by a qualified archaeologist (**Standard Condition CR-1**). With implementation of **Standard Condition CR-1**, impacts related to previously undiscovered archaeological resources would be **less than significant** and no mitigation is required.

Standard Conditions: No mitigation is required; however, the following Standard Condition is a regulatory requirement that would be implemented to reduce impacts related to discovery of unknown archaeological resources during construction.

Standard Condition CR-1: **Discovery of Archeological Resources.** Prior to commencement of grading activities, the City of Riverside Director of Building & Safety, or designee, shall verify that all project grading and construction plans include notes specifying that if inadvertent archaeological resources are discovered during excavation, grading, or construction activities, work shall cease in the area of the find until a qualified archaeologist has evaluated the find in accordance with federal, state, and local guidelines, including those set forth in California Public Resources Code (PRC) Section 21083.2. Construction personnel shall not collect or move any archaeological materials and associated materials. Construction activity may continue unimpeded on other portions of the project site. The found deposits would be treated in accordance with federal, state, and local guidelines, including those set forth in PRC Section 21083.2.

c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

5c. Response: ***(Source: General Plan 2025 Policy HP-1.3)***

Less Than Significant With Mitigation Incorporated. The project site area contains artificial fills and older alluvial fan deposits. Artificial fills may contain fossils, but such fossils have been removed from their original location and are thus out of stratigraphic context. For this reason, they are not considered important for scientific study and have no paleontological sensitivity. Older alluvial fan deposits contain fossils including mammoths, mastodons, horses, bison, camels, saber-toothed cats, coyotes, deer, and sloths, as well as smaller animals like rodents, rabbits, birds, reptiles, and fish. For this reason, these

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

deposits are considered to have high paleontological sensitivity. Ground-disturbing activities for the project are expected to extend into older alluvial fan deposits with high paleontological sensitivity. This is considered a significant impact. Impacts to paleontological resources would be reduced to **less than significant with implementation of Mitigation Measure PAL-1**.

Mitigation Measure PAL-1: A paleontologist shall be hired to develop a Paleontological Resource Impact Mitigation Program (PRIMP) for this project. The PRIMP shall include the methods that will be used to protect paleontological resources that may exist within the project area, as well as procedures for monitoring, fossil preparation and identification, curation into a repository, and preparation of a report at the conclusion of grading.

- Excavation and grading activities in deposits with high paleontological sensitivity (Older Alluvial Fan Deposits) shall be monitored by a paleontological monitor following a PRIMP. No monitoring is required for excavations in rocks with no paleontological sensitivity (Artificial Fill).
- If paleontological resources are encountered during the course of ground disturbance, the paleontological monitor shall have the authority to temporarily redirect construction away from the area of the find in order to assess its significance.
- Collected resources shall be prepared to the point of identification, identified to the lowest taxonomic level possible, cataloged, and curated into the permanent collections of a scientific institution.
- At the conclusion of the monitoring program, a report of findings shall be prepared to document the results of the monitoring program.
- In the event that paleontological resources are encountered when a paleontological monitor is not present, work in the immediate area of the find shall be redirected and a paleontologist should be contacted to assess the find for significance. If determined to be significant, the fossil shall be collected from the field.

d. Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☒	☐

5d. Response: ***(Source: General Plan 2025 FPEIR Figure 5.5-1 – Archaeological Sensitivity and Figure 5.5-2 – Prehistoric Cultural Resources Sensitivity)***

Less Than Significant Impact. No known human remains are present on the project site and there are no facts or evidence to support the idea that Native Americans or people of European descent are buried on the project site. In the unlikely event that human remains are encountered during project grading, the proper authorities would be notified, and standard procedures for the respectful handling of human remains during the earthmoving activities would be followed. Construction contractors are required to adhere to California Code of Regulations (CCR) Section 15064.5(e), PRC Section 5097, and Section 7050.5 of the State Health and Safety Code. To ensure proper treatment of burials, in the event of an unanticipated discovery of a burial, human bone, or suspected human bone, the law requires that all excavation or grading in the vicinity of the find halt immediately, the area of the find be protected, and the contractor immediately notify the County Coroner of the find. The construction contractor, developer, and the County Coroner are required to comply with the provisions of CCR Section 15064.5(e), PRC Section 5097.98, and Section 7050.5 of the State Health and Safety Code. Compliance with these provisions (specified in **Standard Condition CR-2**) would ensure that any potential impacts to unknown buried human remains would be **less than significant** by ensuring appropriate examination, treatment, and protection of human remains as required by State law. No mitigation is required.

Standard Condition: No mitigation is required; however, the following Standard Condition is a regulatory requirement that would be implemented to reduce impacts related to discovery of human remains during construction.

Standard Condition CR-2: **Discovery of Human Remains.** Consistent with the requirements of California Code of Regulations (CCR) Section 15064.5(e), if human remains are encountered, work within 25 feet of the discovery shall be redirected and the Riverside County Coroner notified

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

immediately. State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code (PRC) Section 5097.98. If the remains are determined to be Native American, the County Coroner shall notify the Native American Heritage Commission (NAHC), which shall determine and notify a Most Likely Descendant (MLD). With the permission of the property owner, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Consistent with CCR Section 15064.5(d), if the remains are determined to be Native American and an MLD is notified, the City shall consult with the MLD as identified by the NAHC to develop an agreement for treatment and disposition of the remains. As determined necessary by the City and MLD, **Mitigation Measures TRI-1 through TRI-3** shall apply (See response 17b.).

6. GEOLOGY AND SOILS. Would the project:				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐

6i. Response: ***(Source: General Plan 2025 Figure PS-1 – Regional Fault Zones and Preliminary Soil Investigation Report (Appendix E))***

Less Than Significant Impact. Seismic activity is expected in Southern California; however, the project site is not located within an Alquist-Priolo zone. The project site does not contain any known fault; therefore, potential for on-site fault rupture is very low. The site is located approximately 9.7 miles northeast of the Elsinore Fault. Proper engineering design and construction in conformance with the California Building Code (CBC) standards and project-specific Geotechnical recommendations (**Standard Condition GEO-1**) would ensure that seismic ground shaking would be reduced to **less than significant** levels directly, indirectly, and cumulatively, and no mitigation is required.

Standard Condition: No mitigation is required; however, the following Standard Condition is a regulatory requirement that would be implemented to reduce impacts related to seismic activity.

Standard Condition GEO-1: **Compliance with applicable California Building Code and Project-specific Geotechnical Recommendations.** Prior to the approval of grading and/or building permits, the applicant shall provide evidence to the City for review and approval that on-site structures, features and facilities have been designed and will be constructed in conformance with applicable provisions of the California Building Code and the recommendations cited in the project-specific geotechnical investigation.

ii. Strong seismic ground shaking?	☐	☐	☒	☐

6ii. Response: ***(Source: General Plan 2025 FPEIR and Preliminary Soil Investigation Report (Appendix E))***

Less Than Significant Impact. The San Jacinto Fault Zone, located in the northeastern portion of the City, and the Elsinore Fault Zone, located in the southern portion of the City's Sphere of Influence, have the potential to cause moderate to large earthquakes that would cause intense ground shaking. Because the proposed project must comply with CBC regulations that protect habitable structures from seismic hazards, direct, indirect, or cumulative impacts associated with strong seismic ground shaking will have **a less than significant impact**, and no mitigation is required.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐

6iii. Response: ***(Source: General Plan 2025 Figure PS-1 – Regional Fault Zones, Figure PS-2 – Liquefaction Zones, General Plan 2025 Figure PS-3 – Soils with High Shrink-Swell Potential, and Preliminary Soil Investigation Report (Appendix E))***

Less Than Significant Impact. The project site is located in an area with high potential for liquefaction. However, the project site has been disturbed and is currently developed with school uses. On-site alluvial and silty sands are not considered susceptible to liquefaction. Furthermore, the incorporation of recommended design measures and adherence to CBC regulations will ensure that impacts related to seismic-related ground failure, including liquefaction, are less than significant. It is reasonable to conclude that the project will have low seismic-related ground failure and seismic-related risk has been reduced to **less than significant** levels directly, indirectly, and cumulatively. No mitigation is required.

iv. Landslides?	☐	☐	☐	☒

6iv. Response: ***(Source: General Plan 2025 FPEIR Figure 5.6-1 – Areas Underlain by Steep Slope, Title 18 – Subdivision Code, Title 17 – Grading Code, and Preliminary Soil Investigation Report (Appendix E))***

No Impact. The Geology and Soils section of the City's General Plan 2025 FPEIR states that "areas of high susceptibility to seismically induced landslides and rockfalls correspond to steep slopes in excess of 30 percent." Figure 5.6-1 of the General Plan 2025 FPEIR indicates that the project area is located on land identified as having a 0 to 10 percent slope, which is the lowest of the four potential categories. Additionally, the project site has been previously excavated, filled, graded, and leveled. Therefore, there will be **no impact** related to landslides directly, indirectly, or cumulatively, and no mitigation is required.

b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

6b. Response: ***(Source: General Plan 2025 FPEIR Figure 5.6-1 – Areas Underlain by Steep Slope, Figure 5.6-4 – Soils, Table 5.6-B – Soil Types, Title 18 – Subdivision Code, and Title 17 – Grading Code)***

Less Than Significant Impact. On-site soils consist of alluvial and silty sands. Native alluvial soils, medium dense silty fine to medium sands and fine sandy silts are present underneath superficial sediments. During grading and construction, disturbance of soil by heavy construction equipment could result in erosion. State and Federal requirements call for the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) establishing erosion and sediment controls for construction activities. The project must also comply with the National Pollutant Discharge Elimination System (NPDES) regulations. In addition, with the erosion control standards with which all development activity must comply (Title 18), the Grading Code (Title 17) also requires the implementation of measures designed to minimize soil erosion. Compliance with State and Federal requirements as well as with Titles 18 and 17 will ensure that soil erosion or loss of topsoil will be a **less than significant impact** directly, indirectly, and cumulatively, and no mitigation is required.

c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐

6c. Response: ***(Source: General Plan 2025 Figure PS-1 – Regional Fault Zones, Figure PS-2 – Liquefaction Zones, Figure PS-3 – Soils with High Shrink-Swell Potential; General Plan 2025 FPEIR Figure 5.6-1 – Areas Underlain by Steep Slope, Figure 5.6-4 – Soils, Table 5.6-B – Soil Types, and Preliminary Soil Investigation Report (Appendix E))***

Less Than Significant Impact. The project site has been previously excavated, filled, graded, and leveled. The site is generally flat, with less than 10 feet of elevation difference across the site. Native alluvial soils, medium dense silty fine to medium sands and fine sandy silts are present underneath superficial deposits. Liquefaction occurs primarily in saturated, loose, fine-to-medium grained alluvial soils in areas where the groundwater table is within 50 feet of the surface. Shaking suddenly causes soils to lose strength and behave as a liquid. Liquefaction-related effects include loss of bearing strength, lateral spreading, and flow failures or slumping. Seven exploratory boreholes were drilled by GeoMat engineer on January 14, 18, 19, 20, and 21, 2017 and one borehole was drilled on October 24, 2015, to a maximum depth of 50 feet below existing ground surface (Appendix E). Groundwater was not encountered by the GeoMat engineer in exploratory borings drilled at the

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
site up to 50 feet below ground surface. Based on available groundwater data, a historic high groundwater of greater than 100 feet below ground surface is estimated.[15] Per the project specific soils report (Appendix E), "… a potential for loss of bearing capacity due to liquefaction is not expected at the site since there is not an upper potentially liquefiable layer at a depth shallower than the estimated depth where the induced vertical stress in the soil is 10% of the bearing pressure imposed by the proposed foundation systems." While the City of Riverside General Plan 2025 FPEIR identifies the site as being with an area of "high" liquefaction potential, recent (2017) and historic reports anticipate groundwater deeper than 100 feet below ground level. Due to the depth of groundwater, compliance with the City's codes will sufficiently ensure that impacts related to geologic conditions are reduced to **less than significant impacts** level directly, indirectly, and cumulatively, and no mitigation is required.				
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
6d. Response: ***(Source: General Plan 2025 FPEIR Figure 5.6-4 – Soils, Figure 5.6-4 – Soils, Table 5.6-B – Soil Types, Figure 5.6-5 – Soils with High Shrink-Swell Potential, Preliminary Soil Investigation Report (Appendix E), and California Building Code as adopted by the City of Riverside and set out in Title 16 of the Riverside Municipal Code)*** **No Impact.** Expansive soils, defined under CBC, expand when wet and shrink when dry. The amount or type of clay present in soil determines its shrink-swell potential. On-site soils are mostly sands and silts, and have very low to no potential for expansion. Therefore, the project site does not have expansive soils, there will be **no impact** directly, indirectly, or cumulatively, and there will be no mitigation required.				
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
6e. Response: ***(Source: Project plans)*** **No Impact.** The proposed project will be served by sewer infrastructure. **No impact** will occur, and no mitigation is required.				
7. GREENHOUSE GAS EMISSIONS. Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
7a. Response*: (Source: Air Quality and Greenhouse Gas Analysis– (Appendix A), SCAQMD 2010)* **Less Than Significant Impact.** "Greenhouse gases" (GHGs) emitted by human activity are implicated in global climate change, commonly referred to as "global warming." GHGs contribute to an increase in the temperature of the Earth's atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation in some parts of the infrared spectrum. The principal GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, and water vapor. For purposes of planning and regulation, Section 15364.5 of the CCR defines GHGs to include, but are not limited to, CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Fossil fuel consumption in the transportation sector (e.g., on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions. *State CEQA Guidelines* Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."				

15 *Preliminary Soil Investigation Report, Hawthorne Heights Project, Single Family Homes, APNs 233-170-001 and 233-180-007, City of Riverside, California*, GeoMat Testing Laboratories, Inc., January 23, 2017 (Appendix E).

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

The City adopted its Riverside Restorative Growthprint (RRG) Economic Prosperity Action Plan (RRG-EPAP) and Climate Action Plan (RRG-CAP) in January 2016. In 2014, the City was one of 12 that collaborated with the Western Riverside Council of Governments (WRCOG) on a Subregional Climate Action Plan (Subregional CAP) that includes 36 measures to guide the City's GHG reduction efforts through 2020. Through the WRCOG Subregional CAP process, the City has committed to a 2020 emissions target of 2,224,908 metric tons of carbon dioxide-equivalent gases (MT CO_2e), which is 26.4 percent below the City's 2007 baseline and 15 percent below 2010 emissions. This represents a reduction of 779,304 MT CO_2e from the City's 2020 business-as-usual (BAU) forecast. The City is aiming for a 2035 emissions target of 1,542,274 MT CO_2e, which is 49 percent below the 2007 baseline and represents a reduction of 2,120,931 MT CO_2e from the 2035 BAU forecast.

The RRG-CAP expands upon the efforts of the WRCOG Subregional CAP, employing local measures to help the City achieve deep GHG reductions through the year 2035. To further develop local GHG reduction measures for the RRG-CAP, the City conducted a detailed assessment of local strategies and actions related to the measures identified in the Subregional CAP and expanded the discussion and analysis with respect to implementation (particularly post-2020), costs and funding, performance metrics, and local co-benefits. Importantly, the discussions identify local economic and entrepreneurship opportunities that can be integrated with local, regional, and global GHG reductions (e.g., the development of green enterprise zones).

Currently, there is no statewide GHG emissions threshold used to determine potential GHG emissions impacts of a project. Air districts in the State are still developing and revising threshold methodology and thresholds. To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD convened a GHG CEQA Significance Threshold Working Group (Working Group). Based on the last Working Group meeting (Meeting No. 15) held in September 2010, SCAQMD is proposing to adopt a tiered approach for evaluating GHG emissions for development projects where the SCAQMD is not the lead agency. This concept is equivalent to the existing consistency determination requirements in *CEQA Guidelines* Sections 15064(h)(3), 15125(d), or 15152(a). The SCAQMD has continued to consider adoption of significance thresholds for residential and general development projects. The most recent proposal issued in September 2010 (SCAQMD 2010) uses the following tiered approach to evaluate potential GHG impacts from various uses:

Tier 1 – Determine if CEQA categorical exemptions are applicable. If not, move to Tier 2.

Tier 2 – Consider whether or not the proposed project is consistent with a locally adopted GHG reduction plan that has gone through public hearing and CEQA review, that has an approved inventory, includes monitoring, etc. If not, move to Tier 3.

Tier 3 – Consider whether the proposed project generates GHG emissions in excess of screening thresholds for individual land uses. A 10,000 MT CO_2e/yr threshold for industrial uses would be recommended for use by all lead agencies. Under Option 1, separate screening thresholds are proposed for residential projects (3,500 MT CO_2e/yr), commercial projects (1,400 MT CO_2e/yr), and mixed-use projects (3,000 MT CO_2e/yr). Under Option 2, a single numerical screening threshold of 3,000 MT CO_2e/yr would be used for all non-industrial projects. If the project generates emissions in excess of the applicable screening threshold, move to Tier 4.

Tier 4 – Establishes a decision tree approach that includes compliance options for projects that have incorporated design features into the project and/or implement GHG mitigation measures.

- Efficiency Target (2020 Targets)
- 4.8 MT CO_2e per service population, (the number of jobs and the number of residents provided by a project), for project level threshold (land use emissions only) and total residual emissions not to exceed 35,000 million tons per year CO_2e
- 6.6 MT CO_2e per service population for plan level thresholds (all sectors)
- Efficiency Target (2035 Targets)
- 3.0 MT CO_2e per service population for project level threshold
- 4.1 MT CO_2e per service population for plan level threshold

If a project fails to meet any of these emissions reduction targets and efficiency targets, the project would move to Tier 5.

Tier 5 – Consider the implementation of CEQA mitigation (including the purchase of GHG offsets) to reduce the project efficiency target to Tier 4 levels.

The thresholds identified above have not been adopted by the SCAQMD or distributed for widespread public review and comment, and the working group tasked with developing the thresholds has not met since September 2010. The future schedule and likelihood adoption is uncertain.

For purposes of this analysis, Tier 3 Option 1 approach for residential projects (3,500 MT CO_2e/yr) is utilized in order to determine the significance for the proposed project's GHG emissions.

Construction and operation of the proposed project would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during the project's operation (as opposed to during its construction). Typically, more than 80 percent of the total energy consumption takes place during the use of buildings and less than 20 percent of energy is consumed during construction. As of yet, there is no study that quantitatively assesses all of the GHG emissions associated with each phase of the construction and use of an individual development.

Overall, the following activities associated with the proposed project could directly or indirectly contribute to the generation of GHG emissions:

- **Construction Activities:** During construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and vendor vehicles.
- **Gas, Electricity, and Water Use:** Natural gas use results in the emission of two GHGs: CH_4 (the major component of natural gas) and CO_2 (from the combustion of natural gas).
- **Solid Waste Disposal:** Solid waste generated by the project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and managing the waste, and they produce additional GHGs to varying degrees.
- **Motor Vehicle Use:** Transportation associated with the proposed project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

Table 7.A lists the annual CO_2 emissions for each of the planned demolition and construction phases.

Table 7.A: Construction Greenhouse Gas Emissions

Construction Phase		Total Regional Pollutant Emissions (MT/yr)			
		CO_2	CH_4	N_2O	CO_2e
2017	Demolition	41	0.01	0	41.3
	Site Preparation	19	<0.01	0	18.7
	Grading	29	<0.01	0	29.3
	Building Construction	48	0.01	0	48.3
2018	Building Construction	265	0.06	0	266.0
	Architectural Coating	22	<0.01	0	22.4
	Paving	22	<0.01	0	22.4
Total Construction Emissions		446	0.10	0	449[1]

Source: Table L, *Air Quality and Greenhouse Gas Analysis (Appendix A)*

Notes:

[1] Rounded to the nearest whole number.

CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
MT/yr = metric tons per year
N_2O = nitrous oxide

Long-term operation of the proposed project would generate GHG emissions from area and mobile sources and indirect emissions from stationary sources associated with energy consumption. Mobile-source emissions of GHGs would include project-generated vehicle trips associated with on-site facilities and customers and visitors to the project site. Area-source emissions would be associated with activities (e.g., landscaping and maintenance of proposed land uses, natural gas for heating, and other sources). Increases in stationary-source emissions would also occur at off-site utility providers as a result of demand for electricity, natural gas, and water by the proposed uses. The GHG emission estimates presented in Table 7.B detail the emissions associated with the level of development envisioned by the proposed project at opening.

The remaining CO_2e emissions are primarily associated with building heating systems and increased regional power plant electricity generation due to the proposed project's electrical demands. Specific development projects proposed under the project would comply with existing State and Federal regulations regarding the energy efficiency of buildings, appliances, and lighting, which would reduce the project's electricity demand. The new buildings constructed in accordance with current energy efficiency standards would be more energy-efficient than older buildings. Since January 1, 2014, several new Building Codes have been enforced in California. All structures other than one- and two-family dwellings and townhomes will be built under the 2016 CBC to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices.

Table 7.B: Operational Greenhouse Gas Emissions

Source	Pollutant Emissions, MT/yr					
	Bio-CO_2	NBio-CO_2	Total CO_2	CH_4	N_2O	CO_2e
Construction emissions amortized over 30 years	0	15	15	<0.01	0	15
Operational Emissions						
Area Sources	0	14	14	<0.01	<0.01	14
Energy Sources	0	411	411	<0.01	<0.01	412
Mobile Sources	0	851	851	0.047	0	852
Waste Sources	13	0	13	0.76	0	32
Water Usage	1.1	42	43	0.12	<0.01	47
Total Project Emissions[1]	**14**	**1,334**	**1,348**	**0.92**	**<0.01**	**1,373**

Source: Table M, *Air Quality and Greenhouse Gas Analysis (Appendix A)*
Notes:
[1] Numbers in table may not appear to add up correctly due to rounding of numbers.

Bio-CO_2 = biologically generated CO_2
CO_2e = carbon dioxide equivalent
NBio-CO_2 = Nonbiologically generated CO_2
CH_4 = methane
MT/yr = metric tons per year
CO_2 = carbon dioxide
N_2O = nitrous oxide

At present, there is a Federal ban on chlorofluorocarbons (CFCs); therefore, it is assumed the project would not generate emissions of CFCs. The project may emit a small amount of HFCs from leakage and service of refrigeration and air-conditioning equipment and from disposal at the end of the life of the equipment. However, the details regarding refrigerants to be used at the project site are unknown at this time. PFCs and SF_6 are typically used in industrial applications, which would not occur on the project site. Therefore, the project is not anticipated to contribute significant emissions of these additional GHGs.

Because climate change impacts are cumulative in nature, no typical single project can result in emission of such a magnitude that it, in and of itself, would be significant on a project basis. The project's operational emissions of 1,373 MT CO_2e/yr is less than the SCAQMD-recommended interim threshold of 3,500 MT CO_2e/yr for residential uses. Therefore, the proposed project would not result in a significant impact on GHG emissions.

Furthermore, this analysis considers GHG emission significance by determining the project's consistency with the policies and goals in the RRG-EPAP and RRG-CAP. As discussed in Response 7.b, below, the project would be consistent with the strategies and goals from the RRG-CAP. In order to ensure that the proposed project complies with and would not conflict with or impede the implementation of reduction goals identified in Assembly Bill (AB) 32, Executive Order (EO) S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor, **Standard Condition GCC-1** shall be implemented. **Standard Condition GCC-1** includes implementation of reduction goals identified in the Riverside RRG-CAP, AB 32, EO S-3-05, and other strategies to help reduce GHGs. With implementation of **Standard Condition GCC-1**, project impacts related to greenhouse gas emissions would be **less than significant** and no mitigation is required.

Standard Condition: No mitigation is required; however, the following Standard Condition is a regulatory requirement that would be implemented to reduce impacts related to greenhouse gas emissions.

Standard Condition GCC-1 **Greenhouse Gas Reduction Strategies.** To ensure the proposed project complies with and would not conflict with or impede the implementation of reduction goals identified in the Riverside RRG-CAP, Assembly Bill (AB) 32, the Governor's Executive Order (EO) S-3-05, and other strategies to help reduce greenhouse gases (GHGs) to the level proposed by the Governor, the project will implement a variety of measures that will reduce its GHG emissions. To the extent feasible, and to the satisfaction of the City of Riverside (City), the following measures shall be incorporated into the design and construction of the project:

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Construction and Building Materials.

- Use locally produced and/or manufactured building materials for at least 10 percent of the construction materials used for the project.
- Recycle/reuse at least 50 percent of the demolished and/or grubbed construction materials (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard) if feasible.
- Use "green building materials," such as those materials that are resource-efficient and are recycled and manufactured in an environmentally friendly way, for at least 10 percent of the project.

Energy Efficiency Measures.

- Design all project buildings to meet or exceed the California Building Code's (CBC) Title 24 energy standard, including, but not limited to, any combination of the following:
  - Increase insulation such that heat transfer and thermal bridging is minimized;
  - Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption; and
  - Incorporate ENERGY STAR® or better rated windows, space heating and cooling equipment, light fixtures, appliances, or other applicable electrical equipment.
- Install efficient lighting and lighting control systems. Use daylight as an integral part of the lighting systems in buildings.
- Install "cool" roofs and cool pavements.
- Install energy-efficient heating and cooling systems, appliances and equipment, and control systems.
- Install solar lights or light-emitting diodes (LEDs) for outdoor lighting or outdoor lighting that meets the City Code.

Water Conservation and Efficiency Measures.

- Devise a comprehensive water conservation strategy appropriate for the project and its location. The strategy may include the following, plus other innovative measures that may be appropriate:
  - Create water-efficient landscapes within the development.
  - Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.
  - Use reclaimed water, if available, for landscape irrigation within the project. Install the infrastructure to deliver and use reclaimed water, if available.
  - Design buildings to be water-efficient. Install water-efficient fixtures and appliances, including low-flow faucets and waterless urinals.
  - Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff.

Solid Waste Measures.

- To facilitate and encourage recycling to reduce landfill-associated emissions, among others, the project will provide trash enclosures that include additional enclosed area(s) for collection of recyclable materials. The recycling collection area(s) will be located within, near, or adjacent to each trash and rubbish disposal area. The recycling collection area will be a minimum of 50 percent of the area provided for the trash/rubbish enclosure(s) or as approved by the Waste Management Department of the City of Riverside.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

- Provide employee education on waste reduction and available recycling services.

Transportation Measures.

- To facilitate and encourage non-motorized transportation, bicycle racks shall be provided in convenient locations to facilitate bicycle access to the project area. The bicycle racks shall be shown on project landscaping and improvement plans submitted for Planning Department approval and shall be installed in accordance with those plans.
- Provide pedestrian walkway and connectivity requirements.

With implementation of **Standard Condition GCC-1**, the proposed project would not conflict with or impede implementation of the reduction goals identified in AB 32, EO S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor. Therefore, the proposed project would not generate greenhouse gas emissions, either directly or indirectly, which would have a significant impact on the environment. Associated impacts would be **less than significant** and no mitigation is required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

7b. Response:

Less Than Significant Impact. As discussed in Response 7.a, above, the City adopted its RRG, RRG-EPAP and RRG-CAP in January 2016. This analysis considers GHG emission significance by determining the proposed project's consistency with the policies and goals in these plans. Table 7.C lists the applicable strategies and goals from the RRG-CAP and identifies how the proposed project achieves compliance. In order to ensure that the proposed project complies with and would not conflict with or impede the implementation of reduction goals identified in AB 32, EO S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor, **Standard Condition GCC-1** shall be implemented. **Standard Condition GCC-1** includes implementation of reduction goals identified in the Riverside RRG-CAP, AB 32, the EO S-3-05, and other strategies to help reduce GHGs.

The AQMP is based on regional growth projections developed by the SCAG. The proposed project is a residential development and is not defined as a regionally significant project under CEQA; therefore, it does not meet SCAG's Intergovernmental Review (IGR) criteria. As discussed in Response 3a, the proposed project would produce fewer vehicle miles traveled and thus lower operational emissions than the former elementary school based on the default trip rates and trip lengths in the Institute of Transportation Engineers *Trip Generation Manual*, Ninth Edition, for the previous elementary school and the proposed project. However, the project does require a General Plan Amendment (Planning Case P16-0112) from B/OP – Business/Office Park to MDR – Medium Density Residential and Zone Change (Planning Case P16-0113) from PF - Public Facilities to R-1-7000 - Single-Family Residential.

Pursuant to the methodology provided in Chapter 12 of the 1993 SCAQMD *CEQA Air Quality Handbook,* consistency with the AQMP is affirmed when a project: (1) does not increase the frequency or severity of an air quality standards violation or cause a new violation; and (2) is consistent with the growth assumptions in the AQMP. Consistency review is presented below:

1. The project would result in short-term construction and long-term pollutant emissions that are less than the CEQA significance emissions thresholds established by the SCAQMD, as demonstrated in Section 3b; therefore, the project could not result in an increase in the frequency or severity of any air quality standards violation and will not cause a new air quality standard violation.
2. The *CEQA Air Quality Handbook* indicates that consistency with AQMP growth assumptions must be analyzed for new or amended General Plan elements, Specific Plans, and significant projects. Significant projects include airports, electrical generating facilities, petroleum and gas refineries, designation of oil drilling districts, water ports, solid waste disposal sites, and offshore drilling facilities; therefore, the proposed project is not defined as significant.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 7.C: Project Compliance with Greenhouse Gas Emission Reduction Strategies

Strategy	Project Compliance
Energy Efficiency Measures	
Measure SR-2: 2016 California Building Energy Efficiency Standards (Title 24, Part 6). Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities). **Green Building Strategy.** Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	**Compliant.** The proposed project would comply with the requirements of Measure SR-2: 2016 California Building Energy Efficiency Standards (Title 24, Part 6)[1], including measures to incorporate energy-efficient building design features detailed in Subchapter 7 (Low-rise Residential Buildings) Section 150.0 (Mandatory Features and Devices.)
Water Conservation and Efficiency Measures	
Measure W-1: Water Use Efficiency. Reduce per capita water use by 20% by 2020. SB X7-7 is part of a California legislative package passed in 2009 that requires urban retail water suppliers to reduce per-capita water use by 10% from a baseline level by 2015, and to reduce per-capita water use by 20% by 2020. Green accountability performance (GAP) Goal 16 directly aligns with SB X7-7. In Southern California, energy costs and GHG emissions associated with the transport, treatment, and delivery of water from outlying regions are high. Therefore, the region has extra incentive to reduce water consumption. While this is considered a state measure, it is up to the local water retailers, jurisdictions, and water users to meet these targets.	**Compliant.** The project would comply with the requirements of Measure W-1: Water Use Efficiency. Water-efficient irrigation systems and devices and drought-tolerant landscaping would be installed on the project site.
Solid Waste Reduction Measures	
Measure SR-13: Construction and Demolition (C&D) Waste Diversion. Meet mandatory requirement to divert 50% of C&D waste from landfills by 2020 and exceed requirement by diverting 90% of C&D waste from landfills by 2035. Effective July 1, 2014, CALGreen, the State's Green Building Standards Code, requires jurisdictions to divert a minimum of 50% of their nonhazardous C&D waste from landfills. Reductions for the year 2020 assume that 100% of new construction and applicable retrofit projects meet the minimum diversion rates established by the state. For 2035, this measure assumes that C&D waste diversion would increase to 90% for new construction and retrofit projects. This increase is in line with GAP Goal 6.A which aims to develop measures to encourage that a minimum of 90% of recoverable waste from all construction sites be recycled throughout Riverside by 2015, beginning with 40% in 2010 and increasing by 10% each year thereafter.	**Compliant.** The project would comply with Measure SR-13: Construction and Demolition Waste Diversion. At least 50 percent of the demolished and/or grubbed construction materials (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard) would be reused/recycled.
Transportation and Motor Vehicle Measures	
Measure SR-6: Pavley and Low Carbon Fuel Standard (LCFS). ARB identified this measure as a Discrete Early Action Measure. This measure would reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. **Measure SR-12: Electric Vehicle Plan and Infrastructure.** SCAG has developed a regional plug-in electric vehicle (PEV) readiness plan, and WRCOG has a similar sub regional plan for PEV readiness. Together, these plans identify viable locations for charging stations, changes to development codes, and other strategies to encourage the purchase and use of electric vehicles. This measure is anticipated to reduce nearly 82,000 MT CO_2e in participating WRCOG jurisdictions by 2020.	**Compliant.** The project does not involve the manufacture, sale, or purchase of vehicles. However, vehicles that operate within and access the project site would comply with Measure SR-6: Pavley and Low Carbon Fuel Standard. Per the Municipal Code (Section 16.07.020), the City has adopted the California Green Building Standards Code (2016) which requires the pre-wiring of new residential development to facilitate the installation and use of EV charging stations (Section 4.106.4); therefore, the project would comply with Measure SR-12: Electric Vehicle Plan and Infrastructure.
Measure E-2: Shade Trees. Strategically plant trees at new developments to reduce the urban heat island effect. Planting additional trees in urban environments has a number of benefits, including lowering peak-load energy demands during the hottest months, enhancing the visual aesthetic of a community, and naturally sequestering carbon dioxide. Properly selected and located shade trees can help keep indoor temperatures low, thereby reducing air conditioner demands and utility costs. Trees can also provide shade for parking lots and other paved areas, reducing urban heat island effect communitywide.	**Compliant.** The project would comply with Measure E-2: Shade Trees. Landscaping and shade trees would be provided throughout the project site.

Source: Riverside Restorative Growthprint, Climate Action Plan RRG – Part B, October 2015.
1. http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf, site accessed August 17, 2017.

ARB = California Air Resources Board GHG = greenhouse gas

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Therefore, based on the consistency analysis presented above, the proposed project is consistent with the current regional AQMP. With implementation of **Standard Condition GCC-1**, impacts related to conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases would be **less than significant**, and no mitigation is required.				
8. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
8a. Response: **Less Than Significant Impact.** Construction of the project has the potential to create a hazard to the public or environment through the routine transportation, use, and disposal of construction-related hazardous materials such as fuels, oils, solvents, and other materials. These materials are typical of materials delivered to construction sites. The project shall comply with all applicable Federal, State, and local laws and regulations pertaining to the transport, use, disposal, handling, and storage of hazardous waste, including but not limited to Title 49 of the Code of Federal Regulations implemented by Title 13 of the CCR, which describes strict regulations for the safe transportation of hazardous materials. Compliance with all applicable Federal, State and local laws related to the transportation, use and storage of hazardous materials would reduce the likelihood and severity of accidents during transit, use and storage to a **less than significant impact** directly, indirectly, and cumulatively. No mitigation is required.				
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
8b. Response: ***(Source: Phase 1 Environmental Site Assessment (ESA) (Appendix F1); Phase 1 Hazmat Sampling and Testing Results (Appendix F2))*** **Less Than Significant With Mitigation Incorporated.** A Phase 1 Environmental Site Assessment (ESA) for the project was prepared in accordance with the standards and procedures outlined in the American Society for Testing and Materials (ASTM) E 1527-13, as applicable. The purpose of this Phase 1 ESA is to identify, to the extent feasible, and pursuant to the processes prescribed herein, recognized environmental conditions in connection with the property. The subject property was used as a school from 1966 until December 2008. The Riverside County Environmental Health Department, Hazardous Materials Division, maintains a list of the underground tank cleanup sites and emergency response activity within the County and was contacted as part of the Phase 1 ESA work on the 6.85-acre Hawthorne property. The agency responded on January 5, 2017, and indicated that there were no files of any incidents or accidents involving hazardous materials on site. Furthermore, data from the Regional Water Quality Control Board indicate that there are no potential sites of contamination on or in the general area of the subject property. A site reconnaissance was conducted on December 27, 2016 and concluded recognized environmental conditions (REC) may currently exist on the project site as a result of nearby railroad operations and past uses of the property for agriculture and as a school site. During the site reconnaissance, two pole-mounted transformers were observed on utility poles within the public right-of-way along the south side of Indiana Avenue adjacent to the northern boundary of the proposed project. Although it is not certain if the observed pole-mounted transformers contained PCBs, no indication of PCB leakage or contamination were observed on the subject property. A review of government agency databases indicated no previously permitted on-site hazardous material use, generation, storage, or disposal. No underground storage tanks have been permitted for the site and no unauthorized releases of petroleum hydrocarbons have been reported for the site. Based on available information, it is concluded that there is low to moderate				

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

probability of the site to contain any REC, Controlled Recognized Environmental Conditions (CREC), Historic Recognized Environmental Conditions (HREC), or conditions that would threaten public health or safety. Due to the railroad tracks abutting the site to the south, past uses of agriculture on the subject property, and presence of a 1960s school complex on site, it was recommended that a hazardous materials Phase II subsurface soil investigation and asbestos and lead-based paint testing be conducted for the subject property. The subsurface soil investigation of the site was conducted in January and February 2017. Soil samples were retrieved from four locations spread evenly in an east-west direction across the site. None of the sampled locations showed elevated levels of contamination above established standards or exceeded recommended levels for residential properties. The Phase II testing indicates that no subsequent soil remediation is required prior to clearing/grubbing of the site.

The sampling effort indicated asbestos containing material (ACM) is present in some of the former school buildings. Due to the presence of ACMs and the potential presence of LBP in existing structures, the demolition of these structures may result in the release of hazardous materials into the environment. The following mitigation is required to reduce potential impacts to a **less than significant level with mitigation incorporated.**

Mitigation Measures: Mitigation is required to reduce potential hazardous material impacts associated with the demolition of existing on-site structures and grading on site. Full adherence to the requirements of the stated measures will ensure potential on-site hazardous material impacts are reduced to a less than significant level.

Mitigation Measure HAZ-1: Prior to the issuance of a demolition or grading permit, the applicant shall provide evidence to the City for review and approval testing for lead-based paint (LBP) has been conducted.

Mitigation Measure HAZ-2: Prior to issuance of a demolition or grading permit, the applicant shall submit to the City for review and approval, evidence that any on-site asbestos containing material (ACM) or lead based paint (LBP) contaminated material identified in any site-specific hazardous material investigation, has been removed, remediated and/or disposed of pursuant to the applicable local, regional, and/or State requirements. The removal and disposal of any such material shall be documented as part of a hazardous waste abatement report to be reviewed by the City prior to the issuance of demolition or grading permits.

c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐

8c. Response: ***(Source: General Plan 2025 Public Safety and Education Elements, General Plan 2025 FPEIR Table 5.7-D – CalARP RMP Facilities in the Project Area, Figure 5.13-2 – Riverside Unified School District (RUSD) Boundaries, Table 5.13-D RUSD Schools, Figure 5.13-4 – Other School District Boundaries, California Health and Safety Code, Title 49 of the Code of Federal Regulations, California Building Code)***

Less Than Significant Impact. Sherman Indian High School is located approximately 0.25 mile north of the project site, and Arlington High School is located approximately 1,000 feet southeast of the project site. The proposed development does pose a potential health risk to nearby existing or proposed schools; however, use of hazardous materials during demolition, construction, and occupation of the proposed project would be subject to all applicable existing Federal, State, and local statutes and regulations. Compliance would ensure that children, teachers, staff, and visitors at the nearby schools are not exposed to hazardous materials.

The proposed project would operate as a typical residential development and would not be expected to introduce a substantial risk to human health through the release of hazardous materials. Potential hazardous materials would include commercial household products and cleaning supplies. These substances would be stored in secure areas and would comply with all applicable storage, handling, usage, and disposal requirements. The potential risks posed by the use and storage of these hazardous materials are primarily limited to the immediate vicinity of the materials. Residents may dispose of household hazardous waste every non-holiday Saturday from 9:00 am to 2:00 pm at the Agua Mansa Permanent HHW Facility. As such, impacts associated with the exposure of schools to hazardous materials caused by this project and will result in a **less than significant impact** directly, indirectly, and cumulatively. No mitigation is required.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐

8d. Response: ***(Source: General Plan 2025 Figure PS-5 – Hazardous Waste Sites, General Plan 2025 FPEIR Tables 5.7-A – CERCLIS Facility Information, Figure 5.7-B – Regulated Facilities in TRI Information and 5.7-C – DTSC EnviroStor Database Listed Sites)***

Less Than Significant With Mitigation Incorporated. No hazardous materials sites, compiled pursuant to Government Code Section 65962.5, are depicted on or adjacent to the project location on the EnviroStar online database. In addition, the General Plan 2025 FPEIR (Figure 5.7-1) does not list any hazardous waste sites on or adjacent to the project site. Although these databases indicate no known on-site hazardous material site, due to the railroad tracks abutting the site to the south and, past uses of agriculture on the property, soil sampling and laboratory testing was required. The results of the Phase II sampling and testing effort did not indicate any contamination above established standards or recommended levels for residential properties.

The sampling effort indicated ACM is present in some of the former school buildings. Full adherence to the requirements of **Mitigation Measures HAZ-1** through **HAZ-2** will ensure potential on-site hazardous material impacts are reduced to **a less than significant level with mitigation incorporated**.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

8e. Response: ***(Source: General Plan 2025 FPEIR Figure 5.7-2 – Airport Safety and Compatibility Zones and Riverside County Airport Land Use Compatibility Plan (RCALUCP).***

No Impact. The proposed project is not located within an Airport Safety Zone, as depicted in Figure 5.7-2 of the General Plan 2025 FPEIR. The project site is not within two miles of a public airport or public use airport. Because the project has not been found to be in an airport zone or within two miles of an airport, no further compliance is necessary with any airport plan. **No impacts** related to safety hazards for people residing or working in the project area directly, indirectly, or cumulatively would occur, and no mitigation is required.

f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

8f. Response: ***(Source: General Plan 2025 Figure PS-6 – Airport Safety Zones and Influence Areas, RCALUCP)***

No Impact. Because the proposed project is not located within proximity of a private airstrip and does not propose a private airstrip, it will not expose people residing or working in the City to safety hazards related to a private airstrip. **No impact** related to people residing or working in the project area directly, indirectly, or cumulatively would occur, and no mitigation is required.

g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐

8g. Response: **(*City of Riverside's EOP)***

Less Than Significant Impact. The project is within an urbanized area and will be served by the surrounding network of existing, full improved streets. All streets have been designed to meet the Public Works and Fire Department specifications. The proposed project shall comply with the City's Emergency Operations Plan (EOP). Temporary street closure may be necessary during construction activities. Any street closure will be of short duration so as not to interfere or impede with any

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

emergency response or evacuation plan. Since the proposed project is designed to be located in a gated community, emergency responders will have access at the main entrance to the community as well as have access at the west edge of the site dedicated for emergency access. Therefore, the project will have a **less than significant impact** directly, indirectly, and cumulatively to an emergency response or evacuation plan. No mitigation is required.

h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

8h. Response: ***(Source: General Plan 2025 Figure PS-7 – Fire Hazard Areas, GIS Map Layer VHFSZ 2010, City of Riverside's EOP, 2002, Riverside Operational Area – Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP), 2004 Part 1/Part 2 and Office of Emergency Services' (OEM's) Strategic Plan)***

No Impact. The proposed project is located in an urbanized area where no wildlands exist and the property is not located within a Very High Fire Severity Zone (VHFSZ) or adjacent to wildland areas; therefore, **no impact** related to wildland fires either directly, indirectly, or cumulatively from this project will occur. No mitigation is required.

9. HYDROLOGY AND WATER QUALITY.

Would the project:

a. Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐

9a. Response: ***(Source: General Plan 2025 FPEIR Table 5.8-A – Beneficial Uses Receiving Water; Project Specific Water Quality Management Plan – SDH & Associates, Inc. (Appendix G))***

Less Than Significant Impact. The project is located on a 6.85-acre property along Indiana Avenue. The site is currently developed with a vacant elementary school, which has several classroom buildings, playgrounds, and associated surface parking lots. The project consists of demolition of the existing school and construction of 54 single-family detached homes and associated improvements. The site clearing and grading phases will disturb vegetation and surface soils, potentially resulting in erosion and sedimentation. If left exposed and with no vegetative cover, the site's bare soil would be subject to wind and water erosion. Since the project involves more than one acre of ground disturbance, it is subject to NPDES requirements and must implement an SWPPP. Implementation of site-specific best management practices (BMPs) as established by the SWPPP will ensure all impacts related to erosion and sedimentation from ground disturbance are less than significant. The Municipal Storm Water Permitting Program regulates storm water discharges from municipal separate storm sewer systems (MS4), which has been added in two phases. Under Phase 1, the RWQCB has adopted an NPDES Permit for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities. Under Phase 2, the State Water Resources Control Board (SWRCB) issued a General Permit for the discharge of storm water from small MS4s to provide permit coverage for smaller municipalities (California Environmental Protection Agency, State Water Resource Control Board).

The project-specific WQMP identifies nine on-site drainage management areas (DMAs). Typical lot design includes a shallow vegetated swale around the perimeter of each house to intercept any runoff from the roof of the house and surrounding areas, which then is routed to four infiltration basins. Nearly all of the runoff generated by this project will be routed to pervious, landscaped areas where it will infiltrate into the ground. Hardscape has been minimized to reduce urban runoff. The southern portion of the site will generally drain to a large retention basin. Smaller basins are located in the northwest corner of the site and on either side of the main project entrance. The site will be graded to direct flow to a sump, with each sump providing drainage to infiltration facility for treatment. An overflow/outlet storm drain will connect and discharge to the existing city storm drain in the northwest corner.

The City of Riverside is located in the Santa Ana River Region, which is within the Riverside County Drainage Area Management Plan (DAMP). The DAMP addresses the requirements of the MS4 permits issued to the Riverside County Co-Permittees by the Santa Ana RWQCB. These are the third MS4 permits issued by each RWQCB and are referred to as the "Third-term" MS4 Permits. The City is a permittee under the Third-term MS4 Permits. Under this permit, the City is required to enforce and comply with storm water discharge requirements.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

To address potential water contaminants, the project is required to comply with applicable Federal, State, and local water quality regulations, including the design and maintenance features detailed in the project-specific WQMP. The WQMP will be reviewed and approved as a routine action during the processing of the project by the City; therefore, it is reasonable that the required measures and features detailed in this plan to safeguard water quality will be incorporated into the proposed project. Given compliance with all applicable local, State, and Federal laws regulating surface water quality, the proposed project as designed is anticipated to result in a **less than significant impact** directly, indirectly, and cumulatively to any water quality standards or waste discharge. No mitigation is required.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐

9b. Response: ***(Source: General Plan 2025 Table PF-1 – RPU Projected Domestic Water Supply (AC-FT/YR), Table PF-2 – RPU Projected Water Demand, RPU Map of Water Supply Basins, RPU Urban Water Management Plan. 2015)***

Less Than Significant Impact. Water service for the site will be provided by Riverside Public Utilities (RPU). RPU extracts groundwater from five groundwater basin, which accounts for the majority of RPU's supplies. Approximately 60 percent comes from the Bunker Hill Basin, within which water rights are adjudicated. RPU's water rights are based on the long-term yield of the basin estimated for normal, dry, and multiple-dry years. Pursuant to the 2015 Urban Water Management Plan (UWMP), the RPU maintains sufficient supplies of water (including groundwater) during normal, dry, and multiple-dry years. The UWMP bases its demand estimates on broad categories of uses (e.g., single-family residential, commercial/industrial/institutional) and growth projections identified by the City. As the site has been previously developed with school uses, it is reasonable that a water demand for the site has been previously included in the estimates of future demand. RPU maintains sufficient water rights in local groundwater basins to meet current and projected future demands.

The proposed project site has been designed to maximize the landscape areas, thereby minimizing the impervious area to the maximum extent possible; runoff from the site will disperse into infiltration facilities or landscaped planted areas prior to discharging into the city storm drain. Additionally, the proposed project will utilize water conservation project design features such as low-flush toilets, low-flow faucets, and drought-tolerant landscaping. The project does not include wells or excavations at a depth that would interfere with groundwater recharge. Because local groundwater supplies are sufficient to supply project growth with the RPU service area, and because the UWMP anticipates adequate existing and future water supplies to accommodate this growth, the proposed project will result in a **less than significant impact** to groundwater supplies and recharge either directly, indirectly, or cumulatively. No mitigation is required.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site?	☐	☐	☒	☐

9c. Response:

Less Than Significant Impact. The project would not have any direct effects on a stream or river as none occurs on site. The project site is relatively flat-lying, with ground slopes limited to an average of less than 0.7 percent to the northwest. The existing project site does not have any other features or facilities promoting infiltration except those that occur as surface runoff flows across the barren dirt to the storm drain in the north. General sheet flow conditions would be maintained and the site would be designed with retention features and permeable areas to ensure runoff from regular rain events are retained on site. The proposed sump basins, where the site is designed to flow, will infiltrate the maximum volume of runoff feasible. The proposed site has been graded to direct flows to sump conditions. Each sump has an infiltration facility for treatment with an overflow/outlet storm drain that will connect and discharge to the existing city storm drain. The project is subject to NPDES requirements; areas of one acre or more of disturbance are subject to preparing and implementing an SWPPP for the prevention of runoff during construction activities. Therefore, the project will have a **less than significant impact** directly, indirectly, or cumulatively to existing drainage patterns, and no mitigation is required.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site?	☐	☐	☒	☐

9d. Response:

Less Than Significant Impact. The project would not have any direct effects on a stream or river, as none occurs on site. The existing project site does not have any features or facilities promoting infiltration except those which occur as surface runoff flows across the barren dirt to the storm drain in the north. The proposed sump basins to where the site is designed to flow will infiltrate the maximum volume of runoff feasible. The proposed site has been graded to direct flow to sump conditions. Each sump has an infiltration facility for treatment with an overflow/outlet storm drain that will connect and discharge to the existing city storm drain. Therefore, no flooding on or off-site as a result of the project will occur and there will be a **less than significant impact** directly, indirectly, and cumulatively that would substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. No mitigation is required.

e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐

9e. Response:

Less Than Significant Impact. The proposed project would include retention features that would help prevent increases in the rate or volume of storm water runoff leaving the site. The project is over one acre in size and is required to have coverage under the State's General Permit for Construction Activities (SWPPP). As stated in the permit, during and after construction, BMPs will be implemented to reduce/eliminate adverse water quality impacts resulting from development. All impacts related to runoff during site preparation, demolition, and grading will be addressed by the SWPPP. The site has been designed to maximize the landscape areas, thereby minimizing the impervious area to the maximum extent practicable. All runoff from the built project site will disperse into infiltration facilities or adjacent landscape planted areas prior to discharging into the storm drain. As any sources of storm water pollution will be mitigated through adherence to NPDES permit requirements, the project will not create or contribute runoff water exceeding the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. For these reasons, there will be a **less than significant impact** directly, indirectly, or cumulatively from storm water exceeding the capacity of existing or planned storm water drainage systems or substantial additional sources of polluted runoff. No mitigation is required.

f. Otherwise substantially degrade water quality?	☐	☐	☒	☐

9f. Response:

Less Than Significant Impact. The project is over one acre in size and is required to have coverage under the State's General Permit for Construction Activities (SWPPP). As stated in the permit, during and after construction, BMPs will be implemented to reduce/eliminate adverse water quality impacts resulting from development. All impacts related to runoff during site preparation, demolition, and grading will be addressed by the SWPPP. The site has been designed to maximize the landscape areas, thereby minimizing the impervious area to the maximum extent practicable. All runoff from the built project site will disperse into infiltration facilities or adjacent landscape planted areas prior to discharging into the storm drain. As any sources of storm water pollution will be mitigated through adherence to NPDES permit requirements, the project will not create or contribute runoff water exceeding the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. For these reasons, there will be a **less than significant impact** directly, indirectly, or cumulatively from sources of water quality degradation. No mitigation is required.

g. Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

9g. Response: ***(Source: General Plan 2025 Figure PS-4 – Flood Hazard Areas, and FEMA Flood Hazard Map Number 06065C0720G)***

No Impact. This project will consist of new housing not located in a 100-year flood zone; however, according to the Federal Flood Hazard Boundary, Flood Insurance Rate Map, the proposed site is within a 500-year flood area, which has a 0.2 percent annual chance of flood. There will be **no impact** caused by this project directly, indirectly, or cumulatively, as it will not place housing within a 100-year flood hazard area. No mitigation is required.

h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒

9h. Response: ***(Source: General Plan 2025 Figure PS-4 – Flood Hazard Areas, and FEMA Flood Hazard Number 06065C0720G)***

No Impact. Based on the Flood Hazard Areas and the National Insurance Map (Map Number 06065C0720G), the site is located in a 500-year flood area and has a 0.2 percent annual chance of flood. However, the project site is not located within or near a 100-year flood hazard area as depicted on General Plan 2025 FPEIR Figure 5.8-2 – Flood Hazard Areas and the National Flood Insurance Rate Map (Map Number 06065C0720G Effective Date August 28, 2008). Therefore, the project will not place a structure within a 100-year flood hazard area that would impede or redirect flood flows and **no significant impact** will occur directly, indirectly, or cumulatively. No mitigation is required.

i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐

9i. Response: ***(Source: General Plan 2025 FPEIR Figure 5.8-2 – Flood Hazard Areas, and FEMA Flood Hazard Number 06065C0720G)***

Less Than Significant Impact. The project is located partially within the Mockingbird Canyon Dam inundation area, which may be affected in the event of a dam failure, as depicted on General Plan 2025 FPEIR Figure 5.8-2 – Flood Hazard Areas. In the event of a dam failure, first flow waters are expected to reach the site in 40 minutes. Therefore, the proposed project may expose people and/or structures to the risk of loss, injury, or death involving flooding as a result of the failure of a levee or dam.

The City Municipal Code, Title 18 – Subdivision Code, Chapter 18.210 – Development Standards, Section 18.210.100 – Flood Prone Lands and Drainage and Title 16 Buildings & Construction, Chapter 16.18 Flood Hazard Area & Implementation of Natural Flood Insurance Program, Sec. 16.8050 requires new construction located within flood hazard areas to mitigate flood hazards by including on-site drainage, anchoring methods to prevent floating structures, elevating buildings above flood levels, and flood proofing, which requires buildings to be inspected and certified by a professional engineer, surveyor, or building inspector. The proposed project will be conditioned to meet these requirements, including compliance with State Civil Code Section 1103 through 1103.4 requiring notification to those potentially affected of the risk involved in locating within a flood hazard or dam inundation area. Therefore, the potential to place a structure within an area that would expose people or structures to a significant risk of loss, injury, or death as a result of the failure of a levee or dam will be **less than significant** directly, indirectly, or cumulatively. No mitigation is required.

j. Expose people or structures to inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

9j. Response: ***(Source: General Plan 2025 Chapter 7.5.8 – Hydrology and Water Quality; General Plan 2025, Open Space and Conservation Element, Figure OS-4)***

Less Than Significant Impact. The site is located inland and no larger bodies of water are located within the site's vicinity; therefore, the potential of tsunamis or seiches affecting the site is considered low. Further, the proposed project site and its surroundings have generally flat topography and are within an urbanized area not within proximity to Lake Mathews, Lake Evans, the Santa Ana River, Lake Hills, Norco Hills, Box Springs Mountain Area, or any of the nine arroyos that transverse the City and its sphere of influence. According to Figure OS-4 in the General Plan 2025, the closest arroyo is Mockingbird Canyon, located approximately one mile southeast of the proposed project. The project site is not located near slopes or mountainous

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
areas that would contribute to mudflow risks. Given the project's location and since there are no features nearby that would pose a threat from seiche, tsunami, or mudflow, impacts are considered **less than significant** either directly, indirectly, or cumulatively. No mitigation is required.				
10. LAND USE AND PLANNING. Would the project:				
a. Physically divide an established community?	☐	☐	☐	☒
10a. Response: ***(Source: General Plan 2025 Land Use and Urban Design Element, City of Riverside GIS/CADME map layers)*** **No Impact.** The current General Plan land use designation for the project is B/OP – Business/Office Park. The project includes a General Plan Amendment to change the designation to MDR – Medium Density Residential. A zone change from PF – Public Facilities to R-1-7000 – Single-Family Residential is also proposed. While the proposed General Plan and zoning are different than current designations, the changes are compatible with uses around the project site, which consist primarily of single-family residential homes. The areas east, west, and north of the project site are zoned R-1-7000 – Single-Family Residential. The project is currently served by fully improved public streets and other infrastructure and does not involve the subdivision of land or the creation of streets that could alter the existing surrounding pattern of development or an established community. Therefore, **no impact** directly, indirectly, or cumulatively to an established community will occur. No mitigation is required.				
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
10b. Response: ***(Source: General Plan 2025 Figure LU-10 – Land Use Policy Map, Table LU-5 – Zoning/General Plan Consistency Matrix, Figure LU-7 – Redevelopment Areas, Title 18 – Subdivision Code, Title 7 – Noise Code, Title 17 – Grading Code, Title 20 – Cultural Resources Code, Title 16 – Buildings and Construction and Citywide Design Guidelines and Sign Guidelines)*** **No Impact.** A closed elementary school site's land use designation will change, through a General Plan Amendment, from B/OP – Business/Office Park to MDR – Medium Density Residential. The new land use designation is compatible with the surrounding land uses, which consist primarily of single-family residential homes. The project is not located within other planned areas and it is not a project of statewide, regional, or area-wide significance. For these reasons, this project will have **no impact** on any applicable land use plan, policy, or regulation directly, indirectly, or cumulatively, and no mitigation is required.				
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
10c. Response: (Source: ***Regional Conservation Authority, (http://www.wrc-rca.org/webimages/mshcpsize.pdf) General Plan 2025 – Figure OS-7 – MSHCP Core and Linkage*****)** **No Impact.** The project site is located on a previously developed/improved site within an urbanized area. The City is a Permittee under the MSHCP; therefore, the project is subject to applicable provisions of the MSHCP. The project site is not located in an area subject to Cell Criteria under the MSHCP and, therefore, has no Conservation requirements toward building out the MSHCP Reserve. Therefore, the project will have **no impact** on the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan directly, indirectly, or cumulatively. No mitigation is required.				
11. MINERAL RESOURCES. Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
11a. Response: ***(Source: General Plan 2025 Figure OS-1 – Mineral Resources; General Plan 2025 FPEIR Figure 5.10-1)***				

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
No Impact. As depicted in Figure 5.10-1, Mineral Resources, of the General Plan 2025 FPEIR, the project site is located within MRZ-4, indicating there are insufficient data to determine whether mineral resources can be found on site. The project site has been previously excavated, filled, graded, and leveled and is currently developed with school uses. It is unlikely that demolition and construction under the project would affect significant mineral deposits. Therefore, the project will have **no impact** on regionally or statewide significant mineral resources directly, indirectly, or cumulatively. No mitigation is required.				
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒
11b. Response: ***(Source: General Plan 2025 Figure OS-1 – Mineral Resources; General Plan 2025 FPEIR Figure 5.10-1)*** **No Impact.** The General Plan 2025 FPEIR determined that there are no specific areas within the city limits that have locally-important mineral resource recovery sites and that the implementation of the General Plan 2025 would not significantly preclude the ability to extract State-designated resources. Therefore, the project will have **no impact** on locally significant mineral resources directly, indirectly, or cumulatively, and no mitigation is required.				
12. NOISE. Would the project result in:				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
12a. Response: ***(Source: Noise and Vibration Impact Analysis (Appendix H); City of Riverside Municipal Code, 2005; Traffic Impact Analysis (Appendix I))*** **Less Than Significant With Mitigation Incorporated.** The project will have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of the community in which it is located. The applicable noise standards governing the project site are the noise criteria listed in the City's Municipal Code and in the Noise Element of the General Plan. **City of Riverside General Plan Noise Element.** The Noise Element specifies the maximum allowable unmitigated exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies several policies to minimize the impacts of excessive noise levels throughout the community, and establishes noise level requirements for all land uses. In its land use decisions, the City may consider its noise/land use compatibility guidelines. The *Noise/Land Use Compatibility Criteria* describes categories of compatibility and not specific noise standards. These guidelines generally identify conditions where development of a particular use may be "Normally Acceptable", "Conditionally Acceptable", "Normally Unacceptable" or "Conditionally Unacceptable." The development of infill residential uses is "Normally Acceptable" in areas with noise levels of 65 dBA CNEL or less, and "Conditionally Acceptable" in areas with a noise levels between 65 and 75 dBA CNEL. For "Conditionally Acceptable" single-family residential uses, new development should only be undertaken after an analysis of noise reduction requirements and identification of noise reduction/insulation feature. As stated in the City's General Plan 2025 Noise Element, ". . . Depending on the ambient environment of a particular community, these basic guidelines may be tailored to reflect existing noise and land use characteristics." The City's General Plan 2025 identifies policies to address noise/land use compatibility issues, including: . • Policy N–1.1: Continue to enforce noise abatement and control measures particularly within residential neighborhoods. • Policy N–1.2: Require the inclusion of noise-reducing design features in development consistent with standards in the Municipal Code. • Policy N–1.3: Enforce the City of Riverside Noise Control Code to ensure that stationary noise and noise emanating from construction activities, private developments/residences and special events are minimized.				

- Policy N–1-5: Avoid locating noise-sensitive land uses in existing and anticipated noise-impacted areas.
- Policy N–1.7: Evaluate noise impacts from roadway improvement projects by using the City's Acoustical Assessment Procedure.
- Policy N–1.8: Continue to consider noise concerns in evaluating all proposed development decisions and roadway projects.
- Policy N–4.1: Ensure that noise impacts generated by vehicular sources are minimized through the use of noise reduction features (e.g., earthen berms, landscaped walls, lowered streets, improved technology).
- Policy N–4.2: Investigate and pursue innovative approaches to reducing noise from railroad sources.

For the purposes of this noise impact analysis, single-family residential uses with outdoor active use areas (e.g., backyards or balconies) exposed to noise levels exceeding 65 dBA CNEL would require mitigation. In addition, interior noise levels for new residential development is required to comply with standards set forth in Title 24 of the State Health and Safety Code. New construction is required to incorporate special insulation, windows and sealants in order to ensure that interior noise levels meet Title 24 standards. The interior noise standard for residences is 45 dBA CNEL.

City of Riverside Municipal Code Noise Ordinance. The purpose of City's Municipal Code Noise Ordinance is to control unnecessary, excessive and/or annoying noises in the City by prohibiting such noise generated by the sources specified in Title 7 of the City's Municipal Code. It is the goal of the City to minimize noise levels and mitigate the effects of noise to provide a safe and healthy living environment. The City has incorporated the following standards in its Municipal Code to control loud, unnecessary, and unusual nuisance noises:

- **Exterior Sound Level Limits.** Unless a variance has been granted, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:
  - The exterior noise standard of the applicable land use category (see Table 12.A), up to 5 dB (up to 60 dBA during the day and up to 50 dBA during the night for residential uses), for a cumulative period of more than 30 minutes in an hour; or
  - The exterior noise standard of the applicable land use category, plus 5 dB (60 dBA during the day and 50 dBA during the night for residential uses), for a cumulative period of more than 15 minutes in any hour; or
  - The exterior noise standard of the applicable land use category, plus 10 dB (65 dBA during the day and 55 dBA during the night for residential uses), for a cumulative period of more than 5 minutes in any hour; or
  - The exterior noise standard of the applicable land use category, plus 15 dB (70 dBA during the day and 60 dBA during the night for residential uses), for a cumulative period of more than 1 minute in any hour; or
  - The exterior noise standard of the applicable land use category, plus 20 dB (75 dBA during the day and 65 dBA during the night for residential uses) or the maximum measured ambient noise level, for any period of time.
- **Interior Sound Level Limits.** No person shall operate or cause to be operated, any source of sound indoors that causes the noise level, when measured inside another dwelling unit, school, or hospital, to exceed:
  - The interior noise standard for the applicable noise category (see Table 12.A), up to 5 dB (up to 50 dBA during the day and up to 40 dBA during the night for residential uses), for a cumulative period of more than 5 minutes in any hour; or
  - The interior noise standard for the applicable land use category, plus 5 dB (50 dBA during the day and 40 dBA during the night for residential uses), for a cumulative period of more than 1 minute in any hour; or
  - The interior noise standard for the applicable land use category, plus 10 dB (55 dBA during the day and 45 dBA during the night for residential uses) or the maximum measured ambient noise level, for any period of time.

Based on Table 12.A and Sections 7.25.010 and 7.30.015 of the City Municipal Code, the maximum exterior noise level for residential uses is 75 dBA maximum noise level (L_{max}) (55 dB + 20 dB) during daytime hours and 65 dBA L_{max} (45 dB + 20 dB) during nighttime hours, or the maximum measured ambient noise level for any period of time. Similarly, the maximum interior nuisance noise level for residential uses is 55 dBA L_{max} (45 dB + 10 dB) during daytime hours and 45 dBA L_{max} (35 dB + 10 dB) during nighttime hours, or the maximum measured ambient noise level for any period of time.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 12.A: City of Riverside Sound Level Limits (dBA)

Land Use Category	Time Period	Exterior Noise Standard	Interior Noise Standard
Residential	Night (10:00 p.m. to 7:00 a.m.) Day (7:00 a.m. to 10:00 p.m.)	45 55	35 45
School	7:00 a.m. to 10:00 p.m. (while school is in session)	N/A[1]	45
Hospital	Anytime	N/A	45
Office/Commercial	Anytime	65	N/A
Industrial	Anytime	70	N/A
Community Support	Anytime	60	N/A
Public Recreation Facility	Anytime	65	N/A
Non-urban	Anytime	70	N/A

Source: Municipal Code (City of Riverside 2005)

[1] N/A = Not Applicable. The City of Riverside has not established a sound level limit for this land use.

dBA = A-weighted decibels

Section 7.35.020.G, Exemptions, of the City's Noise Ordinance, states that "Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday" are exempt from the noise level limits of the Municipal Code. On August 18, 2016, Ordinance 7341 was adopted by the Riverside City Council, amending the Noise Ordinance to exempt construction noise between the hours of 7:00 a.m. and 7:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays from the standards of the Noise Ordinance.

Existing Conditions. The project site is adjacent to SR-91, Indiana Avenue, and the BNSF railroad tracks. Noise associated with these mobile sources would potentially affect the project site. To assess the existing noise environment, short-term (15 minutes each) noise measurements were conducted at four locations (three on-site, one across Indiana Avenue from the project site) identified by City staff.

A summary of the measured ambient noise is provided below.

- **ST-1:** The measurements taken at this location were conducted at the southwest corner of the project site, near the railroad tracks. The noise levels measured at ST-1 were 67.2 dBA L_{eq} and 83.9 dBA L_{max}, with the primary noise sources coming from traffic on SR-91 and the railroad tracks. Another ambient noise measurement at this location was taken without a train passing by the site. The noise levels measured at this location without the train noise were 53.6 dBA L_{eq} and 66.9 dBA L_{max}, with the noise sources coming from traffic on SR-91.
- **ST-2:** The measurements taken at this location were conducted at the northwestern corner of the project site, south of Indiana Avenue near SR-91. The noise levels measured at ST-2 were 61.4 dBA L_{eq} and 79.4 dBA L_{max}, with primary noise sources coming from SR-91 and Indiana Avenue. No train pass-by noise was recorded.
- **ST-3:** The measurements taken at this location were conducted north of the project site along the north side of Indiana Avenue. The noise levels at ST-3 were 58.8 dBA L_{eq} and 79.3 dBA L_{max} with train noise and 56.4 dBA L_{eq} and 70.1 dBA L_{max} without train noise. Noise sources contributing to this measurement site included distant train noise and traffic on SR-91 and Indiana Avenue.
- **ST-4:** The measurements taken at this location were conducted at the northeastern corner of the project site next to the back yard of the residence located at 3418 Donald Avenue. The noise levels measured at this location were 67.5 dBA L_{eq} and 82.6 dBA L_{max} from vehicular and train noise adjacent to the project site, and 67.9 dBA L_{eq} and 81.4 dBA L_{max} without train noise.

These noise levels represent the noise environment in a snapshot of time at the stated locations during that time period. While these measurements should not be used to determine future noise impacts or as the basis for mitigation measures; they indicate the current noise environment on-site and in the project area.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Demolition and Construction Impacts. Short-term noise impacts would be associated with demolition, grading, building construction, and paving activities for the proposed project. Construction-related short-term noise levels would be higher than existing ambient noise levels in the project area but would no longer occur once construction of the project is completed. Two types of short-term noise impacts could occur during the construction of the proposed project. First, construction crew commutes and the transport of construction and demolition equipment and materials to the site for the proposed project would incrementally increase noise levels on access roads leading to the site. Although there would be a relatively high single-event noise exposure potential causing intermittent noise nuisance (passing trucks at 50 feet would generate up to a maximum of 87 dBA L_{max}), the effect on longer term (hourly or daily) ambient noise levels would be small. Therefore, short-term construction-related impacts associated with worker commute and equipment transport to the project site would be **less than significant.**

The second type of short-term noise impact is related to noise generated during demolition, grading, building construction, and paving activities on the project site. Construction is completed in discrete steps, each of which has its own mix of equipment, and consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site, and therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. The site preparation phase, which includes the excavation and grading of the site, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery (e.g., backfillers, bulldozers, draglines, and front loaders). Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 or 4 minutes at lower power settings.

The maximum noise level generated by each dozer is assumed to be approximately 85 dBA L_{max} at 50 ft from the dozer in operation. Each front-end loader would generate approximately 80 dBA L_{max} at 50 ft. The maximum noise level generated by water trucks/pickup trucks is approximately 55 dBA L_{max} at 50 ft from these vehicles. Each doubling of the sound source with equal strength increases the noise level by 3 dBA. Each piece of construction equipment operates as an individual point source. The worst-case composite noise level at the nearest residence during this phase of construction would be 86 dBA L_{max} (85 dBA + 80 dBA + 55 dBA = 86 dBA) at a distance of 50 feet from an active construction area. Based on a usage factor of 40 percent, the worst-case combined noise level during this phase of construction would be 82 dBA L_{eq} at a distance of 50 ft from the active construction area.

Construction-related short-term noise levels would be higher than existing ambient noise levels in the project area today, but would no longer occur once construction of the project is completed. The City's Noise Ordinance (Section 7.35.020.G, Exemptions) states that, ". . .*Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday*" are exempt from the noise level limits of the Municipal Code. Construction activities would occur in accordance with the days and times allowed as described in Section 7.35.020.G of the City's Noise Ordinance; therefore, no significant construction noise impact would occur.

The proposed project would be required to comply with the construction hours specified in the City's Noise Ordinance to reduce construction-related noise impacts. As specified in **Standard Condition NOI-1**, construction activities within the City are restricted to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday and between 8:00 a.m. and 5:00 p.m. on Saturdays, and are prohibited on Sundays and federal holidays. The construction contractor would be required to equip construction equipment with mufflers, position construction equipment to direct noise away from sensitive receptors, and place staging areas at the greatest distance possible from sensitive receptors. Through compliance with **Standard Condition NOI-1**, construction noise impacts to nearby sensitive receptors would be **less than significant**.

Operational Impacts. As discussed below, long-term noise associated with the project site would be generated from vehicle traffic, rail, and on-site stationary sources associated with single-family residential uses.

It must be noted that the project site is located in an area currently subjected to high levels of noise from adjacent roadways and rail operations. CEQA Guidelines section 15126.2(a) generally requires an evaluation of environmental conditions and hazards existing on a proposed project site if such conditions and hazards may cause substantial adverse impacts to future residents or users of the project. CEQA calls upon an agency to evaluate existing conditions in order to assess whether a project could exacerbate hazards that are already present. In *California Building Industry Association v. Bay Area Air Quality*

Management District (2015), the California Supreme Court held that ". . .agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment -– and not the environment's impact on the project – that compels an evaluation of how future residents or users could be affected by exacerbated conditions."

Long-Term Vehicular Traffic Noise Impacts. Based on the Traffic Impact Analysis (Appendix I), the proposed project is expected to generate 514 average daily vehicle trips (ADT). Generally, a doubling of traffic is required to generate a perceptible increase (3 dBA) in noise. As detailed in Tables 12.C, 12.D, and 12.E the project-related traffic is not sufficiently extreme to generate a perceptible increase in noise the project area. Project-related traffic noise level increases would be 0.2 dBA or less and would not be discernible to the human ear in an outdoor environment.

The FHWA highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate traffic-related noise conditions along the roadway segments in the project vicinity. Traffic volumes on Indiana Avenue projected in the Traffic Impact Analysis for the proposed project (Appendix I) were used to assess the potential traffic noise impacts along the street segments in the project vicinity. The project-related changes would be small enough to not have any significant impacts on off-site land uses along these roadway segments. Existing traffic volumes on SR 91 were projected to the 2017 and 2040 scenarios. These noise levels represent the worst-case scenario, which assumes that no shielding is provided.

Table 12.B: Existing Traffic Noise Levels

Roadway Segment	ADT	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane
Indiana Avenue east of Donald Avenue	8,800	36[1,2]	78	167	67.2
Indiana Avenue west of Donald Avenue	8,700	36[1,2]	77	166	67.1
SR-91	176,500	1,022[2]	2,199	4,736	85.7

Source: Table I, *Noise and Vibration Impact Analysis* (Appendix H)
[1] Traffic noise within 50 ft of the roadway centerline was calculated manually.
[2] Indiana Avenue and SR-91 was modeled using Caltrans traffic percentages were modeled using Riverside County's traffic mix based on their roadway classification.

ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
SR-91 = State Route 91

The project site is approximately 45 feet from the centerline of Indiana Avenue and approximately 350 feet from the centerline of SR-91. As detailed in Table 12.B, traffic noise levels in the project vicinity varies from moderate (Indiana Avenue) to high (SR-91), with the 70 dBA CNEL currently extending to 36 feet from the centerline of Indiana Avenue and extending to 1,022 feet from the SR-91 centerline. The project site would be impacted by noise from Indiana Avenue reaching 69 dBA CNEL and 77 dBA CNEL from traffic on Indiana Avenue and SR-91, respectively. However, SR-91 in the project area is approximately 20 feet below the project site and existing residences are located between the project site and SR-91. There is an existing noise barrier along the edge of the freeway that is measured approximately 20 feet high on the freeway side and eight to ten feet high on the side facing adjacent residences. These factors, acting as noise barriers, would provide a minimum 15 dBA reduction, reducing the actual noise from traffic on SR-91 to 62 dBA CNEL (77 dBA – 15dBA) or lower. This level of noise, combined with the noise from traffic on Indiana Avenue, results in an **existing** noise level of 70 dBA CNEL at the northern project boundary.

Tables 12.C, 12.D, and 12.E provide the traffic noise levels along the roadways adjacent to the project site under the "without" and "with" project conditions for existing and future project scenarios. These noise levels represent the worst-case scenario, which assumes that no shielding is provided between the traffic and the location where the noise contours are drawn. These tables indicate that project-related traffic noise level increases would be small (0.2 dBA or less) and would not result in any significant traffic noise impacts to off-site land uses. Table 12.E reveals that noise levels from 2040 traffic volumes on Indiana Avenue and SR-91 would be the highest among the three scenarios; therefore, overall traffic noise levels under this scenario are used to determine the potential traffic noise impacts.

Table 12.C: Existing (2016) Traffic Noise Levels Without and With Project

Roadway Segment	Existing Without Project (Baseline)					Existing With Project						
	ADT	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane	ADT	Change in ADT	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane	Increase over Baseline CNEL (dBA) 50 feet from Centerline of Outermost Lane
Indiana Avenue east of Donald Avenue	8,800	36[1,2]	78	167	67.2	8,900	0	36	78	168	67.2	0.0
Indiana Avenue west of Donald Avenue	8,700	36[1,2]	77	166	67.1	9,100	400	37	80	171	67.3	0.2
SR-91	176,500	1,022[2]	2,199	4,736	85.7	176,500	0	1,022	2,199	4,736	85.7	0.0

Source: Table M, *Noise and Vibration Impact Analysis* (Appendix H)
[1] Traffic noise within 50 ft of the roadway centerline was calculated manually.
[2] Indiana Avenue and SR-91 was modeled using Riverside County's traffic mix based on their roadway classification.ADT = average daily traffic
dBA = A-weighted decibels
CNEL = Community Noise Equivalent Level
SR-91 = State Route 91
dBA = A-weighted decibels

Table 12.D: 2017 Traffic Noise Levels Without and With Project

Roadway Segment	2017 Cumulative Without Project (Baseline)					2017 Cumulative With Project						
	ADT	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane	ADT	Change in ADT	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane	Increase over Baseline CNEL (dBA) 50 feet from Centerline of Outermost Lane
Indiana Avenue east of Donald Avenue	9,800	39[1,2]	84	179	67.6	10,000	200	39	85	182	67.7	0.1
Indiana Avenue west of Donald Avenue	9,800	39[1,2]	84	179	67.6	10,200	400	40	86	184	67.8	0.2
SR-91	178,300	1,029[2]	2,214	4,768	85.7	178,300	0	1,029	2,214	4,768	85.7	0.0

Source: Table N, *Noise and Vibration Impact Analysis* (Appendix H)
[1] Traffic noise within 50 ft of the roadway centerline was calculated manually.
[2] Indiana Avenue and SR-91 was modeled using Riverside County's traffic mix based on their roadway classification.
ADT = average daily traffic
dBA = A-weighted decibels
CNEL = Community Noise Equivalent Level
SR-91 = State Route 91
dBA = A-weighted decibels

Table 12.E: 2040 Traffic Noise Levels Without and With Project

Roadway Segment	2040 Cumulative Without Project (Baseline)					2040 Cumulative With Project						
	ADT	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane	ADT	Change in ADT	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane	Increase over Baseline CNEL (dBA) 50 feet from Centerline of Outermost Lane
Indiana Avenue east of Donald Avenue	11,900	44[1,2]	95	204	68.5	12,000	100	45	96	205	68.5	0.0
Indiana Avenue west of Donald Avenue	11,900	44[1,2]	95	204	68.5	12,200	300	45	97	208	68.6	0.1
SR-91	224,100	1,198[2]	2,579	5,553	86.7	224,100	0	1,198	2,579	5,553	86.7	0.0

Source: Table O, *Noise and Vibration Impact Analysis* (Appendix H)
[1] Traffic noise within 50 ft of the roadway centerline was calculated manually.
[2] Indiana Avenue and SR-91 was modeled using Riverside County's traffic mix based on their roadway classification.
ADT = average daily traffic
dBA = A-weighted decibels
CNEL = Community Noise Equivalent Level
SR-91 = State Route 91
dBA = A-weighted decibels

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Under the 2040 scenario, the noise level at the northern property boundary would be 70 dBA CNEL and 78 dBA CNEL from traffic on Indiana Avenue and SR-91, respectively. As with the existing condition, the depressed nature of SR-91 in this area and the presence of intervening structures would reduce noise from SR-91 to approximately 63 dBA CNEL (78 dBA – 15 dBA.) Combined, 2040 noise levels at the northern property boundary from traffic on Indiana Avenue and SR-91 would be 71 dBA CNEL, which exceeds the City's exterior noise standard of 65 dBA CNEL. The proposed project would expose persons to or generation of noise levels in excess of standards established in the City's General Plan 2025 and mitigation measures would be required. Outdoor active use areas (e.g., backyards) along the northern property boundary (Lots 1, 21 through 30) would require a noise barrier with a minimum height of 6 feet. This barrier would reduce noise levels associated with traffic from Indiana Avenue and SR-91 to the City's exterior noise standard of 65 dBA CNEL or below for residential uses.

Accounting for attenuation provided by typical construction in Southern California (12 dBA reduction windows/doors open, and 24 dBA reduction with windows/doors closed), interior noise levels for residences along the northern property boundary would range from 47 dBA CNEL (closed, 71 dBA – 24 dBA = 47 dBA) to 59 dBA CNEL (opened, 71 dBA – 12 dBA = 59 dBA) which could exceed the City's interior noise standard of 45 dBA CNEL. Building facade upgrades (e.g., windows with STC ratings higher than the STC-28 provided by standard building construction) would be required for residences along the northern property boundary (Lots 1, 21 through 30)[16].

Long-Term Train Noise Impacts. Noise from existing rail operations is an existing condition on-site and throughout the project area. While the proposed project does not include any feature, facility or method of operation that would increase or exacerbate the intensity, duration or frequency of railroad noise, the following discussion has been provided to provide full disclosure of the potential on-site noise environment that may result from the development of residential uses in proximity to a heavily used rail corridor.

The following discussion provides The Federal Transit Administration's 2006 *Transit Noise and Vibration Impact Assessment* manual was used in the determination of noise and vibration impacts on the site. Based on information provided by the Southern California Regional Rail Authority, approximately 25 Metrolink trains, two Amtrak passenger trains, and 74 BNSF freight trains operate daily on the rail line immediately adjacent to the proposed project. These trains operate 7 days per week and 24 hours per day. The current Metrolink schedule at the La Sierra train station indicates 15 trains run during daytime hours (between 7:00 a.m. and 7:00 p.m.); two train runs during evening hours (between 7:00 p.m. and 10:00 p.m.), and eight trains run during nighttime hours (between 10:00 p.m. and 7:00 a.m.) each day on weekdays. Similar to vehicular noise, train noise is a line source and assumed the train to be on the centerline of the train tracks so that it covers both direction and balance the train noise emissions. Train noise projected from the edge of the train tracks would be the same as train noise projected from the centerline of the train tracks, with a slight modification to the calculation process for the noise source and distance attenuation. Using the FTA's guidelines, it is calculated that train operations in the study area would result in a noise level of 74.8 dBA CNEL at 50 feet from the train tracks.

The project site is approximately 100 to 200 feet from the centerline of the train tracks. At this distance, train noise would be reduced to between 70.3 and 65.8 dBA CNEL, respectively, at the southern boundary of the site. Residences on the project perimeter would function as noise barriers and provide at least 10 dBA in noise attenuation to residences located in the middle of the project site. Exterior noise levels for residential buildings or units in the middle of the project site would be reduced to 60.3 dBA CNEL (70.3 dBA – 10 dBA = 60.3 dBA) and would not exceed the City's exterior noise standard of 65 dBA CNEL. Interior noise levels would be 48.3 and 36.3 dBA CNEL with windows and doors open and closed, respectively. Interior noise levels with windows and doors open would exceed the City's interior noise standard of 45 dBA CNEL while interior noise levels with windows and doors closed would not exceed the interior noise standard. Air conditioning will be required for residences to ensure that windows and doors can remain closed for a prolonged period of time to maintain the interior noise standard.

As previously stated, CEQA generally does not require an analysis of the environment's effect (existing train noise) on a project. Nonetheless, the recreation area(s) and residences on the south portion of the site would be exposed to existing

[16] Noise mitigation for the building facades should be based on the windows and doors closed scenario for practical and feasibility reasons, and not on the windows and doors open scenario whether the future residents prefer windows and doors open or not. If any residents choose to leave the windows and doors open, their interior noise would be higher than when the windows and doors are closed and would not meet the City's interior noise standard of 45 dBA CNEL

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

railway noise ranging from 65.8 to 70.3 dBA CNEL (Figure 5A). A 10-foot high noise barrier would reduce noise at outdoor recreation area(s) to the City's exterior noise standard of 65.0 dBA CNEL or lower (the City's established exterior standard). The backyards of residences along the rear private property lines of Lots 1 through 9 and Lots 17 through 21; and south private property lines of Lots 8, 9, and 17 that are not shielded from intervening structures would require a minimum noise barrier height of 8 feet to reduce train noise levels to the City's exterior noise standard of 65 dBA CNEL or below. Backyard and/or balconies associated with residences along the south private property lines of Lots 10 through 16 and west private property line of Lot 16 would require a minimum noise barrier height of 6 feet to reduce train noise levels to the City's exterior noise standard of 65 dBA CNEL or below (Figure 5B). While existing on-site ambient noise levels from traffic and rail operations exceed the City's exterior noise standard of 65 dBA CNEL for residential uses, the incorporation of the recommended sound attenuation features (walls and building facade improvements), would implement City policies for reducing noise impacts at a "Conditionally Acceptable" use by, 1) enforcing noise abatement and control measures particularly within residential neighborhoods, 2) requiring the inclusion of noise-reducing design features in development consistent with standards in the Municipal Code, and 3) ensuring that noise impacts generated by transportation (vehicular and rail) noise sources are minimized through the use of noise reduction features. Thus, installation of these walls would improve the livability and quality of life for these residences.

Standard residential construction in Southern California provides at least 12 dBA of exterior-to-interior noise attenuation with windows and doors open and 24 dBA with windows and doors closed. The nearest residence located on the southern edge of the project site would be exposed to an interior noise level of 58.3 dBA CNEL (70.3 dBA – 12 dBA = 58.3 dBA) with windows and doors open. With windows and doors closed, interior noise levels the closest residence located on the southern edge of the project site would be exposed to an interior noise level of 46.3 dBA CNEL (70.3 dBA - 24 dBA = 46.3 dBA). The interior noise level with windows and doors open and closed would exceed the City's interior noise standard of 45 dBA CNEL; therefore, building facade upgrades (e.g., windows with sound transmission class [STC] ratings higher than the STC-28) and air conditioning would be required to ensure that windows and doors can remain closed for a prolonged period of time. Each air conditioning unit will be designed to comply with the City's Municipal Code noise standards regulating the heating, ventilation and air-conditioning (HVAC) equipment noise.

Noise from train horn occurs in a much shorter time periods, usually in seconds. Based on FTA's Transit Noise and Vibration Impact Assessment (FTA, May 2006), transit car horns could generate 78 to 90 dBA maximum noise level (L_{max}) at 50 feet, and locomotive horn can generate up to 110 dBA L_{max} at 50 feet. Even though it is higher in peak or maximum noise level, train horn noise usually is not used to determine the required noise mitigation due to the feasibility and lack of noise regulations associated with it. In addition, the project is located in an existing Federal Railroad Administration (FRA) approved quiet zone where locomotive engineers are not required to sound the train horns unless in case of emergencies (e.g., when tracks are obstructed).

On-Site Operational Stationary Source Noise Impacts. Potential long-term noise impacts would be associated with stationary sources. These activities are potential point sources of noise that could affect on-site residences. On-site noise-producing activities include ventilation, and air-conditioning equipment (HVAC). HVAC equipment associated with the project would be the primary noise source associated with the project. The noise sources could take the form of fans, pumps, air compressors and related equipment. HVAC operations would be required to meet all noise standards. For the purpose of this analysis, HVAC equipment was assumed to be located on the ground floor in the backyard area of the single-family residential units.

Precise details of HVAC equipment, including future location and sizing, are unknown at this time; therefore, for purposes of this analysis, 75 dBA at three feet was assumed to represent typical HVAC-related noise. Off-site noise-sensitive receptors are located approximately 25 feet from the proposed project. Adjusted for distance, the off-site residences would be exposed to a noise level of 57 dBA L_{eq} from on-site HVAC equipment. This noise level would exceed the City's exterior daytime L_{50} standard of 55 dBA and nighttime L_{50}, L_{25}, and L_8 standard of 45, 50, and 55 dBA, respectively. This noise level would not exceed the City's interior daytime and nighttime noise standard. An 8 foot high wall on the east side of the project would be required to reduce noise levels by 12 dBA, reducing noise levels generated from on-site HVAC equipment to a noise level of 45 dBA Leq (57 dBA – 12 dBA = 45 dBA). This noise level would not exceed the City's exterior daytime and nighttime noise standard. Therefore, long-term noise impacts from HVAC equipment would be less than significant with the implementation of an 8 ft high wall on the east side of the project.

LSA

FIGURE 5A

N

0 70 140

FEET

SOURCE: SDH and Associates, Inc. February, 2016.

Hawthorne Residential Development Project

Existing Traffic and Train Noise Levels

I:\SWK1502\G\Exist_Traffic&Train Noise Levels.cdr (8/17/2017)

LSA

FIGURE 5B

LEGEND

- Minimum 10 ft High Noise Barrier
- Minimum 8 ft High Noise Barrier
- Minimum 6 ft High Noise Barrier
- STC-28 or Higher Windows

0 70 140

FEET

SOURCE: SDH and Associates, Inc. February, 2016.

Hawthorne Residential Development Project

Noise Barrier Locations and Building Facade Upgrades

I:\SWK1502\G\Barriers-Upgrades.cdr (8/17/2017)

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Standard Conditions. The following Standard Condition is a regulatory requirement that would be implemented to reduce noise impacts during demolition and construction activities.

Standard Condition NOI-1: **Construction Noise.** Prior to issuance of building permits, Planning staff, or designee, shall verify that all construction plans include notes stipulating the following:

- Construction activities shall be restricted within the City of Riverside to the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and 8:00 a.m. to 5:00 p.m. on Saturdays, and are prohibited on Sundays and federal holidays.
- During all project site demolition, excavation, and grading on site, the project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.
- The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.

Implementation of **Standard Condition NOI-1** would reduce construction-related noise impacts to the nearby sensitive receptors to a less than significant level.

Mitigation Measures. Although the proposed project would be exposed to ambient noise levels above the City's noise standards, implementation of **Mitigation Measure NOI-1** would reduce the ambient noise levels to meet the City's noise standards thus improving the livability for the residences by reducing noise levels to "Conditionally Acceptable" noise levels and complying with the General Plan 2025 policies related to noise/land use compatibility.

Mitigation Measure NOI-1: **Traffic/Train Noise Impacts.** The following mitigation measures are required:

- An interior noise analysis shall be required upon completion of detailed floor plans and prior to issuance of building permits to ensure compliance with the noise standard and with installation of an air conditioning unit. If noise standards are not met, the Applicant shall be required to enhance the building facades such as double-paned windows to comply with the interior noise standards.
- Air conditioning, a form of mechanical ventilation, shall be required for all residences to ensure that windows and doors can remain closed for a prolonged period of time to maintain the interior noise standard.
- A minimum noise barrier height of 10 ft shall be required along the southern project property line and a portion of the east and west property lines around the recreational area to shield the playground and residences closest to the southern property line (Lots 10 through 16) from train related noises.
- A minimum noise barrier height of 8 ft shall be required along the rear private property lines of Lots 1 through 9 and Lots 17 through 21; and south private property lines of Lots 8, 9 and 17 to shield outdoor active use areas (e.g., backyards or balconies) from train related noises.
- A minimum 6 ft high noise barrier shall be required along the south private property lines of Lots 10 through 16 and west private property line of Lot 16 to shield the outdoor active use areas (e.g., backyards or balconies) from train related noises.
- A minimum noise barrier height of 6 ft shall be required along the private property line immediately south of Indiana Avenue (Lots 1, and 21 through 30) to shield outdoor active use areas such as backyards or balconies from traffic noise along Indiana Avenue and State Route 91 freeway.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

- Building facade upgrades (e.g., double-paned windows with a sound transmission class rating of STC-28 or higher) shall be required for all residences located south of Indiana Avenue (Lots 1, 21 through 30).
- Building facade upgrades (e.g., double-paned windows with a STC-28 or higher) shall be required for all residences facing the BNSF railroad tracks (Lots 1 through 21 and 43 through 48).

Mitigation Measure NOI-2: On-Site Operational Noise Impacts

A minimum noise barrier height of 8 feet along the east side of the project (Lots 1 through 8) shall be required to shield on-site ground floor HVAC equipment.

Implementation of **Mitigation Measure NOI-1** and **NO1-2** would reduce identified noise impacts to a less than significant level.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐

12b. Response: ***(Source: Noise and Vibration Impact Analysis (Appendix H); Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment (2006), https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf Website accessed April 2016; California Department of Transportation (Caltrans), Transportation-Related Earthborne Vibrations, Technical Advisory, 1992)***

Less Than Significant With Mitigation Incorporated. Vibration refers to groundborne noise and perceptible motion. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernible, but without the effects associated with the shaking of a building, there is less adverse reaction. Vibration propagation is more efficient in stiff, clay soils than in loose, sandy soils. Shallow rock concentrates the vibration energy close to the surface and can result in groundborne vibration problems at some distance from the source. Factors such as layering of the soil and depth to the water table can have significant effects on the propagation of groundborne vibration. Soft, loose, sandy soils tend to attenuate more vibration energy than hard, rocky materials. Vibration propagation through groundwater is more efficient than through sandy soils.

This construction vibration impact analysis discusses the level of human annoyance using vibration levels in VdB and will assess the potential for building damages using vibration levels in PPV (in/sec) because vibration levels calculated in RMS are best for characterizing human response to building vibration while vibration level in PPV is best used to characterize potential for damage. A vibration level up to 102 VdB (an equivalent to 0.5 in/sec in PPV) (FTA 2006) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For a non-engineered timber and masonry building, the construction vibration damage criterion is 94 VdB (0.2 in/sec in PPV).

Table 12.F identifies the PPV and VdB values at 25 feet from the construction vibration source. Bulldozers and other heavy-tracked construction equipment (except for pile drivers and vibratory rollers) generate approximately 87 VdB of ground-borne vibration when measured at 25 feet, based on the Transit Noise and Vibration Impact Assessment (FTA 2006). This level of ground-borne vibration levels would result in potential annoyance to residences and workers located adjacent to the project site, but would not cause any damage to the buildings. Construction vibration, similar to vibration from other sources, would not have any significant effects on outdoor activities (e.g., those outside of residences in the project vicinity). Outdoor site preparation for the project is expected to use a bulldozer and loaded truck. The greatest levels of vibration are anticipated to occur during the site preparation phase. All other phases are expected to result in lower vibration levels. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project boundary (assuming the construction equipment would be used at or near the project boundary) because vibration impacts occur normally within the buildings.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 12.F: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)[1]
Pile Driver (Impact), Typical	0.644	104
Pile Driver (Sonic), Typical	0.170	93
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer[2]	**0.089**	**87**
Caisson Drilling	0.089	87
Loaded Trucks	**0.076**	**86**
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Table K, Source: Noise and Vibration Impact Analysis (Appendix H).
1 RMS vibration velocity in decibels (VdB) is 1 µin/sec.
2 Equipment shown in **bold** is expected to be used on site.

µin/sec = microinches per second
ft = feet
FTA = Federal Transit Administration
in/sec = inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

Table 12.G lists the respective projected vibration level from various construction equipment expected to be used on the project site to the nearest buildings in the project vicinity. For typical construction activity, the equipment with the highest vibration generation potential is the large bulldozer, which would generate 87 VdB (0.089 PPV [in/sec]) at 25 feet. The closest residential property is located east of the project site and includes a garage located approximately 7.5 feet from the project construction boundary (property line). The residential building is located approximately 25 feet from the property line. As shown in Table 12.G, the garage building and residential building at the closest residential property would experience vibration levels of up to 103 VdB (0.54 PPV [in/sec]). Other adjacent buildings in the project area are farther away and would experience lower vibration levels.

Table 12.G: Summary of Construction Equipment and Activity Vibration

Receptor	Construction Equipment	Reference Vibration Level (VdB) at 25 ft	Reference Vibration Level (PPV) at 25 ft	Distance (ft)	Vibration Level (VdB)	Vibration Level (PPV)
Garage Building	Large Bulldozer	87	0.089	7.5	103	0.542
	Loaded Truck	86	0.076	7.5	102	0.463
Residential Building	Large Bulldozer	87	0.089	25	87	0.089
	Loaded Truck	86	0.076	25	86	0.076

Source: Table L, Noise and Vibration Impact Analysis (Appendix H).
Note: The FTA-recommended building damage threshold is 0.2 PPV (in/sec) or approximately 94 VdB at the receiving property structure or building.

ft = feet
in/sec = inches per second
FTA = Federal Transit Administration
PPV = peak particle velocity
VdB = vibration velocity decibels

Construction vibration levels at the garage building of the closest residential property would exceed the FTA threshold of 94 VdB (0.2 in/sec PPV) for building damage when bulldozers and loaded trucks operate within 7.5 feet of the property line. Although construction vibration levels at residential uses would have the potential to result in annoyance, these vibration levels would no longer occur once construction of the project is completed. The implementation of mitigation measure to use light construction equipment (e.g. small bulldozers and trucks) within 15 feet from the eastern property line would ensure that construction vibration levels would be below the FTA threshold of 94 VdB (0.2 in/sec PPV) for building damage.

Mitigation Measure NOI-3: Short-Term Construction Vibration Impacts

The construction contractor shall use light construction equipment (e.g., small bulldozers and trucks) within 15 feet of the eastern property line.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

12c. Response: ***(Source: Noise and Vibration Impact Analysis (Appendix H))***

Less Than Significant Impact. The project site is adjacent to SR-91 and the BNSF railroad tracks. Noise associated with these mobile sources would potentially affect the project site. To assess the existing noise environment, four short-term (15 minutes each) noise measurements at four representative locations in the project area, as identified by City staff were conducted on December 13, 2016. The findings of these noise measurements follow:

- Ambient noise measurement for ST-1 was conducted at the southwest corner of the project site, near the railroad tracks. The short-term 15-minute measurement at ST-1 shows that noise levels measured at this location were 67.2 dBA L_{eq} and 83.9 dBA L_{max}, with the primary noise sources coming from traffic on SR-91 and the railroad tracks. Two sets of noise readings were recorded, one with train noise included and one without a train passing by the site. The noise levels measured at this location without the train noise were 53.6 dBA L_{eq} and 66.9 dBA L_{max}, with the noise sources coming from traffic on SR-91.
- Ambient noise measurement for ST-2 was conducted at the northwestern corner of the project site that is near SR-91 and is on the south side of Indiana Avenue. The noise levels measured were 61.4 dBA L_{eq} and 79.4 dBA L_{max}, with noise sources coming from SR-91 and Indiana Avenue and no train pass-by noise recorded.
- Ambient noise measurement for ST-3 was conducted north of the project site along the north side of Indiana Avenue and showed the noise levels were 58.8 dBA L_{eq} and 79.3 dBA L_{max} with train noise and 56.4 dBA L_{eq} and 70.1 dBA L_{max} without train noise. Noise sources contributing to this measurement site included distant train noise and traffic on SR-91 and Indiana Avenue.
- Ambient noise measurement for ST-4 was conducted at the northeastern corner of the project site next to the back yard of the residence located at 3418 Donald Avenue. The noise levels measured at this location were 67.5 dBA L_{eq} and 82.6 dBA L_{max} from vehicular and train noise adjacent to the project site, and 67.9 dBA L_{eq} and 81.4 dBA L_{max} without train noise.

These noise levels represent the noise environment in a snapshot of time at the identified locations during that time period. These measurements should not be used for the determination of future noise impacts or used as the basis for mitigation measures. As discussed in Response 12a, neither the long-term traffic nor stationary noise sources would cause an increase in ambient noise levels of more than 3 dBA at sensitive receptors in the vicinity of the project site; thus, the impact related to permanent increases in ambient noise levels would be **less than significant**, and no mitigation is required.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

12d. Response: ***(Source: Noise and Vibration Impact Analysis (Appendix H))***

Less Than Significant Impact. As discussed in Response 12a above, implementation of the proposed project would include construction activities that would result in a substantial temporary increase in ambient noise levels in the project site vicinity above levels existing without the project, but would no longer occur once construction is completed. Sensitive receptors in the project vicinity are as close as 25 feet from proposed construction areas.[17] Compliance with the hours specified in the City's Municipal Code regarding construction activities, as well as implementation of noise reduction measures (e.g., those discussed in **Standard Condition NOI-1**), would help reduce construction noise impacts on adjacent noise-sensitive land uses when construction occurs near the project boundaries. Implementation of **Standard Condition NOI-1** would ensure construction noise levels remain **less than significant.**

[17] Although garages are 10 feet away from the project boundary, residential structures are approximately 25 feet away from the project boundary.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

12e. Response: ***(Sources: General Plan 2025 Figure PS-6 – Airport Safety Zones and Influence Areas; General Plan 2025 Figure N-8 – Riverside and Flabob Airport Noise Contours, Noise and Vibration Impact Analysis (Appendix H))***

Less Than Significant Impact. The project site is located approximately 2.4 miles south of the Riverside Municipal Airport and outside the 55 dBA noise contour for the Riverside Municipal Airport. Additionally, according to the *Noise and Vibration Impact Analysis* (Appendix H), the dominant source of ambient noise on the project site is traffic on SR-91, Indiana Avenue, and trains traveling on the BNSF railroad tracks. Therefore, the project would not expose people residing or working in the project area to excessive noise levels from a public airport or public use airport. The project would have a **less than significant** impact related to airport noise, and no mitigation is required.

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

12f. Response: ***(Source: General Plan 2025 Figure PS-6 – Airport Safety Zones and Influence Areas)***

No Impact. The project site is not within the vicinity of a private airstrip. Therefore, it would have **no impact** related to private airstrips, and no mitigation is required.

13. POPULATION AND HOUSING. Would the project:				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐

13a. Response: ***(Source: General Plan 2025 Table LU-3 – Land Use Designations; General Plan 2025 FPEIR Section 5.12-Population and Housing, Table 5.12-A – SCAG Population and Households Forecast, Table 5.12-B – General Plan Population and Employment Projections–2025, Table 5.12-C – 2025 General Plan FPEIR and SCAG Comparisons, Table 5.12-D – General Plan Housing Projections 2025, Capital Improvement Program and SCAG's Regional Transportation Plan (RCP) and RTP; Population and Housing Estimates for Cities, Counties, and the State, January 1, 2011–2016, with 2010 Benchmark – California Department of Finance)***

Less Than Significant Impact. The current vacant elementary school will be replaced by 54 single-family residential homes. The project is in an urbanized area, would not induce substantial population growth as the addition of 54 single-family housing units represents 0.04 percent of the projected 127,692 housing units anticipated by 2025 in the City's General Plan. Based on a factor of 3.29 persons/household, the proposed project could increase the City's population by up to 178 persons. The 2015 and projected future (2040) population of the City, Riverside County, and the region are detailed in Table 13.A.

Table 13.A: SCAG Population and Projections

	2015		2040	
	Population	**Employment**	**Population**	**Employment**
City of Riverside	310,700	120,000	386,600	200,500
Riverside County	2,316,438	742,000	3,167,584	1,174,500
SCAG	18,779,123	8,006,030	18,779123	9,871,441

Source: Tables 8 and 11, Demographic and Growth Forecast, 2016-2040 RTP-SCS, Southern California Association of Governments, December 2015.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

The anticipated rate of population growth in the City (2.4 percent) is roughly similar to that of Riverside County (2.0 percent) and the SCAG region (2.5 percent) for the same period. The SCAG foresees that population will increase in the City and region over the next 25 years.

Most of the surrounding land is already developed, and cannot be further developed to induce additional population growth. The proposed project will be constructed in accordance with related General Plan policies designed to minimize adverse conditions to population and housing increases for the City. Therefore, this project will have **a less than significant impact** on population growth either directly or indirectly. No mitigation is required.

b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

13b. Response: ***(Source: CADME Land Use 2003 Layer, Google imaging etc.)***

No Impact. The existing project site contains a vacant elementary school and no housing. No housing will be displaced, eliminating the requirement of constructing replacement housing elsewhere. There will be **no impact** on existing housing either directly, indirectly, or cumulatively, and no mitigation is required.

c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

13c. Response: ***(Source: CADME Land Use 2003 Layer, Google imaging etc.)***

No Impact. Since the existing project site contains a vacant school and no residential uses, no people will be displaced and no construction of replacement housing is necessary. Therefore, the project will have **no impact**, necessitating the need for replacement housing either directly, indirectly, or cumulatively, and no mitigation is required.

14. PUBLIC SERVICES.

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

a. Fire protection?	☐	☐	☐	☒

14a. Response: ***(Source: General Plan 2025 FPEIR Table 5.13-B – Fire Station Locations, Table 5.13-C – Riverside Fire Department Statistics and Ordinance 5948 § 1)***

No Impact. The project is located in an urbanized area and includes the construction and operation of 54 single-family homes. Fire facilities and services are provided by Station 2 located at 9449 Andrew Street, located 0.7 mile from the project site. The City's Fire Department policy states that units will be located and staffed such that an effective response force of 4 units with 12 personnel minimum shall be available to all areas of the City within a maximum of 10 minutes (total response time). In addition, with implementation of General Plan 2025 policies and compliance with existing codes and standards, there will be **no impact** on the demand for additional fire facilities or services either directly, indirectly, or cumulatively, and no mitigation is required.

b. Police protection?	☐	☐	☐	☒

14b. Response: ***(Source: General Plan 2025 Figure PS-8 – Neighborhood Policing Centers)***

No Impact. The project may require police services during construction and operation of the proposed residential uses. Adequate police facilities and services are provided by Magnolia Neighborhood Policing Center, located at 10540-B Magnolia Avenue, to serve this project. The City of Riverside's police officers rotate through assignments rather than stay within one area. Incoming calls requesting police services are assigned by urgency. Priority 1 calls are typically of a life-threatening nature, such as a robbery in process or an accident involving bodily injury. Police officers strive to respond within 7 minutes to Priority 1 calls. Officers will respond to less-urgent Priority 2 calls within 12 minutes. These types of calls are not life threatening and include such incidents as burglary, petty theft, shoplifting, etc.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
In addition, with implementation of General Plan 2025 policies, compliance with existing codes and standards, and through Police Department practices, there will be **no impact** on the demand for additional police facilities of services either directly, indirectly, or cumulatively. No mitigation is required.				
c. Schools?	☐	☐	☒	☐
14c. Response: ***(Source: General Plan 2025 FPEIR Figure 5.13-2 – RUSD Boundaries, Table 5.13-D – RUSD, Figure 5.13-4 – Other School District Boundaries, and School Facilities Needs Analysis – Riverside Unified School District-March 2016)*** **Less Than Significant Impact.** The project is a residential use that will involve the addition of housing units that would increase numbers of school-age children. Even though there is a General Plan Amendment attached to this project, which would change the land use designation from B/OP – Business/Office Park to MDR – Medium Density Residential, the total housing unit count of 54 single-family residential units would not substantially change the direction of the land use patterns in the Riverside General Plan 2025. An increase in local school population of up to 38[18] students could result from development of the proposed project. Senate Bill 50, also known as Proposition 1A was enacted to direct development fees to local school districts for the expansion or construction of school facilities. The proposed project will be required to pay applicable local school fees as development occurs. The payment of required school fees will offset any impact to school services or facilities; therefore, a **less than significant** school impact would occur. No mitigation is required.				
d. Parks?	☐	☐	☒	☐
14d. Response: ***(Source: General Plan 2025 Figure PR-1 – Parks, Open Spaces and Trails, Table PR-4 – Park and Recreation Facilities, Parks Master Plan 2003, General Plan 2025 FPEIR Table 5.14-A – Park and Recreation Facility Types, and Table 5.14-C – Park and Recreation Facilities Funded in the Riverside Renaissance Initiative)*** **Less Than Significant Impact.** An increase in population would occur due to the addition of housing for the project. The closest park to the project site is Arlington Park located at 3860 Van Buren Boulevard. As the population grows, the need for park and other recreational facilities rises due to the additional strain on upkeep and maintenance that is required from the City. The project includes a central paseo to provide pedestrian access to a meandering trail located within the southern portion of the site. Recreational amenities located in this area include a tot lot, picnic tables, and shade structures. In order to ensure that adequate park facilities are available for all residents, the City of Riverside requires all development projects to pay Park Development Impact Fees before issuing building permits. Through the payment of these fees, the funds needed to accommodate additional maintenance and upkeep of parks and other recreational services is fulfilled. Therefore, there will be a **less than significant impact** directly, indirectly, or cumulatively created by the construction of new or expansion of existing park facilities caused by the increase in the demand for park facilities or services. No mitigation is required.				
e. Other public facilities?	☐	☐	☐	☒
14e. Response: ***(Source: General Plan 2025 Figure LU-8 – Community Facilities, FPEIR Figure 5.13-5 – Library Facilities, Figure 5.13-6 – Community Centers, Table 5.3-F – Riverside Community Centers, Table 5.13-H – Riverside Public Library Service Standards)*** **No Impact.** The project would develop residential uses within an urbanized area. Public facilities and services, including libraries and community centers, are provided in the neighborhood to serve this project. In addition, with implementation of General Plan 2025 policies, compliance with existing codes and standards, and through Park and Recreation and Community Services and Library practices, there will be **no impact** on the demand for additional public facilities or services either directly, indirectly, or cumulatively. No mitigation is required.				

[18] Student Population Increase: Elementary Students = 54 homes × 0.38 student generation rate = 20.5 students; Middle School Students = 54 homes × 0.11 student generation rate = 5.9 students; and High School Students = 54 homes × 0.21 student generation rate = 11.3 students.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
15. RECREATION. Would the project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

15a. Response: ***(Source: General Plan 2025 Figure PR-1 – Parks, Open Spaces and Trails, Table PR-4 – Park and Recreation Facilities, Figure CCM-6 – Master Plan of Trails and Bikeways, Parks Master Plan 2003; General Plan 2025 FPEIR Table 5.14-A – Park and Recreation Facility Types, and Table 5.14-C – Park and Recreation Facilities Funded in the Riverside Renaissance Initiative, Table 5.14-D – Inventory of Existing Community Centers, Riverside Municipal Code Chapter 16.60 – Local Park Development Fees, Bicycle Master Plan May 2007, Population and Housing Estimates for Cities, Counties, and the State, January 1, 2011–2016, with 2010 Benchmark-California Department of Finance)***

Less Than Significant Impact. New housing is proposed with this project; therefore, an increase in residents is expected. The City's adopted standard for developed park acreage of 3 acres per 1,000 residents will not be adversely affected by the increase of 178 residents. Additionally, the proposed project site is not located in an area of the City identified to have a parkland shortage.

The project includes a central paseo that provides pedestrian access to a meandering trail located within the southern portion of the site. Recreational amenities located in this area include a tot lot, picnic tables, and shade structures. While these features will be available to project residents, the use of existing park and recreation areas may also occur, causing an incremental impact to existing facilities. The project will be required to pay Park Development Impact Fees to cover the cost of elevated levels of maintenance; therefore, **a less than significant** direct, indirect, or cumulative impact on existing neighborhood and regional parks will occur. No mitigation is required.

b. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

15b. Response:

Less Than Significant Impact. The proposed project is an infill development containing a vacant elementary school along established transportation corridors in an area zoned for B/OP – Business/Office Park. The project includes a General Plan Amendment to change the land use designations to MDR – Medium Density Residential.

The proposed project will be developed in accordance with the City's General Plan 2025, Park and Recreation Master Plan, and all other applicable local, State, and/or Federal regulatory requirements. The project includes a central paseo that provides pedestrian access to a meandering trail located within the southern portion of the site. Recreational amenities located in this area include a tot lot, picnic tables, and shade structures. The project will also be required to pay Park Development Fees to cover the cost of elevated levels of park maintenance. Therefore, there will be **a less than significant impact** directly, indirectly, or cumulatively to the environment from the proposed construction of the single-family residences. No mitigation is required.

16. TRANSPORTATION AND TRAFFIC. Would the project result in:				
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

16a. Response: ***(Source: Traffic Impact Analysis (Appendix I))***

***Operation*. Less Than Significant With Mitigation Incorporated.** Roadway performance is most often controlled by the performance of intersections, specifically during peak traffic periods. Operating conditions at intersections are typically described in terms of level of service (LOS) with LOS A representing the best operating conditions (free-flow traffic) and LOS F the worst (traffic jammed). Table 16.A summarizes the relationship of delay and LOS at unsignalized and signalized intersections.

Table 16.A: Level of Service Criteria for Unsignalized and Signalized Intersections

Level of Service	Unsignalized Intersection Average Delay per Vehicle (sec.)	Signalized Intersection Average Delay per Vehicle (sec.)
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

Source: Table B, *Traffic Impact Analysis* (Appendix I)

The City's significance criteria are used for all study intersections under the City's jurisdiction. The City uses LOS D as its minimum level of service for intersections and roadways of Collector or higher classification; LOS C is to be maintained on other street intersections. For projects in conformance with the City's General Plan 2025, a significant project impact occurs at a study intersection when the peak hour LOS falls below D (E or F), which indicates that LOS D or better is to be maintained on Arterial Streets wherever possible. A significant project impact occurs when the peak hour LOS falls below D in this analysis.

The study area was approved by City staff via the City's scoping agreement process. Study intersections were selected based on discussion with City staff. The study includes locations where project traffic has potential to cause a significant impact. Based on the coordination with the City, one intersection, the Donald Avenue-Project Driveway/Indiana Avenue was identified for analysis. Consistent with the City's Traffic Impact Analysis guidelines, the 2010 *Highway Capacity Manual* (HCM) analysis methodologies were used to determine intersection levels of service for all study area intersections. The traffic analysis examined traffic operations in the vicinity of the proposed project under the following six scenarios:

- Existing traffic conditions;
- Existing with project traffic conditions;
- Project completion (2017) conditions;
- Project completion (2017) with project traffic conditions;
- Cumulative (2017) traffic conditions; and
- Cumulative (2017) with project traffic conditions.

For each scenario, traffic operations at study intersections are evaluated for the a.m. and p.m. peak hours. The a.m. peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 and 9:00 a.m. The p.m. peak hour is defined as the one hour of highest traffic volumes occurring between 4:00 and 6:00 p.m.

Table 16.B summarizes the a.m. and p.m. peak hour and daily project trip generation and shows that the project is expected to generate 41 a.m. peak hour trips, 54 p.m. peak hour trips, and 514 daily trips.

Table 16.C summarizes the delay and LOS at the study intersection—Donald Avenue-Project Driveway/Indiana Avenue—without the project. Based on the City's significant impact criteria, a significant circulation impact (LOS D) occurs at the intersection Donald Avenue-Project Driveway/Indiana under build-out (2040) with project conditions (a.m. peak hour).

Table 16.B: Project Trip Generation

Land Uses	Units	A.M. Peak Hour			P.M. Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Single Family Residential	**54 DU**							
Trips/Unit[1]		0.19	0.56	0.75	0.63	0.37	1.00	9.52
Trip Generation		10	31	41	34	20	54	514
Total Trip Generation		10	31	41	34	20	54	514

Source: Table D, *Traffic Impact Analysis (Appendix I)*
DU=Dwelling Units
[1] *Rates based on Land Use 210- "Single Family Detached Housing" from the Institute of Transportation Engineers (ITE)* Trip Generation Manual, *9th Edition.*

Table 16.C: Intersection of Donald Avenue-Project Driveway/Indiana Avenue LOS

Scenario	Control	Without Project				With Project					With Project With Recommended Improvements			
		A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour			P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS		Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS
Existing Conditions	TWSC	15.4	C	19.6	C	18.9	C		20.9	C	*No Improvements Required*			
Project Completion (2017) Conditions	TWSC	15.6	C	19.9	C	19.2	C		21.2	C				
Cumulative (2017) Conditions	TWSC	17.6	C	22.5	C	22.6	C		24.1	C				
Build-out (2040) Conditions	TWSC	21.2	C	30.4	D	**30.0**	**D**	*	32.7	D	16.2	C	16.7	D

Source: Table E, *Traffic Impact Analysis (Appendix I)*
Notes:
TWSC = Two-Way Stop Control
Delay = Average control delay in seconds (For TWSC intersections, reported delay is for worst-case movement).
LOS = Level of Service
* A significant circulation impact occurs as the addition of project-related trips causes the a.m. peak hour delay to increase by more than 8.0 seconds when operating at LOS C.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

To reduce the level of this impact, **Mitigation Measure TRA-1** has been identified. As detailed in Table 16.C, with the implementation of this measure, the project study area intersections would operate at a satisfactory LOS. No further mitigation is required.

Mitigation Measure TRA-1: **Intersection of Donald Avenue-Project Driveway/Indiana Avenue.** Prior to issuance of a Certificate of Occupancy, the City of Riverside, Traffic Engineering Section City Engineer, or designee, shall verify that the Donald Avenue-Project Driveway/Indiana Avenue intersection has restriped Indiana Avenue to provide a two-way left-turn lane along the project frontage.

b. Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐

16b. Response: ***(Source: Traffic Impact Analysis (Appendix I) General Plan 2025 Figure CCM-4 – Master Plan of Roadways, General Plan 2025 FPEIR Figure 5.15-4 –Volume to Capacity (V/C) Ratio and Level of Service (LOS) (Typical 2025), Table 5.15-D – Existing and Future Trip Generation Estimates, Table 5.15-H – Existing and Typical Density Scenario Intersection Levels of Service, Table 5.15-I – Conceptual General Plan Intersection Improvement Recommendations, Table 5.15-J – Current Status of Roadways Projected to Operate at LOS E or F in 2025, Table 5.15.-K – Freeway Analysis Proposed General Plan SCAG's RTP)***

Less Than Significant with Mitigation Incorporated. The focus of a congestion management plan (CMP) is the development of an enhanced traffic monitoring system in which real-time traffic count data can be accessed by the Riverside County Transportation Commission to evaluate the condition of the congestion management system as well as meeting other monitoring requirements at the State and Federal levels. Per the CMP-adopted LOS standard of E, when a congestion management system segment falls to F, a deficiency plan is required. Preparation of a deficiency plan is the responsibility of the local agency where the deficiency is located. Agencies identified as contributors to the deficiency are required to coordinate with the development of the plan. The deficiency plan must contain mitigation measures, including transportation demand management strategies and transit alternatives, and a schedule of mitigating the deficiency.

The City's General Plan 2025 requires LOS to conform to the CMP standards. Therefore, if the project is in compliance with the City's LOS standards, the project would be in compliance with the CMP. As discussed in Table 16.C and Response 16a above, with the implementation of **Mitigation Measures TRA-1**, the project study area intersections would operate at a satisfactory LOS. As such, the proposed project would not result in a direct, indirect, or cumulative impact to an existing LOS within the applicable study area. Impacts would be **less than significant with mitigation incorporated.**

c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

16c. Response: ***(Source: General Plan 2025 Figure PS-6 – Airport Safety Zones and Influence Areas, General Plan 2025 FPEIR-Figure 5.7-2)***

No Impact. The project site is located approximately 2.4 miles south of the Riverside Municipal Airport and is not located within an Airport Safety Zone, as depicted in Figure 5.7-2 of the General Plan 2025 Program FPEIR. Because the project has not been found to be in an airport zone, no further compliance is necessary with any airport plan, there are **no impacts** from airports directly, indirectly, and cumulatively, and no mitigation is required.

d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
16d. Response: ***(Source: Project Site Plans)***				
Less Than Significant Impact. Vehicular access to the project site would be provided via one driveway on Donald Avenue at Indiana Avenue. Vehicular traffic to and from the project site would utilize the existing network of regional and local roadways that serve the project site area. The proposed project would introduce new roadways but would not introduce a land use that would conflict with existing urban land uses in the surrounding area. The project would include a new left-turn lane along Indiana Avenue at the project site entrance. Design of the proposed project, including curb cuts, ingress, egress, and other streetscape changes, would be subject to review by Traffic Engineering Section of the Public Works Department; therefore, it is reasonable that potential design hazards would be addressed during project review. Impacts related to hazardous design features would be **less than significant**, and no mitigation is required.				
e. Result in inadequate emergency access?	☐	☐	☒	☐
16e. Response: ***(Source: California Department of Transportation Highway Design Manual, Municipal Code, and Fire Code)***				
Less Than Significant Impact. Access for emergency vehicles would be provided via the main entrance to the community as well as at the west edge of the site dedicated for emergency access. Sufficient space and turning radius for fire trucks would be provided on the project site around the proposed buildings. The driveway to the project site would remain open during construction, and project site access would be maintained. Therefore, implementation of the proposed project would not result in inadequate emergency access. Impacts would be **less than significant impact** and no mitigation is required.				
f. Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities)?	☐	☐	☐	☒
16f. Response: ***(Source: General Plan 2025 Land Use and Urban Design, Circulation and Community Mobility and Education Elements, Bicycle Master Plan, School Safety Program – Walk Safe! – Drive Safe!)***				
No Impact. The project would not affect adopted policies supporting alternative transportation and would be subject to compliance with policies, plans, and programs of the City and other applicable agencies regarding alternative modes of transportation. Pedestrians accessing the project may utilize pedestrian facilities (e.g., sidewalks and crosswalks) that are part of the surrounding street system. A sidewalk is located along Indiana Avenue and can be used to access the project site. Van Buren Boulevard, Indiana Avenue, and SR-91 are served by transit facilities (Riverside Transit Agency [RTA] Bus Routes 10, 14, and 21). Bus stops at the Indiana Avenue/Gibson Street intersection and the Indiana Avenue/Jackson Street intersection are the closest bus stops to the project site. The project would not remove or relocate any alternative transportation access points. Therefore, the project does not conflict with adopted plans, policies, or programs supporting alternative transportation. **No impact** related to public transit, bicycle, or pedestrian facilities plans would occur, and no mitigation is required.				
17. TRIBAL CULTURAL RESOURCES. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?	☐	☐	☐	☒
17a.Response: ***(Source: Cultural Resources Assessment-Hawthorne Elementary School Project (Appendix D); AB 52 Consultation)***				
No Impact. A cultural resources records search was conducted for the project area and a one-mile radius around it at the Eastern Information Center (EIC) of the California Historical Resources Information System (CHRIS) located at the University				

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

of California, Riverside. The objectives of this research were (1) to establish the status and extent of previously recorded cultural resources sites, surveys, and studies, (2) to note the likelihood of encountering cultural resources and their type(s) based on previously recorded resources within one mile of the project area, and (3) to uncover relevant historical contexts. Data sources consulted at the EIC include archaeological site records, historic USGS topographic maps, reports from previous studies, and the State Historic Resource Inventory (HRI) for Riverside County, which contains listings for the National Register of Historic Places (National Register), California Register of Historical Resources (California Register), California Historical Landmarks (CHL), and California Points of Historical Interest (CPHI). Archival research was conducted in August 2016 and September 2016. Sources included, but were not limited to, online sources, published literature in local and regional history, historic aerial photographs, historic maps, and news articles. The project site has been developed with school uses since 1966 and is substantially surrounded by urban development. The site has not been identified as a Native American sacred place, landscape, or feature of significant tribal cultural value during project-related Native American consultation.

The school and associated features do not meet any of the criteria for listing in the National Register or California Register or for local designation. Therefore, it is not a historical resource as defined by CEQA. The segment of the Upper Riverside Canal (33-4495H) is adjacent to the southern boundary of the project area has sustained alterations and has lost integrity. Therefore, it is not historically significant individually and does not contribute the significance of the larger resource. **No impact** related to this issue would occur; therefore, no mitigation is warranted.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐

17b. Response: ***(Source: Cultural Resources Assessment-Hawthorne Elementary School Project (Appendix D); City AB 52 Consultation)***

Less Than Significant with Mitigation Incorporated. The project site has been developed with school uses since 1966 and is substantially surrounded by urban development. No on-site cultural resources were identified during the records search. The entire project area has been moderately to severely disturbed by the development of school and other urban uses. The playground area has been covered with a rubberized surface; the open space outside of the buildings has been used for recreation purposes. Mature trees and shrubbery were noted throughout the project area. No evidence of native soil was present in the project area. No archaeological resources were identified. The nearest resource to the project area is the Riverside Upper Canal (33-004495), which is adjacent to the southeastern project area boundary. A review of the Historic Property Directory revealed that numerous historic-period resources within the one-mile radius have been previously documented and/or evaluated, but none was determined to be historically significant.

Chapter 532, Statutes of 2014 (i.e., Assembly Bill [AB] 52), requires Lead Agencies to evaluate a project's potential to impact "tribal cultural resources." Such resources include "[s]ites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are eligible for inclusion in the California Register of Historical resources or included in a local register of historical resources." AB 52 also gives Lead Agencies the discretion to determine, supported by substantial evidence, whether a resource qualifies as a "tribal cultural resource." Per AB 52, the City sent out notices to interested California Native American tribes on August 12, 2016 and October 21, 2016. Five tribes (Viejas Band of Kumeyaay, Agua Caliente Band of Cahuilla Indians, Soboba Band of Luiseño Indians, Gabrielino Band of Mission Indians – Kizh Nation, and Morongo Band of Mission Indians) responded as part of the AB 52 consultation effort. Agua Caliente Band of Cahuilla Indians had no comments. Viejas Band of Kumeyaay Indians requested to be informed in the event inadvertent discovery of cultural artifacts, cremation sites, or human remains are encountered. The Soboba Band of Luiseño Indians requested Government to Government consultation and requested Native American Monitoring to be present during any ground disturbing activities and outlined procedures to be taken in the event cultural resources, and human remains are discovered. The Gabrielino Band of Missions requested consultation and Native American Monitoring during ground disturbing activities. The Morongo Band of Mission Indians provided standard conditions in the event human remains and Native American cultural resources are discovered.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

The State of California Governor's Office of Planning and Research developed Tribal Consultation Guidelines in order to provide guidance to cities and counties on the process for consulting with Native American tribes during the adoption or amendment of local general plans or specific plans (defined in Government Code Section 65450 et seq.), which is a component of this project as an amendment to the General Plan 2025 is proposed. Senate Bill (SB) 18 requires local agencies to consult with tribes prior to making certain planning decisions and to provide notice to tribes at certain key points in the planning process, thereby providing tribes an opportunity to participate in local land use decisions at an early planning stage. In accordance with SB 18, the City initiated consultation with the Native American tribes and interested parties from the list provided by the NAHC on April 11, 2016. Three tribes (Agua Caliente Band of Cahuilla Indians, Rincon Band of Luiseño Indians, and Soboba Band of Luiseño Indians) responded as part of the SB 18 process. Agua Caliente Band of Cahuilla Indians stated that the site is not located within the Tribe's Traditional Use Area. Rincon Band of Luiseño Indians stated that the site is not within Rincon's Historic Boundaries and deferred to the Pechanga Band of Luiseño Indians or Soboba Band of Luiseño Indians. Soboba Band of Luiseño Indians stated that the site falls within the bounds of the tribe's Tribal Traditional Use Areas and requested Government to Government consultation and requested Native American Monitor(s), and provided procedures in the event cultural resources or human remains are discovered. The consultation efforts with the Soboba Band of Luiseño Indians was done concurrently with the AB 52 process.

While no occurrence of historic or prehistoric resources has been recorded on site, based on the consultation effort with the Tribes, a potential for such resources cannot be discounted. At the request of the consulting tribe(s), the following measures have been identified to address this potential impact.

Mitigation Measure TRI-1: At least 30 days prior to filing of a grading permit, the project applicant shall contact and notify the consulting tribe(s) of anticipated grading and excavation activities. In conjunction with the City and the consulting tribe(s), the applicant shall develop a Tribal Cultural Resources Monitoring Agreement. A copy of the monitoring agreement shall be provided to the City prior to the issuance of any grading permit for the project. The agreement shall address the details, timing, and responsibility of all archaeological and cultural activities that will occur on the project site. Details in the Plan shall include:

- Project grading and development scheduling.
- The development of a rotating or simultaneous schedule in coordination with the applicant and the designated Native American Tribal Monitor(s) during grading, excavation, and ground-disturbing activities on the site, including the scheduling, safety requirements, duties, scope of work, reimbursement, and Native American Tribal Monitor(s)' authority to stop and redirect grading activities in coordination with a qualified archaeologist.
- The protocols and stipulations that the City, tribe(s) and qualified archaeologist will follow in the event of inadvertent discovery of tribal cultural resources (see Mitigation Measure TRI-2).

Mitigation Measure TRI-2: In the event of an inadvertent discovery of any tribal cultural resource(s), the landowner(s) shall relinquish ownership of all such resources, including (but not limited to) sacred items, burial goods, and related archaeological artifacts and burial remains. The applicant shall relinquish the artifacts through one or more of the following methods:

- A fully executed reburial agreement with the consulting Native American tribe(s) for discovery of tribal cultural resources. This shall include measures and provisions to protect the future reburial area from any future impacts. Reburial shall not occur until all cataloguing and recordation on appropriate Department of Parks and Recreation (DPR) 523-series forms have been completed. Non-tribal cultural resources will be addressed in coordination with the City and qualified archaeologist in accordance with professional standards.
- A curation agreement with an appropriate qualified repository within Riverside County that meets federal standards per 36 CFR Part 79. The collections and associated records shall be transferred, including title, to an appropriate curation facility within Riverside

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

County be accompanied by payment of the fees necessary for permanent curation.

Mitigation Measure TRI-3: Prior to the issuance of grading permits, the applicant shall submit to the City for review and approval, evidence that planned on-site excavation activities conform to the applicable provisions of the Tribal Cultural Resources Monitoring Agreement.

With implementation of these measures, potential impacts to Native American cultural resources are reduced to a **less than significant with mitigation incorporated**.

18. UTILITIES AND SYSTEM SERVICES. Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐

18a. Response: ***(Source: General Plan 2025 Figure PF-2 – Sewer Facilities Map, General Plan 2025 FPEIR Figure 5.16-5 – Sewer Service Areas, Table 5.16-K – Estimated Future Wastewater Generation for the City of Riverside's Sewer Service Area, Figure 5.8-1 – Watersheds, Wastewater Integrated Master Plan and Certified EIR)***

Less Than Significant Impact. Wastewater facilities would be provided by the City sewer system. The project is within the boundaries of the Santa Ana Regional Water Quality Control Board (RWQCB). Wastewater in the surrounding area is transported to the Riverside Regional Water Quality Control Plant. The primary sources of pollutants to storm water from the proposed project are construction and demolition activities and runoff from roofs and paved areas. All new development is required to comply with all provisions of the NPDES program and the City's Municipal Separate Sewer Permit (MS4), as enforced by the RWQCB. Therefore, the proposed project would not exceed applicable wastewater treatment requirements of the RWQCB with respect to discharges to the sewer system or storm water system within the City. Since the project will discharge its wastewater to a facility that is legally required to meet wastewater standards and because the proposed project is required to adhere to the above regulations related to wastewater treatment, the project will have a **less than significant impact**, and no mitigation is required.

b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐

18b. Response: ***(Source: General Plan 2025 Table PF-1 – RPU Projected Domestic Water Supply (AC-FT/YR); Table PF-2 – RPU Projected Water Demand, RPU; General Plan 2025 FPEIR Table 5.16-G – General Plan Projected Water Demand for RPU Including Water Reliability for 2025; Table 5.16-K – Estimated Future Wastewater Generation for the City of Riverside's Sewer Service Area; Figure 5.16-4 – Water Facilities and Figure 5.16-6 – Sewer Infrastructure and Wastewater Integrated Master Plan and Certified EIR; Urban Water Management Plan, City of Riverside Public Utilities, June 2016.; Riverside Wastewater Collection and Treatment Facilities Integrated Master Plan, February 2008)***

Less Than Significant Impact. The project will not result in the construction of new or expanded water or wastewater treatment facilities. The proposed project will be required to connect to existing water and wastewater infrastructure to provide the necessary construction and water/sewer needs for the project. The connection point for the lines would be from lines within existing adjacent roadways (Indiana Avenue). No new water and sewer infrastructure is anticipated with implementation of the project. The project is consistent with the Typical Growth Scenario of the General Plan 2025 wherein future water and wastewater generation was determined to be adequate (see Tables 5.16-E, 5.16-F, 5.16-G, 5.16-H, 5.16-I, 5.16-J and 5.16-K of the General Plan 2025 FPEIR).

The RPU's 2015 UWMP estimates water supply and demand during normal, dry and multiple-dry years (Table 18.A).

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 18.A: Projected Water Supply/Demand (acre-feet/year)

Condition	2020	2025	2030	2035	2040
Normal Year					
Supply	116,903	121,093	124,703	124,703	124,703
Demand	95,221	96,534	99,015	101,589	104,257
Dry Year					
Supply	96,288	101,288	104,088	104,088	104,088
Demand	95,221	96,534	99,015	101,589	104,257
Multiple-dry Year					
Supply	102,364	107,364	110,614	110,164	110,164
Demand	95,221	96,534	99,015	101,589	104,257

As detailed in response 13a, the project is located in an urbanized area and would not induce substantial population growth. The addition of 54 single-family housing units represents 0.04 percent of the projected 127,692 housing units anticipated by 2025 in the City's General Plan 2025 FPEIR. Demographic information from the General Plan 2025 and the SCAG were considered during the preparation of the UWMP.

The RPU's 2015 Urban Water Management Plan prepared by the City of Riverside estimated a daily per capita water demand of 206 gallons (gpcd). Based on an average household size of 3.29 persons per household,[19] the 54-unit project would result in a population of 178 persons, with an estimated water usage of 36,668 gallons per day (0.11 acre-foot). This represents 0.04 percent of anticipated RPU water supplies in 2020 through 2040 (assuming worst-case multiple dry years). As established in Table 18.A, sufficient water supplies are available to serve existing and projected future water demand under normal, dry and multiple-dry conditions. Water has been previously supplied to the now vacant school. The proposed project would tie into existing water mains located in adjacent streets. The proposed 54-unit project does not include the installation of any off-site conveyance, distribution, treatment or storage facilities. Due to the limited size of the project, and the presence of existing water facilities in the project area, no substantial upgrade or expansion of existing facilities is anticipated.

The Riverside Wastewater Collection and Treatment Facilities Integrated Master Plan projects future flow at 96.6 gallons per day per capita. This project would consequently use 17,195 gallons per day (178 residents × 96.6 gallons per pay), but would be under the 32.5 million gallons per day the plan projects for the city in 2025. Based on these data, no new wastewater facilities will need to be constructed or capacity added to existing facilities due to this project's projected population growth.

Therefore, the project will have a **less than significant impact** related to the construction of new water or wastewater treatment facilities or the expansion of existing facilities directly, indirectly, or cumulatively, and no mitigation is required.

c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐

18c. Response: ***(Source: General Plan 2025; General Plan 2025 FPEIR Figure 5.16-2 – Drainage Facilities)***

Less Than Significant Impact. The proposed project will result in an increase in impervious surface areas. The Subdivision Code (Title 18, Section 18.48.020) requires drainage fees to be paid to the City for new construction. Fees are transferred into a drainage facilities fund that is maintained by Riverside County Flood Control and Water Conservation District. This section also complies with the California Government Code (Section 66483), which provides for the payment of fees for construction of drainage facilities. Fees are required to be paid as part of the conditions of approval/waiver for filing of a final map or parcel map.

General Plan 2025 Policies PF 4.1 and PF 4.3 require the City to continue to routinely monitor its storm drain system and to fund and improve those systems as identified in the City's Capital Improvement Plan. Implementation of these policies will

[19] California Department of Finance's *Demographic Research Unit's Population and Housing Estimates for Cities, Counties, and the State*. January 2017

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
ensure that the City is adequately served by drainage systems. The General Plan 2025 also includes policies and programs that will minimize the environmental effects of the development of such facilities. Therefore, the project will have a **less than significant impact** on existing storm water drainage facilities and would not require the expansion of existing facilities directly, indirectly, or cumulatively. No mitigation is required.				
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐

18d. Response: ***(Source: General Plan 2025 FPEIR Figure 5.16-3 – Water Service Areas, Figure 5.16-4 – Water Facilities, Table 5.16-E – RPU Projected Domestic Water Supply AC-FT/YR, Table 5.16-F – Projected Water Demand, Table 5.16-G – General Plan Projected Water Demand for RPU including Water Reliability for 2025)***

Less Than Significant Impact. The project will not exceed expected water supplies. As stated in Response 18b, there are approximately 3.29 persons per household in the City of Riverside in 2016 per the Department of Finance's *Demographic Research Unit's Population and Housing Estimates for Cities, Counties, and the State*. The development will only add 0.11 acre-feet to the 99,835 acre-feet per day. Sufficient water supplies will be available to the project and no new entitlements or resources will be needed.

The project is consistent with the General Plan 2025 FPEIR Typical Growth Scenario where future water supplies were determined to be adequate (see Tables 5.16-E, 5.16-F, 5.16-G, 5.16-H, 5.16-I and 5.16-J of the General Plan 2025 FPEIR). Therefore, the project will have **less than significant impact** related to insufficient water supplies either directly, indirectly, or cumulatively, and no mitigation is required.

e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

18e. Response: ***(Source: General Plan 2025 FPEIR Figure 5.16-5 – Sewer Service Areas, Figure 5.16-6 – Sewer Infrastructure, Table 5.16-K – Estimated Future Wastewater Generation for the City of Riverside's Sewer Service Area, and Wastewater Integrated Master Plan and Certified EIR)***

No Impact. The project will not exceed wastewater treatment requirements of the RWQCB. The Riverside Wastewater Collection and Treatment Facilities Integrated Master Plan projects future flow at 96.6 gallons per day per capita. This project would consequently use 17,195 gallons per day, but would be under the 32.5 million gallons per day the plan projects for Riverside in 2025. Based on these data, no new wastewater facilities will need to be constructed or capacity added to existing facilities due to this project's projected population growth.

The project is consistent with the General Plan 2025 FPEIR Typical Growth Scenario wherein future wastewater treatment capacity was determined to be adequate (see Table 5.16-K of the General Plan 2025 FPEIR). Therefore, **no impact** related to wastewater treatment directly, indirectly, or cumulatively will occur. No mitigation is required.

f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐

18f. Response: ***(Source: General Plan 2025 FPEIR Table 5.16-A – Existing Landfills and Table 5.16-M)***

Less Than Significant Impact. The project includes the development of residential uses. Solid waste from demolition, construction and future operations will be transported to the Badlands Landfill, located east of the City of Moreno Valley. Badlands Landfill has a current remaining capacity of 9.8 million tons as of January 2015, a maximum daily load of 4,500 tons per day, and an average daily load of 2,500 tons per day, as specified via phone call by Andy Cortez (principal engineer at Badlands Landfill). The project would generate 1,780 lbs/day or 0.89 ton per day of solid waste when built. This is well below the Badlands Landfill daily capacity and the impact will be minimal.

Construction of the project would also generate waste. Per the California Green Building Code, a minimum of 50 percent of this debris will be diverted to a material recycling facility. Impacts to landfill capacity directly, indirectly, and cumulatively will be **less than significant**, and no mitigation will be required.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
g. Comply with Federal, State, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

18g. Response: ***(Source: California Integrated Waste Management Board 2002 Landfill Facility Compliance Study)***

No Impact. The California Integrated Waste Management Act under the Public Resource Code requires that local jurisdictions divert at least 50 percent of all solid waste generated by January 1, 2000. The City is currently achieving a 60 percent diversion rate, well above state requirements. In addition, the California Green Building Code requires all developments to divert 50 percent of non-hazardous construction and demolition debris for all projects and all excavated soil beginning January 1, 2011. The proposed project must comply with the City's waste disposal requirements as well as the California Green Building Code. For these reasons, the project would not conflict with any Federal, State, or local regulations related to solid waste. **No impact** related to solid waste statutes will occur directly, indirectly, or cumulatively, and no mitigation will be required.

19. MANDATORY FINDINGS OF SIGNIFICANCE.				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or an endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐

19a. Response:

Less Than Significant With Mitigation Incorporated. The proposed project's impacts to biological resources and cultural resources were analyzed in this Initial Study and all direct and cumulative impacts were determined to have no impact, a less than significant impact, or rendered a less than significant impact with implementation of mitigation. Therefore, impacts to biological resources and cultural resources would be less than significant with implementation of mitigation and no additional mitigation is required.

b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐

19b. Response:

Less Than Significant With Mitigation Incorporated. The proposed project's potential cumulative impacts to air quality, biological resources, cultural resources, GHGs, hazards and hazardous materials, noise, traffic, and tribal cultural resources, were analyzed in this Initial Study, and all cumulative impacts were less than significant or rendered less than significant with mitigation.

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

19c. Response:

Less Than Significant With Mitigation Incorporated. Impacts related to aesthetics, air quality, geology and soils, GHGs, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, recreation, traffic, and utilities and service systems that could potentially affect human beings directly or indirectly were analyzed in this Initial Study. All direct and cumulative impacts were less than significant or rendered less than significant with implementation of mitigation measures.

Note: Authority cited: Sections 21083 and 21087, Public Resources Code. Reference: Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.3, 21093, 21094, 21151, Public Resources Code; *Sundstrom v. County of Mendocino*, 202 Cal.App.3d 296 (1988); *Leonoff v. Monterey Board of Supervisors*, 222 Cal.App.3d 1337 (1990).

REFERENCES

Babcock Laboratories, Phase 1 Environmental Site Assessment Sampling and Testing Results (Appendix F2)

Caltrans (California Department of Transportation). 2011. California Scenic Highway Mapping System. Accessed November 30, 2016. http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm.

California Department of Conservation. 2016a. Riverside County Important Farmland 2014. Accessed November 30, 2016. ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2014/riv14_w.pdf.

California Department of Conservation. 2016b. Riverside County Williamson Act FY 2015/2016. Accessed November 30, 2016. ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Riverside_w_15_16_WA.pdf.

GeoMat Testing Laboratories, Inc. 2017, Preliminary Soil Investigation Report (Appendix E)

LSA Associates, Inc. 2017. *Air Quality and Greenhouse Gas Impact Analysis*. (Appendix A)

LSA Associates, Inc. 2017, *Burrowing Owl Habitat Assessment* (Appendix C)

LSA Associates, Inc. 2017, *Cultural Resource Assessment* (Appendix D)

LSA Associates, Inc. 2017, *Health Risk Assessment* (Appendix B)

LSA Associates, Inc. 2017, *Noise and Vibration Impact Analysis* (Appendix H)

LSA Associates, Inc. 2017, *Phase 1 Environmental Site Assessment (*Appendix F1)

LSA Associates, Inc. 2017, *Traffic Impact Analysis* (Appendix I)

Riverside Restorative Growthprint, Climate Action Plan RRG – Part B, October 2015

SDH & Associates. 2017. Project Specific Water Quality Management Plan (Appendix G)

South Coast Air Quality Management District (SCAQMD). 2010. *Greenhouse Gases CEQA Significance Thresholds Working Group Meeting No. 15.* September 28, 2010.

Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM

This Mitigation Monitoring and Reporting Program has been prepared for use in implementing mitigation measures for the:

Hawthorne Residential Project (TTM 37032)

The program has been prepared in compliance with State law and the Mitigated Negative Declaration (MND) prepared for the project by the City of Riverside (City).

The California Environmental Quality Act (CEQA) (Section 15097) requires adoption of a reporting or monitoring program for those measures placed on a project to mitigate or avoid adverse effects on the environment (Public Resource Code Section 21081.6). The law states that the reporting or monitoring program shall be designed to ensure compliance during project implementation.

The monitoring program contains the following elements:

1) The mitigation measures are recorded with the action and procedure necessary to ensure compliance. In some instances, one action may be used to verify implementation of several mitigation measures.
2) A procedure for compliance and verification has been outlined for each action necessary. This procedure designates who will take action, what action will be taken and when, and to whom and when compliance will be reported.
3) The program has been designed to be flexible. As monitoring progresses, changes to compliance procedures may be necessary based upon recommendations by those responsible for the program. As changes are made, new monitoring compliance procedures and records will be developed and incorporated into the program.

This Mitigation Monitoring and Reporting Program includes mitigation measures identified in the MND. To facilitate the review of project requirements, the Standard Conditions identified in the MND have been incorporated into this MMRP.

MITIGATION MONITORING AND RESPONSIBILITIES

As the Lead Agency, the City is responsible for ensuring full compliance with the mitigation measures adopted for the proposed project. The City will monitor and report on all mitigation activities. Mitigation measures will be implemented at different stages of development throughout the project area. In this regard, the responsibilities for implementation have been assigned to the Applicant, Contractor, or a combination thereof. If during the course of project implementation, any of the mitigation measures identified herein cannot be successfully implemented, the City shall be immediately informed, and the City will then inform any affected responsible agencies. The City, in conjunction with any affected responsible agencies, will then determine if modification to the project is required and/or whether alternative mitigation is appropriate.

MITIGATION MONITORING AND REPORTING PROGRAM CHECKLIST

Project Name: Hawthorne Residential Project (TTM 37032) **Applicant: Steven Walker Communities**

Date: August 2017

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
AIR QUALITY - STANDARD CONDITIONS					
Standard Condition AQ-1: Compliance with SCAQMD Rules 402 and 403. During construction, the construction contractor shall comply with the South Coast Air Quality Management District (SCAQMD) Rules 402 and 403 for controlling fugitive dust emissions and construction equipment emissions. In compliance with Rule 403, fugitive dust shall be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, dust suppression techniques shall be implemented to prevent fugitive dust from creating a nuisance off site. The following applicable dust suppression techniques from Rule 403 shall be implemented during project construction: • Nontoxic chemical soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).	City Planner or Director of Building and Safety (or designee)	During Plan Check. Prior to the issuance of a grading or building permit and during construction activities (as required).	Provide evidence that the construction plans include this restriction. Verification through site visit (as required).		Withhold grading and/or demolition permits. Issuance of a stop work order (as required).

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
• Active sites shall be watered at least twice daily. (Locations where grading is to occur shall be thoroughly watered prior to earthmoving.) • All trucks hauling dirt, sand, soil, or other loose materials shall be covered, or at least 2 feet (0.6 meter) of freeboard (vertical space between the top of the load and the top of the trailer) shall be maintained in accordance with the requirements of California Vehicle Code (CVC) Section 23114. • Construction access roads shall be paved at least 100 feet (30 meters) onto the site from the main road. • Traffic speeds on all unpaved roads shall be reduced to 15 miles per hour (mph) or less. Additionally, the following construction emissions control measures from the SCAQMD CEQA Handbook are required to further minimize fugitive dust emissions: • Disturbed areas shall be revegetated as quickly as possible. • All excavating and grading operations shall be suspended when wind speeds (as instantaneous gusts) exceed 25 mph. • All streets shall be swept once per day if visible soil materials are carried to adjacent streets (recommend water sweepers with reclaimed water).					

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
• Wheel washer devices shall be installed at locations where vehicles enter and exit unpaved roads onto paved roads, or vehicles and any equipment leaving the site shall be washed each trip. • All on-site roads shall be paved as soon as feasible, watered periodically, or chemically stabilized. • The area disturbed by clearing, grading, earthmoving, or excavation operations shall be minimized at all times. • The construction contractor shall select the construction equipment used on site based on low emission factors and high-energy efficiency. The construction contractor shall ensure that construction-grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturers' specifications. • The construction contractor shall utilize electric or diesel-powered equipment in lieu of gasoline powered engines where feasible. • The construction contractor shall ensure that construction-grading plans include a statement that work crews will shut off equipment when not in use. During smog season (May through October), the overall length of the construction period will be extended, thereby decreasing the size of the					

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
area prepared each day, to minimize vehicles and equipment operating at the same time. • The construction contractor shall time the construction activities so as to not interfere with peak hour traffic and minimize obstruction of through traffic lanes adjacent to the site; if necessary, a flagperson shall be retained to maintain safety adjacent to existing roadways. • The construction contractor shall support and encourage ridesharing and transit incentives for the construction crew.					
Standard Condition AQ-2: Compliance with Title 13, California Code of Regulations, Section 2449(d)(d). Operators of applicable off-road vehicles (self-propelled diesel-fueled vehicles 25 horsepower and up that were not designed to be driven on-road) must limit idling to no more than five (5) minutes: • All construction vehicles shall be prohibited from idling in excess of five (5) minutes, both on and off site.	City Planner or Director of Building and Safety (or designee)	During Plan Check. Prior to the issuance of a grading or building permit and during construction activities (as required).	Provide evidence that the construction plans include this restriction. Verification through site visit (as required).		Withhold grading and/or demolition permits. Issuance of a stop work order (as required).
Standard Condition AQ-3: Compliance with applicable California Department of Resources Recycling and Recovery (CalRecycle) Sustainable (Green) Building Program Measures. • At least 50 percent of construction materials (including, but not limited to, soil, mulch, vegetation, concrete, lumber, metal, and cardboard) shall be recycle/reused.	City Planner or Director of Building and Safety (or designee)	During Plan Check. Prior to the issuance of a grading or building permit and during construction activities (as required).	Provide evidence that the construction plans include this restriction. Verification through site visit (as required).		Withhold grading and/or demolition permits. Issuance of a stop work order (as required).

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
• “Green building materials” (e.g., those materials that are rapidly renewable or resource-efficient, and recycled and manufactured in an environmentally friendly way) shall be used for at least 10 percent of the project, as specified on the California Department of Resources Recycling and Recovery website.					
Standard Condition AQ-4: Compliance with Title 24, Energy Conservation and Green Building Standards. Project design shall comply with Title 24 of the California Code of Regulations established by the California Energy Commission (CEC) regarding energy conservation and green building standards. The project applicant shall incorporate the following into the final project building plans: • Low-emission water heaters shall be used. Solar water heaters are encouraged. • Exterior windows shall utilize window treatments for efficient energy conservation.	Director of Building and Safety (or designee)	During Plan Check. Prior to the issuance of building permits.	Provide evidence that the project plans include the required features.		Withhold building permits.
Mitigation Measure AQ-1: Prior to the issuance of building permits, the applicant shall provide to the City for review and approval, evidence that in-house filtration systems with efficiencies equal to or exceeding a Minimum Efficiency Reporting Value (MERV) 16 as defined by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 52.2 are installed in on-site residential structures.	City Planner or Designee	During Plan Check. Prior to the issuance of building permits.	Provide evidence that the required filtrations systems have been incorporated into project design.		Withhold building permits.

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
Mitigation Measure AQ-2: Prior to the issuance of building permits, the applicant shall provide to the City for review and approval, a copy of a *Toxic Air Contaminant Disclosure* that will be presented to prospective buyers of real estate within the project site. The *Toxic Air Contaminant Disclosure* shall convey information to prospective buyers about potential TAC exposure at the project site. As approved by the City, the *Toxic Air Contaminant Disclosure* shall contain the language dictated by State law in conjunction with real estate transfer.	City Planner or Designee	During Plan Check. Prior to the issuance of building permits.	Submittal and approval of the required disclosure to be provided to all prospective buyers.		Withhold building permits.
BIOLGICAL RESOURCES					
Mitigation Measure BIO-1: If project activities are planned during the bird nesting season (February 15 to August 31), nesting bird survey(s) consisting of up to three (3) site visits within the week prior to clearing and demolition activities shall be conducted to ensure birds protected under the MBTA are not disturbed by on-site activities. Any such survey(s) shall be conducted by a qualified biologist. If no active nests are found, no additional measures are required. If active nests are found, the nest locations shall be mapped by the biologist. The nesting bird species shall be documented and, to the degree feasible, the nesting stage (e.g., incubation of eggs, feeding of young, near fledging) determined. Based on the species present and surrounding habitat, a no-disturbance buffer shall be established around each active nest. The buffer shall be identified by a qualified biologist and confirmed by the City. No construction or ground disturbance activities shall be conducted within the buffer until the	City Planner or Designee	No more than thirty (30) days prior to the commencement of ground disturbing activities.	Provide evidence that the required pre-construction survey has been completed.		Withhold grading permit.

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
biologist has determined the nest is no longer active and has informed the City and construction supervisor that activities may resume.					
CULTURAL RESOURCES					
Standard Condition CR-1: Discovery of Archaeological Resources. Prior to commencement of grading activities, the City of Riverside Director of Building & Safety, or designee, shall verify that all project grading and construction plans include notes specifying that if archaeological resources are discovered during excavation, grading, or construction activities, work shall cease in the area of the find until a qualified archaeologist has evaluated the find in accordance with federal, state, and local guidelines, including those set forth in California Public Resources Code (PRC) Section 21083.2. Construction personnel shall not collect or move any archaeological materials and associated materials. Construction activity may continue unimpeded on other portions of the project site. The found deposits would be treated in accordance with federal, state, and local guidelines, including those set forth in PRC Section 21083.2.	City Building and Safety Department (or designee)	Prior to commencement of grading activities.	Provide evidence that the construction documents include instructions in the event archaeological resources are discovered. Provide evidence that appropriate buffer areas have been established.		Withhold grading permit and/or issuance of a stop work order.
Standard Condition CR-2: Discovery of Human Remains. Consistent with the requirements of California Code of Regulations (CCR) Section 15064.5(e), if human remains are encountered, work within 25 feet of the discovery shall be redirected and the Riverside County Coroner notified immediately. State Health and Safety Code Section 7050.5 states that no further	City Planner (or designee)	As soon as a discovery is made.	Provide evidence of notification to the Riverside County Coroner that discovery of human remains were found. If remains are Native American, provide evidence of notification to		Issuance of a stop work order.

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code (PRC) Section 5097.98. If the remains are determined to be Native American, the County Coroner shall notify the Native American Heritage Commission (NAHC), which shall determine and notify a Most Likely Descendant (MLD). With the permission of the property owner, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Consistent with CCR Section 15064.5(d), if the remains are determined to be Native American and an MLD is notified, the City shall consult with the MLD as identified by the NAHC to develop an agreement for treatment and disposition of the remains.			the Native American Heritage Commission.		
Mitigation Measure PAL-1: A paleontologist shall be hired to develop a Paleontological Resource Impact Mitigation Program (PRIMP) for this project. The PRIMP shall include the methods that will be used to protect paleontological resources that may exist within the project area, as well as procedures for monitoring, fossil preparation and identification, curation into a repository, and preparation of a report at the conclusion of grading. • Excavation and grading activities in deposits with high paleontological sensitivity (Older	City Planner (or designee)	During Plan Check. Prior to the issuance of grading/building permits and during construction activities.	Provide evidence that the Paleontological Resource Impact Mitigation Program has been prepared by a qualified paleontologist and to the satisfaction of the City Planner (or designee).		Withhold grading/ building permit and/or issuance of a stop work order.

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
Alluvial Fan Deposits) shall be monitored by a paleontological monitor following a PRIMP. No monitoring is required for excavations in rocks with no paleontological sensitivity (Artificial Fill). • If paleontological resources are encountered during the course of ground disturbance, the paleontological monitor shall have the authority to temporarily redirect construction away from the area of the find in order to assess its significance. • Collected resources shall be prepared to the point of identification, identified to the lowest taxonomic level possible, cataloged, and curated into the permanent collections of a scientific institution. • At the conclusion of the monitoring program, a report of findings shall be prepared to document the results of the monitoring program. • In the event that paleontological resources are encountered when a paleontological monitor is not present, work in the immediate area of the find shall be redirected and a paleontologist should be contacted to assess the find for significance. If determined to be significant, the fossil shall be collected from the field.					
GEOLOGY AND SOILS					
Standard Condition GEO-1: Compliance with applicable California Building Code and Project-specific Geotechnical	City Building and Safety Department (or designee)	During Plan Check. Prior to the issuance of a	Verification that the project plans incorporate		Withhold grading and/or

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
Recommendations. Prior to the approval of grading and/or building permits, the applicant shall provide evidence to the City for review and approval that on-site structures, features and facilities have been designed and will be constructed in conformance with applicable provisions of the California Building Code and the recommendations cited in the project-specific geotechnical investigation.		grading or building permit.	the applicable design recommendations.		building permits.
GREENHOUSE GAS EMISSIONS					
Standard Condition GCC-1: Greenhouse Gas Reduction Strategies. To ensure the proposed project complies with and would not conflict with or impede the implementation of reduction goals identified in the Riverside RRG-CAP, Assembly Bill (AB) 32, the Governor's Executive Order (EO) S-3-05, and other strategies to help reduce greenhouse gases (GHGs) to the level proposed by the Governor, the project will implement a variety of measures that will reduce its GHG emissions. To the extent feasible, and to the satisfaction of the City of Riverside (City), the following measures will be incorporated into the design and construction of the project: **Construction and Building Materials.** • Use locally produced and/or manufactured building materials for at least 10 percent of the construction materials used for the project. • Recycle/reuse at least 50 percent of the demolished and/or grubbed construction materials (including, but not limited to, soil,	City Planner (or designee)	During Plan Check. Prior to the issuance of a grading or building permit.	Provide verification that the project plans incorporate the recommended features and/follow applicable policies/practices.		Withhold building permits.

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
vegetation, concrete, lumber, metal, and cardboard) if feasible. • Use "green building materials," such as those materials that are resource-efficient and are recycled and manufactured in an environmentally friendly way, for at least 10 percent of the project. **Energy Efficiency Measures.** • Design all project buildings to meet or exceed the California Building Code's (CBC) Title 24 energy standard, including, but not limited to, any combination of the following: ○ Increase insulation such that heat transfer and thermal bridging is minimized. ○ Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption. ○ Incorporate ENERGY STAR® or better rated windows, space heating and cooling equipment, light fixtures, appliances, or other applicable electrical equipment. • Install efficient lighting and lighting control systems. Use daylight as an integral part of the lighting systems in buildings. • Install "cool" roofs and cool pavements.					

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
• Install energy-efficient heating and cooling systems, appliances and equipment, and control systems. • Install solar lights or light-emitting diodes (LEDs) for outdoor lighting or outdoor lighting that meets the City Code. **Water Conservation and Efficiency Measures.** • Devise a comprehensive water conservation strategy appropriate for the project and its location. The strategy may include the following, plus other innovative measures that may be appropriate: ○ Create water-efficient landscapes within the development. ○ Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls. ○ Use reclaimed water, if available, for landscape irrigation within the project. Install the infrastructure to deliver and use reclaimed water, if available. ○ Design buildings to be water-efficient. Install water-efficient fixtures and appliances, including low-flow faucets and waterless urinals. ○ Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff. **Solid Waste Measures.**					

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
• To facilitate and encourage recycling to reduce landfill-associated emissions, among others, the project will provide trash enclosures that include additional enclosed area(s) for collection of recyclable materials. The recycling collection area(s) will be located within, near, or adjacent to each trash and rubbish disposal area. The recycling collection area will be a minimum of 50 percent of the area provided for the trash/rubbish enclosure(s) or as approved by the Waste Management Department of the City of Riverside. • Provide employee education on waste reduction and available recycling services. **Transportation Measures.** • To facilitate and encourage non-motorized transportation, bicycle racks shall be provided in convenient locations to facilitate bicycle access to the project area. The bicycle racks shall be shown on project landscaping and improvement plans submitted for Planning Department approval and shall be installed in accordance with those plans. • Provide pedestrian walkway and connectivity requirements.					
HAZARDOUS MATERIALS					
Mitigation Measure HAZ-1: Prior to the issuance to the demolition or grading permit, the applicant shall provide evidence to the City for review and approval testing for lead-based paint (LBP) has been conducted.	City Planner or Designee	Prior to the issuance of demolition or grading permits.	Submittal of required lead based-pain (LBP) report.		Withhold grading and/or demolition permit.

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
Mitigation Measure HAZ-2: Prior to issuance of a demolition or grading permit, the applicant shall submit to the City for review and approval, evidence that any on-site asbestos containing material (ACM) or lead based paint (LBP) contaminated material identified in any site-specific hazardous material investigation, has been removed, remediated and/or disposed of pursuant to the applicable local, regional, and/or State requirements. The removal and disposal of any such material shall be documented as part of a hazardous waste abatement report to be reviewed by the City prior to the issuance of demolition or grading permits.	City Planner or Designee	Prior to the issuance of demolition or grading permits.	Submittal and acceptance of final remediation/abatement report.		Withhold grading and/or demolition permit.
NOISE					
Standard Condition NOI-1: Construction Noise. Prior to issuance of building permits, Planning staff, or designee, shall verify that all construction plans include notes stipulating the following: • Construction activities shall be restricted within the City of Riverside to the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and 8:00 a.m. to 5:00 p.m. on Saturdays, and are prohibited on Sundays and federal holidays. • During all project site demolition, excavation, and grading on site, the project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.	City Planner (or designee)	Prior to the issuance of grading and/or building permits and during construction activities.	Provide evidence that construction plans include the required measures and/or conduct site visits (as determined necessary by the City).		Withhold grading and/or building permit and/or issuance of a stop work order.

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
• The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site. • The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.					
Mitigation Measures NOI-1: Traffic/Train Noise Impacts. The following mitigation measures are required: • An interior noise analysis shall be required upon completion of detailed floor plans and prior to issuance of building permits to ensure compliance with the noise standard and with installation of an air conditioning unit. If noise standards are not met, the Applicant shall be required to enhance the building facades such as double-paned windows to comply with the interior noise standards. • Air conditioning, a form of mechanical ventilation, shall be required for all residences to ensure that windows and doors can remain closed for a prolonged period of time to maintain the interior noise standard. • A minimum noise barrier height of up to 10 feet shall be required along the southern project property line and a portion of the east and west property lines around the	City Planner (or designee)	Prior to the issuance of building permits. Prior to release Certificate of Occupancy.	Provide evidence that project plans include the recommended features. Provide results of the interior noise analysis. Site visit by City staff.		Withhold building permits. Withhold release Certificate of Occupancy.

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
recreational area to shield the playground and residences closest to the southern property line (Lots 10 through 16) from train related noises. • A minimum noise barrier height of 8 feet shall be required along the rear private property lines of Lots 1 through 9 and Lots 17 through 21; and south private property lines of Lots 8, 9, and 17 to shield outdoor active use area (e.g., backyards or balconies) from train related noises. • A minimum noise barrier height of 6 feet shall be required along the south private property lines of Lots 10 through 16 and west private property line of Lot 16 to shield the outdoor active use areas such as backyards or balconies from traffic noise along Indiana Avenue and State Route 91 freeway. • A minimum noise barrier height of 6 feet shall be required along the private property line immediately south of Indiana Avenue (Lots 1, and 21 through 30) to shield outdoor active use areas such as backyards or balconies from traffic noise along Indiana Avenue and State Route 91 freeway. • Building façade upgrades (e.g., double-paned windows with a sound transmission class rating of STC-28 or higher) shall be required for all residences located south of Indiana Avenue (Lots 12, 21 through 30). • Building façade upgrades (e.g., double-paned windows with STC-28 or higher) shall be					

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
required for all residences facing the BNSF railroad tracks (Lots 1 through 21 and 43 through 48).					
Mitigation Measure NOI-2: On-Site Operational Noise Impacts. A minimum noise barrier height of 8 feet along the east side of the project is required to shield on-site ground floor HVAC equipment.	City Planner or Director (or designee)	Prior to the issuance of building permits. Prior to release of Certificate of Occupancy.	Provide evidence that the project plans included the required wall. Site visit by City staff.		Withhold building permits. Withhold release of Certificate of Occupancy.
Mitigation Measure NOI-3: Short-Term Construction Vibration Impacts. The construction contractor shall use light construction equipment (e.g., small bulldozers and trucks) within 15 feet of the eastern property line.	City Planner or Director (or designee)	During Plan Check and during construction activities.	Provide evidence that the construction plans include this restriction. Verification through site visit (as required).		Withhold grading and/or demolition permits and/or issuance of a stop work order.
TRAFFIC					
Mitigation Measure TRA-1: Intersection of Donald Avenue-Project Driveway/Indiana Avenue. Prior to issuance of a Certificate of Occupancy, the City of Riverside, Traffic Engineering Section City Engineer, or designee, shall verify that the Donald Avenue-Project Driveway/Indiana Avenue intersection has restriped Indiana Avenue to provide a two way left-turn lane along the project frontage.	City Traffic Engineer (or designee)	Prior to the issuance of Certificate of Occupancy.	Provide evidence that the project applicant has restriped a two way left-turn lane along the project frontage.		Withhold Certificate of Occupancy.
TRIBAL CULTURAL RESOURCES					
Mitigation Measure TRI-1: At least 30 days prior to filing of a grading permit, the project applicant shall contact and notify the consulting tribe(s) of anticipated grading and excavation	City Planner (or designee)	At least 30 days prior to issuance of grading permit.	Provide approved Tribal Cultural Resources Management Agreement between the applicant and		Withhold grading permit.

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
activities. In conjunction with the City and the consulting tribe(s), the applicant shall develop a Tribal Cultural Resources Monitoring Agreement. A copy of the monitoring agreement shall be provided to the City prior to the issuance of any grading permit for the project. The agreement shall address the details, timing, and responsibility of all archaeological and cultural activities that will occur on the project site. Details in the Plan shall include: • Project grading and development scheduling. • The development of a rotating or simultaneous schedule in coordination with the applicant and the designated Native American Tribal Monitor(s) during grading, excavation, and ground-disturbing activities on the site, including the scheduling, safety requirements, duties, scope of work, reimbursement, and Native American Tribal Monitor(s)' authority to stop and redirect grading activities in coordination with a qualified archaeologist. • The protocols and stipulations that the City, tribe(s) and qualified archaeologist will follow in the event of inadvertent discovery of tribal cultural resources (see Mitigation Measure TRI-2).			the affected Native American tribal governments.		
Mitigation Measure TRI-2: In the event of an inadvertent discovery of any tribal cultural resource(s), the landowner(s) shall relinquish ownership of all such resources, including (but not limited to) sacred items, burial goods, and	City Planner (or designee)	Upon discovery of inadvertent discovery and development of a reburial and/or	1) Submit and provide evidence that any inadvertent discovery of any tribal cultural resource has been		Issuance of a stop work order.

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
related archaeological artifacts and burial remains. The applicant shall relinquish the artifacts through one or more of the following methods: • A fully executed reburial agreement with the consulting Native American tribe(s) for discovery of tribal cultural resources. This shall include measures and provisions to protect the future reburial area from any future impacts. Reburial shall not occur until all cataloguing and recordation on appropriate Department of Parks and Recreation (DPR) 523-series forms have been completed. Non-tribal cultural resources will be addressed in coordination with the City and qualified archaeologist in accordance with professional standards. • A curation agreement with an appropriate qualified repository within Riverside County that meets federal standards per 36 CFR Part 79. The collections and associated records shall be transferred, including title, to an appropriate curation facility within Riverside County be accompanied by payment of the fees necessary for permanent curation.		curation agreement.	appropriately and/or recorded, and relinquished to the consulting Native American tribe(s). 2) Submit an approved reburial agreement. 3) Submit an approved curation agreement.		

Standard Condition/Mitigation Measure	Responsible for Monitoring	Timing of Verification	Method of Verification	Verified Date/ Initials	Sanctions for Non-Compliance
Mitigation Measure TRI-3: Prior to the issuance of grading permits, the applicant shall submit to the City for review and approval, evidence that planned on-site excavation activities conform to the applicable provisions of the Tribal Cultural Resources Monitoring Agreement.	City Planner (or designee)	During Plan Check. Prior to the issuance of grading permits. Site visits during construction (as determined necessary by the City).	Provide evidence that the proposed excavation activities conform with the approved Tribal Cultural Resources Monitoring Agreement. Site visits (as warranted).		Withhold grading, demolition and/or building permits. Issuance of a stop work order (as warranted).

Appendix A:
Air Quality and Greenhouse Gas Impact Analysis

AIR QUALITY AND GREENHOUSE GAS IMPACT ANALYSIS

HAWTHORNE RESIDENTIAL DEVELOPMENT PROJECT

CITY OF RIVERSIDE, CALIFORNIA

Tung-chen Chung, Ph.D., INCE Board Certified

LSA

May 2017

AIR QUALITY AND GREENHOUSE GAS IMPACT ANALYSIS

HAWTHORNE RESIDENTIAL DEVELOPMENT PROJECT

CITY OF RIVERSIDE, CALIFORNIA

Prepared for:

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(949) 553-0666

Project No. SWK1502

LSA

May 2017

EXECUTIVE SUMMARY

LSA was retained to prepare an air quality and greenhouse gas (GHG) impact analysis for the proposed residential development project located at 9170 Indiana Avenue, in the City of Riverside, Riverside County, California.

This air quality and GHG impact analysis provides a discussion of the proposed project, the physical setting of the project area, and the regulatory framework for air quality. The report provides data on existing air quality and evaluates potential air quality and GHG impacts associated with the proposed project. Modeled air quality levels are based upon default trip generation for the proposed uses included in the project.

Regional emissions during project construction, calculated with the California Emission Estimation Model (CalEEMod; Version 2016.3.1), would not exceed criteria pollutant thresholds established by the South Coast Air Quality Management District (SCAQMD). Compliance with SCAQMD Rules and Regulations during construction will reduce construction-related air quality impacts from fugitive dust emissions and construction equipment emissions. Standard dust suppression measures have been identified for short-term construction to meet the SCAQMD emissions thresholds. The proposed project would also not exceed the localized significance thresholds (LSTs).

Pollutant emissions from project operation, also calculated with the CalEEMod model, would not exceed the SCAQMD thresholds for any criteria pollutants. LSTs would not be exceeded by long-term emissions from operation of the project. Historical air quality data show that existing carbon monoxide (CO) levels for the project area and the general vicinity do not exceed either State or federal ambient air quality standards. The CO concentrations in the project area are much lower than the federal and State CO standards. The proposed project would not result in any significant increase in CO concentrations at intersections in the project vicinity. Therefore, project-related traffic would not significantly affect local CO levels under future year conditions, and the CO concentrations would be below the State and federal standards. No significant impact on local CO levels would occur.

The proposed project is located in the City of Riverside, Riverside County, which is among the counties that are found to not have serpentine and ultramafic rock in their soils.[1] Therefore, the potential risk for naturally occurring asbestos during project construction is small and less than significant.

The potential of the project to affect global climate change (GCC) is also addressed. Short-term construction and long-term operational emissions of the principal GHGs, including carbon dioxide and methane, are quantified, and their significance relative to the California Air Resources Board (ARB) Scoping Plan is discussed. The proposed project will not exceed any proposed GHG emissions thresholds or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

[1] Department of Conservation Division of Mines and Geology. A general location guide for ultramafic rocks in California – Areas more likely to contain naturally occurring asbestos, August 2000. Website: ftp://ftp.consrv.ca.gov/pub/dmg/pubs/ofr/ofr_2000-019.pdf, accessed October 2016.

The proposed project will require a General Plan Amendment (Planning Case P16-0112) from B/OP – Business/Office Park to MDR – Medium Density Residential and a Zone Change (Planning Case P16-0113) from PF - Public Facilities to R-1-7000 - Single-family residential. The regional Air Quality Management Plan was developed with operational emissions from the previous elementary school on the project site. Based on the defaults trip rates and trip lengths in the Institute of Transportation Engineers Trip Generation Manual, Ninth Edition for the previous elementary school and the proposed project, the proposed project would produce a lower amount of vehicle miles traveled and thus lower operational emissions than the former elementary school. Therefore, the proposed uses are consistent with the regional Air Quality Management Plan.

The evaluation was prepared in conformance with appropriate standards, utilizing procedures and methodologies in the SCAQMD *California Environmental Quality Act (CEQA) Air Quality Handbook* (SCAQMD 1993) and associated updates. Air quality data posted on the respective websites of the California Air Resources Board and the United States Environmental Protection Agency are included to document the local air quality environment.

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FIGURES

TABLES

APPENDIX

ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter
AAQS	ambient air quality standards
AB	Assembly Bill
ac	acre(s)
AQMP	Air Quality Management Plan
AR4	Fourth Assessment Report
ARB	California Air Resources Board
Basin	South Coast Air Basin
CAA	Clean Air Act
CAAQS	California ambient air quality standards
CalEEMod	California Emission Estimation Model
CalEPA	California Environmental Protection Agency
CAT	Climate Action Team
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFCs	chlorofluorocarbons
CH_4	Methane
City	City of Riverside
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
County	County of Riverside
Diesel RRP	Diesel Risk Reduction Plan
DPM	particulate matter from diesel-fueled engines
EO	Executive Order
EPA	United States Environmental Protection Agency

ft	foot/feet
GCC	global climate change
GHG	greenhouse gas
GPO	United States Government Printing Office
GWP	Global Warming Potential
H_2S	hydrogen sulfide
HFCs	hydrofluorocarbons
IGR	Intergovernmental Review
IPCC	Intergovernmental Panel on Climate Change
ITE	Institute of Transportation Engineers
lbs/day	pounds per day
LST	localized significance threshold
m	meter(s)
mg/m^3	milligrams per cubic meter
MMT	million metric tons
MMT CO_2e	million metric tons of carbon dioxide equivalent
MMT CO_2e/yr	million metric tons of carbon dioxide equivalent per year
mpg	miles per gallon
mph	miles per hour
MPO	Metropolitan Planning Organization
MT	metric tons
MT CO_2e	metric tons of carbon dioxide equivalent
MT CO_2e/yr	metric tons of carbon dioxide equivalent per year
MT/yr	metric tons per year
MW	megawatts
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NO_X	nitrogen oxides

O_3	ozone
OMB	White House Office of Management and Budget
OPR	Office of Planning and Research
PFCs	perfluorocarbons
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppm	parts per million
PRC	Public Resource Code
project	residential development project
ROCs	reactive organic compounds
ROGs	reactive organic gases
RPS	Renewable Portfolio Standard
RPS Program	California Renewable Portfolio Standard Program
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SO_2	sulfur dioxide
SONGS	San Onofre Nuclear Generating Station
SRA	Source Receptor Area
TACs	toxic air contaminants
T-BACT	toxics best available control technology
UNFCCC	United Nations Framework Convention on Climate Change
USC	United States Code
VMT	vehicle miles traveled
VOC	volatile organic compounds

PROJECT DESCRIPTION

INTRODUCTION

This air quality and greenhouse gas (GHG) impact analysis has been prepared to evaluate the potential air quality and GHG impacts and mitigation measures associated with the proposed residential development project (project) located at 9170 Indiana Avenue, in the City of Riverside (City), County of Riverside (County), California. This report provides a project-specific air quality and GHG impact analysis by examining the impacts of the proposed uses on adjacent sensitive uses, as well as the impacts on the proposed uses on the project site, and evaluating the mitigation measures required as part of the project design. Guidelines identified by the South Coast Air Quality Management District (SCAQMD) in its *CEQA Air Quality Handbook* (SCAQMD 1993) and associated updates (SCAQMD, 2016) will be followed in this air quality and GHG impact analysis.

REGIONAL PROJECT LOCATION

The project site is a former elementary school located south of Indiana Avenue and north of existing railroad tracks, between Gibson Street and Jackson Street in the City of Riverside, Riverside County. Figure 1 shows the project location.

PROJECT CHARACTERISTICS

The project consists of the construction of 54 single-family dwelling units. Figure 2 illustrates the site plan.

The proposed uses are not consistent with the current General Plan land use and zoning designations and thus will require a General Plan Amendment (Planning Case P16-0112) from B/OP – Business/Office Park to MDR – Medium Design Residential and a Zone Change (Planning Case P16-0113) from PF - Public Facilities to R-1-7000 - Single-family residential.

LAND USES IN THE PROJECT VICINITY

The project site is surrounded primarily by residential development with the nearest residential use east of the project site having a garage located approximately 7 ½ feet from property line and the residence located approximately 25 feet from property line. The areas adjacent to the project site include the following uses:

- **North:** Residential uses on the north side of Indiana Avenue
- **East:** Vacant land and single-family residential development
- **South:** Burlington Northern Santa Fe (BNSF) Railway right-of-way with substation, vacant land and single-family residential development further south
- **West:** Vacant land, with Gibson Street and a single-family residential development further west

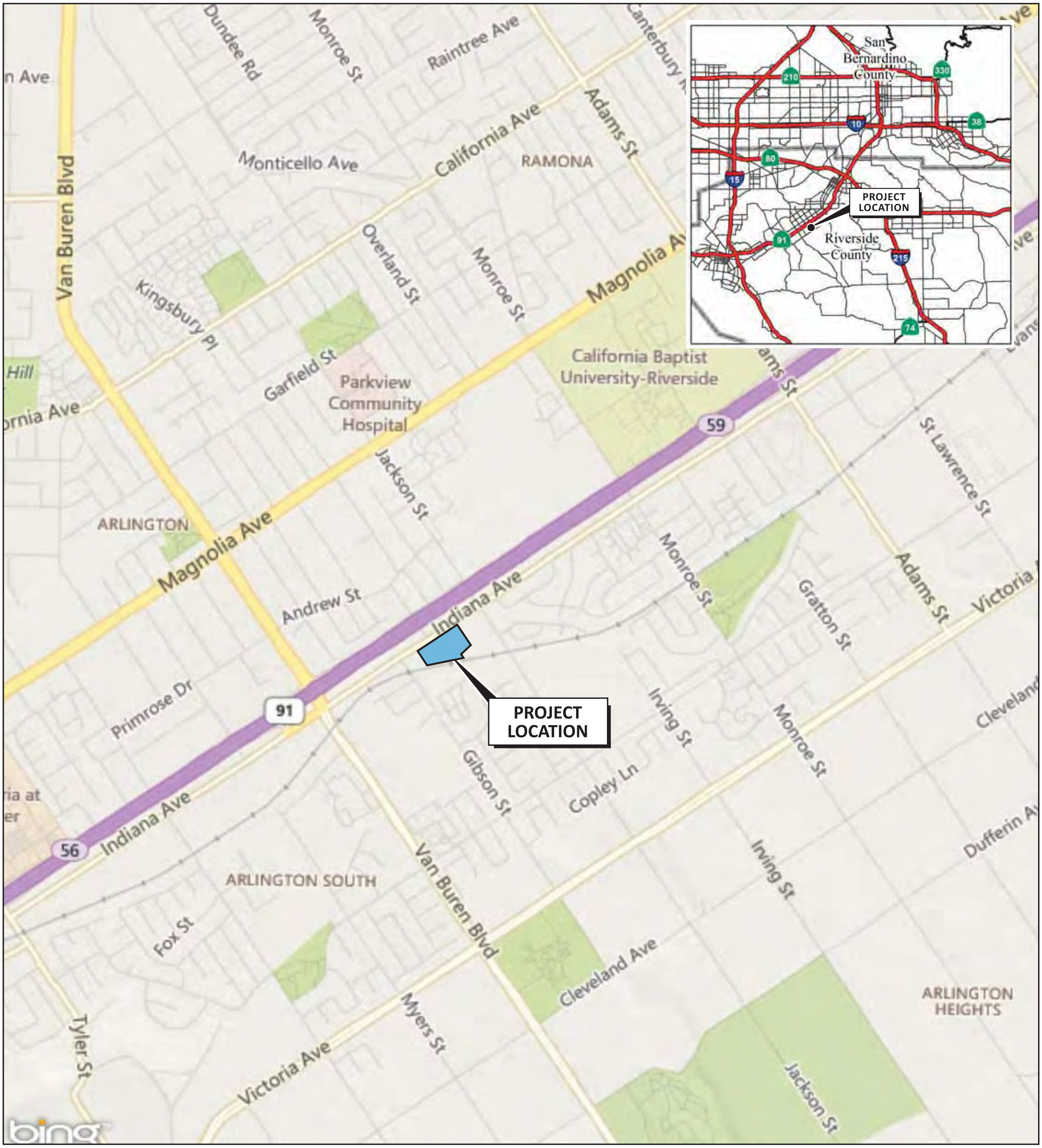

FIGURE 1

N

0 1000 2000

FEET

SOURCE: Bing Maps

Hawthorne Residential Development Project

Project Location Map

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LSA

FIGURE 2

0 70 140
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Hawthorne Residential Development Project

Site Plan

SOURCE: SDH and Associates, Inc. February, 2016.

I:\SWK1502\G\Site Plan.cdr (8/8/2017)

SETTING

REGIONAL AIR QUALITY

The project site is located in the City of Riverside in the non-desert portion of the County of Riverside, California, which is part of the South Coast Air Basin (Basin) and is under the jurisdiction of the SCAQMD. The air quality assessment for the proposed project includes estimating emissions associated with short-term construction and long-term operation of the proposed project.

A number of air quality modeling tools are available to assess the air quality impacts of projects. In addition, certain air districts, such as the SCAQMD, have created guidelines and requirements to conduct air quality analyses. The SCAQMD's current guidelines, included in its *CEQA Air Quality Handbook* (1993) and associated updates (SCAQMD, 2016), were adhered to in the assessment of air quality impacts for the proposed project.

Both the State of California and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants. As detailed in Table A, these pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in size (PM_{10}), particulate matter less than 2.5 microns in size ($PM_{2.5}$), and lead. In addition, the State has set standards for sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

In addition to setting out primary and secondary AAQS, the State of California has established a set of episode criteria for O_3, CO, NO_2, SO_2, and PM_{10}. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three. An alert level is that concentration of pollutants at which initial stage control actions are to begin. An alert will be declared when any one of the pollutant alert levels is reached at any monitoring site and meteorological conditions are such that the pollutant concentrations can be expected to remain at these levels for 12 or more hours or to increase; or, in the case of oxidants, the situation is likely to recur within the next 24 hours unless control actions are taken.

Pollutant alert levels:

- **O_3:** 392 micrograms per cubic meter ($\mu g/m^3$) (0.20 parts per million [ppm]), 1-hour average
- **CO:** 17 milligrams per cubic meter (mg/m^3) (15 ppm), 8-hour average
- **NO_2:** 1,130 $\mu g/m^3$ (0.6 ppm), 1-hour average; 282 $\mu g/m^3$ (0.15 ppm), 24-hour average
- **SO_2:** 800 $\mu g/m^3$ (0.3 ppm), 24-hour average
- **Particulates, measured as PM_{10}:** 350 $\mu g/m^3$, 24-hour average

Table A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm (137 $\mu g/m^3$)		0.070 ppm (137 $\mu g/m^3$)		
Respirable Particulate Matter (PM_{10})[8]	24-Hour	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 $\mu g/m^3$		--		
Fine Particulate Matter ($PM_{2.5}$)[9]	24-Hour	No Separate State Standard		35 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	12.0 $\mu g/m^3$		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)[10]	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)	Gas Phase Chemiluminescence	53 ppb (100 $\mu g/m^3$)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (339 $\mu g/m^3$)		100 ppb (188 $\mu g/m^3$)	None	
Sulfur Dioxide (SO_2)[11]	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (for certain areas)[10]		Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (for certain areas)[10]	—	
	3-Hour	—		—	0.5 ppm (1300 $\mu g/m^3$)	
	1-Hour	0.25 ppm (655 $\mu g/m^3$)		75 ppb (196 $\mu g/m^3$)	—	
Lead[12,13]	30 Day Average	1.5 $\mu g/m^3$	Atomic Absorption	—	—	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 $\mu g/m^3$ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 $\mu g/m^3$		
Visibility-Reducing Particles[14]	8-Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No Federal Standards		
Sulfates	24-Hour	25 $\mu g/m^3$	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24-Hour	0.01 ppm (26 $\mu g/m^3$)	Gas Chromatography			

Source: Ambient Air Quality Standards (ARB 2016).
The footnotes for this table are provided on the following page.

Footnotes:

1 California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once per year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the EPA for further clarification and current national policies.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent procedure which can be shown to the satisfaction of ARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

8 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10 To attain the 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11 On June 2, 2010, the new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12 The ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13 The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

14 In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basins, respectively.

°C = degrees Celsius
$\mu g/m^3$ = micrograms per cubic meter
ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
mg/m^3 = milligrams per cubic meter
ppb = parts per billion
ppm = parts per million

Table B summarizes the primary health effects and sources of common air pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (United States Environmental Protection Agency [EPA]), these health effects will not occur unless the standards are exceeded by a large margin or for a prolonged period of time. State AAQS are more stringent than federal AAQS. Among the pollutants, O_3 and particulate matter ($PM_{2.5}$ and PM_{10}) are considered regional pollutants, while the others have more localized effects.

Table B: Summary of Health Effects of the Major Criteria Air Pollutants

Pollutant	Health Effects	Examples of Sources
Particulate matter (PM_{10}: less than or equal to 10 microns)	• Increased respiratory disease • Lung damage • Premature death	• Cars and trucks, especially diesels • Fireplaces, wood stoves • Windblown dust from roadways, agriculture, and construction
Ozone (O_3)	• Breathing difficulties • Lung damage	Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products
Carbon monoxide (CO)	• Chest pain in heart patients • Headaches, nausea • Reduced mental alertness • Death at very high levels	Any source that burns fuel, such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Nitrogen dioxide (NO_2)	Lung damage	See CO sources
Toxic air contaminants	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders	• Cars and trucks, especially diesels • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products

Source: ARB Fact Sheet: Air Pollution and Health. Website: http://www.arb.ca.gov/research/health/fs/fs1/fs1.htm, accessed October 2016.
Notes:
ARB = California Air Resources Board

The California Clean Air Act (CCAA) provides SCAQMD and other air districts with the authority to manage transportation activities at indirect sources. Indirect sources of pollution include any facility, building, structure, or installation, or combination thereof, that attracts or generates mobile-source activity that results in emissions of any pollutant. In addition, area sources that are generated when minor sources collectively emit a substantial amount of pollution are also managed by the local air districts. Examples of this would be the motor vehicles at an intersection, a mall, and on highways. SCAQMD also regulates stationary sources of pollution throughout its jurisdictional area. Direct emissions from motor vehicles are regulated by the California Air Resources Board (ARB).

Climate/Meteorology

Air quality in the planning area is not only affected by various emission sources (mobile and industry, etc.), but also by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall, etc. The combination of topography, low mixing height, abundant sunshine, and emissions from the second largest urban area in the United States gives the Basin the worst air pollution problem in the nation.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the site with complete weather data is the Riverside-Fire Station 3, which provides sufficient data for average temperatures in the project area. Riverside-Fire Station 3[1] shows that the monthly average maximum temperature recorded ranged from 66.8°F in January to 94.4°F in August, with an annual average maximum of 79.5°F. The monthly average minimum temperature recorded at this station ranged from 39.1°F in January to 59.6°F in August, with an annual average minimum of 48.6°F. January is typically the coldest month, and July and August are typically the warmest months in this area of the Basin.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and is generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin and along the coastal side of the mountains. Riverside-Fire Station 3's monitored precipitation shows that average monthly rainfall varied from 2.20 inches in February to 0.44 inch or less from May to October, with an annual total of 10.21 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in mid-afternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

Winds in the vicinity of the project area blow predominantly from the south-southwest, with relatively low velocities. Wind speeds in the project area average about 5 miles per hour (mph). Summer wind speeds average slightly higher than winter wind speeds. Low average wind speeds, together with a persistent temperature inversion limit the vertical dispersion of air pollutants throughout the Basin. Strong, dry, north or northeasterly winds, known as Santa Ana winds, occur during the fall and winter months, dispersing air contaminants. The Santa Ana conditions tend to last for several days at a time.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly on shore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are CO and nitrogen oxides (NO_X) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

Description of Global Climate Change and Its Sources

Global climate change (GCC) is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other significant changes in climate (such as precipitation or

1 Western Regional Climate Center. Website: www.wrcc.dri.edu, accessed October 2016.

wind) that last for an extended period of time. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures.

Climate change refers to any change in measures of weather (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from natural factors, such as changes in the sun's intensity; natural processes within the climate system, (e.g., changes in ocean circulation); or human activities, such as the burning of fossil fuels, land clearing, or agriculture. The primary observed effect of GCC has been a rise in the average global tropospheric[1] temperature of 0.36°F per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling shows that further warming may occur, which may induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns, or more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and increased intensity of tropical cyclones. Specific effects in California might include a decline in the Sierra Nevada snowpack, erosion of California's coastline, and seawater intrusion in the San Joaquin Delta.

Global surface temperatures have risen by 1.33°F ±0.32°F over the last 100 years. The rate of warming over the last 50 years is almost double that over the last 100 years (IPCC 2013). The latest projections, based on state-of-the art climate models, indicate that temperatures in California are expected to rise 3–10.5°F by the end of the century (State of California 2013). The prevailing scientific opinion on climate change is that "most of the warming observed over the last 60 years is attributable to human activities" (IPCC 2013). Increased amounts of CO_2 and other GHGs are the primary causes of the human-induced component of warming. The observed warming effect associated with the presence of GHGs in the atmosphere (from either natural or human sources) is often referred to as the greenhouse effect.[2]

GHGs are present in the atmosphere and naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced GCC are:[3]

- Carbon dioxide (CO_2)
- CH_4 (methane)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)

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1 The troposphere is the zone of the atmosphere characterized by water vapor, weather, winds, and decreasing temperature with increasing altitude.

2 The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse allows in heat from sunlight and reduces the amount of heat that escapes, GHGs like CO_2, CH_4, and N_2O in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

3 The GHGs listed are consistent with the definition in Assembly Bill 32 (Government Code 38505), as discussed later in this section.

- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)

Over the last 200 years, human activities have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, which some scientists believe can cause global warming. While GHGs produced by human activities include naturally occurring GHGs such as CO_2, CH_4, and N_2O, some gases, like HFCs, PFCs, and SF_6, are completely new to the atmosphere. Certain other gases, such as water vapor, are short-lived in the atmosphere as compared to these GHGs that remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is generally excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this air quality and GHG impact analysis, the term "GHG" will refer collectively to the six gases identified in the bulleted list provided above.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. GWP is based on several factors, including the relative effectiveness of a gas in absorbing infrared radiation and the length of time that the gas remains in the atmosphere ("atmospheric lifetime"). GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of metric tons (MT)[1] of "CO_2 equivalents" (CO_2e). For example, N_2O is 265 times more potent at contributing to global warming than CO_2. Table C identifies the GWP for each type of GHG analyzed in this report.

Table C: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-Year Time Horizon)
Carbon Dioxide (CO_2)	~100	1
Methane (CH_4)	12	28
Nitrous Oxide (N_2O)	121	265

Source: *First Update to the Climate Change Scoping Plan: Building on the Framework Pursuant to AB 32, the California Global Warming Solutions Act* (ARB 2014b).
Notes:
AB 32 = Assembly Bill 32
ARB = California Air Resources Board

Carbon Dioxide. In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals, and plants; volcanic outgassing; decomposition of organic matter; and evaporation from the oceans. Human-caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Rates of CO_2 removal through carbon sinks may increase (e.g. due to steeper concentration gradients) in response to an increase in carbon source emissions and the resulting state of the carbon cycle will be different from before the increase. Natural changes to the

[1] A metric ton is equivalent to approximately 1.1 tons.

carbon cycle work slowly, especially compared to the rapid rate at which humans are adding CO_2 to the atmosphere. Natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of human-made CO_2. Consequently, the gas is building up in the atmosphere. The concentration of CO_2 in the atmosphere has risen approximately 30 percent since the late 1800s (CalEPA 2010).

The transportation sector remains the largest source of GHG emissions in 2014 with 25 percent of California's GHG emission inventory (EPA 2016). When electricity-related emissions are distributed to economic end-use sectors, transportation activities accounted for 33.4 percent of U.S. CO_2 emissions from fossil fuel combustion in 2014. The largest sources of transportation CO_2 emissions in 2014 were passenger cars (42.4 percent), medium- and heavy-duty trucks (23.1 percent), light-duty trucks, which include sport utility vehicles, pickup trucks, and minivans (17.8 percent), commercial aircraft (6.6 percent), pipelines (2.7 percent), rail (2.6 percent), and ships and boats (1.6 percent).

Methane. CH_4 is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources of CH_4 include fires, geologic processes, and bacteria that produce CH_4 in a variety of settings (most notably, wetlands) (EPA 2010). Anthropogenic sources include rice cultivation, livestock, landfills and waste treatment, biomass burning, and fossil fuel combustion (burning of coal, oil, and natural gas, etc.). As with CO_2, the major removal process of atmospheric CH_4—a chemical breakdown in the atmosphere—cannot keep pace with source emissions, and CH_4 concentrations in the atmosphere are increasing.

Nitrous Oxide. N_2O is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. N_2O is also a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion sources emit N_2O. The quantity of N_2O emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California.

Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride. HFCs are primarily used as substitutes for O_3-depleting substances regulated under the Montreal Protocol.[1] PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry, which is active in California, has led to greater use of PFCs. However, there are no known project-related emissions of these three GHGs; therefore, these substances are not discussed further in this analysis.

Emissions Sources and Inventories

An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on global, national, California, and local GHG emission inventories. However,

[1] The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for O_3 depletion.

because GHGs persist for a long time in the atmosphere (see Table C), accumulate over time, and are generally well mixed, their impact on the atmosphere and climate cannot be tied to a specific point of emission.

Global Emissions. Worldwide emissions of GHGs in 2012 totaled 29 billion MT of CO_2e (UNFCCC 2015). Global estimates are based on country inventories developed as part of the programs of the United Nations Framework Convention on Climate Change (UNFCCC).

United States Emissions. In 2014, the United States emitted approximately 6.87 billion MT of CO_2e. Total U.S. emissions have increased by 7.4 percent from 1990 to 2014, and emissions increased from 2013 to 2014 by 1.0 percent. In 2014, relatively cool winter conditions led to an increase in fuels for the residential and commercial sectors for heating. Additionally, transportation emissions increased as a result of a small increase in vehicle miles traveled (VMT) and fuel use across on-road transportation modes. There also was an increase in industrial production across multiple sectors resulting in slight increases in industrial sector emissions. Lastly, since 1990, U.S. emissions have increased at an average annual rate of 0.3 percent (EPA 2016).

State of California Emissions. According to California ARB emission inventory estimates, California emitted approximately 441.5 million metric tons of CO_2e (MMT CO_2e) in 2014 (ARB 2015b). This is a decrease of 2.8 MMT CO_2e from 2013 and a 9.4 percent decrease since 2004 (ARB 2016b).

The ARB estimates that transportation was the source of approximately 36 percent of the State's GHG emissions in 2014, followed by electricity generation (both in-State and out-of-State) at 20 percent and industrial sources at 21 percent. The remaining sources of GHG emissions were residential and commercial activities at 9 percent, agriculture at 8 percent, high-GWP gases at 4 percent, and recycling and waste at 2 percent (ARB 2016b).

The ARB is responsible for developing the State GHG Emission Inventory. This inventory estimates the amount of GHGs emitted to and removed from the atmosphere by human activities within the State and supports the Assembly Bill (AB) 32 Climate Change Program. The ARB's current GHG emission inventory covers 1990–2013 and is based on fuel use, equipment activity, industrial processes, and other relevant data (e.g., housing, landfill activity, and agricultural lands).

The ARB staff has projected Statewide unregulated GHG emissions for 2020, which represent the emissions that would be expected to occur in the absence of any GHG reduction actions, at 509 MMT CO_2e. GHG emissions from the transportation and electricity sectors as a whole are expected to increase but remain at approximately 30 percent and 32 percent of total CO_2e emissions, respectively (ARB 2014). On April 29, 2015, Governor Edmund G. Brown, Jr. issued Executive Order (EO) B-30-15. The EO sets a new interim Statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050, and directs the ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of MMT CO_2e.

Air Pollution Constituents and Attainment Status

The ARB coordinates and oversees both State and federal air pollution control programs in California. The ARB oversees activities of local air quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the EPA and local air districts. The ARB has divided the State into 15 air basins based on meteorological and topographical factors of air pollution. Data collected at these stations are used by the ARB and EPA to classify air basins as attainment, nonattainment, nonattainment-transitional, or unclassified, based on air quality data for the most recent 3 calendar years compared with the AAQS. Attainment areas may be further classified:

- **Attainment/Unclassified** ("unclassifiable" on some lists), areas which have never violated the air quality standard of interest or do not have enough monitoring data to establish attainment or nonattainment status;
- **Attainment-Maintenance** (national ambient air quality standards [NAAQS] only), areas which violated an NAAQS that is currently in use (was nonattainment) in or after 1990, but now attain the standard and are officially redesignated as attainment areas by the EPA with a maintenance State Implementation Plan (SIP); or
- **Attainment** (usually only for California ambient air quality standards [CAAQS], but sometimes for NAAQS), which areas have adequate monitoring data to show attainment, have never been nonattainment, or, for NAAQS, have completed the official maintenance period.

Nonattainment areas are imposed with additional restrictions as required by the EPA. The air quality data are also used to monitor progress in attaining air quality standards. Table D lists the attainment status for the criteria pollutants in the Basin.

Table D: Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
O_3 1-hour	Nonattainment	Extreme Nonattainment
O_3 8-hour	Nonattainment	Extreme Nonattainment
PM_{10}	Nonattainment	Attainment/Maintenance
$PM_{2.5}$	Nonattainment	Serious Nonattainment
CO	Attainment	Attainment/Maintenance
NO_2	Attainment	Unclassified/Attainment (1-hr) Attainment/Maintenance (annual)
SO_2	Attainment[1]	Unclassified/Attainment
Lead	Attainment[1]	Unclassified/Attainment[2]
All Others	Attainment/Unclassified	Attainment/Unclassified

Source: South Coast Air Quality Management District. Website: www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf, accessed December 2016.

Notes:

[1] Information from California Air Resources Board. Website: www.arb.ca.gov/desig/adm/adm.htm

[2] Except in Los Angeles County.

CO = carbon monoxide
N/A = not applicable
NO_2 = nitrogen dioxide
O_3 = ozone
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide

Ozone. O_3 (smog) is formed by photochemical reactions between NO_X and reactive organic gases (ROGs) rather than being directly emitted. O_3 is a pungent, colorless gas typical of Southern California smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. O_3 levels peak during summer and early fall. The entire Basin is designated as a nonattainment area for the State 1-hour and 8-hour O_3 standards. The EPA has officially designated the status for most of the Basin regarding the 8-hour O_3 standard as extreme nonattainment, which means the Basin has until 2024 to attain the federal 8-hour O_3 standard.

Carbon Monoxide. CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire Basin is in attainment for the State standards for CO. The Basin is designated as an attainment area under the State CO standards and as an attainment/maintenance area under the federal CO standards.

Nitrogen Oxides. NO_2, a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of the photochemical smog reaction. It also contributes to other pollution problems, including a high concentration of fine particulate matter ($PM_{2.5}$), poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung function and may reduce resistance to infection. The entire Basin is designated as attainment for the State NO_2 standard and as an unclassified/attainment area under the federal 1-hour NO_2 standard.

Sulfur Dioxide. SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter ($PM_{2.5}$), and reduces visibility and the level of sunlight. The entire Basin is in attainment with both the federal and State SO_2 standards.

Lead. Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the bloodstream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. Lead dust is the most common source of lead poisoning and other health related effects of lead. Lead cannot be absorbed through the skin, so it may enter the bloodstream in one of two ways; either through ingestion or inhalation. Lead particles found in lead dust are small enough to make it past the filters in the nose and work their way down into the lungs. Lead dust can also very easily coat things such as toys, furniture, food, dishes, and many other surfaces found in the home. Once these surfaces are contaminated by lead dust, they pose a serious health risk to everyone inside the home, especially young children and pets. The portion of the Basin the project site is located in is in attainment with both the federal and State lead standards.

Particulate Matter. Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (PM_{10}) derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particle levels. Fine particles can also be formed in the atmosphere through chemical reactions. PM_{10} can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily among the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (in children and individuals with cardiopulmonary disease such as asthma); decreased lung function (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. The Basin is designated nonattainment for the federal and State $PM_{2.5}$ standards and the State PM_{10} standard, and attainment/maintenance for the federal PM_{10} standard.

Volatile Organic Compounds. Volatile organic compounds (VOCs; also known as ROGs and reactive organic compounds [ROCs]) are formed from the combustion of fuels and the evaporation of organic solvents. VOCs are not defined as criteria pollutants, but are a prime component of the photochemical smog reaction. Consequently, VOCs accumulate in the atmosphere more quickly during the winter when sunlight is limited and photochemical reactions are slower. There are no attainment designations for VOCs.

Sulfates. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The entire Basin is in attainment for the State standard for sulfates.

Hydrogen Sulfide. H_2S is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation. In 1984, an ARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance. The entire Basin is unclassified for the State standard for H_2S.

Visibility-Reducing Particles. Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt. The statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. The entire Basin is unclassified for the State standard for visibility-reducing particles.

LOCAL AIR QUALITY

The SCAQMD, together with the ARB, maintains ambient air quality monitoring stations in the Basin. The air quality monitoring station closest to the site is the Riverside-Rubidoux Station located at 5888 Mission Boulevard approximately 5.75 miles northeast of project site, which monitors all of the air pollutants. The air quality trends from this station are used to represent the ambient air quality in the project area. The pollutants monitored are CO, O_3, PM_{10}, $PM_{2.5}$, NO_2, and SO_2.[1,1]

[1] United States Environmental Protection Agency (EPA). 2013–2015 Air Quality Data. Website: http://www3.epa.gov/airquality/airdata/, accessed October 2016.

The ambient air quality data in Table E show that NO_2 and CO levels are below the applicable State and federal standards. As detailed in Table E (Ambient Air Quality Monitored at the Riverside-Rubidoux Station), the State 1-hour O_3 standard was exceeded 13 to 31 times per year in the past 3 years.

Table E: Ambient Air Quality Monitored at the Riverside-Rubidoux Station

Pollutant	Standard	2013	2014	2015
Carbon Monoxide (CO)				
Maximum 1-hr concentration (ppm)		2.5	2.4	4.1
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8-hr concentration (ppm)		2.0	1.9	1.5
Number of days exceeded:	State: ≥ 9.0 ppm	0	0	0
	Federal: ≥ 9 ppm	0	0	0
Ozone (O_3)				
Maximum 1-hr concentration (ppm)		0.123	0.141	0.132
Number of days exceeded:	State: > 0.09 ppm	13	29	31
Maximum 8-hr concentration (ppm)		0.103	0.104	0.105
Number of days exceeded:	State: > 0.07 ppm	38	69	59
	Federal: > 0.075 ppm	26	41	39
Coarse Particulates (PM_{10})				
Maximum 24-hr concentration (µg/m^3)		135	100	69
Number of days exceeded:	State: > 50 µg/m^3	86	119	87
	Federal: > 150 µg/m^3	0	0	0
Annual arithmetic average concentration (µg/m^3)		33.2	36.3	32.2
Exceeded for the year:	State: > 20 µg/m^3	Yes	Yes	Yes
Fine Particulates ($PM_{2.5}$)				
Maximum 24-hr concentration (µg/m^3)		60.3	48.9	54.7
Number of days exceeded:	Federal: > 35 µg/m^3	6	5	9
Annual arithmetic average concentration (µg/m^3)		12.4	ND	11.8
Exceeded for the year:	State: > 12 µg/m^3	Yes	ND	No
	Federal: > 15 µg/m^3	No	ND	No
Nitrogen Dioxide (NO_2)				
Maximum 1-hr concentration (ppm)		0.060	0.060	0.057
Number of days exceeded:	State: > 0.18 ppm	0	0	0
Annual arithmetic average concentration (ppm)		ND	0.015	0.014
Exceeded for the year:	State: > 0.030 ppm	ND	No	No
	Federal: > 0.053 ppm	ND	No	No

Source 1: United States Environmental Protection Agency (EPA). Air Quality Data. Website: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report (accessed December 2016).
Source 2: California Air Resources Board (ARB). iADAM: Air Quality Data Statistics. Website: http://www.arb.ca.gov/adam (accessed December 2016).
Notes:
µg/m^3 = micrograms per cubic meter
hr = hour
ND = no data available
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ppm = parts per million

[1] California Air Resources Board (ARB). iADAM: Air Quality Data Statistics. Website: http://www.arb.ca.gov/adam/index.html, accessed October 2016.

The federal 8-hour O_3 standard was exceeded 26 to 41 days per year in the past 3 years, and the State 8-hour O_3 standard was exceeded 38 to 69 times per year in the past 3 years. The federal 24-hour PM_{10} standard was not exceeded in the past 3 years, but the State 24-hour PM_{10} standard was exceeded 86 to 119 days per year in the past 3 years. The State's annual PM_{10} standard was exceeded in each of the years from 2013 to 2015. The federal 24-hour $PM_{2.5}$ standard was exceeded 5 to 9 days per year in the past 3 years and the State's annual $PM_{2.5}$ standard was exceeded in 2013.

Data collected at permanent monitoring stations are used by the EPA to classify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. The EPA has designated the Southern California Association of Governments (SCAG) as the Metropolitan Planning Organization (MPO) responsible for ensuring compliance with the requirements of the CAA for the Basin.

In an effort to help federal agencies ensure the integrity of their environmental reviews and promote sound governmental decision making, the Council on Environmental Quality (CEQ) issued on January 14, 2011, final guidance on the "Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact." This guidance was developed as part of CEQ's effort to modernize and reinvigorate federal agency implementation of the National Environmental Policy Act (NEPA). The EPA established new national air quality standards for ground-level O_3 and $PM_{2.5}$ in 1997. On May 14, 1999, the Court of Appeals for the District of Columbia Circuit issued a decision ruling that the CAA, as applied in setting the new public health standards for O_3 and $PM_{2.5}$, was unconstitutional as an improper delegation of legislative authority to the EPA. On February 27, 2001, the United States Supreme Court upheld the way the government sets air quality standards under the CAA. The court unanimously rejected industry arguments that the EPA must consider financial cost, as well as health benefits, in writing standards. The justices also rejected arguments that the EPA took too much lawmaking power from Congress when it set tougher standards for O_3 and soot in 1997. Nevertheless, the court threw out the EPA's policy for implementing new O_3 rules, saying that the agency ignored a section of the law that restricts its authority to enforce such rules.

In April 2003, the EPA was cleared by the White House Office of Management and Budget (OMB) to implement the 8-hour ground-level O_3 standard. The EPA issued the proposed rule implementing the 8-hour O_3 standard in April 2003. The EPA completed final 8-hour nonattainment status on April 15, 2004. The EPA revoked the 1-hour O_3 standard on June 15, 2005, and lowered the 8-hour O_3 standard from 0.08 ppm to 0.075 ppm on April 1, 2008.

The EPA issued the final $PM_{2.5}$ implementation rule in fall 2004. The EPA lowered the 24-hour $PM_{2.5}$ standard from 65 to 35 $\mu g/m^3$ and revoked the annual PM_{10} standard on December 17, 2006. The EPA issued final designations for the 2006 24-hour $PM_{2.5}$ standard on December 12, 2008.

The United States has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the United States Supreme Court ruled that the EPA has the authority to regulate CO_2 emissions under the CAA. While there currently are no adopted federal regulations for the control or reduction of GHG emissions, the EPA commenced several actions in 2009 that are required to implement a regulatory approach to GCC.

On September 30, 2009, the EPA announced a proposal that focuses on large facilities emitting over 25,000 tons of GHG emissions per year. These facilities would be required to obtain permits that would demonstrate they are using the best practices and technologies to minimize GHG emissions.

On December 7, 2009, the EPA Administrator signed a final action under the CAA, finding that six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to GCC. This EPA action does not impose any requirements on industry or other entities. However, the findings are a prerequisite to finalizing the GHG emission standards for light-duty vehicles mentioned below.

On July 18, 2016, the Department of Transportation's National Highway Traffic Safety Administration (NHTSA), EPA and ARB issued a Draft Technical Assessment Report (TAR) for light-duty vehicle CAFE (Corporate Average Fuel Economy) and GHG standards for MYs 2022-2025. This Draft TAR is the first step in the Agencies' mid-term evaluation process of the October 2012 final rule establishing CAFE and GHG standards for MYs 2017 and beyond. On August 16, 2016, the EPA and the NHTSA jointly finalized standards for medium- and heavy-duty vehicles that will improve fuel efficiency and cut carbon pollution, while bolstering energy security and spurring manufacturing innovation. The agencies estimate that the standards will save up to 2 billion barrels of oil and reduce CO_2 emissions by up to 1.1 billion metric tons over the lifetimes of MYs 2018-2029 vehicles, providing up to $230 billion in net social benefits.

State Regulations/Standards

California Air Pollution Control Officers Association. The California Air Pollution Control Officers Association (CAPCOA) is a non-profit association of the air pollution control officers from all 35 local air quality agencies throughout California. CAPCOA was formed in 1976 to promote clean air and to provide a forum for sharing of knowledge, experience, and information among the air quality regulatory agencies around the State. CAPCOA meets regularly with federal and state air quality officials to develop statewide rules and to assure consistent application of rules and regulations. CAPCOA works with specialized task forces (including regulated industry) by participating actively in the legislative process, and continuing to coordinate local efforts with those of the state and federal air agencies. The goal is to protect public health while maintaining economic vitality.

California Air Resource Board. In 1967, the California Legislature passed the Mulford-Carrell Act, which combined two Department of Health bureaus (i.e., the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board), to establish the ARB. Since its formation, the ARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems.

California adopted the CCAA in 1988. The ARB administers CAAQS for the 10 air pollutants designated in the CCAA. These 10 State air pollutants are the six criteria pollutants designated by the federal CAA as well as visibility-reducing particulates, H_2S, sulfates, and vinyl chloride.

The ARB identified DPM as TACs in August 1998. Following the identification process, the ARB was required by law to determine whether there is a need for further control. In September 2000, the ARB adopted the Diesel Risk Reduction Plan, which recommends many control measures to reduce the risks associated with DPM and to achieve goals of 75 percent DPM reduction by 2010 and 85 percent by 2020.

From the 2010 Climate Action Team Report – California Climate Action Milestones. In 1988, AB 4420 directed the California Energy Commission (CEC) to report on "how global warming trends may affect California's energy supply and demand, economy, environment, agriculture, and water supplies" and offer "recommendations for avoiding, reducing and addressing the impacts." This marked the first statutory direction to a California State agency to address climate change.

The California Climate Action Registry was created to encourage voluntary reporting and early reductions of GHG emissions with the adoption of Senate Bill (SB) 1771 in 2000. The CEC was directed to assist by developing metrics and identifying and qualifying third-party organizations to provide technical assistance and advice to GHG emission reporters. The next year, SB 527 amended SB 1771 to emphasize third-party verification.

SB 1711 also contained several additional requirements for the CEC, including updating the State's Greenhouse Gas Emissions Inventory from an existing 1998 report and continuing to update it every 5 years; acquiring, developing and distributing information on GCC to agencies and businesses; establishing a State interagency task force to ensure policy coordination; and establishing a climate change advisory committee to make recommendations on the most equitable and efficient ways to implement climate change requirements. In 2006, AB 1803 transferred preparation of the inventory from the CEC to the ARB. The ARB updates the inventory annually.

AB 1493, authored by Assembly Member Fran Pavley in 2002, directed the ARB to adopt regulations to achieve the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles. The so-called "Pavley" regulations, or Clean Car regulations, were approved by the ARB in 2004. The ARB submitted a request to the EPA to implement the regulations in December 2005. After several years of requests to the federal government and accompanying litigation, this waiver request was granted on June 30, 2009. The ARB has since combined the control of smog-causing pollutants and GHG emissions to develop a single coordinated package of standards known as Low Emission Vehicles III. These regulations reduced GHG emissions from California passenger vehicles by approximately 22 percent in 2012 and approximately 30 percent in 2016, all while improving fuel efficiency and reducing motorists' costs. AB 1493 also directed the California Climate Action Registry to adopt protocols for reporting reductions in GHG emissions from mobile sources prior to the operative date of the regulations.

SB 812 added forest management practices to the California Climate Action Registry members' reportable emissions actions. It also directed the Registry to adopt forestry procedures and protocols to monitor, estimate, calculate, report, and certify carbon stores and CO_2 emissions that resulted from the conservation and conservation-based management of forests in California.

The California Renewable Portfolio Standard (RPS) Program, which requires electric utilities and other entities under the jurisdiction of the California Public Utilities Commission to meet 20 percent of its retail sales with renewable power by 2017, was established by SB 1078 in 2002. In 2006, the RPS Program was accelerated by SB 107 to 20 percent by 2010. The RPS Program was subsequently expanded by the renewable electricity standard approved by the ARB in September 2010, requiring all utilities to meet a 33 percent target by 2020. The renewable electricity standard is projected to reduce GHG emissions from the electricity sector by at least 12 MMT CO_2e in 2020.

In December 2004, Governor Arnold Schwarzenegger signed Executive Order (EO) S-20-04, which set a goal of reducing energy use in State-owned buildings by 20 percent by 2015 (from a 2003 baseline) and encouraged cities, counties, schools, and the private sector to take all cost-effective measures to reduce building electricity use. This action built upon the State's strong history of energy efficiency efforts that have saved Californians and California businesses energy and money for decades. They are a cornerstone of GHG reduction efforts.

EO S-3-05 (June 2005) established GHG targets for the State, such as returning to year 2000 emission levels by 2010; 1990 levels by 2020; and 80 percent below 1990 levels by 2050. It directed the Secretary of CalEPA to coordinate efforts to meet the targets with the heads of other State agencies. This group became the Climate Action Team (CAT).

California's Million Solar Roofs plan was boosted by the passage of SB 1 in 2006. The plan is estimated to result in 3,000 megawatts of new electricity-generating capacity and avoidance of 2.1 MMT CO_2e emissions. The main components of the bill included expanding the program to more customers, requiring the State's municipal utilities to create their own solar rebate programs, and making solar panels a standard option on new homes.

The California Global Warming Solutions Act of 2006, best known by its bill number AB 32, created a first-in-the-country comprehensive program to achieve real, quantifiable, and cost-effective reductions in GHGs. The law set an economy-wide cap on California GHG emissions at 1990 levels by 2020. It directed the ARB to prepare, approve, and implement a Scoping Plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions. EO S-20-06, signed in October 2006, directed the Secretary for Environmental Protection to establish a Market Advisory Committee of national and international experts. The committee made recommendations to the ARB on the design of a market-based program for GHG emissions reduction. The ARB adopted the Scoping Plan, describing a portfolio of measures to achieve the target, in December 2008.

The ARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identifies the next steps for California's climate change strategy. It shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path toward long-term, deep GHG emission reductions. The report establishes a broad framework for continued emission reductions beyond 2020, with a goal of 80 percent below 1990 levels by 2050. The Update identifies progress made to meet the near-term objectives of AB 32 and defines California's climate change priorities and activities Climate for the next several years. The Update does not set new targets for the State but rather describes a path that would achieve the long-term 2050 goal of EO S-3-05 for emissions to decline to 80 percent below 1990 levels by 2050. As previously stated Executive Order (EO) B-30-15 (April 29, 2015) requires ARB to update the Scoping Plan.

The Governors of California, Arizona, New Mexico, Oregon, and Washington entered into a Memorandum of Understanding in February 2007, establishing the Western Climate Initiative. The Governors agreed to set a regional goal for emissions reductions consistent with state-by-state goals; develop a design for a regional market-based, multi-sector mechanism to achieve the goal; and participate in a multi-state GHG registry. The initiative has since grown to include Montana, Utah, and the Canadian provinces of British Columbia, Manitoba, Ontario, and Québec.

California is implementing the world's first Low Carbon Fuel Standard for transportation fuels, pursuant to both EO S-01-07 (signed January 2007) and AB 32. The standard requires a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. This reduction is expected to reduce GHG emissions in 2020 by 17.6 MMT CO_2e. Also in 2007, AB 118 created the Alternative and Renewable Fuel and Vehicle Technology Program. The CEC and the ARB administer the program. This act provides funding for alternative fuel and vehicle technology research, development, and deployment in order to attain the State's climate change goals, achieve the State's petroleum reduction objectives and clean air and GHG emission reduction standards, develop public-private partnerships, and ensure a secure and reliable fuel supply.

In addition to vehicle emissions regulations and the Low Carbon Fuel Standard, the third effort for reducing GHG emissions from transportation is the reduction in the demand for personal vehicle travel (VMT). This measure was addressed in September 2008 through the Sustainable Communities and Climate Protection Act of 2008, or SB 375. The enactment of SB 375 initiated an important new regional land use planning process to mitigate GHG emissions by integrating and aligning planning for housing, land use, and transportation for California's 18 MPOs. The bill directed the ARB to set regional GHG emissions reduction targets for most areas of the State. It also contained important elements related to federally mandated Regional Transportation Plans (RTPs) and the alignment of State transportation and housing planning processes.

Also codified in 2008, SB 97 required the Governor's Office of Planning and Research (OPR) to develop GHG emissions criteria for use in determining project impacts under CEQA. These criteria were developed in 2009 and went into effect in 2010.

EO S-13-08 launched a major initiative for improving the State's adaptation to climate impacts from sea level rise, increased temperatures, shifting precipitation, and extreme weather events. It ordered a California Sea Level Rise Assessment Report to be requested from the National Academy of Sciences. It also ordered the development of a Climate Adaptation Strategy. The strategy, published in December 2009, assesses the State's vulnerability to climate change impacts and outlines possible solutions that can be implemented within and across State agencies to promote resiliency. The strategy focused on seven areas: public health, biodiversity and habitat, ocean and coastal resources, water management, agriculture, forestry, and transportation and energy infrastructure.

As described above, on April 29, 2015, Governor Edmund G. Brown, Jr. issued EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's EO aligns California's GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris set for late 2015. The EO also requires the State's climate adaptation plan to be updated every 3 years and for the State to continue its climate change research program, among other provisions. As with EO S-3-05, this EO is not legally enforceable against local governments and the private sector. Legislation that would update AB 32 to make post-2020 targets and requirements a mandate is in process in the State Legislature.

The initiatives, EOs, and statutes outlined above comprise the major milestones in California's efforts to address climate change through coordinated action on climate research, GHG mitigation, and climate change adaptation. There are numerous other related efforts that have been undertaken by State agencies and departments to address specific questions and programmatic needs. The Climate Action Team coordinates these efforts and others, which comprise the State's climate program. The sections below describe these efforts.

Regional Air Quality Planning Framework

The 1976 Lewis Air Quality Management Act established the SCAQMD and other air districts throughout the State. The federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the State.

The ARB is responsible for incorporating air quality management plans for local air basins into an SIP for EPA approval. Significant authority for air quality control within them has been given to local air districts that regulate stationary-source emissions and develop local nonattainment plans.

Regional Air Quality Management Plan

The SCAQMD and the SCAG are responsible for formulating and implementing the Air Quality Management Plan (AQMP) for the Basin. The main purpose of an AQMP is to bring the area into compliance with federal and State air quality standards. Every 3 years, the SCAQMD prepares a new AQMP, updating the previous plan and having a 20-year horizon. The SCAQMD adopted the 2012 AQMP in December 2012; the ARB approved it on January 23, 2013, and forwarded it to the EPA.

The 2012 AQMP incorporates the latest scientific and technological information and planning assumptions, including the 2012 RTP/Sustainable Communities Strategy (SCS) and updated emission inventory methodologies for various source categories. The 2012 AQMP included the new and changing federal requirements, implementation of new technology measures, and continued development of economically sound, flexible compliance approaches.

The 2016 RTP/SCS was adopted by SCAG in April 2016. SCAQMD released the Draft 2016 AQMP on June 30, 2016 for adoption in early 2017.

THRESHOLDS OF SIGNIFICANCE

A number of modeling tools are available to assess air quality impacts of projects. In addition, certain air districts, such as the SCAQMD, have created guidelines and requirements to conduct air quality analysis. The SCAQMD's current guidelines, the *CEQA Air Quality Handbook* (1993) with associated updates (SCAQMD, 2016), were adhered to in the assessment of air quality impacts for the proposed project. The current air quality model, CalEEMod Version 2016.3.1, was used to estimate project-related mobile- and stationary-source emissions in this air quality and GHG impact analysis.

This air quality and GHG impact analysis includes estimated emissions associated with short-term construction and long-term operation of the proposed project. Criteria pollutants with regional impacts would be emitted by project-related vehicular trips as well as by emissions associated with stationary sources used on site. Localized air quality impacts (i.e., higher CO concentrations [CO hot spots] near intersections or roadway segments in the project vicinity) would be small and less than significant due to the generally low ambient CO concentrations (maximum 2.5 ppm for the 1-hour period and 1.6 ppm for the 8-hour period) in the project area.

The net increase in pollutant emissions determines the significance and impact on regional air quality as a result of the proposed project. The results also allow the local government to determine whether the proposed project will deter the region from achieving the goal of reducing pollutants in accordance with the AQMP in order to comply with the NAAQS and CAAQS.

STATE THRESHOLDS OF SIGNIFICANCE

Based on Appendix G, PRC Sections 15000–15387 of the *State CEQA Guidelines,* a project would normally be considered to have a significant effect on air quality if the project would violate any AAQS, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutants concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

REGIONAL THRESHOLDS OF SIGNIFICANCE

In addition to the NAAQS and CAAQS, the SCAQMD has established daily emissions thresholds for construction and operation of a proposed project in the Basin. It should be noted that the emissions thresholds were established based on the attainment status of the air basin in regard to air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (EPA), these emissions thresholds are regarded as conservative and would overstate an individual project's contribution to health risks.

Regional Thresholds for Construction Emissions

The following CEQA significance thresholds for construction emissions have been established for the Basin:

- 75 pounds per day (lbs/day) of VOCs

- 100 lbs/day of NO_X
- 550 lbs/day of CO
- 150 lbs/day of PM_{10}
- 55 lbs/day of $PM_{2.5}$
- 150 lbs/day of SO_2

Projects in the Basin with construction-related emissions that exceed any of these emission thresholds are considered to be significant under the SCAQMD guidelines.

Regional Thresholds for Operational Emissions

The following CEQA significance thresholds for operational emissions have been established for the Basin:

- 55 lbs/day of VOCs
- 55 lbs/day of NO_X
- 550 lbs/day of CO
- 150 lbs/day of PM_{10}
- 55 lbs/day of $PM_{2.5}$
- 150 lbs/day of SO_2

Projects in the Basin with operational emissions that exceed any of these emission thresholds are considered to be significant under the SCAQMD guidelines.

The phase-out of leaded gasoline started in 1976. Since gasoline no longer contains lead, the project is not anticipated to result in air quality impacts related to lead; therefore, no further discussion is provided in this analysis.

Local Microscale Concentration Standards. The significance of localized project impacts under CEQA depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. If ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a State or federal standard, project emissions are considered significant if they increase 1-hour CO concentrations by 1 ppm or more or 8-hour CO concentrations by 0.45 ppm or more. The following are applicable local emission concentration standards for CO:

- California State 1-hour CO standard of 20 ppm
- California State 8-hour CO standard of 9 ppm

Thresholds for Localized Impact Analysis

In the SCAQMD *Final Localized Significance Threshold Methodology* (published in June 2003 and revised in July 2008), it is recommended that all air quality analyses include an assessment of both construction and operational impacts on the air quality of nearby sensitive receptors. LSTs represent the maximum emissions from a project site that are not expected to result in an exceedance of the NAAQS or CAAQS, as previously shown in Table A. LSTs are based on the ambient concentrations of that pollutant within the project Source Receptor Area (SRA) and the distance to the nearest sensitive receptor. For this project, the appropriate SRA for the localized impacts analysis is the Metropolitan Riverside County area (SRA 23).

In the case of CO and NO_2, since ambient levels are below the standards (see Table E), a project would be considered to have a significant impact if project emissions result in an exceedance of one or more of the NAAQS or CAAQS. Since the PM_{10} and $PM_{2.5}$ ambient levels already exceed a State or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. For these two, the significance criteria are the pollutant concentration thresholds presented in SCAQMD Rules 403 and 1301. The Rule 403 threshold of 10.4 $\mu g/m^3$ applies to construction emissions. The Rule 1301 threshold of 2.5 $\mu g/m^3$ applies to operational activities.

Based on the SCAQMD recommended methodology[1] and the construction equipment planned, no more than 4.5 acres[2] would be disturbed on any one day, thus the 2 and 5 acre thresholds have been interpolated to derive 4.5 acre LST thresholds for construction emissions. For operational emissions, the localized significance for a project greater than 5 acres can be determined by performing the screening-level analysis before using the dispersion modeling because the screening-level analysis is more conservative, and if no exceedance of the screening-level thresholds is identified, then the chance of operational LSTs exceeding concentration standards is small.

Sensitive receptors include residences, schools, hospitals, and similar uses that are sensitive to adverse air quality. There are existing residences immediately to the north and east of the project boundary, the closest at approximately 25 feet from property line. SCAQMD LST Methodology (SCAQMD 2008) specifies "Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Therefore, the following emissions thresholds apply during project construction and operation:

- **Construction Localized Significance Thresholds, 4.5 acres, 82 ft (25 m) distance**
  - 253 lbs/day of NO_X
  - 1,461 lbs/day of CO
  - 12 lbs/day of PM10
  - 7.3 lbs/day of $PM_{2.5}$
- **Operation Localized Significance Thresholds, 5 acres, 82 ft (25 m) distance**
  - 270 lbs/day of NO_X
  - 1,577 lbs/day of CO

[1] *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*. Website: www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf, accessed December 2016.

[2] Maximum disturbance of 4.5 acres would occur during the grading phase from the use of 2 tractors, 2 scrapers, 1 dozer, and 1 grader for 8 hours/day.

- 4 lbs/day of PM_{10}
- 2 lbs/day of $PM_{2.5}$

Thresholds for Global Climate Change

State CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

The SCAQMD has not adopted recommended numeric CEQA significance thresholds for GHG emissions for lead agencies to use in assessing GHG impacts of residential and commercial development projects. In October 2008, SCAQMD presented to the Governing Board the *Draft Guidance Document – Interim CEQA GHG Significance Thresholds* (SCAQMD 2008). The guidance document was not adopted or approved by the Governing Board. This document, which builds on the previous guidance prepared by CAPCOA explored various approaches for establishing a significance threshold for GHG emissions. Among the concepts discussed, the document considered a "de minimis," or screening, threshold to "identify small projects that would not likely contribute to significant cumulative GHG impacts" (SCAQMD 2008). As further explained in this document, "Projects with GHG emissions less than the screening level are considered to be small projects, that is, they would not likely be considered cumulatively considerable" (SCAQMD 2008). The SCAQMD formed a GHG CEQA Significance Threshold Working Group to work with SCAQMD staff on developing GHG CEQA significance thresholds until statewide significance thresholds or guidelines are established.

The SCAQMD has continued to consider adoption of significance thresholds for residential and general development projects. The most recent proposal issued in September 2010 (SCAQMD 2010) uses the following tiered approach to evaluate potential GHG impacts from various uses:

Tier 1 Determine if CEQA categorical exemptions are applicable. If not, move to Tier 2.

Tier 2 Consider whether or not the proposed project is consistent with a locally adopted GHG reduction plan that has gone through public hearing and CEQA review, that has an approved inventory, includes monitoring, etc. If not, move to Tier 3.

Tier 3 Consider whether the proposed project generates GHG emissions in excess of screening thresholds for individual land uses. A 10,000 MT CO_2e per year threshold for industrial uses would be recommended for use by all lead agencies. Under Option 1, separate screening thresholds are proposed for residential projects (3,500 MT CO_2e per year), commercial projects (1,400 MT CO_2e per year), and mixed-use projects (3,000 MT CO_2e per year). Under Option 2, a single numerical screening threshold of 3,000 MT CO_2e per year would be used for all non-industrial projects. If the project generates emissions in excess of the applicable screening threshold, move to Tier 4.

Tier 4 Establishes a decision tree approach that includes compliance options for projects that have incorporated design features into the project and/or implement GHG mitigation measures.

- Efficiency Target (2020 Targets)
  - 4.8 MT CO_2e per service population (SP), (the number of jobs and number of residents provided by a project), for project level threshold (land use emissions only) and total residual emissions not to exceed 25,000 million tons per year (mty) CO_2e
  - 6.6 MT CO_2e per SP for plan level threshold (all sectors)
- Efficiency Target (2035 Targets)
  - 3.0 MT CO_2e per SP for project level threshold
  - 4.1 MT CO_2e per SP for plan level threshold

If a project fails to meet any of these emissions reduction targets and efficiency targets, the project would move to Tier 5.

Tier 5 Consider the implementation of CEQA mitigation (including the purchase of GHG offsets) to reduce the project efficiency target to Tier 4 levels.

The thresholds identified above have not been adopted by the SCAQMD or distributed for widespread public review and comment, and the working group tasked with developing the thresholds has not met since September 2010. The future schedule and likelihood of threshold adoption is uncertain.

For purposes of this analysis, the Tier 3 Option 1 approach for residential projects (3,500 MT CO_2e per year) is utilized in order to determine the significance of the proposed project's GHG emissions.

IMPACTS AND MITIGATION

Air pollutant emissions associated with the project would occur over the short term from construction activities, such as fugitive dust from demolition, site preparation, grading, building construction, architectural coating, paving, and emissions from equipment exhaust. There would be long-term regional emissions associated with project-related vehicular trips and due to energy consumption such as electricity usage by the proposed land uses.

CONSTRUCTION IMPACTS

Equipment Exhaust and Related Construction Activities

Construction activities produce combustion emissions from various sources, such as grading, site preparation, utility engines, and motor vehicles transporting the construction crew. Exhaust emissions from construction activities envisioned on site would vary daily as construction activity levels change. The use of construction equipment on site would result in localized exhaust emissions.

The details of the project construction have not yet been determined; therefore, the following includes preliminary construction information based on understanding of the project. The proposed project requires dirt moving. Development of the site will alter the existing on-site topography. During on-site grading, the site will be balanced and would not require either export or import of soil. No planned schedule is available at this time, however, for purposes of this analysis and to provide a conservative analysis, the schedule shown in Table F was assumed to be representative of the anticipated on-site activity. If construction occurs at a later time, the emissions would be similar or less than those presented in this study due to more fuel-efficient vehicles, etc.

Similarly, the details of what construction equipment would be used in the construction of the project have not been finalized as of the time of this air quality and GHG impact analysis. Table F lists a tentative construction schedule, and Table G lists a standard set of construction equipment capable of completing the anticipated project construction. This set was developed using the CalEEMod model and specifying the site area and planned land use.

Table F: Construction Schedule

Phase Name	No. of Days per Week	No. of Days
Demolition	5	20
Site Preparation	5	10
Grading	5	20
Building Construction	5	230
Architectural Coating	5	152
Paving	5	20

Table G: Diesel Construction Equipment Utilized by Construction Phase

Construction Phase	Off-Road Equipment Type	Off-Road Equipment Unit Amount	Hours Used per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	1	8	81	0.73
	Excavators	3	8	158	0.38
	Rubber Tired Dozers	2	8	247	0.4
Site Preparation	Rubber Tired Dozers	3	8	247	0.4
	Tractors/Loaders/Backhoes	4	8	97	0.37
Grading	Excavators	1	8	158	0.38
	Rubber Tired Dozers	1	8	247	0.4
	Graders	1	8	187	0.41
	Tractors/Loaders/Backhoes	3	8	97	0.37
Building Construction	Cranes	1	7	231	0.29
	Forklifts	3	8	89	0.2
	Generator Sets	1	8	84	0.74
	Tractors/Loaders/Backhoes	3	7	97	0.37
	Welders	1	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Paving	Pavers	2	8	130	0.42
	Paving Equipment	2	8	132	0.36
	Rollers	2	8	80	0.38

Source: Compiled by LSA (December 2016).

The most recent version of the CalEEMod model (Version 2016.3.1) was used to calculate the construction emissions, as shown in Table H (based on the schedule and equipment listed above). The emissions rates shown are the combination of the on- and off-site emissions.

Table H: Short-Term Regional Construction Emissions

	Total Regional Pollutant Emissions (lbs/day)							
	VOC	NO_X	CO	SO_X	Fugitive PM_{10}	Exhaust PM_{10}	Fugitive $PM_{2.5}$	Exhaust $PM_{2.5}$
Year 2017	5.08	52.36	24.47	0.04	8.33	2.88	4.52	2.65
Year 2018	7.60	26.22	20.71	0.03	0.30	1.66	0.08	1.57
Maximum daily emissions	**7.60**	**52.36**	**24.47**	**0.04**	**8.33**	**2.88**	**4.52**	**2.65**
SCAQMD Pollutant Thresholds	**75**	**100**	**550**	**150**	**150**	**150**	**55**	**55**
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA (December 2016).
Notes: These estimates reflect control of fugitive dust required by SCAQMD Rule 403.
The values shown are the maximum summer or winter daily emissions results from CalEEMod.
CO = carbon monoxide
lbs/day = pounds per day
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur dioxide
VOC = volatile organic compounds

As shown in Table H, the emissions are all below the criteria pollutant significance thresholds. Since no exceedances of any criteria pollutants are expected, no significant impacts would occur for project construction. Standard measures were incorporated in the modeling and are discussed later in this report. Details of the emission factors and other assumptions are included in Appendix A.

Fugitive Dust

Fugitive dust emissions are generally associated with land clearing and exposure of soils to the air and wind, as well as cut-and-fill grading operations. Dust generated during construction varies substantially on a project-by-project basis depending on the level of activity, the specific operations, and weather conditions at the time of construction.

The proposed project will be required to comply with SCAQMD Rules 402 and 403 to control nuisance emissions and fugitive dust. The CalEEMod model does not provide for including these required measures in any way other than as mitigation. However, these measures are not mitigating a significant air quality impact but complying with the requirements. Thus, the PM_{10} and $PM_{2.5}$ emissions shown are from the CalEEMod output tables listed as “Mitigated Construction,” even though the only measures that have been applied to the analysis are the required construction emissions control measures, or standard conditions.

Localized Impacts Analysis

The SCAQMD has issued guidance on applying CalEEMod modeling results to localized impacts analysis.[1] Sensitive receptors include residences, schools, hospitals, and similar uses that are sensitive to adverse air quality. The project site is surrounded primarily by residential development with the nearest residential use east of the project site having a garage located approximately 7 ½ feet from property line and the residence located approximately 25 feet from property line. As per SCAQMD LST guidance, for receptors less than 82 ft (25 m) away, LST screening thresholds at 82 ft (25 m) are used as the SCAQMD-recommended LST thresholds. Table I identifies that the emissions of the pollutants on the peak day of construction would result in concentrations of pollutants at these nearest residences that are all below the SCAQMD thresholds of significance.

Table I: Construction LST Impacts (lbs/day)

Emissions Sources	NO_X	CO	PM_{10}	$PM_{2.5}$
On-site Emissions	52	23	11	7.1
LSTs	**253**	**1,461**	**12**	**7.3**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: Compiled by LSA (December 2016).
SRA: Metropolitan Riverside County, 4.5 acres, 25-meter distance
Notes:
CO = carbon monoxide
lbs/day = pounds per day
LST = local significance threshold
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

[1] South Coast Air Quality Management District (SCAQMD). *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds.* Website: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf, accessed December 2016.

Odors

Heavy-duty equipment in the project area during construction would emit odors, primarily from the equipment exhaust. However, the construction activity would cease to occur after individual construction is completed. No other sources of objectionable odors have been identified for the proposed project, and no mitigation measures are required.

SCAQMD Rule 402 regarding nuisances states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." The proposed uses are not anticipated to emit any objectionable odors. Therefore, objectionable odors posing a health risk to potential on-site and existing off-site uses would not occur as a result of the proposed project.

Naturally Occurring Asbestos

Asbestos is the name given to a group of fibrous minerals that occur naturally in rock formations in the environment. Naturally occurring asbestos (NOA) is the term applied to a natural geological occurrence of various types of asbestos. NOA has been found to be present in the majority of counties in California. It is commonly found in ultramafic rock formations, including serpentine rock, and in the soils where these rock types are located. NOA may pose a health risk if asbestos-containing rocks are crushed or broken and asbestos fibers are released into the air, although these health risks are not yet fully understood.

The proposed project is located in the City of Riverside in Riverside County, which is among the counties found to have serpentine and ultramafic rock in their soils. However, no serpentine or ultramafic rock has been found in the project area in the past 25 years. By following standard nuisance and dust control measures, as required by SCAQMD Rules 402 and 403, any NOA that might be disturbed would not become airborne. Therefore, the potential risk for NOA exposure to nearby residents during project construction is small and less than significant.

Construction Emissions Conclusions

As established in Table H, daily regional construction emissions would not exceed the daily thresholds of any criteria pollutant emission thresholds established by the SCAQMD. Table I shows that during construction, there will be no localized significant impacts.

LONG-TERM REGIONAL AIR QUALITY IMPACTS

Long-Term Project Operational Emissions

Long-term air pollutant emission impacts are those associated with stationary sources and mobile sources involving any project-related changes. The proposed project would result in area-, energy-, and mobile-source emissions. Area sources include architectural coatings, consumer products, and landscaping. Energy sources include natural gas consumption for heating (the homes would only have non-wood burning gas fireplaces). Trip generation rates from the project's traffic study have been used to develop the mobile source emissions.

Long-term operational emissions associated with the proposed project are shown in Tables J and K (localized significance impacts). Table J shows that the peak daily emissions of all criteria pollutants as a result of the proposed project would not exceed the corresponding SCAQMD daily emission thresholds. Therefore, project-related long-term air quality impacts would be less than significant.

Table J: Opening Year Regional Operational Emissions

Source	Pollutant Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area Sources	2.58	0.95	4.86	<0.01	0.10	0.10
Energy Sources	0.060	0.51	0.22	<0.01	0.04	0.04
Mobile Sources	1.28	9.11	15.49	0.056	3.96	1.10
Total Project Emissions	**3.92**	**10.57**	**20.57**	**0.056**	**4.1**	**1.24**
SCAQMD Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA (December 2016).
Notes:
The values shown are the maximum summer or winter daily emissions results from CalEEMod.
CO = carbon monoxide
lbs/day = pounds per day
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides
VOC = volatile organic compounds

Localized Impacts Analysis

Table K shows the calculated emissions for the proposed operational activities compared with the appropriate SCAQMD localized impacts thresholds. The localized impacts analysis by design only includes on-site sources; however, the CalEEMod model outputs for operations do not separate on-site and off-site emissions. The emissions shown in Table I for area sources are assumed to all occur on site and for energy sources entirely off site. While some of the mobile-source emissions will occur from vehicles driving on site, most of the mobile-source emissions calculated by the CalEEMod model would occur while the vehicles are driving off site.

Table K: Long-Term Operational Localized Impact Analysis (lbs/day)

Emissions Sources	NO_X	CO	PM_{10}	$PM_{2.5}$
On-site emissions	1	6	0.29	0.15
LSTs	**270**	**1,577**	**4**	**2**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: Compiled by LSA (December 2016).
Note: SRA – Metropolitan Riverside County, 5 acres, 82-foot distance, on-site traffic 5 percent of total.
CO = carbon monoxide
lbs/day = pounds per day
LST = localized significance thresholds
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SRA = Source Receptor Area

It is unlikely that the average on-site distance driven by vehicles will be more than 1,000 feet, which is approximately 2 percent of the total miles traveled. For a worst-case scenario assessment, the emissions shown in Table K include all on-site project-related area sources and 5 percent of the project-related new mobile sources. Table K shows that the operational emission rates would not exceed the LSTs. Therefore, the proposed operational activity would not result in a locally significant air quality impact.

GHG Emissions

This section evaluates potential significant impacts related to GCC that could result from implementation of the proposed project. Because it is not possible to tie specific GHG emissions to actual changes in climate, this evaluation focuses on the project's emission of GHGs. Mitigation measures are identified as appropriate.

GHG Emissions Background. Emissions estimates for the proposed project are discussed below. GHG emissions estimates are provided herein for informational purposes only, as there is no established quantified GHG emissions threshold. Bearing in mind that CEQA does not require "perfection" but instead "adequacy, completeness, and a good faith effort at full disclosure," the analysis below is based on methodologies and information available to the City and the applicant at the time this analysis was prepared. Estimation of GHG emissions in the future does not account for all changes in technology that may reduce such emissions; therefore, the estimates are based on past performance and represent a scenario that is worse than that which is likely to be encountered (after energy-efficient technologies have been implemented). While information is presented below to assist the public and decision-makers in understanding the project's potential contribution to GCC impacts, the information available to the cities is not sufficiently detailed to allow a direct comparison between particular project characteristics and particular climate change impacts, or between any particular proposed mitigation measure and any reduction in climate change impacts.

Overall, the following activities associated with the proposed project could directly or indirectly contribute to the generation of GHG emissions:

- **Construction Activities:** During construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment.
- **Gas, Electricity, and Water Use:** Natural gas use results in the emission of two GHGs: CH_4 (the major component of natural gas) and CO_2 (from the combustion of natural gas). Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy-intensive. Preliminary estimates indicate that the total energy used to pump and treat this water exceeds 6.5 percent of the total electricity used in the State per year (State of California 2008).
- **Solid Waste Disposal:** Solid waste generated by the project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and managing the waste, and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of CH_4 from the anaerobic decomposition of organic materials. CH_4 is 25 times more potent a GHG than CO_2. However, landfill CH_4 can also be a source of energy. In addition, many materials in landfills do not decompose fully, and the carbon that remains is sequestered in the landfill and not released into the atmosphere.

- **Motor Vehicle Use:** Transportation associated with the proposed project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

GHG emissions associated with the project would occur over the short term from construction activities and would consist primarily of emissions from equipment exhaust. There would also be long-term regional emissions associated with project-related new vehicular trips and stationary-source emissions, such as natural gas used for heating and electricity usage for lighting. Preliminary guidance from the OPR and recent letters from the Attorney General critical of CEQA documents that have taken different approaches indicate that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water conveyance and treatment, waste generation, and construction activities. The calculation presented below includes construction emissions in terms of CO_2; annual CO_2e GHG emissions from increased energy consumption, water usage, and solid waste disposal; and estimated GHG emissions from vehicular traffic that would result from implementation of the project.

Table L lists the annual GHG emissions for each of the planned construction phases in 2017 and 2018 and shows that the GHG emissions would be highest during the building construction phase, at approximately 266 MT. Total construction GHG emissions over the entire construction period are estimated to be 449 MT CO_2e.

Table L: Short-Term Regional Construction Emissions

Construction Phase		Total Regional Pollutant Emissions (MT/yr)			
		CO_2	**CH_4**	**N_2O**	**CO_2e**
2017	Demolition	41	0.01	0	41.3
	Site Preparation	19	<0.01	0	18.7
	Grading	29	<0.01	0	29.3
	Building Construction	48	0.01	0	48.3
2018	Building Construction	265	0.06	0	266.0
	Architectural Coating	22	<0.01	0	22.4
	Paving	22	<0.01	0	22.4
Total Construction Emissions		**446**	**0.10**	**0**	**449[1]**

Source: Compiled by LSA (December 2016).
Notes: [1]Rounded to the nearest whole number.
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
MT/yr = metric tons per year
N_2O = nitrous oxide

Long-term operation of the proposed project would generate GHG emissions from area and mobile sources and indirect emissions from stationary sources associated with energy consumption. Mobile-source emissions of GHGs would include project-generated vehicle trips associated with on-site residences. Area-source emissions would be associated with activities such as landscaping and maintenance of proposed land uses, natural gas for heating, and other sources. Increases in stationary-source emissions would also occur at off-site utility providers as a result of demand for electricity, natural gas, and water by the proposed uses.

Operational and Construction GHG emissions as shown in Table M were calculated using CalEEMod Version 2016.3.1. The Table shows total GHG emissions from the project operational GHG emissions. Based on SCAQMD guidance, construction emissions were amortized over 30 years (a typical project lifetime) and added to the total project operational emissions. Appendix A includes the worksheets for the GHG emissions.

Table M: Long-Term Operational Greenhouse Gas Emissions

Source	Pollutant Emissions (MT/yr)					
	Bio-CO_2	**NBio-CO_2**	**Total CO_2**	**CH_4**	**N_2O**	**CO_2e**
Construction emissions amortized over 30 years	0	15	15	<0.01	0	15
Operational Emissions						
Area Sources	0	14	14	<0.01	<0.01	14
Energy Sources	0	411	411	<0.01	<0.01	412
Mobile Sources	0	851	851	0.047	0	852
Waste Sources	13	0	13	0.76	0	32
Water Usage	1.1	42	43	0.12	<0.01	47
Total Project Emissions[1]	**14**	**1,334**	**1,348**	**0.92**	**<0.01**	**1,373**

Source: Compiled by LSA (December 2016).
Note: [1]Numbers in table may not appear to add up correctly due to rounding of numbers.
Bio-CO_2 = biologically generated CO_2
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
MT/yr = metric tons per year
N_2O = nitrous oxide
NBio-CO_2 = non-biologically generated CO_2

As shown in Table M, the project will produce 1,373 MT CO_2e/yr, which is 0.0014 MMT CO_2e/yr. For comparison, the existing emissions from the entire SCAG region are estimated to be approximately 176.79 MMT CO_2e/yr, and the existing emissions for the entire State are estimated at approximately 496.95 MMT CO_2e/yr.

At present, there is a federal ban on chlorofluorocarbons (CFCs); therefore, it is assumed the project would not generate emissions of CFCs. The project may emit a small amount of HFCs from leakage and service of refrigeration and air-conditioning equipment and from disposal at the end of the life of the equipment. However, the details regarding refrigerants to be used at the project site are unknown at this time. PFCs and SF_6 are typically used in industrial applications, none of which would be used on the project site. Therefore, it is not anticipated that the project would contribute significant emissions of these additional GHGs.

Because climate change impacts are cumulative in nature, no typical single project can result in emissions of such a magnitude that it, in and of itself, would be significant on a project basis. The project’s operational emissions of 1,373 MT CO_2e/yr is less than the SCAQMD-recommended interim threshold of 3,500 MT CO_2e/yr for residential uses. Therefore, the proposed project would not result in a significant impact on GHG emissions.

LONG-TERM MICROSCALE (CO HOT SPOT) ANALYSIS

Vehicular trips associated with the proposed project would contribute to congestion at intersections and along roadway segments in the project vicinity. Localized air quality impacts would occur when emissions from vehicular traffic increase as a result of the proposed project. The primary mobile-source pollutant of local concern is CO, which is a direct function of vehicle idling time and, thus, of traffic flow conditions. CO transport is extremely limited; under normal meteorological conditions, it disperses rapidly with distance from the source. However, under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels, affecting local sensitive receptors (residents, schoolchildren, the elderly, and hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentrations, modeling is recommended, to determine a project's effect on local CO levels.

An assessment of project-related impacts on localized ambient air quality requires that future ambient air quality levels be projected. Existing CO concentrations in the immediate project vicinity are not available. Ambient CO levels monitored in the Riverside area stations showed a highest recorded 1-hour concentration of 4.1 ppm (State standard is 20 ppm) and a highest 8-hour concentration of 2.0 ppm (State standard is 9 ppm) during the past 3 years (see Table E). The highest CO concentrations would normally occur during peak traffic hours; hence, CO impacts calculated under peak traffic conditions represent a worst-case analysis.

As described in the *Traffic Impact Analysis* prepared for the proposed project (LSA 2016), all study area intersections currently operate at satisfactory level of service (LOS) e.g., no intersections predicted to operate at LOS E or F. Intersections operating at higher LOS levels mean vehicles spend more time idling, thus causing higher CO emissions. With addition of the project in the existing setting with recommended improvements, all study area intersections would continue to operate at satisfactory LOS.

Therefore, the project can be implemented in an existing setting with no significant peak-hour intersection impacts. Given the relatively low level of CO concentrations in the project area, project-related vehicles are not expected to result in the CO concentrations exceeding the State or federal CO standards.

AIR QUALITY MANAGEMENT PLAN CONSISTENCY

A consistency determination plays an essential role in local agency project review by linking local planning and unique individual projects to the air quality plans. It fulfills the CEQA goal of fully informing local agency decision-makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are addressed. Only new or amended General Plan elements, Specific Plans, and significantly unique projects need to undergo a consistency review due to the air quality plan strategy being based on projections from local General Plans.

The AQMP is based on regional growth projections developed by the SCAG. It should be noted that the AQMP analyzed the site as a school with the former operation of the Hawthorne Elementary School. The proposed project is a residential development and is not defined as a regionally significant project under CEQA; therefore, it does not meet SCAG's Intergovernmental Review (IGR) criteria. In addition, based on the defaults trip rates and trip lengths in the Institute of Transportation Engineers Trip Generation Manual, Ninth Edition for the previous elementary school and the proposed project, the proposed project would produce a lower amount of vehicle miles traveled and thus lower operational emissions than the former elementary school. However, the project does require a General Plan Amendment (Planning Case P16-0112) from B/OP –

Business/Office Park to MDR – Medium Density Residential and Zone Change (Planning Case P16-0113) from PF - Public Facilities to R-1-7000 - Single-family residential.

Pursuant to the methodology provided in Chapter 12 of the 1993 SCAQMD *CEQA Air Quality Handbook,* consistency with the Basin 2012 AQMP is affirmed when a project: (1) does not increase the frequency or severity of an air quality standards violation or cause a new violation; and (2) is consistent with the growth assumptions in the AQMP. Consistency review is presented below:

1. The project would result in short-term construction and long-term pollutant emissions that are less than the CEQA significance emissions thresholds established by the SCAQMD, as demonstrated above; therefore, the project could not result in an increase in the frequency or severity of any air quality standards violation and will not cause a new air quality standard violation.
2. The *CEQA Air Quality Handbook* indicates that consistency with AQMP growth assumptions must be analyzed for new or amended General Plan elements, Specific Plans, and significant projects. Significant projects include airports, electrical generating facilities, petroleum and gas refineries, designation of oil drilling districts, water ports, solid waste disposal sites, and offshore drilling facilities; therefore, the proposed project is not defined as significant.

Therefore, based on the consistency analysis presented above, the proposed project is consistent with the current regional AQMP.

STANDARD CONDITIONS

Construction Operations

The project is required to comply with regional rules that assist in reducing short-term air pollutant emissions. SCAQMD Rule 403 requires that fugitive dust be controlled with best-available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off site.

Operations

The proposed project is required to comply with Title 24 of the California Code of Regulations (CCR) established by the CEC regarding energy conservation and green building standards.

These measures will result in reduced emissions during the construction and operation phases of the proposed project.

PROJECT FEATURES

Global Climate Change Impacts

Project Feature GCC-1 To ensure that the proposed project complies with and would not conflict with or impede the implementation of reduction goals identified in Assembly Bill 32, the Governor's Executive Order S-3-05, and other strategies to help reduce greenhouse gases (GHGs) to the level proposed by the Governor, the project will implement a variety of measures that will reduce its GHG emissions. The following measures shall be incorporated into the design and construction of the project (including specific building projects):

Construction and Building Materials

- Divert at least 50 percent of the grubbed construction materials (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard) to a material recycling facility within 20 miles from the project site.

Water Conservation and Efficiency Measures

- Devise a comprehensive water conservation strategy appropriate for the project and its location. The strategy may include the following, plus other innovative measures that may be appropriate:
  - Create water-efficient landscapes within the development.
  - Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.
  - Restrict watering methods (e.g., prohibit systems that apply water to nonvegetated surfaces) and control runoff.

In addition, the project would be subject to all applicable regulatory requirements, which would also reduce the GHG emissions of the project. With implementation of Project Feature GCC-1 and application of regulatory requirements, the project would not conflict with or impede implementation of reduction goals identified in AB 32, the Governor's EO S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor. Therefore, the project's contribution to cumulative GHG emissions would be less than significant.

CUMULATIVE IMPACTS

The project would temporarily contribute criteria pollutants to the area during its construction. A number of individual projects in the area may be under construction simultaneously with the proposed project. Depending on construction schedules and actual implementation of other projects in the area, generation of fugitive dust and pollutant emissions during construction could result in substantial short-term increases in air pollutants. However, each project would be required to comply with the SCAQMD's standard construction measures. The proposed project's short-term construction emissions would not exceed the significance thresholds. Therefore, it will not have a significant short-term cumulative impact.

The project's long-term operational emissions would not exceed the SCAQMD's criteria pollutant thresholds. As climate change impacts are global in nature, no typical single project can result in emissions of such a magnitude that it, in and of itself, would be significant on project basis. Because the proposed project will not exceed the SCAQMD-recommended interim thresholds for residential uses, the proposed project would not result in a significant long-term cumulative impact.

IMPACTS TO THE PROPOSED PROJECT FROM GLOBAL CLIMATE CHANGE

Local temperatures could increase in time as a result of GCC with or without the proposed project. This increase in temperature could lead to other climate effects, including, but not limited to, increased flooding due to increased precipitation and runoff. At present, the extent of climate change impacts is uncertain, and more extensive monitoring of runoff is necessary for greater understanding of changes in hydrologic patterns. Studies indicate that increased temperatures could result in a greater portion of peak stream flows occurring earlier in the spring, with decreases in late spring and early summer. These changes could have implications for water supply, flood management, and ecosystem health. In addition, there is a potential for sea level rising due to global warming. However, based on the location of the project site and the nature of the project use, the proposed project is not expected to be significantly affected by GCC.

REFERENCES

California Air Resources Board (ARB). May 2014. First Update to the Climate Change Scoping Plan: Building on the Framework Pursuant to AB 32, the California Global Warming Solutions Act of 2006. Website: http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf, accessed October 2016.

———. October 2016. Ambient Air Quality Standards. Website: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, accessed October 2016.

———. 2016b. Greenhouse Gas Inventory Data – 2016 Edition. Website:https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_trends_00-14_20160617.pdf, accessed October 2016.

———. Air Quality Standards and Area Designations. Website: http://www.arb.ca.gov/desig/desig.htm, accessed October 2016.

———. ARB Fact Sheet: Air Pollution and Health. Website: http://www.arb.ca.gov/research/health/fs/fs1/fs1.htm, accessed October 2016.

———. iADAM: Air Quality Data Statistics. Website: http://www.arb.ca.gov/adam, accessed October 2016.

California Department of Conservation. Asbestos. Website: http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos/Pages/index.aspx, accessed October 2016.

California Department of Resources Recycling and Recovery. Website: http://www.calrecycle.ca.gov, accessed October 2016.

California Energy Commission (CEC). November 2005. California's Water-Energy Relationship. Website: http://www.energy.ca.gov/2005publications/CEC-700-2005-011/CEC-700-2005-011-SF.PDF, accessed October 2016.

California Integrated Waste Management Board (CIWMB). Residential Developments: Estimated Solid Waste Generation Rates. Website: http://www.calrecycle.ca.gov/wastechar/wastegenrates/Residential.htm, accessed October 2016.

Intergovernmental Panel on Climate Change (IPCC). 2013. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the IPCC. Website: http://www.ipcc.ch/report/ar5/wg1, accessed October 2016.

LSA. October 2016. *Traffic Impact Analysis: Hawthorne Residential Project*.

National Assessment Synthesis Team (NAST). 2001. *Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change*, Report for the US Global Change Research Program. Website: http://data.globalchange.gov/assets/e9/97/436129058f2107f4925aeec13ed8/nca-2000-foundation-report.pdf, accessed October 2016.

South Coast Air Quality Management District (SCAQMD). April 1993. *CEQA Air Quality Handbook*.

———. June 2003. Final Localized Significance Threshold Methodology.

———. June 2005 (amended). Rule 403, Fugitive Dust. Website: http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4, accessed October 2016.

———. October 2006. Final – Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds.

———. 2008. *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*. October 2008.

———.2010. *Greenhouse Gases CEQA Significance Thresholds Working Group Meeting No. 15*. September 28, 2010. Accessed August 20, 2013. http://www.aqmd.gov/ceqa/handbook/GHG/2010/sept28mtg/sept29.html.

———. 2012. Air Quality Management Plan.

———. Fact Sheet for Applying CalEEMod to Localized Significance Thresholds. Website: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2, accessed October 2016.

———. 2016. *CEQA Air Quality Handbook* website: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook, accessed October 2016.

State of California. April 2008. Water-Energy Sector Summary, AB 32 Scoping Plan, GHG Emission Reduction Strategies. Website: http://www.climatechange.ca.gov/climate_action_team/reports/CAT_subgroup_reports/Water_Sector_Summary_and_Analyses.pdf, accessed October 2016.

———. October 2013. "Preparing California for Extreme Heat – Guidance and Recommendations." Website: http://www.climatechange.ca.gov/climate_action_team/reports/Preparing_California_for_Extreme_Heat.pdf, accessed October 2016.

United Nations Environment Programme (UNEP). 2007. Buildings and Climate Change: Status, Challenges and Opportunities. Paris, France. Website: http://www.unep.fr/shared/publications/pdf/DTIx0916xPA-BuildingsClimate.pdf, accessed October 2016.

United Nations Framework Convention on Climate Change (UNFCCC). 2015. Combined Total of Annex I and Non-Annex I Country CO_2e emissions, Greenhouse Gas Inventory Data. Website: http://unfccc.int/ghg_data/ghg_data_unfccc/items/4146.php, accessed October 2016.

United States Environmental Protection Agency (EPA). April 2010. *Methane and Nitrous Oxide Emissions from Natural Sources*. Website: http://nepis.epa.gov/Exe/ZyNET.exe/P100717T.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2006+Thru+2010&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C06thru10%5CTxt%5C00000017%5CP100717T.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL, accessed July 2016.

———. February 2016. Draft U.S. Greenhouse Gas Inventory Report: 1990–2014. EPA 430-R-16-002. Website: https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2016-Main-Text.pdf, accessed October 2016.

———. April 2016. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2014. Website: https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2016-Main-Text.pdf, accessed October 2016.

———. 2012–2014 Air Quality Data. Website: http://www.epa.gov/airquality/airdata, accessed October 2016.

Western Regional Climate Center. Recent Climate in the West. Website: http://www.wrcc.dri.edu, accessed October 2016.

APPENDIX A

TRAFFIC DATA & CALEEMOD MODEL PRINTOUTS

Trip Generation Comparison Table

Project No.	Land Use	Location	Units	Rate	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
1 .	Single-Family Detached Housing		54 DU	Trips/Unit[1]	0.19	0.56	0.75	0.63	0.37	1.00	9.52
	Residential Development (Proposed)			Trip Generation	**10**	**30**	**40**	**34**	**20**	**54**	**514**
2 .	Elementary School (Previous Land Use)		610 Students	Trips/Unit[2]	0.25	0.20	0.45	0.07	0.08	0.15	1.29
				Trip Generation	**151**	**124**	**275**	**45**	**47**	**92**	**787**
			Net New Trips		**-141**	**-94**	**-235**	**-11**	**-27**	**-38**	**-273**

DU = Dwelling Units

[1] Rates based on Land Use 210 "Single-Family Detached Housing" from ITE *Trip Generation,* 9th Edition.

[2] Rates based on Land Use 520 "Elementary School" from ITE *Trip Generation,* 9th Edition.

Hawthorn Heights

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	54.00	Dwelling Unit	6.85	108,466.00	154

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2019
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Site acreage and building sf from project plans.

Construction Phase - Assumed architectual coatings applied to each residence throughout the building construction phase.

Demolition - There are 5 main existing buildings totaling 23,295 square feet

Vehicle Trips -

Woodstoves - No residences will have a wood-burning fireplace, assume all would have gas fireplaces.

Sequestration - Estimated the number of new trees from the site plan.

Construction Off-road Equipment Mitigation - Dust control measures as required by SCAQMD Rule 403.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15

tblConstructionPhase	NumDays	20.00	152.00
tblConstructionPhase	PhaseEndDate	11/23/2018	9/28/2018
tblConstructionPhase	PhaseStartDate	10/27/2018	3/1/2018
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	45.90	54.00
tblFireplaces	NumberNoFireplace	5.40	0.00
tblFireplaces	NumberWood	2.70	0.00
tblLandUse	BuildingSpaceSquareFeet	97,200.00	108,466.00
tblLandUse	LandUseSquareFeet	97,200.00	108,466.00
tblLandUse	LotAcreage	17.53	6.85
tblProjectCharacteristics	OperationalYear	2018	2019
tblSequestration	NumberOfNewTrees	0.00	20.00
tblWoodstoves	NumberCatalytic	2.70	0.00
tblWoodstoves	NumberNoncatalytic	2.70	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	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					
2017	5.0811	52.3543	24.4658	0.0448	18.2675	2.8799	21.1473	9.9840	2.6495	12.6335	0.0000	4,544.7943	4,544.7943	1.2007	0.0000	4,572.4963
2018	7.6038	26.2128	20.7132	0.0342	0.2955	1.6581	1.9537	0.0792	1.5678	1.6470	0.0000	3,339.7151	3,339.7151	0.7195	0.0000	3,356.9880
Maximum	**7.6038**	**52.3543**	**24.4658**	**0.0448**	**18.2675**	**2.8799**	**21.1473**	**9.9840**	**2.6495**	**12.6335**	**0.0000**	**4,544.7943**	**4,544.7943**	**1.2007**	**0.0000**	**4,572.4963**

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	lb/day										lb/day					
2017	5.0811	52.3543	24.4658	0.0448	8.3310	2.8799	11.2109	4.5222	2.6495	7.1716	0.0000	4,544.7943	4,544.7943	1.2007	0.0000	4,572.4963
2018	7.6038	26.2128	20.7132	0.0342	0.2955	1.6581	1.9537	0.0792	1.5678	1.6470	0.0000	3,339.7151	3,339.7151	0.7195	0.0000	3,356.9880
Maximum	**7.6038**	**52.3543**	**24.4658**	**0.0448**	**8.3310**	**2.8799**	**11.2109**	**4.5222**	**2.6495**	**7.1716**	**0.0000**	**4,544.7943**	**4,544.7943**	**1.2007**	**0.0000**	**4,572.4963**

	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**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**53.53**	**0.00**	**43.01**	**54.28**	**0.00**	**38.25**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	2.5755	0.9476	4.8583	5.9500e-003		0.0970	0.0970		0.0970	0.0970	0.0000	1,151.5512	1,151.5512	0.0298	0.0210	1,158.5435
Energy	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368
Mobile	1.2834	9.0536	15.4896	0.0563	3.9006	0.0586	3.9592	1.0439	0.0554	1.0993		5,733.3829	5,733.3829	0.2968		5,740.8026
Total	**3.9180**	**10.5074**	**20.5633**	**0.0655**	**3.9006**	**0.1965**	**4.0971**	**1.0439**	**0.1933**	**1.2372**	**0.0000**	**7,531.1309**	**7,531.1309**	**0.3390**	**0.0328**	**7,549.3830**

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	2.5755	0.9476	4.8583	5.9500e-003		0.0970	0.0970		0.0970	0.0970	0.0000	1,151.5512	1,151.5512	0.0298	0.0210	1,158.5435
Energy	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368
Mobile	1.2834	9.0536	15.4896	0.0563	3.9006	0.0586	3.9592	1.0439	0.0554	1.0993		5,733.3829	5,733.3829	0.2968		5,740.8026
Total	**3.9180**	**10.5074**	**20.5633**	**0.0655**	**3.9006**	**0.1965**	**4.0971**	**1.0439**	**0.1933**	**1.2372**	**0.0000**	**7,531.1309**	**7,531.1309**	**0.3390**	**0.0328**	**7,549.3830**

	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**	**N20**	**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	9/4/2017	9/29/2017	5	20	
2	Site Preparation	Site Preparation	9/30/2017	10/13/2017	5	10	
3	Grading	Grading	10/14/2017	11/10/2017	5	20	
4	Building Construction	Building Construction	11/11/2017	9/28/2018	5	230	
5	Paving	Paving	9/29/2018	10/26/2018	5	20	
6	Architectural Coating	Architectural Coating	3/1/2018	9/28/2018	5	152	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 219,644; Residential Outdoor: 73,215; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

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	Excavators	3	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	1	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
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
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
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
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	19.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	106.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	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

Site Preparation	7	18.00	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

Clean Paved Roads

3.2 Demolition - 2017

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					1.1536	0.0000	1.1536	0.1747	0.0000	0.1747			0.0000			0.0000
Off-Road	4.1031	42.7475	23.0122	0.0388		2.1935	2.1935		2.0425	2.0425		3,924.2833	3,924.2833	1.0730		3,951.1070
Total	**4.1031**	**42.7475**	**23.0122**	**0.0388**	**1.1536**	**2.1935**	**3.3471**	**0.1747**	**2.0425**	**2.2172**		**3,924.2833**	**3,924.2833**	**1.0730**		**3,951.1070**

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	0.0367	1.5744	0.1874	4.1500e-003	0.0927	8.4500e-003	0.1012	0.0254	8.0800e-003	0.0335		439.3901	439.3901	0.0291		440.1164
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
Worker	0.1003	0.0657	0.8420	1.8200e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		181.1209	181.1209	6.0800e-003		181.2729

Total	**0.1370**	**1.6401**	**1.0294**	**5.9700e-003**	**0.2604**	**9.5200e-003**	**0.2699**	**0.0699**	**9.0700e-003**	**0.0790**		**620.5110**	**620.5110**	**0.0351**		**621.3893**

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					0.5191	0.0000	0.5191	0.0786	0.0000	0.0786			0.0000			0.0000
Off-Road	4.1031	42.7475	23.0122	0.0388		2.1935	2.1935		2.0425	2.0425	0.0000	3,924.2833	3,924.2833	1.0730		3,951.1070
Total	**4.1031**	**42.7475**	**23.0122**	**0.0388**	**0.5191**	**2.1935**	**2.7126**	**0.0786**	**2.0425**	**2.1211**	**0.0000**	**3,924.2833**	**3,924.2833**	**1.0730**		**3,951.1070**

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	0.0367	1.5744	0.1874	4.1500e-003	0.0927	8.4500e-003	0.1012	0.0254	8.0800e-003	0.0335		439.3901	439.3901	0.0291		440.1164
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
Worker	0.1003	0.0657	0.8420	1.8200e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		181.1209	181.1209	6.0800e-003		181.2729
Total	**0.1370**	**1.6401**	**1.0294**	**5.9700e-003**	**0.2604**	**9.5200e-003**	**0.2699**	**0.0699**	**9.0700e-003**	**0.0790**		**620.5110**	**620.5110**	**0.0351**		**621.3893**

3.3 Site Preparation - 2017

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.9608	52.2754	23.4554	0.0380		2.8786	2.8786		2.6483	2.6483		3,894.9500	3,894.9500	1.1934		3,924.7852
Total	**4.9608**	**52.2754**	**23.4554**	**0.0380**	**18.0663**	**2.8786**	**20.9448**	**9.9307**	**2.6483**	**12.5790**		**3,894.9500**	**3,894.9500**	**1.1934**		**3,924.7852**

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
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
Worker	0.1204	0.0789	1.0104	2.1900e-003	0.2012	1.2900e-003	0.2025	0.0534	1.1900e-003	0.0546		217.3450	217.3450	7.3000e-003		217.5275
Total	**0.1204**	**0.0789**	**1.0104**	**2.1900e-003**	**0.2012**	**1.2900e-003**	**0.2025**	**0.0534**	**1.1900e-003**	**0.0546**		**217.3450**	**217.3450**	**7.3000e-003**		**217.5275**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.9608	52.2754	23.4554	0.0380		2.8786	2.8786		2.6483	2.6483	0.0000	3,894.950 0	3,894.9500	1.1934		3,924.785 2
Total	**4.9608**	**52.2754**	**23.4554**	**0.0380**	**8.1298**	**2.8786**	**11.0084**	**4.4688**	**2.6483**	**7.1171**	**0.0000**	**3,894.950 0**	**3,894.9500**	**1.1934**		**3,924.785 2**

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
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
Worker	0.1204	0.0789	1.0104	2.1900e-003	0.2012	1.2900e-003	0.2025	0.0534	1.1900e-003	0.0546		217.3450	217.3450	7.3000e-003		217.5275
Total	**0.1204**	**0.0789**	**1.0104**	**2.1900e-003**	**0.2012**	**1.2900e-003**	**0.2025**	**0.0534**	**1.1900e-003**	**0.0546**		**217.3450**	**217.3450**	**7.3000e-003**		**217.5275**

3.4 Grading - 2017

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					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	3.0705	33.8868	17.1042	0.0297		1.7774	1.7774		1.6352	1.6352		3,037.910 7	3,037.9107	0.9308		3,061.180 9
Total	**3.0705**	**33.8868**	**17.1042**	**0.0297**	**6.5523**	**1.7774**	**8.3298**	**3.3675**	**1.6352**	**5.0027**		**3,037.910 7**	**3,037.9107**	**0.9308**		**3,061.180 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
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
Worker	0.1003	0.0657	0.8420	1.8200e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		181.1209	181.1209	6.0800e-003		181.2729
Total	**0.1003**	**0.0657**	**0.8420**	**1.8200e-003**	**0.1677**	**1.0700e-003**	**0.1687**	**0.0445**	**9.9000e-004**	**0.0455**		**181.1209**	**181.1209**	**6.0800e-003**		**181.2729**

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					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	3.0705	33.8868	17.1042	0.0297		1.7774	1.7774		1.6352	1.6352	0.0000	3,037.910 7	3,037.9107	0.9308		3,061.180 9
Total	**3.0705**	**33.8868**	**17.1042**	**0.0297**	**2.9486**	**1.7774**	**4.7260**	**1.5154**	**1.6352**	**3.1506**	**0.0000**	**3,037.910 7**	**3,037.9107**	**0.9308**		**3,061.180 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
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
Worker	0.1003	0.0657	0.8420	1.8200e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		181.1209	181.1209	6.0800e-003		181.2729
Total	**0.1003**	**0.0657**	**0.8420**	**1.8200e-003**	**0.1677**	**1.0700e-003**	**0.1687**	**0.0445**	**9.9000e-004**	**0.0455**		**181.1209**	**181.1209**	**6.0800e-003**		**181.2729**

3.5 Building Construction - 2017

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	3.1149	26.5546	18.1825	0.0269		1.7879	1.7879		1.6791	1.6791		2,650.9797	2,650.9797	0.6531		2,667.3078
Total	**3.1149**	**26.5546**	**18.1825**	**0.0269**		**1.7879**	**1.7879**		**1.6791**	**1.6791**		**2,650.9797**	**2,650.9797**	**0.6531**		**2,667.3078**

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
Vendor	0.0253	0.7807	0.1592	1.5900e-003	0.0384	7.6200e-003	0.0461	0.0111	7.2900e-003	0.0184		167.7388	167.7388	0.0148		168.1085
Worker	0.1270	0.0833	1.0665	2.3100e-003	0.2124	1.3600e-003	0.2137	0.0563	1.2600e-003	0.0576		229.4198	229.4198	7.7000e-003		229.6123

Total	**0.1523**	**0.8640**	**1.2257**	**3.9000e-003**	**0.2508**	**8.9800e-003**	**0.2598**	**0.0674**	**8.5500e-003**	**0.0759**		**397.1586**	**397.1586**	**0.0225**		**397.7209**

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	3.1149	26.5546	18.1825	0.0269		1.7879	1.7879		1.6791	1.6791	0.0000	2,650.9797	2,650.9797	0.6531		2,667.3078
Total	**3.1149**	**26.5546**	**18.1825**	**0.0269**		**1.7879**	**1.7879**		**1.6791**	**1.6791**	**0.0000**	**2,650.9797**	**2,650.9797**	**0.6531**		**2,667.3078**

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
Vendor	0.0253	0.7807	0.1592	1.5900e-003	0.0384	7.6200e-003	0.0461	0.0111	7.2900e-003	0.0184		167.7388	167.7388	0.0148		168.1085
Worker	0.1270	0.0833	1.0665	2.3100e-003	0.2124	1.3600e-003	0.2137	0.0563	1.2600e-003	0.0576		229.4198	229.4198	7.7000e-003		229.6123
Total	**0.1523**	**0.8640**	**1.2257**	**3.9000e-003**	**0.2508**	**8.9800e-003**	**0.2598**	**0.0674**	**8.5500e-003**	**0.0759**		**397.1586**	**397.1586**	**0.0225**		**397.7209**

3.5 Building Construction - 2018

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	2.6795	23.3900	17.5804	0.0269		1.4999	1.4999		1.4099	1.4099		2,620.9351	2,620.9351	0.6421		2,636.9883
Total	**2.6795**	**23.3900**	**17.5804**	**0.0269**		**1.4999**	**1.4999**		**1.4099**	**1.4099**		**2,620.9351**	**2,620.9351**	**0.6421**		**2,636.9883**

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
Vendor	0.0221	0.7290	0.1410	1.5900e-003	0.0384	6.1100e-003	0.0445	0.0111	5.8500e-003	0.0169		167.4790	167.4790	0.0138		167.8248
Worker	0.1144	0.0727	0.9397	2.2400e-003	0.2124	1.3300e-003	0.2137	0.0563	1.2200e-003	0.0576		222.9216	222.9216	6.7900e-003		223.0912
Total	**0.1365**	**0.8017**	**1.0807**	**3.8300e-003**	**0.2508**	**7.4400e-003**	**0.2582**	**0.0674**	**7.0700e-003**	**0.0745**		**390.4006**	**390.4006**	**0.0206**		**390.9161**

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	2.6795	23.3900	17.5804	0.0269		1.4999	1.4999		1.4099	1.4099	0.0000	2,620.9351	2,620.9351	0.6421		2,636.9883
Total	**2.6795**	**23.3900**	**17.5804**	**0.0269**		**1.4999**	**1.4999**		**1.4099**	**1.4099**	**0.0000**	**2,620.9351**	**2,620.9351**	**0.6421**		**2,636.9883**

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
Vendor	0.0221	0.7290	0.1410	1.5900e-003	0.0384	6.1100e-003	0.0445	0.0111	5.8500e-003	0.0169		167.4790	167.4790	0.0138		167.8248
Worker	0.1144	0.0727	0.9397	2.2400e-003	0.2124	1.3300e-003	0.2137	0.0563	1.2200e-003	0.0576		222.9216	222.9216	6.7900e-003		223.0912
Total	**0.1365**	**0.8017**	**1.0807**	**3.8300e-003**	**0.2508**	**7.4400e-003**	**0.2582**	**0.0674**	**7.0700e-003**	**0.0745**		**390.4006**	**390.4006**	**0.0206**		**390.9161**

3.6 Paving - 2018

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	1.6437	17.5209	14.7964	0.0228		0.9561	0.9561		0.8797	0.8797		2,294.0887	2,294.0887	0.7142		2,311.9432
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6437**	**17.5209**	**14.7964**	**0.0228**		**0.9561**	**0.9561**		**0.8797**	**0.8797**		**2,294.0887**	**2,294.0887**	**0.7142**		**2,311.9432**

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
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
Worker	0.0903	0.0574	0.7419	1.7700e-003	0.1677	1.0500e-003	0.1687	0.0445	9.7000e-004	0.0454		175.9907	175.9907	5.3600e-003		176.1247
Total	**0.0903**	**0.0574**	**0.7419**	**1.7700e-003**	**0.1677**	**1.0500e-003**	**0.1687**	**0.0445**	**9.7000e-004**	**0.0454**		**175.9907**	**175.9907**	**5.3600e-003**		**176.1247**

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	1.6437	17.5209	14.7964	0.0228		0.9561	0.9561		0.8797	0.8797	0.0000	2,294.0887	2,294.0887	0.7142		2,311.9432
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6437**	**17.5209**	**14.7964**	**0.0228**		**0.9561**	**0.9561**		**0.8797**	**0.8797**	**0.0000**	**2,294.0887**	**2,294.0887**	**0.7142**		**2,311.9432**

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
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
Worker	0.0903	0.0574	0.7419	1.7700e-003	0.1677	1.0500e-003	0.1687	0.0445	9.7000e-004	0.0454		175.9907	175.9907	5.3600e-003		176.1247
Total	**0.0903**	**0.0574**	**0.7419**	**1.7700e-003**	**0.1677**	**1.0500e-003**	**0.1687**	**0.0445**	**9.7000e-004**	**0.0454**		**175.9907**	**175.9907**	**5.3600e-003**		**176.1247**

3.7 Architectural Coating - 2018

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	4.4651					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.1171
Total	**4.7638**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.1171**

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
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
Worker	0.0241	0.0153	0.1978	4.7000e-004	0.0447	2.8000e-004	0.0450	0.0119	2.6000e-004	0.0121		46.9309	46.9309	1.4300e-003		46.9666

Total	**0.0241**	**0.0153**	**0.1978**	**4.7000e-004**	**0.0447**	**2.8000e-004**	**0.0450**	**0.0119**	**2.6000e-004**	**0.0121**		**46.9309**	**46.9309**	**1.4300e-003**		**46.9666**

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	4.4651					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.1171
Total	**4.7638**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.1171**

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
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
Worker	0.0241	0.0153	0.1978	4.7000e-004	0.0447	2.8000e-004	0.0450	0.0119	2.6000e-004	0.0121		46.9309	46.9309	1.4300e-003		46.9666
Total	**0.0241**	**0.0153**	**0.1978**	**4.7000e-004**	**0.0447**	**2.8000e-004**	**0.0450**	**0.0119**	**2.6000e-004**	**0.0121**		**46.9309**	**46.9309**	**1.4300e-003**		**46.9666**

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	1.2834	9.0536	15.4896	0.0563	3.9006	0.0586	3.9592	1.0439	0.0554	1.0993		5,733.3829	5,733.3829	0.2968		5,740.8026
Unmitigated	1.2834	9.0536	15.4896	0.0563	3.9006	0.0586	3.9592	1.0439	0.0554	1.0993		5,733.3829	5,733.3829	0.2968		5,740.8026

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	514.08	535.14	465.48	1,743,245	1,743,245
Total	514.08	535.14	465.48	1,743,245	1,743,245

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.533383	0.039495	0.183627	0.126156	0.018688	0.005561	0.017029	0.066607	0.001345	0.001247	0.004677	0.000974	0.001211

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	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368
NaturalGas Unmitigated	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368

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					
Single Family Housing	5492.67	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368
Total		**0.0592**	**0.5062**	**0.2154**	**3.2300e-003**		**0.0409**	**0.0409**		**0.0409**	**0.0409**		**646.1968**	**646.1968**	**0.0124**	**0.0119**	**650.0368**

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					
Single Family Housing	5.49267	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368
Total		**0.0592**	**0.5062**	**0.2154**	**3.2300e-003**		**0.0409**	**0.0409**		**0.0409**	**0.0409**		**646.1968**	**646.1968**	**0.0124**	**0.0119**	**650.0368**

6.0 Area Detail

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	2.5755	0.9476	4.8583	5.9500e-003		0.0970	0.0970		0.0970	0.0970	0.0000	1,151.5512	1,151.5512	0.0298	0.0210	1,158.5435
Unmitigated	2.5755	0.9476	4.8583	5.9500e-003		0.0970	0.0970		0.0970	0.0970	0.0000	1,151.5512	1,151.5512	0.0298	0.0210	1,158.5435

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	0.1860					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Consumer Products	2.1476					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1048	0.8958	0.3812	5.7200e-003		0.0724	0.0724		0.0724	0.0724	0.0000	1,143.5294	1,143.5294	0.0219	0.0210	1,150.3248
Landscaping	0.1371	0.0519	4.4771	2.4000e-004		0.0245	0.0245		0.0245	0.0245		8.0218	8.0218	7.8700e-003		8.2187
Total	**2.5755**	**0.9476**	**4.8583**	**5.9600e-003**		**0.0970**	**0.0970**		**0.0970**	**0.0970**	**0.0000**	**1,151.5512**	**1,151.5512**	**0.0298**	**0.0210**	**1,158.5435**

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	0.1860					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.1476					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1048	0.8958	0.3812	5.7200e-003		0.0724	0.0724		0.0724	0.0724	0.0000	1,143.5294	1,143.5294	0.0219	0.0210	1,150.3248
Landscaping	0.1371	0.0519	4.4771	2.4000e-004		0.0245	0.0245		0.0245	0.0245		8.0218	8.0218	7.8700e-003		8.2187
Total	**2.5755**	**0.9476**	**4.8583**	**5.9600e-003**		**0.0970**	**0.0970**		**0.0970**	**0.0970**	**0.0000**	**1,151.5512**	**1,151.5512**	**0.0298**	**0.0210**	**1,158.5435**

7.0 Water Detail

7.1 Mitigation Measures Water

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

Hawthorn Heights
Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	54.00	Dwelling Unit	6.85	108,466.00	154

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2019
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Site acreage and building sf from project plans.

Construction Phase - Assumed architectual coatings applied to each residence throughout the building construction phase.

Demolition - There are 5 main existing buildings totaling 23,295 square feet

Vehicle Trips -

Woodstoves - No residences will have a wood-burning fireplace, assume all would have gas fireplaces.

Sequestration - Estimated the number of new trees from the site plan.

Construction Off-road Equipment Mitigation - Dust control measures as required by SCAQMD Rule 403.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15

tblConstructionPhase	NumDays	20.00	152.00
tblConstructionPhase	PhaseEndDate	11/23/2018	9/28/2018
tblConstructionPhase	PhaseStartDate	10/27/2018	3/1/2018
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	45.90	54.00
tblFireplaces	NumberNoFireplace	5.40	0.00
tblFireplaces	NumberWood	2.70	0.00
tblLandUse	BuildingSpaceSquareFeet	97,200.00	108,466.00
tblLandUse	LandUseSquareFeet	97,200.00	108,466.00
tblLandUse	LotAcreage	17.53	6.85
tblProjectCharacteristics	OperationalYear	2018	2019
tblSequestration	NumberOfNewTrees	0.00	20.00
tblWoodstoves	NumberCatalytic	2.70	0.00
tblWoodstoves	NumberNoncatalytic	2.70	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	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					
2017	5.0782	52.3573	24.2793	0.0445	18.2675	2.8799	21.1473	9.9840	2.6495	12.6335	0.0000	4,515.6898	4,515.6898	1.1998	0.0000	4,543.4391
2018	7.6015	26.2154	20.5219	0.0338	0.2955	1.6582	1.9537	0.0792	1.5679	1.6471	0.0000	3,305.7494	3,305.7494	0.7189	0.0000	3,323.0337
Maximum	**7.6015**	**52.3573**	**24.2793**	**0.0445**	**18.2675**	**2.8799**	**21.1473**	**9.9840**	**2.6495**	**12.6335**	**0.0000**	**4,515.6898**	**4,515.6898**	**1.1998**	**0.0000**	**4,543.4391**

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	lb/day										lb/day					
2017	5.0782	52.3573	24.2793	0.0445	8.3310	2.8799	11.2109	4.5222	2.6495	7.1716	0.0000	4,515.6898	4,515.6898	1.1998	0.0000	4,543.4391
2018	7.6015	26.2154	20.5219	0.0338	0.2955	1.6582	1.9537	0.0792	1.5679	1.6471	0.0000	3,305.7494	3,305.7494	0.7189	0.0000	3,323.0336
Maximum	**7.6015**	**52.3573**	**24.2793**	**0.0445**	**8.3310**	**2.8799**	**11.2109**	**4.5222**	**2.6495**	**7.1716**	**0.0000**	**4,515.6898**	**4,515.6898**	**1.1998**	**0.0000**	**4,543.4391**

	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**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**53.53**	**0.00**	**43.01**	**54.28**	**0.00**	**38.25**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	2.5755	0.9476	4.8583	5.9500e-003		0.0970	0.0970		0.0970	0.0970	0.0000	1,151.5512	1,151.5512	0.0298	0.0210	1,158.5435
Energy	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368
Mobile	1.0948	9.1086	13.4081	0.0519	3.9006	0.0592	3.9599	1.0439	0.0560	1.0999		5,290.2581	5,290.2581	0.3038		5,297.8522
Total	**3.7295**	**10.5624**	**18.4818**	**0.0611**	**3.9006**	**0.1971**	**4.0978**	**1.0439**	**0.1939**	**1.2378**	**0.0000**	**7,088.0061**	**7,088.0061**	**0.3459**	**0.0328**	**7,106.4325**

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	2.5755	0.9476	4.8583	5.9500e-003		0.0970	0.0970		0.0970	0.0970	0.0000	1,151.5512	1,151.5512	0.0298	0.0210	1,158.5435
Energy	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368
Mobile	1.0948	9.1086	13.4081	0.0519	3.9006	0.0592	3.9599	1.0439	0.0560	1.0999		5,290.2581	5,290.2581	0.3038		5,297.8522
Total	**3.7295**	**10.5624**	**18.4818**	**0.0611**	**3.9006**	**0.1971**	**4.0978**	**1.0439**	**0.1939**	**1.2378**	**0.0000**	**7,088.0061**	**7,088.0061**	**0.3459**	**0.0328**	**7,106.4325**

	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	N20	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	9/4/2017	9/29/2017	5	20	
2	Site Preparation	Site Preparation	9/30/2017	10/13/2017	5	10	
3	Grading	Grading	10/14/2017	11/10/2017	5	20	
4	Building Construction	Building Construction	11/11/2017	9/28/2018	5	230	
5	Paving	Paving	9/29/2018	10/26/2018	5	20	
6	Architectural Coating	Architectural Coating	3/1/2018	9/28/2018	5	152	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 219,644; Residential Outdoor: 73,215; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

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	Excavators	3	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	1	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
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
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
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
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	19.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	106.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	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

Site Preparation		7	18.00	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

Clean Paved Roads

3.2 Demolition - 2017

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					1.1536	0.0000	1.1536	0.1747	0.0000	0.1747			0.0000			0.0000
Off-Road	4.1031	42.7475	23.0122	0.0388		2.1935	2.1935		2.0425	2.0425		3,924.2833	3,924.2833	1.0730		3,951.1070
Total	**4.1031**	**42.7475**	**23.0122**	**0.0388**	**1.1536**	**2.1935**	**3.3471**	**0.1747**	**2.0425**	**2.2172**		**3,924.2833**	**3,924.2833**	**1.0730**		**3,951.1070**

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	0.0384	1.5953	0.2188	4.0500e-003	0.0927	8.5700e-003	0.1013	0.0254	8.2000e-003	0.0336		428.8603	428.8603	0.0317		429.6529
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
Worker	0.0978	0.0682	0.6866	1.6300e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		162.5462	162.5462	5.3200e-003		162.6792

Total	**0.1363**	**1.6635**	**0.9054**	**5.6800e-003**	**0.2604**	**9.6400e-003**	**0.2701**	**0.0699**	**9.1900e-003**	**0.0791**		**591.4064**	**591.4064**	**0.0370**		**592.3321**

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					0.5191	0.0000	0.5191	0.0786	0.0000	0.0786			0.0000			0.0000
Off-Road	4.1031	42.7475	23.0122	0.0388		2.1935	2.1935		2.0425	2.0425	0.0000	3,924.2833	3,924.2833	1.0730		3,951.1070
Total	**4.1031**	**42.7475**	**23.0122**	**0.0388**	**0.5191**	**2.1935**	**2.7126**	**0.0786**	**2.0425**	**2.1211**	**0.0000**	**3,924.2833**	**3,924.2833**	**1.0730**		**3,951.1070**

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	0.0384	1.5953	0.2188	4.0500e-003	0.0927	8.5700e-003	0.1013	0.0254	8.2000e-003	0.0336		428.8603	428.8603	0.0317		429.6529
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
Worker	0.0978	0.0682	0.6866	1.6300e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		162.5462	162.5462	5.3200e-003		162.6792
Total	**0.1363**	**1.6635**	**0.9054**	**5.6800e-003**	**0.2604**	**9.6400e-003**	**0.2701**	**0.0699**	**9.1900e-003**	**0.0791**		**591.4064**	**591.4064**	**0.0370**		**592.3321**

3.3 Site Preparation - 2017

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.9608	52.2754	23.4554	0.0380		2.8786	2.8786		2.6483	2.6483		3,894.950 0	3,894.9500	1.1934		3,924.785 2
Total	**4.9608**	**52.2754**	**23.4554**	**0.0380**	**18.0663**	**2.8786**	**20.9448**	**9.9307**	**2.6483**	**12.5790**		**3,894.950 0**	**3,894.9500**	**1.1934**		**3,924.785 2**

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
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
Worker	0.1174	0.0819	0.8240	1.9600e-003	0.2012	1.2900e-003	0.2025	0.0534	1.1900e-003	0.0546		195.0554	195.0554	6.3900e-003		195.2150
Total	**0.1174**	**0.0819**	**0.8240**	**1.9600e-003**	**0.2012**	**1.2900e-003**	**0.2025**	**0.0534**	**1.1900e-003**	**0.0546**		**195.0554**	**195.0554**	**6.3900e-003**		**195.2150**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.9608	52.2754	23.4554	0.0380		2.8786	2.8786		2.6483	2.6483	0.0000	3,894.950 0	3,894.9500	1.1934		3,924.785 2
Total	**4.9608**	**52.2754**	**23.4554**	**0.0380**	**8.1298**	**2.8786**	**11.0084**	**4.4688**	**2.6483**	**7.1171**	**0.0000**	**3,894.950 0**	**3,894.9500**	**1.1934**		**3,924.785 2**

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
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
Worker	0.1174	0.0819	0.8240	1.9600e-003	0.2012	1.2900e-003	0.2025	0.0534	1.1900e-003	0.0546		195.0554	195.0554	6.3900e-003		195.2150
Total	**0.1174**	**0.0819**	**0.8240**	**1.9600e-003**	**0.2012**	**1.2900e-003**	**0.2025**	**0.0534**	**1.1900e-003**	**0.0546**		**195.0554**	**195.0554**	**6.3900e-003**		**195.2150**

3.4 Grading - 2017

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					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	3.0705	33.8868	17.1042	0.0297		1.7774	1.7774		1.6352	1.6352		3,037.910 7	3,037.9107	0.9308		3,061.180 9
Total	**3.0705**	**33.8868**	**17.1042**	**0.0297**	**6.5523**	**1.7774**	**8.3298**	**3.3675**	**1.6352**	**5.0027**		**3,037.910 7**	**3,037.9107**	**0.9308**		**3,061.180 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
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
Worker	0.0978	0.0682	0.6866	1.6300e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		162.5462	162.5462	5.3200e-003		162.6792
Total	**0.0978**	**0.0682**	**0.6866**	**1.6300e-003**	**0.1677**	**1.0700e-003**	**0.1687**	**0.0445**	**9.9000e-004**	**0.0455**		**162.5462**	**162.5462**	**5.3200e-003**		**162.6792**

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					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	3.0705	33.8868	17.1042	0.0297		1.7774	1.7774		1.6352	1.6352	0.0000	3,037.9107	3,037.9107	0.9308		3,061.1809
Total	**3.0705**	**33.8868**	**17.1042**	**0.0297**	**2.9486**	**1.7774**	**4.7260**	**1.5154**	**1.6352**	**3.1506**	**0.0000**	**3,037.9107**	**3,037.9107**	**0.9308**		**3,061.1809**

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
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
Worker	0.0978	0.0682	0.6866	1.6300e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		162.5462	162.5462	5.3200e-003		162.6792
Total	**0.0978**	**0.0682**	**0.6866**	**1.6300e-003**	**0.1677**	**1.0700e-003**	**0.1687**	**0.0445**	**9.9000e-004**	**0.0455**		**162.5462**	**162.5462**	**5.3200e-003**		**162.6792**

3.5 Building Construction - 2017

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	3.1149	26.5546	18.1825	0.0269		1.7879	1.7879		1.6791	1.6791		2,650.9797	2,650.9797	0.6531		2,667.3078
Total	**3.1149**	**26.5546**	**18.1825**	**0.0269**		**1.7879**	**1.7879**		**1.6791**	**1.6791**		**2,650.9797**	**2,650.9797**	**0.6531**		**2,667.3078**

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
Vendor	0.0264	0.7816	0.1816	1.5400e-003	0.0384	7.7100e-003	0.0461	0.0111	7.3800e-003	0.0184		161.6313	161.6313	0.0163		162.0393
Worker	0.1239	0.0864	0.8697	2.0700e-003	0.2124	1.3600e-003	0.2137	0.0563	1.2600e-003	0.0576		205.8918	205.8918	6.7400e-003		206.0603

Total	**0.1503**	**0.8681**	**1.0513**	**3.6100e-003**	**0.2508**	**9.0700e-003**	**0.2599**	**0.0674**	**8.6400e-003**	**0.0760**		**367.5231**	**367.5231**	**0.0231**		**368.0996**

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	3.1149	26.5546	18.1825	0.0269		1.7879	1.7879		1.6791	1.6791	0.0000	2,650.9797	2,650.9797	0.6531		2,667.3078
Total	**3.1149**	**26.5546**	**18.1825**	**0.0269**		**1.7879**	**1.7879**		**1.6791**	**1.6791**	**0.0000**	**2,650.9797**	**2,650.9797**	**0.6531**		**2,667.3078**

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
Vendor	0.0264	0.7816	0.1816	1.5400e-003	0.0384	7.7100e-003	0.0461	0.0111	7.3800e-003	0.0184		161.6313	161.6313	0.0163		162.0393
Worker	0.1239	0.0864	0.8697	2.0700e-003	0.2124	1.3600e-003	0.2137	0.0563	1.2600e-003	0.0576		205.8918	205.8918	6.7400e-003		206.0603
Total	**0.1503**	**0.8681**	**1.0513**	**3.6100e-003**	**0.2508**	**9.0700e-003**	**0.2599**	**0.0674**	**8.6400e-003**	**0.0760**		**367.5231**	**367.5231**	**0.0231**		**368.0996**

3.5 Building Construction - 2018

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	2.6795	23.3900	17.5804	0.0269		1.4999	1.4999		1.4099	1.4099		2,620.9351	2,620.9351	0.6421		2,636.9883
Total	**2.6795**	**23.3900**	**17.5804**	**0.0269**		**1.4999**	**1.4999**		**1.4099**	**1.4099**		**2,620.9351**	**2,620.9351**	**0.6421**		**2,636.9883**

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
Vendor	0.0232	0.7284	0.1627	1.5300e-003	0.0384	6.1900e-003	0.0446	0.0111	5.9200e-003	0.0170		161.2405	161.2405	0.0153		161.6240
Worker	0.1116	0.0754	0.7638	2.0100e-003	0.2124	1.3300e-003	0.2137	0.0563	1.2200e-003	0.0576		200.0165	200.0165	5.9200e-003		200.1644
Total	**0.1348**	**0.8038**	**0.9265**	**3.5400e-003**	**0.2508**	**7.5200e-003**	**0.2583**	**0.0674**	**7.1400e-003**	**0.0745**		**361.2570**	**361.2570**	**0.0213**		**361.7884**

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	2.6795	23.3900	17.5804	0.0269		1.4999	1.4999		1.4099	1.4099	0.0000	2,620.9351	2,620.9351	0.6421		2,636.9883
Total	**2.6795**	**23.3900**	**17.5804**	**0.0269**		**1.4999**	**1.4999**		**1.4099**	**1.4099**	**0.0000**	**2,620.9351**	**2,620.9351**	**0.6421**		**2,636.9883**

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
Vendor	0.0232	0.7284	0.1627	1.5300e-003	0.0384	6.1900e-003	0.0446	0.0111	5.9200e-003	0.0170		161.2405	161.2405	0.0153		161.6240
Worker	0.1116	0.0754	0.7638	2.0100e-003	0.2124	1.3300e-003	0.2137	0.0563	1.2200e-003	0.0576		200.0165	200.0165	5.9200e-003		200.1644
Total	**0.1348**	**0.8038**	**0.9265**	**3.5400e-003**	**0.2508**	**7.5200e-003**	**0.2583**	**0.0674**	**7.1400e-003**	**0.0745**		**361.2570**	**361.2570**	**0.0213**		**361.7884**

3.6 Paving - 2018

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	1.6437	17.5209	14.7964	0.0228		0.9561	0.9561		0.8797	0.8797		2,294.0887	2,294.0887	0.7142		2,311.9432
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6437**	**17.5209**	**14.7964**	**0.0228**		**0.9561**	**0.9561**		**0.8797**	**0.8797**		**2,294.0887**	**2,294.0887**	**0.7142**		**2,311.9432**

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
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
Worker	0.0881	0.0595	0.6030	1.5900e-003	0.1677	1.0500e-003	0.1687	0.0445	9.7000e-004	0.0454		157.9077	157.9077	4.6700e-003		158.0245
Total	**0.0881**	**0.0595**	**0.6030**	**1.5900e-003**	**0.1677**	**1.0500e-003**	**0.1687**	**0.0445**	**9.7000e-004**	**0.0454**		**157.9077**	**157.9077**	**4.6700e-003**		**158.0245**

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	1.6437	17.5209	14.7964	0.0228		0.9561	0.9561		0.8797	0.8797	0.0000	2,294.0887	2,294.0887	0.7142		2,311.9432
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6437**	**17.5209**	**14.7964**	**0.0228**		**0.9561**	**0.9561**		**0.8797**	**0.8797**	**0.0000**	**2,294.0887**	**2,294.0887**	**0.7142**		**2,311.9432**

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
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
Worker	0.0881	0.0595	0.6030	1.5900e-003	0.1677	1.0500e-003	0.1687	0.0445	9.7000e-004	0.0454		157.9077	157.9077	4.6700e-003		158.0245
Total	**0.0881**	**0.0595**	**0.6030**	**1.5900e-003**	**0.1677**	**1.0500e-003**	**0.1687**	**0.0445**	**9.7000e-004**	**0.0454**		**157.9077**	**157.9077**	**4.6700e-003**		**158.0245**

3.7 Architectural Coating - 2018

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	4.4651					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.1171
Total	**4.7638**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.1171**

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
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
Worker	0.0235	0.0159	0.1608	4.2000e-004	0.0447	2.8000e-004	0.0450	0.0119	2.6000e-004	0.0121		42.1087	42.1087	1.2500e-003		42.1399

Total	**0.0235**	**0.0159**	**0.1608**	**4.2000e-004**	**0.0447**	**2.8000e-004**	**0.0450**	**0.0119**	**2.6000e-004**	**0.0121**		**42.1087**	**42.1087**	**1.2500e-003**		**42.1399**

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	4.4651					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.1171
Total	**4.7638**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.1171**

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
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
Worker	0.0235	0.0159	0.1608	4.2000e-004	0.0447	2.8000e-004	0.0450	0.0119	2.6000e-004	0.0121		42.1087	42.1087	1.2500e-003		42.1399
Total	**0.0235**	**0.0159**	**0.1608**	**4.2000e-004**	**0.0447**	**2.8000e-004**	**0.0450**	**0.0119**	**2.6000e-004**	**0.0121**		**42.1087**	**42.1087**	**1.2500e-003**		**42.1399**

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	1.0948	9.1086	13.4081	0.0519	3.9006	0.0592	3.9599	1.0439	0.0560	1.0999		5,290.2581	5,290.2581	0.3038		5,297.8522
Unmitigated	1.0948	9.1086	13.4081	0.0519	3.9006	0.0592	3.9599	1.0439	0.0560	1.0999		5,290.2581	5,290.2581	0.3038		5,297.8522

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	514.08	535.14	465.48	1,743,245	1,743,245
Total	514.08	535.14	465.48	1,743,245	1,743,245

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.533383	0.039495	0.183627	0.126156	0.018688	0.005561	0.017029	0.066607	0.001345	0.001247	0.004677	0.000974	0.001211

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	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368
NaturalGas Unmitigated	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368

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					
Single Family Housing	5492.67	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368
Total		**0.0592**	**0.5062**	**0.2154**	**3.2300e-003**		**0.0409**	**0.0409**		**0.0409**	**0.0409**		**646.1968**	**646.1968**	**0.0124**	**0.0119**	**650.0368**

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					
Single Family Housing	5.49267	0.0592	0.5062	0.2154	3.2300e-003		0.0409	0.0409		0.0409	0.0409		646.1968	646.1968	0.0124	0.0119	650.0368
Total		**0.0592**	**0.5062**	**0.2154**	**3.2300e-003**		**0.0409**	**0.0409**		**0.0409**	**0.0409**		**646.1968**	**646.1968**	**0.0124**	**0.0119**	**650.0368**

6.0 Area Detail

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	2.5755	0.9476	4.8583	5.9500e-003		0.0970	0.0970		0.0970	0.0970	0.0000	1,151.5512	1,151.5512	0.0298	0.0210	1,158.5435
Unmitigated	2.5755	0.9476	4.8583	5.9500e-003		0.0970	0.0970		0.0970	0.0970	0.0000	1,151.5512	1,151.5512	0.0298	0.0210	1,158.5435

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	0.1860					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Consumer Products	2.1476					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1048	0.8958	0.3812	5.7200e-003		0.0724	0.0724		0.0724	0.0724	0.0000	1,143.5294	1,143.5294	0.0219	0.0210	1,150.3248
Landscaping	0.1371	0.0519	4.4771	2.4000e-004		0.0245	0.0245		0.0245	0.0245		8.0218	8.0218	7.8700e-003		8.2187
Total	**2.5755**	**0.9476**	**4.8583**	**5.9600e-003**		**0.0970**	**0.0970**		**0.0970**	**0.0970**	**0.0000**	**1,151.5512**	**1,151.5512**	**0.0298**	**0.0210**	**1,158.5435**

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	0.1860					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.1476					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1048	0.8958	0.3812	5.7200e-003		0.0724	0.0724		0.0724	0.0724	0.0000	1,143.5294	1,143.5294	0.0219	0.0210	1,150.3248
Landscaping	0.1371	0.0519	4.4771	2.4000e-004		0.0245	0.0245		0.0245	0.0245		8.0218	8.0218	7.8700e-003		8.2187
Total	**2.5755**	**0.9476**	**4.8583**	**5.9600e-003**		**0.0970**	**0.0970**		**0.0970**	**0.0970**	**0.0000**	**1,151.5512**	**1,151.5512**	**0.0298**	**0.0210**	**1,158.5435**

7.0 Water Detail

7.1 Mitigation Measures Water

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

Hawthorn Heights

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	54.00	Dwelling Unit	6.85	108,466.00	154

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2019
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	1325.65	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Site acreage and building sf from project plans.

Construction Phase - Assumed architectual coatings applied to each residence throughout the building construction phase.

Demolition - There are 5 main existing buildings totaling 23,295 square feet

Vehicle Trips -

Woodstoves - No residences will have a wood-burning fireplace, assume all would have gas fireplaces.

Sequestration - Estimated the number of new trees from the site plan.

Construction Off-road Equipment Mitigation - Dust control measures as required by SCAQMD Rule 403.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15

tblConstructionPhase	NumDays	20.00	152.00
tblConstructionPhase	PhaseEndDate	11/23/2018	9/28/2018
tblConstructionPhase	PhaseStartDate	10/27/2018	3/1/2018
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	45.90	54.00
tblFireplaces	NumberNoFireplace	5.40	0.00
tblFireplaces	NumberWood	2.70	0.00
tblLandUse	BuildingSpaceSquareFeet	97,200.00	108,466.00
tblLandUse	LandUseSquareFeet	97,200.00	108,466.00
tblLandUse	LotAcreage	17.53	6.85
tblProjectCharacteristics	OperationalYear	2018	2019
tblSequestration	NumberOfNewTrees	0.00	20.00
tblWoodstoves	NumberCatalytic	2.70	0.00
tblWoodstoves	NumberNoncatalytic	2.70	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	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					
2017	0.1562	1.5259	0.8764	1.5000e-003	0.1769	0.0857	0.2626	0.0876	0.0797	0.1673	0.0000	136.7662	136.7662	0.0347	0.0000	137.6342
2018	0.6545	2.6898	2.1154	3.4800e-003	0.0291	0.1680	0.1971	7.8000e-003	0.1584	0.1662	0.0000	309.2143	309.2143	0.0671	0.0000	310.8911
Maximum	**0.6545**	**2.6898**	**2.1154**	**3.4800e-003**	**0.1769**	**0.1680**	**0.2626**	**0.0876**	**0.1584**	**0.1673**	**0.0000**	**309.2143**	**309.2143**	**0.0671**	**0.0000**	**310.8911**

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					
2017	0.1562	1.5259	0.8764	1.5000e-003	0.0848	0.0857	0.1705	0.0408	0.0797	0.1205	0.0000	136.7660	136.7660	0.0347	0.0000	137.6340
2018	0.6545	2.6898	2.1154	3.4800e-003	0.0291	0.1680	0.1971	7.8000e-003	0.1584	0.1662	0.0000	309.2140	309.2140	0.0671	0.0000	310.8908
Maximum	**0.6545**	**2.6898**	**2.1154**	**3.4800e-003**	**0.0848**	**0.1680**	**0.1971**	**0.0408**	**0.1584**	**0.1662**	**0.0000**	**309.2140**	**309.2140**	**0.0671**	**0.0000**	**310.8908**

	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**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.70**	**0.00**	**20.03**	**49.04**	**0.00**	**14.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
1	**9-4-2017**	**12-3-2017**	1.3620	1.3620
2	**12-4-2017**	**3-3-2018**	0.9122	0.9122
3	**3-4-2018**	**6-3-2018**	1.1111	1.1111
4	**6-4-2018**	**9-3-2018**	1.1111	1.1111
5	**9-4-2018**	**9-30-2018**	0.3157	0.3157
		Highest	1.3620	1.3620

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Area	0.4443	0.0177	0.5644	1.0000e-004		3.9700e-003	3.9700e-003		3.9700e-003	3.9700e-003	0.0000	13.8771	13.8771	1.1400e-003	2.4000e-004	13.9765
Energy	0.0108	0.0924	0.0393	5.9000e-004		7.4700e-003	7.4700e-003		7.4700e-003	7.4700e-003	0.0000	411.1365	411.1365	8.7000e-003	3.3400e-003	412.3489
Mobile	0.1901	1.6076	2.3983	9.2100e-003	0.6657	0.0102	0.6759	0.1784	9.6400e-003	0.1880	0.0000	851.3289	851.3289	0.0466	0.0000	852.4938
Waste						0.0000	0.0000		0.0000	0.0000	12.8169	0.0000	12.8169	0.7575	0.0000	31.7532
Water						0.0000	0.0000		0.0000	0.0000	1.1162	42.3648	43.4810	0.1156	2.9000e-003	47.2341
Total	**0.6452**	**1.7176**	**3.0020**	**9.9000e-003**	**0.6657**	**0.0216**	**0.6874**	**0.1784**	**0.0211**	**0.1995**	**13.9331**	**1,318.7073**	**1,332.6404**	**0.9295**	**6.4800e-003**	**1,357.8064**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4443	0.0177	0.5644	1.0000e-004		3.9700e-003	3.9700e-003		3.9700e-003	3.9700e-003	0.0000	13.8771	13.8771	1.1400e-003	2.4000e-004	13.9765
Energy	0.0108	0.0924	0.0393	5.9000e-004		7.4700e-003	7.4700e-003		7.4700e-003	7.4700e-003	0.0000	411.1365	411.1365	8.7000e-003	3.3400e-003	412.3489
Mobile	0.1901	1.6076	2.3983	9.2100e-003	0.6657	0.0102	0.6759	0.1784	9.6400e-003	0.1880	0.0000	851.3289	851.3289	0.0466	0.0000	852.4938
Waste						0.0000	0.0000		0.0000	0.0000	12.8169	0.0000	12.8169	0.7575	0.0000	31.7532
Water						0.0000	0.0000		0.0000	0.0000	1.1162	42.3648	43.4810	0.1156	2.9000e-003	47.2341
Total	**0.6452**	**1.7176**	**3.0020**	**9.9000e-003**	**0.6657**	**0.0216**	**0.6874**	**0.1784**	**0.0211**	**0.1995**	**13.9331**	**1,318.7073**	**1,332.6404**	**0.9295**	**6.4800e-003**	**1,357.8064**

	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	N20	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

2.3 Vegetation

Vegetation

Category	CO2e
	MT
New Trees	14.1600
Total	**14.1600**

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	9/4/2017	9/29/2017	5	20	
2	Site Preparation	Site Preparation	9/30/2017	10/13/2017	5	10	
3	Grading	Grading	10/14/2017	11/10/2017	5	20	
4	Building Construction	Building Construction	11/11/2017	9/28/2018	5	230	
5	Paving	Paving	9/29/2018	10/26/2018	5	20	
6	Architectural Coating	Architectural Coating	3/1/2018	9/28/2018	5	152	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 219,644; Residential Outdoor: 73,215; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area:

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	Excavators	3	8.00	158	0.38

Demolition	Concrete/Industrial Saws		1	8.00	81	0.73
Grading	Excavators		1	8.00	158	0.38
Building Construction	Cranes		1	7.00	231	0.29
Building Construction	Forklifts		3	8.00	89	0.20
Building Construction	Generator Sets		1	8.00	84	0.74
Paving	Pavers		2	8.00	130	0.42
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
Building Construction	Tractors/Loaders/Backhoes		3	7.00	97	0.37
Grading	Graders		1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes		3	8.00	97	0.37
Paving	Paving Equipment		2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes		4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers		3	8.00	247	0.40
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
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	19.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	106.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	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
Site Preparation	7	18.00	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

Clean Paved Roads

3.2 Demolition - 2017

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					0.0115	0.0000	0.0115	1.7500e-003	0.0000	1.7500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0410	0.4275	0.2301	3.9000e-004		0.0219	0.0219		0.0204	0.0204	0.0000	35.6005	35.6005	9.7300e-003	0.0000	35.8438
Total	**0.0410**	**0.4275**	**0.2301**	**3.9000e-004**	**0.0115**	**0.0219**	**0.0335**	**1.7500e-003**	**0.0204**	**0.0222**	**0.0000**	**35.6005**	**35.6005**	**9.7300e-003**	**0.0000**	**35.8438**

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	3.7000e-004	0.0162	2.0100e-003	4.0000e-005	9.1000e-004	8.0000e-005	1.0000e-003	2.5000e-004	8.0000e-005	3.3000e-004	0.0000	3.9460	3.9460	2.7000e-004	0.0000	3.9528
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.1000e-004	7.1000e-004	7.2300e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5124	1.5124	5.0000e-005	0.0000	1.5136
Total	**1.2800e-003**	**0.0169**	**9.2400e-003**	**6.0000e-005**	**2.5600e-003**	**9.0000e-005**	**2.6600e-003**	**6.9000e-004**	**9.0000e-005**	**7.8000e-004**	**0.0000**	**5.4583**	**5.4583**	**3.2000e-004**	**0.0000**	**5.4664**

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					5.1900e-003	0.0000	5.1900e-003	7.9000e-004	0.0000	7.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0410	0.4275	0.2301	3.9000e-004		0.0219	0.0219		0.0204	0.0204	0.0000	35.6005	35.6005	9.7300e-003	0.0000	35.8438
Total	**0.0410**	**0.4275**	**0.2301**	**3.9000e-004**	**5.1900e-003**	**0.0219**	**0.0271**	**7.9000e-004**	**0.0204**	**0.0212**	**0.0000**	**35.6005**	**35.6005**	**9.7300e-003**	**0.0000**	**35.8438**

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	3.7000e-004	0.0162	2.0100e-003	4.0000e-005	9.1000e-004	8.0000e-005	1.0000e-003	2.5000e-004	8.0000e-005	3.3000e-004	0.0000	3.9460	3.9460	2.7000e-004	0.0000	3.9528
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.1000e-004	7.1000e-004	7.2300e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5124	1.5124	5.0000e-005	0.0000	1.5136
Total	**1.2800e-003**	**0.0169**	**9.2400e-003**	**6.0000e-005**	**2.5600e-003**	**9.0000e-005**	**2.6600e-003**	**6.9000e-004**	**9.0000e-005**	**7.8000e-004**	**0.0000**	**5.4583**	**5.4583**	**3.2000e-004**	**0.0000**	**5.4664**

3.3 Site Preparation - 2017

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0248	0.2614	0.1173	1.9000e-004		0.0144	0.0144		0.0132	0.0132	0.0000	17.6672	17.6672	5.4100e-003	0.0000	17.8025
Total	**0.0248**	**0.2614**	**0.1173**	**1.9000e-004**	**0.0903**	**0.0144**	**0.1047**	**0.0497**	**0.0132**	**0.0629**	**0.0000**	**17.6672**	**17.6672**	**5.4100e-003**	**0.0000**	**17.8025**

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	5.4000e-004	4.2000e-004	4.3400e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9074	0.9074	3.0000e-005	0.0000	0.9082
Total	**5.4000e-004**	**4.2000e-004**	**4.3400e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9074**	**0.9074**	**3.0000e-005**	**0.0000**	**0.9082**

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					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0248	0.2614	0.1173	1.9000e-004		0.0144	0.0144		0.0132	0.0132	0.0000	17.6672	17.6672	5.4100e-003	0.0000	17.8025
Total	**0.0248**	**0.2614**	**0.1173**	**1.9000e-004**	**0.0407**	**0.0144**	**0.0550**	**0.0223**	**0.0132**	**0.0356**	**0.0000**	**17.6672**	**17.6672**	**5.4100e-003**	**0.0000**	**17.8025**

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	5.4000e-004	4.2000e-004	4.3400e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9074	0.9074	3.0000e-005	0.0000	0.9082
Total	**5.4000e-004**	**4.2000e-004**	**4.3400e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9074**	**0.9074**	**3.0000e-005**	**0.0000**	**0.9082**

3.4 Grading - 2017

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					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0307	0.3389	0.1710	3.0000e-004		0.0178	0.0178		0.0164	0.0164	0.0000	27.5595	27.5595	8.4400e-003	0.0000	27.7706
Total	**0.0307**	**0.3389**	**0.1710**	**3.0000e-004**	**0.0655**	**0.0178**	**0.0833**	**0.0337**	**0.0164**	**0.0500**	**0.0000**	**27.5595**	**27.5595**	**8.4400e-003**	**0.0000**	**27.7706**

Unmitigated Construction Off-Site

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

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.1000e-004	7.1000e-004	7.2300e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5124	1.5124	5.0000e-005	0.0000	1.5136
Total	**9.1000e-004**	**7.1000e-004**	**7.2300e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5124**	**1.5124**	**5.0000e-005**	**0.0000**	**1.5136**

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					0.0295	0.0000	0.0295	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0307	0.3389	0.1710	3.0000e-004		0.0178	0.0178		0.0164	0.0164	0.0000	27.5594	27.5594	8.4400e-003	0.0000	27.7705
Total	**0.0307**	**0.3389**	**0.1710**	**3.0000e-004**	**0.0295**	**0.0178**	**0.0473**	**0.0152**	**0.0164**	**0.0315**	**0.0000**	**27.5594**	**27.5594**	**8.4400e-003**	**0.0000**	**27.7705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.1000e-004	7.1000e-004	7.2300e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5124	1.5124	5.0000e-005	0.0000	1.5136

Total	**9.1000e-004**	**7.1000e-004**	**7.2300e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5124**	**1.5124**	**5.0000e-005**	**0.0000**	**1.5136**

3.5 Building Construction - 2017

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	0.0545	0.4647	0.3182	4.7000e-004		0.0313	0.0313		0.0294	0.0294	0.0000	42.0863	42.0863	0.0104	0.0000	42.3455
Total	**0.0545**	**0.4647**	**0.3182**	**4.7000e-004**		**0.0313**	**0.0313**		**0.0294**	**0.0294**	**0.0000**	**42.0863**	**42.0863**	**0.0104**	**0.0000**	**42.3455**

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	4.5000e-004	0.0139	2.9700e-003	3.0000e-005	6.6000e-004	1.3000e-004	8.0000e-004	1.9000e-004	1.3000e-004	3.2000e-004	0.0000	2.6223	2.6223	2.5000e-004	0.0000	2.6284
Worker	2.0100e-003	1.5600e-003	0.0160	4.0000e-005	3.6500e-003	2.0000e-005	3.6800e-003	9.7000e-004	2.0000e-005	9.9000e-004	0.0000	3.3524	3.3524	1.1000e-004	0.0000	3.3552
Total	**2.4600e-003**	**0.0155**	**0.0190**	**7.0000e-005**	**4.3100e-003**	**1.5000e-004**	**4.4800e-003**	**1.1600e-003**	**1.5000e-004**	**1.3100e-003**	**0.0000**	**5.9747**	**5.9747**	**3.6000e-004**	**0.0000**	**5.9836**

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	0.0545	0.4647	0.3182	4.7000e-004		0.0313	0.0313		0.0294	0.0294	0.0000	42.0862	42.0862	0.0104	0.0000	42.3454
Total	**0.0545**	**0.4647**	**0.3182**	**4.7000e-004**		**0.0313**	**0.0313**		**0.0294**	**0.0294**	**0.0000**	**42.0862**	**42.0862**	**0.0104**	**0.0000**	**42.3454**

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	4.5000e-004	0.0139	2.9700e-003	3.0000e-005	6.6000e-004	1.3000e-004	8.0000e-004	1.9000e-004	1.3000e-004	3.2000e-004	0.0000	2.6223	2.6223	2.5000e-004	0.0000	2.6284
Worker	2.0100e-003	1.5600e-003	0.0160	4.0000e-005	3.6500e-003	2.0000e-005	3.6800e-003	9.7000e-004	2.0000e-005	9.9000e-004	0.0000	3.3524	3.3524	1.1000e-004	0.0000	3.3552
Total	**2.4600e-003**	**0.0155**	**0.0190**	**7.0000e-005**	**4.3100e-003**	**1.5000e-004**	**4.4800e-003**	**1.1600e-003**	**1.5000e-004**	**1.3100e-003**	**0.0000**	**5.9747**	**5.9747**	**3.6000e-004**	**0.0000**	**5.9836**

3.5 Building Construction - 2018

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	0.2613	2.2805	1.7141	2.6200e-003		0.1462	0.1462		0.1375	0.1375	0.0000	231.8231	231.8231	0.0568	0.0000	233.2430
Total	**0.2613**	**2.2805**	**1.7141**	**2.6200e-003**		**0.1462**	**0.1462**		**0.1375**	**0.1375**	**0.0000**	**231.8231**	**231.8231**	**0.0568**	**0.0000**	**233.2430**

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	2.1900e-003	0.0722	0.0148	1.5000e-004	3.7000e-003	6.0000e-004	4.2900e-003	1.0700e-003	5.7000e-004	1.6400e-003	0.0000	14.5819	14.5819	1.2800e-003	0.0000	14.6139
Worker	0.0101	7.6000e-003	0.0784	2.0000e-004	0.0204	1.3000e-004	0.0205	5.4100e-003	1.2000e-004	5.5300e-003	0.0000	18.1459	18.1459	5.4000e-004	0.0000	18.1594
Total	**0.0123**	**0.0798**	**0.0932**	**3.5000e-004**	**0.0241**	**7.3000e-004**	**0.0248**	**6.4800e-003**	**6.9000e-004**	**7.1700e-003**	**0.0000**	**32.7277**	**32.7277**	**1.8200e-003**	**0.0000**	**32.7733**

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	0.2613	2.2805	1.7141	2.6200e-003		0.1462	0.1462		0.1375	0.1375	0.0000	231.8228	231.8228	0.0568	0.0000	233.2427
Total	**0.2613**	**2.2805**	**1.7141**	**2.6200e-003**		**0.1462**	**0.1462**		**0.1375**	**0.1375**	**0.0000**	**231.8228**	**231.8228**	**0.0568**	**0.0000**	**233.2427**

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	2.1900e-003	0.0722	0.0148	1.5000e-004	3.7000e-003	6.0000e-004	4.2900e-003	1.0700e-003	5.7000e-004	1.6400e-003	0.0000	14.5819	14.5819	1.2800e-003	0.0000	14.6139
Worker	0.0101	7.6000e-003	0.0784	2.0000e-004	0.0204	1.3000e-004	0.0205	5.4100e-003	1.2000e-004	5.5300e-003	0.0000	18.1459	18.1459	5.4000e-004	0.0000	18.1594
Total	**0.0123**	**0.0798**	**0.0932**	**3.5000e-004**	**0.0241**	**7.3000e-004**	**0.0248**	**6.4800e-003**	**6.9000e-004**	**7.1700e-003**	**0.0000**	**32.7277**	**32.7277**	**1.8200e-003**	**0.0000**	**32.7733**

3.6 Paving - 2018

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	0.0164	0.1752	0.1480	2.3000e-004		9.5600e-003	9.5600e-003		8.8000e-003	8.8000e-003	0.0000	20.8116	20.8116	6.4800e-003	0.0000	20.9736
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0164**	**0.1752**	**0.1480**	**2.3000e-004**		**9.5600e-003**	**9.5600e-003**		**8.8000e-003**	**8.8000e-003**	**0.0000**	**20.8116**	**20.8116**	**6.4800e-003**	**0.0000**	**20.9736**

Unmitigated Construction Off-Site

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

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1000e-004	6.2000e-004	6.3500e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4693	1.4693	4.0000e-005	0.0000	1.4704
Total	**8.1000e-004**	**6.2000e-004**	**6.3500e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.4693**	**1.4693**	**4.0000e-005**	**0.0000**	**1.4704**

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	0.0164	0.1752	0.1480	2.3000e-004		9.5600e-003	9.5600e-003		8.8000e-003	8.8000e-003	0.0000	20.8116	20.8116	6.4800e-003	0.0000	20.9736
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0164**	**0.1752**	**0.1480**	**2.3000e-004**		**9.5600e-003**	**9.5600e-003**		**8.8000e-003**	**8.8000e-003**	**0.0000**	**20.8116**	**20.8116**	**6.4800e-003**	**0.0000**	**20.9736**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1000e-004	6.2000e-004	6.3500e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4693	1.4693	4.0000e-005	0.0000	1.4704

Total	**8.1000e-004**	**6.2000e-004**	**6.3500e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.4693**	**1.4693**	**4.0000e-005**	**0.0000**	**1.4704**

3.7 Architectural Coating - 2018

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	0.3394					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0227	0.1524	0.1409	2.3000e-004		0.0114	0.0114		0.0114	0.0114	0.0000	19.4048	19.4048	1.8400e-003	0.0000	19.4509
Total	**0.3621**	**0.1524**	**0.1409**	**2.3000e-004**		**0.0114**	**0.0114**		**0.0114**	**0.0114**	**0.0000**	**19.4048**	**19.4048**	**1.8400e-003**	**0.0000**	**19.4509**

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	1.6500e-003	1.2500e-003	0.0129	3.0000e-005	3.3400e-003	2.0000e-005	3.3600e-003	8.9000e-004	2.0000e-005	9.1000e-004	0.0000	2.9778	2.9778	9.0000e-005	0.0000	2.9800
Total	**1.6500e-003**	**1.2500e-003**	**0.0129**	**3.0000e-005**	**3.3400e-003**	**2.0000e-005**	**3.3600e-003**	**8.9000e-004**	**2.0000e-005**	**9.1000e-004**	**0.0000**	**2.9778**	**2.9778**	**9.0000e-005**	**0.0000**	**2.9800**

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	0.3394					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0227	0.1524	0.1409	2.3000e-004		0.0114	0.0114		0.0114	0.0114	0.0000	19.4047	19.4047	1.8400e-003	0.0000	19.4508
Total	**0.3621**	**0.1524**	**0.1409**	**2.3000e-004**		**0.0114**	**0.0114**		**0.0114**	**0.0114**	**0.0000**	**19.4047**	**19.4047**	**1.8400e-003**	**0.0000**	**19.4508**

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	1.6500e-003	1.2500e-003	0.0129	3.0000e-005	3.3400e-003	2.0000e-005	3.3600e-003	8.9000e-004	2.0000e-005	9.1000e-004	0.0000	2.9778	2.9778	9.0000e-005	0.0000	2.9800
Total	**1.6500e-003**	**1.2500e-003**	**0.0129**	**3.0000e-005**	**3.3400e-003**	**2.0000e-005**	**3.3600e-003**	**8.9000e-004**	**2.0000e-005**	**9.1000e-004**	**0.0000**	**2.9778**	**2.9778**	**9.0000e-005**	**0.0000**	**2.9800**

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	0.1901	1.6076	2.3983	9.2100e-003	0.6657	0.0102	0.6759	0.1784	9.6400e-003	0.1880	0.0000	851.3289	851.3289	0.0466	0.0000	852.4938
Unmitigated	0.1901	1.6076	2.3983	9.2100e-003	0.6657	0.0102	0.6759	0.1784	9.6400e-003	0.1880	0.0000	851.3289	851.3289	0.0466	0.0000	852.4938

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	514.08	535.14	465.48	1,743,245	1,743,245
Total	514.08	535.14	465.48	1,743,245	1,743,245

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.533383	0.039495	0.183627	0.126156	0.018688	0.005561	0.017029	0.066607	0.001345	0.001247	0.004677	0.000974	0.001211

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	304.1514	304.1514	6.6500e-003	1.3800e-003	304.7280
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	304.1514	304.1514	6.6500e-003	1.3800e-003	304.7280
NaturalGas Mitigated	0.0108	0.0924	0.0393	5.9000e-004		7.4700e-003	7.4700e-003		7.4700e-003	7.4700e-003	0.0000	106.9851	106.9851	2.0500e-003	1.9600e-003	107.6209
NaturalGas Unmitigated	0.0108	0.0924	0.0393	5.9000e-004		7.4700e-003	7.4700e-003		7.4700e-003	7.4700e-003	0.0000	106.9851	106.9851	2.0500e-003	1.9600e-003	107.6209

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					
Single Family Housing	2.00483e+006	0.0108	0.0924	0.0393	5.9000e-004		7.4700e-003	7.4700e-003		7.4700e-003	7.4700e-003	0.0000	106.9851	106.9851	2.0500e-003	1.9600e-003	107.6209
Total		**0.0108**	**0.0924**	**0.0393**	**5.9000e-004**		**7.4700e-003**	**7.4700e-003**		**7.4700e-003**	**7.4700e-003**	**0.0000**	**106.9851**	**106.9851**	**2.0500e-003**	**1.9600e-003**	**107.6209**

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					
Single Family Housing	2.00483e+006	0.0108	0.0924	0.0393	5.9000e-004		7.4700e-003	7.4700e-003		7.4700e-003	7.4700e-003	0.0000	106.9851	106.9851	2.0500e-003	1.9600e-003	107.6209
Total		**0.0108**	**0.0924**	**0.0393**	**5.9000e-004**		**7.4700e-003**	**7.4700e-003**		**7.4700e-003**	**7.4700e-003**	**0.0000**	**106.9851**	**106.9851**	**2.0500e-003**	**1.9600e-003**	**107.6209**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	505819	304.1514	6.6500e-003	1.3800e-003	304.7280
Total		**304.1514**	**6.6500e-003**	**1.3800e-003**	**304.7280**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	505819	304.1514	6.6500e-003	1.3800e-003	304.7280
Total		**304.1514**	**6.6500e-003**	**1.3800e-003**	**304.7280**

6.0 Area Detail

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	0.4443	0.0177	0.5644	1.0000e-004		3.9700e-003	3.9700e-003		3.9700e-003	3.9700e-003	0.0000	13.8771	13.8771	1.1400e-003	2.4000e-004	13.9765
Unmitigated	0.4443	0.0177	0.5644	1.0000e-004		3.9700e-003	3.9700e-003		3.9700e-003	3.9700e-003	0.0000	13.8771	13.8771	1.1400e-003	2.4000e-004	13.9765

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	0.0339					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3919					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.3100e-003	0.0112	4.7600e-003	7.0000e-005		9.1000e-004	9.1000e-004		9.1000e-004	9.1000e-004	0.0000	12.9674	12.9674	2.5000e-004	2.4000e-004	13.0445
Landscaping	0.0171	6.4800e-003	0.5596	3.0000e-005		3.0700e-003	3.0700e-003		3.0700e-003	3.0700e-003	0.0000	0.9097	0.9097	8.9000e-004	0.0000	0.9320
Total	**0.4443**	**0.0177**	**0.5644**	**1.0000e-004**		**3.9800e-003**	**3.9800e-003**		**3.9800e-003**	**3.9800e-003**	**0.0000**	**13.8771**	**13.8771**	**1.1400e-003**	**2.4000e-004**	**13.9764**

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	0.0339					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3919					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.3100e-003	0.0112	4.7600e-003	7.0000e-005		9.1000e-004	9.1000e-004		9.1000e-004	9.1000e-004	0.0000	12.9674	12.9674	2.5000e-004	2.4000e-004	13.0445
Landscaping	0.0171	6.4800e-003	0.5596	3.0000e-005		3.0700e-003	3.0700e-003		3.0700e-003	3.0700e-003	0.0000	0.9097	0.9097	8.9000e-004	0.0000	0.9320
Total	**0.4443**	**0.0177**	**0.5644**	**1.0000e-004**		**3.9800e-003**	**3.9800e-003**		**3.9800e-003**	**3.9800e-003**	**0.0000**	**13.8771**	**13.8771**	**1.1400e-003**	**2.4000e-004**	**13.9764**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	43.4810	0.1156	2.9000e-003	47.2341
Unmitigated	43.4810	0.1156	2.9000e-003	47.2341

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	3.51832 / 2.21807	43.4810	0.1156	2.9000e-003	47.2341
Total		**43.4810**	**0.1156**	**2.9000e-003**	**47.2341**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	3.51832 / 2.21807	43.4810	0.1156	2.9000e-003	47.2341
Total		**43.4810**	**0.1156**	**2.9000e-003**	**47.2341**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	12.8169	0.7575	0.0000	31.7532
Unmitigated	12.8169	0.7575	0.0000	31.7532

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	63.14	12.8169	0.7575	0.0000	31.7532
Total		**12.8169**	**0.7575**	**0.0000**	**31.7532**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	63.14	12.8169	0.7575	0.0000	31.7532
Total		**12.8169**	**0.7575**	**0.0000**	**31.7532**

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

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	14.1600	0.0000	0.0000	14.1600

11.2 Net New Trees

Species Class

	Number of Trees	Total CO_2	CH_4	N_2O	CO_2e
		MT			
Miscellaneous	20	14.1600	0.0000	0.0000	14.1600
Total		**14.1600**	**0.0000**	**0.0000**	**14.1600**

Appendix B:
Health Risk Assessment

HEALTH RISK ASSESSMENT

HAWTHORNE RESIDENTIAL DEVELOPMENT PROJECT
CITY OF RIVERSIDE, COUNTY OF RIVERSIDE, CALIFORNIA

LSA

August 2017

HEALTH RISK ASSESSMENT

HAWTHORNE RESIDENTIAL DEVELOPMENT PROJECT
CITY OF RIVERSIDE, COUNTY OF RIVERSIDE, CALIFORNIA

Prepared for:

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Project No. SWK1502

LSA

August 2017

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APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

AAQS	ambient air quality standards
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AB	Assembly Bill
ARB	California Air Resources Board
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
Basin	South Coast Air Basin
BNSF	Burlington Northern and Santa Fe
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CEQA	California Environmental Quality Act
CO	carbon monoxide
DPM	diesel particulate matter
EPA	United States Environmental Protection Agency
FIND	SCAQMD Facility Information Detail
ft	Feet
HARP 2	Hotspots Analysis and Reporting Program Version 2
HI	hazard index
HRA	health risk assessment
LSA	LSA Associates, Inc.
MERV	minimum efficiency reporting value
MICR	maximum individual cancer risk
mph	miles per hour
NOx	Nitrogen oxides
OEHHA	Office of Environmental Health and Hazards Assessment
PM10	particulate matter less than 10 microns in diameter
PSE	particle size efficiency
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SR-91	State Route 91
T-BACT	toxics best available control technology
TAC	toxic air contaminant

Symbols

°F	degree(s) Fahrenheit

1.0 INTRODUCTION

1.1 INTRODUCTION

LSA was retained to prepare a health risk assessment (HRA) for the proposed residential development project located at 9170 Indiana Avenue, in the City of Riverside, County of Riverside, California.

An HRA is a process used to estimate the increased risk of health problems in people who are exposed to toxic air contaminants (TAC). An HRA combines results of studies on the health effects of various animal and human exposures to TAC with results of studies that estimate the level of people's exposures at different distances from the sources of the pollutants. The purpose of the HRA is to determine the increased cancer risk and noncancer health risks from exposure to TAC from all sources nearby the proposed project.

In 2005, the California Air Resources Board (ARB) developed an Air Quality and Land Use Handbook to help readers understand the potential cancer risks from some common sources of toxic emissions, such as:

- Freeways and high traffic volume roads
- Goods distribution centers
- Rail yards
- Ports
- Refineries
- Chrome platers
- Dry cleaners using perchloroethylene
- Gasoline dispensing facilities

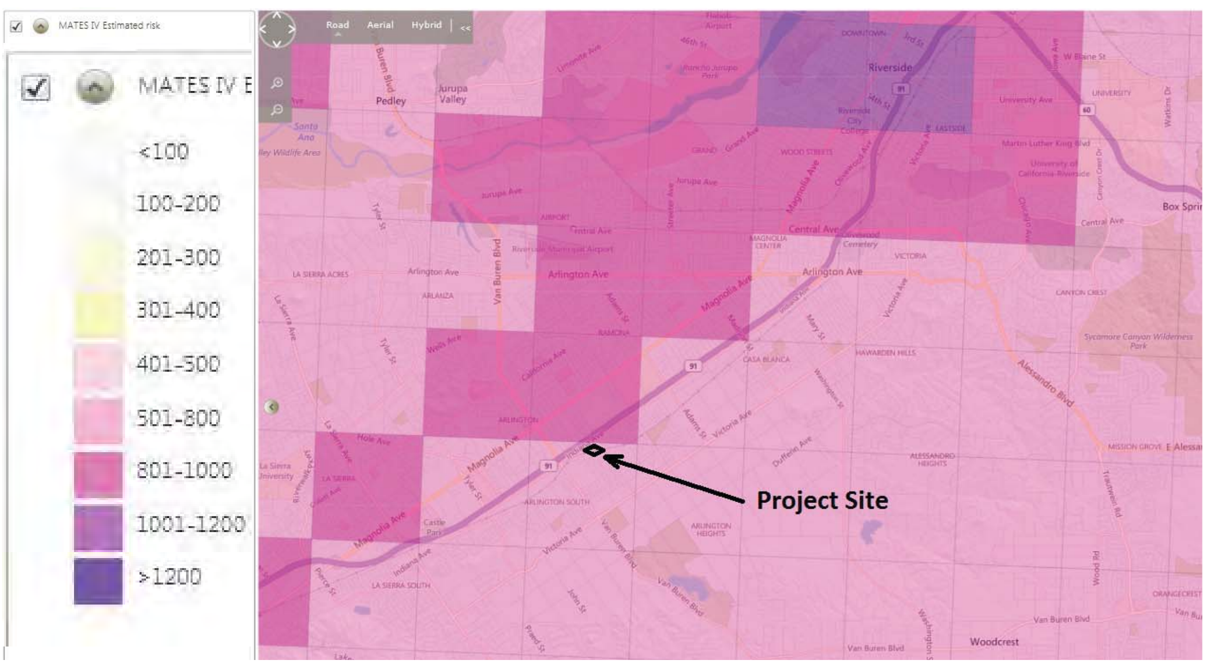
The ARB Handbook identified the potential cancer risks at various distances from these sources and recommended buffer distances between those sources and receptors. The ARB promulgated an advisory recommendation to avoid setting sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. The ARB indicates that due to traffic-generated pollutants, there is an estimated increased cancer risk incidence of 300 to 1,700 in a million if within 500 feet of a freeway. At some point after 500 feet however, the increased cancer risk incidence due to the effects of freeway/roadway corridor pollutants become indistinguishable from the ambient air quality condition. In this regard, the effects of freeway/roadway-source pollutants that may impact the Project site are analyzed because the site is located within 500 feet of freeway/roadway-sources.

The South Coast Air Quality Management District (SCAQMD) has conducted four Multiple Air Toxics Exposure Studies, (the most recent being MATES IV)[1]. These are monitoring and evaluation

1 http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iv, accessed March 1, 2017.

studies conducted in the South Coast Air Basin (Basin). The MATES studies do not provide land use development recommendations. The MATES IV Study includes a network of 10 fixed sites used to monitor toxic air contaminants once every six days for one year. The fixed monitoring station nearest to the project site was located at 5888 Mission Boulevard in the City of Jurupa Valley, approximately 5.9 miles northwest of the site. In addition to the 10 fixed sites, mobile monitoring platforms were deployed that focused on local scale studies at locations for short time periods. For the modeling analysis conducted for the MATES IV study, emissions over the Basin were estimated and allocated to 2 kilometer by 2 kilometer (1.2 mile x 1.2 mile) geographic grids. A regional dispersion model was used to estimate the annual average concentrations in each grid cell.

The MATES IV Study data for the Project vicinity comprehensively reflects increased TAC-source cancer risks affecting the City and Project site, including increased cancer risks due to freeway, roadway, and rail line pollutant sources. Based on the SCAQMD's MATES IV Carcinogenic Risk Interactive Map[1] (and reproduced below), the northern corner of the site is located within a grid cell with an estimated carcinogenic risk of 801 - 1,000 per million. The balance of the site has an estimated carcinogenic risk of 501 to 800 per million. While these are very high risk levels, the average risk level is now about 65 percent lower than the estimated risk shown in the MATES III report for the 2004-2006 time period, reflecting the success of various control strategies to reduce exposure to air toxics in the region.



In addition, the California Code of Regulations, Title 14, Section 15126.2(a) recommends that significant environmental effects of a project be assessed when a project brings development and

[1] http://www3.aqmd.gov/webappl/OI.Web/OI.aspx?jurisdictionID=AQMD.gov&shareID=73f55d6b-82cc-4c41-b779-4c48c9a8b15b, site accessed March 1, 2017.

people into an affected area (1). For the proposed project, adjoining freeway emissions and an existing railroad line are a potential concern and relevant thresholds and standards exist to determine the impact of vehicular and locomotive emissions on an exposed population. As such, a health risk assessment was prepared to assess the impact of these emissions on individuals residing at the proposed project site.

In accordance with the Air Quality Element within the City of Riverside's General Plan 2025, Policy AQ-1.3 specifically states that City should separate, create buffers, and/or protect sensitive receptors from significant sources of pollution to the greatest extent possible.

The Project proposes single-family residential land uses that would be located approximately 200 feet southeast of the 10-lane Route 91 freeway. Additionally, the Project is approximately 50 feet to the north of an existing double-tracked rail line utilized by Burlington Northern and Santa Fe (BNSF) Railway trains, Amtrak passenger rail, and the Riverside Transit Agency Metrolink passenger rail.

The 2005 ARB guidance noted previously, information made available through the MATES-IV Study, City's Policy AQ-1.3, and configuration and design of the Project would suggest that further assessment of the existing freeway-source and railroad-source pollutant impacts are warranted. Notwithstanding, these off-site freeway-source and railroad-source Air Toxic Health Risk Assessment has been prepared for the Project and is intended to:

- Disaggregate potential freeway-source and railroad-source air pollutant health effects from other background conditions identified in the MATES IV Study;
- Comply with the City's Air Quality Element of the General Plan 2025; and
- Identify means to reduce the specific effects of freeway-source and railroad-source pollutants at the Project site.

In 2009, the California Air Pollution Control Officers Association (CAPCOA) published guidance (CAPCOA 2009) on assessing the health risk impacts from and to proposed land use projects, focusing on the acute, chronic, and cancer impacts of sources affected by California Environmental Quality Act (CEQA) and recommending procedures to identify when a project should undergo further risk evaluation, how to conduct the HRA, how to engage the public, what to do with the results from the HRA, and what mitigation measures may be appropriate for various land use projects. In 2015, six years after the CAPCOA guidance document was released in 2009, an important CEQA case (California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369) established that CEQA does not require the analysis of the existing air environment on a project; thus this HRA is *not* properly part of the CEQA analysis of existing impacts on the Hawthorne project.

Finally, the South Coast Air Quality Management District (SCAQMD) has its own Risk Assessment guidelines and required assumptions (SCAQMD 2015). These guidelines incorporate the new Office of Environmental Health and Hazards Assessment (OEHHA) guidance and the options to be used when using the ARB's Hotspots Analysis and Reporting Program Version 2 (HARP 2) program for risk assessment calculations. While this guidance only covers projects producing emissions that potentially affect nearby sensitive receptors, this HRA applies the SCAQMD guidelines to determine the health risk levels to future residents of the proposed project from external sources.

This HRA follows the ARB Handbook, CAPCOA, and SCAQMD guidance and recommendations and examines the short-term and long-term potential health effects from emissions of TAC in the area surrounding the proposed project, primarily exhaust of traffic on the surrounding roadways and any TAC emissions from businesses operating within 0.25 mile of the proposed project.

1.2 PROJECT DESCRIPTION

The project site is a former elementary school located south of Indiana Avenue and north of the existing railroad tracks, between Gibson Street and Jackson Street in the City of Riverside in the County of Riverside. Figure 1 shows the project location. The project consists of the construction of 54 single-family dwelling units. Figure 2 illustrates the site plan.

1.3 EXISTING LAND USES ON THE PROJECT SITE AND IN THE PROJECT VICINITY

The project site is surrounded primarily by residential development with the nearest residential use east of the project site having a garage located approximately 7 ½ feet from property line and the residence located approximately 25 feet from property line. The areas adjacent to the project site include the following uses:

- **North:** Residential uses on the north side of Indiana Avenue
- **East:** Vacant land and single-family residential development
- **South:** BNSF Railway right-of-way with substation, vacant land and single-family residential development further south
- **West:** Vacant land, with Gibson Street and a single-family residential development further west

1.4 EMISSIONS SOURCES

To be thorough, all stationary sources within 0.25 mile of the project should be included in an HRA. A survey of the SCAQMD Facility Information Detail (FIND) database shows that there are no permitted facilities within this range. For this HRA, exhaust emissions from all gasoline- and diesel-powered traffic on Indiana Avenue and State Route 91 (SR-91) and from trains passing on the nearby tracks were included in the analysis.

LSA

FIGURE 1

Hawthorne Residential Development

Regional and Project Location

0 1000 2000
FEET

SOURCE: Bing Aerial, 2016: Streetmap, 2013/Riverside County, 2015.

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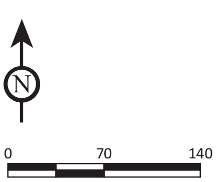
LSA

FIGURE 2



Hawthorne Residential Development Project

Site Plan

SOURCE: SDH and Associates, Inc. February, 2016.

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2.0 SETTING

2.1 REGIONAL AIR QUALITY

The project site is located in the City of Riverside, is within the South Coast Air Basin (Basin) and is under the jurisdiction of the SCAQMD.

2.1.1 Climate/Meteorology

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.), but also by atmospheric conditions such as wind speed, wind direction, temperature, rainfall, etc. The combination of topography, low mixing height, abundant sunshine, and emissions from the second-largest urban area in the United States gives the Basin some of the worst air pollution problems in the nation.

The annual average temperature varies little throughout the Basin, ranging from the low-to-middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the site with complete weather data is the Riverside Fire Department Station 3, which provides sufficient data for average temperatures in the project area. Riverside Fire Department Station 3[1] shows the monthly average maximum temperature recorded ranged from 66.8°F in January to 94.4°F in August, with an annual average maximum of 79.5°F. The monthly average minimum temperature recorded at this station ranged from 39.1°F in January to 59.6°F in August, with an annual average minimum of 48.6°F. January is typically the coldest month, and July and August are typically the warmest months in this area of the Basin.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and is generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin and along the coastal side of the mountains. Riverside Fire Department Station 3's monitored precipitation shows average monthly rainfall varied from 2.20 inches in February to 0.44 inch or less from May to October, with an annual total of 10.21 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in midafternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

1 Western Regional Climate Center. Website: www.wrcc.dri.edu (accessed December 2016).

Winds in the vicinity of the project area blow predominantly from the south-southwest, with relatively low velocities. Wind speeds in the project area average about 5 miles per hour (mph). Summer wind speeds average slightly higher than winter wind speeds. Low average wind speeds, together with a persistent temperature inversion, limit the vertical dispersion of air pollutants throughout the Basin. Strong, dry, north or northeasterly winds, known as Santa Ana winds, occur during the fall and winter months, dispersing air contaminants. The Santa Ana conditions tend to last for several days at a time.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly on shore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are carbon monoxide (CO) and nitrogen oxides (NO_X) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

2.1.2 Toxic Air Contaminants

The public's exposure to TACs is a significant environmental health issue in the State of California (State). In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the federal Clean Air Act (42 United States Code [USC] Sec. 7412[b]) is a TAC. Under State law, the California Environmental Protection Agency (CalEPA), acting through the ARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act), AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987), and Senate Bill (SB) 25, the Children's Environmental Health Protection Act. The Tanner Air Toxics Act sets forth a formal procedure for ARB to designate substances as TACs. To date, the ARB has designated nearly 200 compounds as TACs. The majority of the estimated health risks from TACs can be attributed to a relatively few compounds, the most important being particulate matter from diesel-fueled engines diesel particulate matter (DPM).

3.0 THRESHOLDS

3.1 HEALTH RISK ASSESSMENT THRESHOLDS OF SIGNIFICANCE

Both the State and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants. For other air pollutants without defined significance standards, the definition of substantial pollutant concentrations varies. For TACs, "substantial" is taken to mean the health risk to any individual exceeds a threshold considered to be a prudent risk management level.

The following limits for maximum individual cancer risk (MICR), and noncancer acute and chronic hazard index (HI) from concentrations of TACs published by the SCAQMD[1] have been published for projects generating emissions of TACs. However, due to a lack of corresponding limits for projects that are not generating emissions of TACs, but rather introducing individuals to an environment that contains TAC emissions, the following limits are considered appropriate for use in determining the health risk for individuals in the Basin:

- **MICR:** MICR is the estimated probability of an individual contracting cancer as a result of exposure to TACs over a period of 30 years for adult residents and 9 years for children. The MICR calculations include multipathway consideration, when applicable.

  The cancer risk would be considered significant if the increase in total cancer risk due to total TAC emissions affecting the project would exceed 10 in 1 million (1.0×10^{-5}) for any individual.

- **Chronic HI:** Chronic HI is the ratio of the estimated long-term level of exposure to a TAC for an individual to its chronic reference exposure level. The chronic HI calculations include multipathway consideration, when applicable.

  The chronic risk would be considered significant if the cumulative increase in total chronic HI for any target organ system due to total TAC emissions affecting the project would exceed 1.0 for any individual.

- **Acute HI:** Acute HI is the ratio of the estimated maximum 1-hour concentration of a TAC for an individual to its acute reference exposure level. The acute HI calculations include multipathway consideration, when applicable.

  The acute risk would be considered significant if the cumulative increase in total acute HI for any target organ system due to total TAC emissions affecting the project would exceed 1.0 for any individual.

[1] SCAQMD Air Quality Significance Thresholds, www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf (accessed December 2016).

4.0 IMPACTS

4.1 HEALTH RISK ASSESSMENT

For the purposes of an HRA, short-term (1-hour) concentrations are of concern for analyzing acute health risk levels, and long-term (multiyear) concentrations are of concern for analyzing chronic and carcinogenic health risk levels. A multipathway HRA has been conducted, analyzing the inhalation, dermal soil, mother's milk, and homegrown produce pathways. This technique was chosen as prescribed in the SCAQMD's June 2015, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act*.

4.1.1 Construction Health Risk Impacts

Construction of the proposed project would include the use of diesel-powered equipment that release DPM, a toxic air contaminant with known carcinogenic and chronic health effects (Office of Environmental Health Hazard Assessment and American Lung Association of California 2002). For construction analyses, the emissions of DPM will be included in the exhaust PM_{10} emissions. Table H in the project's *Air Quality and Greenhouse Gas Impact Analysis* (LSA 2017) shows that the exhaust PM_{10} emissions from construction would be no more than 2.88 lbs/day. However, these are peak day emissions and average daily emissions over the entire construction process would be much lower. Carcinogenic and chronic health risk levels are determined by considering a 30-year exposure period, however construction is only expected to last approximately one year. This low average DPM emissions rate, combined with a short period of construction would result in construction health risk levels well below thresholds of significance.

4.1.2 Operational Health Risk Impacts

The first step of the HRA is to characterize the emissions of TACs within range of the project site. To be thorough and as directed by the SCAQMD, all stationary sources of TACs within a 0.25 mile of the project would be included in this HRA. However, a survey of the SCAQMD FIND database shows that there are no permitted facilities with emissions of TACs within this range.

Vehicle traffic on Indiana Avenue and SR-91 is a TAC source within range of the project site. The total daily traffic for Indiana Avenue is sourced from the project Traffic Study (LSA 2016) and for SR-91 is sourced from Caltrans for 2014 (the most recent year available). As described above, the most important TAC to consider in an HRA is DPM. Thus, it is important to break down the total traffic data for these roadways into gasoline and diesel-powered categories. While the Caltrans data include the percentage of trucks by number of axles, no similar data are available for Indiana Avenue. Also, no data are available to determine the percentages of trucks that are diesel-powered for either road. For this HRA, it was assumed that the percentage of diesel-powered vehicles are consistent with the EMFAC2014[1] data for the region. It was further assumed that all the trucks were the type that resulted in the greatest exhaust emissions and highest health risk levels.

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[1] The ARB maintains the Emission Factors (EMFAC) model, which is approved by EPA for developing on-road motor vehicle emission inventories and conformity analyses in California. EMFAC models on-road

Finally, trains passing on the tracks to the south of the project site are sources of TACs within range of the project site. Emissions data from the United States Environmental Protection Agency (EPA)[1] were used to characterize these train emissions. Based on communications received from Metrolink (included in Appendix A), 25 Metrolink, 2 Amtrak, and 74 BNSF Railway freight trains pass the project site daily. Metrolink began transitioning to Tier 4 locomotives in 2013, so for this HRA, locomotives are assumed to be a mixture of Tiers 1 through 4. Tier 4 locomotives reduce particulate matter and nitrogen oxide emissions by up to 85 percent compared to the lower tiers. It was assumed Amtrak locomotives are the same as Metrolink. BNSF Railway freight trains typically have multiple 4400 HP locomotives per train. For this HRA, an average of two locomotives per BNSF Railway freight train was assumed. Further, for the purpose of this HRA, while BNSF has already upgraded their locomotives to perform at Tier 2 levels, it was assumed that over the 30-year period of this HRA, BNSF would continue to upgrade their locomotive performance levels. For this HRA, it was assumed that using 75 percent of the locomotives as Tier 2 and 25 percent as Tier 4 was representative.

The OEHHA has determined that long-term exposure to DPM poses the highest cancer risk of any TAC it has evaluated. Exposure to diesel exhaust can also have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks. For risk assessment procedures, the OEHHA specifies the surrogate for whole diesel exhaust is DPM.

Fortunately, improvements to diesel fuel and diesel engines have already reduced emissions of some of the contaminants. These improvements have already resulted in a 75 percent reduction in particle emissions from diesel-powered trucks and other equipment (compared to 2000 levels), and by 2020, when fully implemented, they will result in an 85 percent reduction.[2] These improvements are anticipated to continue into the foreseeable future. However, to be conservative, other than what is built into the EMFAC2014 model, none of these anticipated improvements are included in this HRA. See Appendix A for the details of this emissions factor derivation. Appendix A shows the development of the exhaust emission rates for the vehicles driving on the roadways and the permitted facility emissions.

4.2 EXPOSURE QUANTIFICATION

In order to assess the impact of TAC emissions on individuals who will live in the proposed residences, air dispersion modeling utilizing the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was performed. The model is approved by the

mobile source emissions under multiple temporal and spatial scales; it produces composite emission factors for specific California geographic areas.

1 United States Locomotive Emissions Standards, www.dieselnet.com/standards/us/loco.php (accessed December 2016).

2 Cal EPA OEHHA and American Lung Association of California, 2002. *Health Effects of Diesel Exhaust*. April.

EPA when estimating the air quality impacts associated with point and fugitive sources in simple and complex terrain. The model was used to calculate the annual average and short duration (i.e., 1 hour) pollutant concentrations associated with each emitting source. Inputs for each emitting source were based on the characterizations referenced in Section 4.1. Details of these inputs are shown in Appendix A. Figure 3 shows the locations of all emissions sources and receptors.

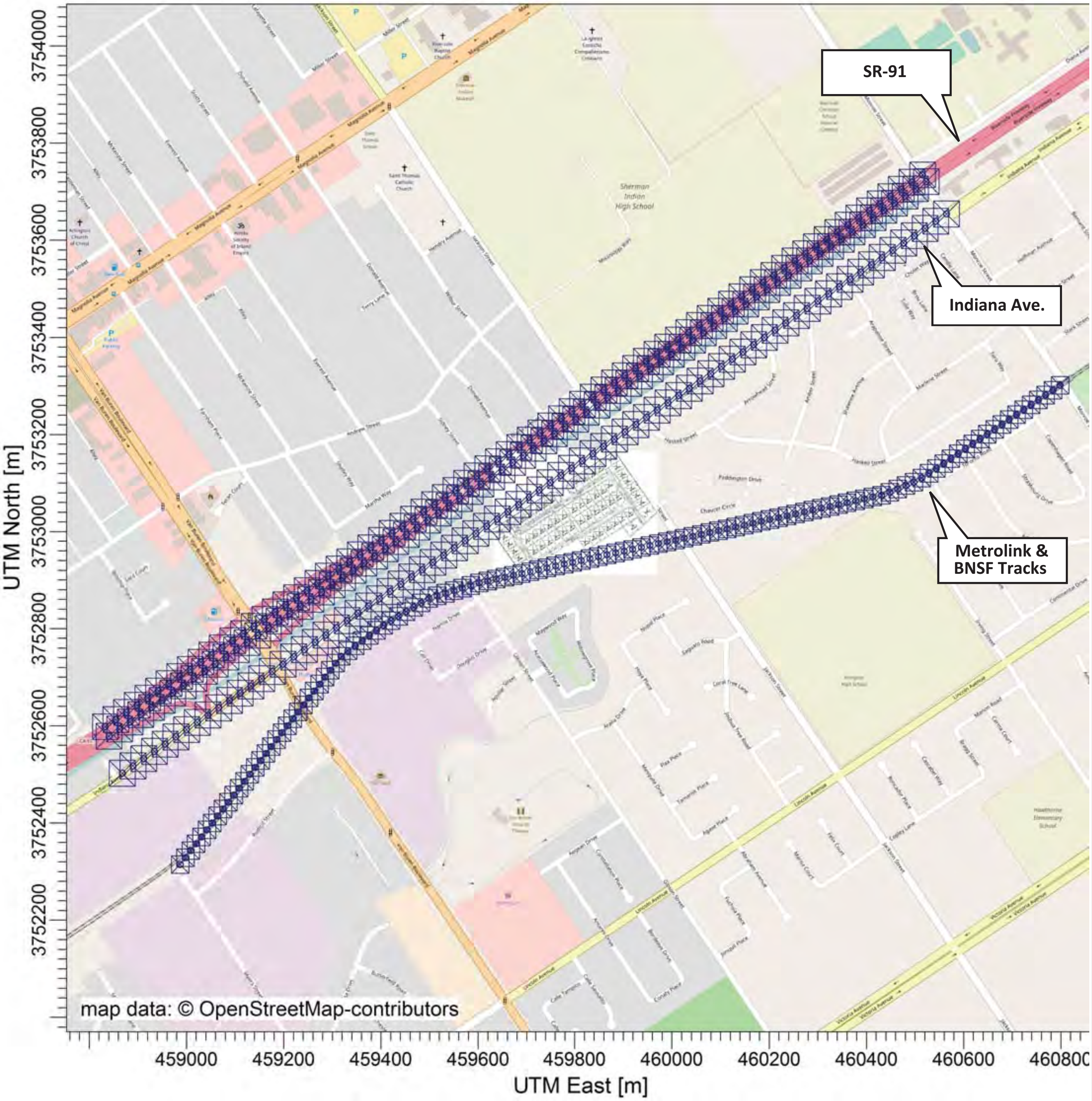
For this HRA, a series of volume sources were used to represent road and train mobile source activity. Vertical (sigma z) dispersion parameters were developed by approximating mixing zone residence time and quantifying the initial vertical term as described in the EPA guidance. Horizontal (sigma y) dispersion parameters were generated by dividing the source separation distance by a standard deviation of 2.15, again as described in the EPA guidance.

The model requires additional input parameters including local meteorology. Due to the model's sensitivity to individual parameters such as wind speed, temperature and direction, the EPA recommends meteorological data used as input in dispersion models be selected on the basis of relative spatial and temporal conditions that exist in the area of concern. As such, 5 years of meteorological data from the SCAQMD Riverside monitoring station was used to represent local weather conditions and prevailing winds.

The modeling analysis also considered the spatial distribution of each source in relation to the proposed residential homes on the project site. Receptors were placed in the approximate location of the house on every residence site to characterize the health risk levels throughout the proposed project site.

The ARB's HARP 2 model is a tool that assists with the programmatic requirements of the Air Toxics "Hot Spots" Program (AB 2588). HARP 2 was used to translate the TAC concentrations from AERMOD into long-term carcinogenic and chronic and short-term acute health risk levels following the guidance in the SCAQMD Risk Assessment Guidelines.

Appendix A contains the HRA emissions worksheets, a list of the receptors that represent locations on the proposed project site, and select pages from the AERMOD output. Appendix B includes the HARP 2 report files for this HRA.



LSA

LEGEND

- Volume Sources Along Roads and Railroad Tracks
- Receptors on Project Site

FIGURE 3

0 70 140
FEET

Hawthorne Residential Development

AERMOD Modeling Setup

SOURCE: SDH and Associates, Inc. February, 2016.

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4.2.1 Acute Project-Related Emission Impacts

Exposure to diesel exhaust can result in immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks. However, according to the rulemaking on *Identifying Particulate Emissions from Diesel-Fueled Engines as a Toxic Air Contaminant* (ARB 1998) and the current *Consolidated Table of OEHHA / ARB Approved Risk Assessment Health Values*, the available data from studies of humans exposed to diesel exhaust are not sufficient for deriving an acute noncancer health risk guidance value. Emissions from gasoline-powered vehicles do contain TACs with short-term acute health effects. The acute inhalation health risks from all sources to the future residents of the proposed project are shown in Table A. The Acute Hazard Index for both the children and adults would be 0.014, less than the threshold of 1.0.

4.2.2 Carcinogenic and Chronic Project-Related Emission Impacts

The carcinogenic and chronic inhalation health risks at the proposed project are also shown in Table A. For a child living at the proposed project for 9 years, he or she would be exposed to an unmitigated inhalation cancer risk of no more than 813 in 1 million. Any adult at the proposed project for 30 years would be exposed to an unmitigated inhalation cancer risk of no more than 1,170 in 1 million. The Chronic Hazard Index for both the children and adults would be 0.26.

Table A: Health Risk Levels for the Residents of the Proposed Project

Location	Maximum Cancer Risk (risk per million)[1,2]	Maximum Noncancer Chronic Risk (Hazard Index)	Maximum Noncancer Acute Risk (Hazard Index)
Children (9-year exposure)	813	0.26	0.014
Adults (30-year exposure) (MICR)	1,170		

Source: LSA Associates, Inc., July 2017.
Note:
[1] The Maximum Cancer Risk and Maximum Noncancer Risks noted in the table represents the ambient/baseline, as the proposed project does not add any emissions of Toxic Air Contaminant (TAC). Thus, there is no marginal/incremental increase of TAC with implementation of the proposed project.
[2] Based on the South Coast Air Quality Management District's MATES IV Study, the project site is located within a grid cell with an estimated carcinogenic risk of 501 to 1,000 per million. The California Environmental Quality Act (CEQA) case (California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369) established that CEQA does not require the analysis of the existing air environment on a project. As noted above, the proposed project does not add any emissions of TAC.
MICR = maximum individual cancer risk

It should be noted that though the results of this HRA are much higher than the SCAQMD threshold for carcinogenic health risk of 10 in a million, the health risk level is attributed to the existing sources such as frequent nearby Metrolink and BNSF freight trains and heavy traffic on the nearby SR-91 freeway. As described above, the project area has been measured to have a carcinogenic risk level of 501 to 800 per million and 801 to 1,000 per million in the MATES IV study.[1]

Although the proposed project will not add any emissions of TAC, a feasible measure that could be implemented to reduce these health risks would be to install air filtration systems in the residences to provide protection while indoors. The health risk levels shown in Table A assume no protection from being indoors, as typical homes provide little filtration of TACs. Air filtration systems are available with efficiencies equal to or exceeding a Minimum Efficiency Reporting Value (MERV) 16 as defined by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 52.2. The average particle size efficiency (PSE) removal based on ASHRAE Standard 52.2 for MERV 16 is approximately 95% for 0.3 to 1.0 $\mu g/m^3$ (DPM) and 95% for 1.0 to 10 $\mu g/m^3$ (PM_{10} and $PM_{2.5}$). The project shall install such systems on the residences to reduce the exposure to the ambient TACs. Table B shows the reduced health risk levels that would result. With MERV 16 filtration, the exposure to TACs for these residents would be substantially lower than the ambient/baseline TAC concentration levels

Table B: Health Risk Levels for the Residents of the Proposed Project with MERV 16 Air Filtration Systems

Location	Maximum Cancer Risk (risk per million)[1,2]	Maximum Noncancer Chronic Risk (Hazard Index)	Maximum Noncancer Acute Risk (Hazard Index)
Children (9-year exposure)	41	0.013	0.0007
Adults (30-year exposure) (MICR)	58		

Source: LSA Associates, Inc., July 2017.
Note:
[1] Based on the South Coast Air Quality Management District's MATES IV Study, the project site is located within a grid cell with an estimated carcinogenic risk of 501 to 1,000 per million. The California Environmental Quality Act (CEQA) case (California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369) established that CEQA does not require the analysis of the existing air environment on a project. The proposed project does not add any emissions of TAC.
[2] The Maximum Cancer Risk and Noncancer risks with MERV 16 Air Filtration Systems are substantially lower than the ambient/baseline Maximum Cancer Risk and Noncancer risks shown in Table A.
MICR = maximum individual cancer risk

The use of MERV filtration systems to reduce DPM and particulates has been successfully implemented by several lead agencies, including, but not limited to: City of Los Angeles, City of Claremont, City of Irvine, City of Glendale, City of Berkley, City of Oakland, and the Los Angeles Unified School District (LAUSD).

As described in Section 3.1 of this report, the SCAQMD only provides a health risk threshold applicable to projects that are generating emissions that would affect nearby sensitive receptors. The basis for these thresholds is that if a project increases the health risk level by less than the thresholds

[1] South Coast Air Quality Management District (SCAQMD), 2015, *MATES IVMultiple Air Toxics Exposure Study*. http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iv (accessed December 2016).

over the existing conditions the impact would be less than significant. The SCAQMD has no threshold for a project like the proposed project that doesn't generate TAC emissions, but introduce individuals into an environment that contains TAC concentrations. As discussed previously in CBIA v. BAAQMD, the California Supreme Court[1] held that CEQA generally does not require analysis or mitigation of the impact of existing environmental conditions on a project, including a project's future users or residents. However, as with other laws and regulations enforced by other agencies that protect public health and safety, the City as the lead agency has authority other than CEQA to require measures to protect public health and safety. Therefore, this document includes *for informational purposes* an evaluation of the environment's impacts on the Project consistent with the current version of the CEQA Checklist provided in Appendix G of the CEQA Guidelines. The evaluation includes an assessment of the Project's potential to expose future sensitive receptors that would be located on the Project site to substantial pollutant concentrations by individual exposure to the existing sources of toxic air contaminants in the Project vicinity. This analysis of the impacts of the environment on the Project is provided for informational purposes only (FindLaw, 2017). As described in Section 1.1 of this report, the SCAQMD has documented that the existing levels of TAC in the project area result in cancer risk levels from 501 to 1,000 per million. In other words, all individuals living in the area of the proposed project are being exposed to these cancer risk levels.

Given that the proposed project will not add any emissions of TAC and will be installing air filtration systems, the individuals living in these homes would be substantially protected from the ambient TAC concentration levels such that the health risk levels would be reduced from those shown in Table A to the much lower levels shown in Table B. As such, the proposed project will not result in a significant health risk.

Finally, in order to fully inform the residents of the proposed project, prior to the issuance of building permits, the applicant shall provide to the City for review and approval, a copy of a Toxic Air Contaminant Disclosure that will be presented to prospective buyers of real estate within the project site. The Toxic Air Contaminant Disclosure shall convey information to prospective buyers about potential TAC exposure at the project site. As approved by the City, the Toxic Air Contaminant Disclosure shall contain the language dictated by State law in conjunction with real estate transfer.

[1] California Supreme Court, 2015, op. cit.

5.0 REFERENCES

California Air Pollution Control Officers Association (CAPCOA), 2009. *Health Risk Assessments for Proposed Land Use Projects*, July, www.capcoa.org/wp-content/uploads/2012/03/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf (accessed December 2016).

California Air Resources Board (ARB). 2014. *Facts About Truck and Bus Regulation Compliance Requirements Summary*. August. www.arb.ca.gov/msprog/onrdiesel/documents/FSRegSum.pdf (accessed December 2016).

———. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April.

———. 1998. Identifying Particulate Emissions from Diesel-Fueled Engines as a Toxic Air Contaminant and the current Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values.

———. Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values. www.arb.ca.gov/toxics/healthval/healthval.htm (accessed December 2016).

———. *HotSpots Analysis and Reporting Program Version 2*. www.arb.ca.gov/toxics/harp/harp.htm (accessed December 2016).

———. Statewide Truck and Bus Regulations. www.arb.ca.gov/regact/2008/truckbus08/truckbus08.htm (accessed December 2016).

———. Toxic Air Contaminant Identification List. www.arb.ca.gov/toxics/id/taclist.htm (accessed December 2016).

FindLaw. 2017. California Building Industry Association v. Bay Area Air Quality Management District. Accessed May 10, 2017: http://caselaw.findlaw.com/ca-supreme-court/1721100.html.

LSA Associates, Inc. October 18, 2016. *Traffic Impact Analysis, Hawthorne Residential Development Project*.

Office of Environmental Health and Hazards Assessment (OEHHA), 2015. *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.* March 6. oehha.ca.gov/air/air-toxics-hot-spots (accessed December 2016).

Office of Environmental Health Hazard Assessment (OEHHA) and American Lung Association of California (ALAC). 2002. "Health Effects of Diesel Exhaust." April. Website: http://oehha.ca.gov/media/downloads/calenviroscreen/indicators/diesel4-02.pdf, accessed March 2017.

South Coast Air Quality Management District (SCAQMD), 2015, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act.* June. www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588_guidelines.pdf (accessed December 2016).

———. 2016, *Facility INformation Detail (FIND) web tool,* www.aqmd.gov/home/tools/public/find (accessed December 2016).

———. 2008-2012 AERMOD Meteorological Data Set - Riverside, California. www.aqmd.gov/docs/default-source/air-quality/meterorological-data/aermod-ready-meteorological-data/table-1-meteorological-sites/aermod-table-1-riverside.exe (accessed December 2016).

United States Environmental Protection Agency (EPA), 1999. *Dispersion Modeling of Toxic Pollutants in Urban Areas.* EPA-454/R-99-021. July. www.epa.gov/scram/air-modeling-guidance-air-toxics-modeling (accessed December 2016).

———. 1999. *Integrated Urban Air Toxics Strategy.* July. www.epa.gov/urban-air-toxics/integrated-urban-air-toxics-strategy (accessed December 2016).

———. 1991. *Risk Assessment for Toxic Air Pollutants: A Citizen's Guide,* EPA #450/3-90-024. March, www3.epa.gov/airtoxics/3_90_024.html (accessed December 2016).

Western Regional Climate Center, www.wrcc.dri.edu/climatedata/climsum (accessed December 2016).

APPENDIX A

EMISSIONS WORKSHEETS

Roadway Vehicle Exhaust Worksheet

Hawthorne Residential Development Project

Indiana		AADT by Vehicle Category[1]							
Total AADT		**LDV**	**2-Axle[2]**	**3-Axle[3]**	**4+-Axle[4]**				
		11,874	158	142	16				
12,190		% of Vehicles That Are Diesel-Powered[5]							
		2.3%	89.3%	89.3%	98.6%				
Average		**Diesel Exhaust PM10 & PM2.5 Emissions at 45 mph (g/mi)6**							
Speed	PM_{10}	2.104E-03	4.80E-04	2.20E-04	1.93E-04				
45 mph	$PM_{2.5}$	1.950E-03	4.59E-04	2.11E-04	1.85E-04				
		% of Vehicles That Are Gasoline-Powered[5]							
		98%	10.7%	10.7%	1.4%				
Total distance		**Gasoline Exhaust ROG Emissions at 45 mph (g/mi)6**				**Number**			
covered by Indiana	ROG	1.86E-02	6.12E-04	6.12E-04	6.01E-04	**of**	**Emission Rates per source**		
sources		**PM_{10}, $PM_{2.5}$ & ROG Exhaust Emissions (g/s)**				**Sources**	**g/s**	**lb/hr**	**lb/yr**
	PM_{10}	8.46E-06	9.98E-07	4.12E-07	4.50E-08	78	1.3E-07	1.0E-06	0.0088
2,051 meters	$PM_{2.5}$	7.84E-06	9.55E-07	3.94E-07	4.30E-08	78	1.2E-07	9.4E-07	0.0082
	ROG	3.19E-03	1.53E-07	1.37E-07	2.04E-09	78	4.1E-05	3.2E-04	2.8452

[1] AADT from project traffic study

[2] 2 axle trucks are assumed to be T6-Instate small (Medium-Heavy Duty Diesel Truck <= 26,000 lbs.

[3] 3 axle trucks are assumed to be T6-Instate heavy (Medium-Heavy Duty Diesel Truck > 26,000 lbs.

[4] 4+ axle trucks are assumed to be Heavy-Heavy Duty Diesel Truck (the emissions factor used is the highest of T7-Tractor, T7-OOS, and T7-POLA) trucks

[5] Source: EMFAC2014 fleet percentages.

[6] Source: EMFAC2014 emission factors for 2020 (model year aggregate).

Speciated Emissions Rates

		lb/hr	lb/yr
diesel part.	--	1.01E-06	8.84E-03
PM2.5	--	9.39E-07	8.23E-03
1,3-butadiene	0.0055	1.79E-06	1.56E-02
benzene	0.02636	8.56E-06	7.50E-02
ethylbenzene	0.01072	3.48E-06	3.05E-02
MEK	0.00019	6.17E-08	5.41E-04
naphthalene	0.00048	1.56E-07	1.37E-03
propylene	0.03128	1.02E-05	8.90E-02
styrene	0.00126	4.09E-07	3.58E-03
toluene	0.0588	1.91E-05	1.67E-01
m & p-xylene	0.0364	1.18E-05	1.04E-01

AADT Total	Total Trucks	Total Truck %	2 Axle Volume	2 Axle Percent	3 Axle Volume	3 Axle Percent	4 Axle Volume	4 Axle Percent	5 Axle Volume	5 Axle Percent	Year
12,190	315	2.58%	158	50%	95	30%	47	15%	16	5%	2010-2012

Total AADT from the October 2016 Traffic Impact Analysis: Hawthorne Residential Project, Figure 4, translated from peak PM hour to ADT by multiplying by 1(

Fleet percentages based on standard Orange County roadway fleet percentages.

Roadway Vehicle Exhaust Worksheet

Hawthorne Residential Development Project

SR-91		AADT by Vehicle Category[1]							
Total AADT		**LDV**	**2-Axle[2]**	**3-Axle[3]**	**4+-Axle[4]**				
		164,349	5,969	519	2,163				
173,000		% of Vehicles That Are Diesel-Powered[5]							
		2.3%	89.3%	89.3%	98.6%				
Average Speed		**Diesel Exhaust PM10 & PM2.5 Emissions at 65 mph (g/mi)6**							
	PM_{10}	1.583E-03	2.45E-04	1.13E-04	1.51E-04				
65 mph	$PM_{2.5}$	1.480E-03	2.35E-04	1.08E-04	1.45E-04				
		% of Vehicles That Are Gasoline-Powered[5]							
		98%	10.7%	10.7%	1.4%				
Total distance covered by SR-91 sources		**Gasoline Exhaust ROG Emissions at 65 mph (g/mi)6**				**Number of Sources**	**Emission Rates per source**		
	ROG	1.45E-02	3.23E-04	3.23E-04	3.15E-04				
		PM_{10}, $PM_{2.5}$ & ROG Exhaust Emissions (g/s)					**g/s**	**lb/hr**	**lb/yr**
4,064 meters	PM_{10}	1.75E-04	3.82E-05	1.53E-06	9.42E-06	156	1.4E-06	1.1E-05	0.0998
	$PM_{2.5}$	1.63E-04	3.65E-05	1.46E-06	9.01E-06	156	1.3E-06	1.1E-05	0.0938
	ROG	6.80E-02	6.02E-06	5.23E-07	2.87E-07	156	4.4E-04	3.5E-03	30.3368

Speciated Emissions Rates

		lb/hr	lb/yr
diesel part.	--	1.14E-05	9.98E-02
PM2.5	--	1.07E-05	9.38E-02
1,3-butadiene	0.0055	1.90E-05	1.67E-01
benzene	0.02636	9.12E-05	8.00E-01
ethylbenzene	0.01072	3.71E-05	3.25E-01
MEK	0.00019	6.58E-07	5.76E-03
naphthalene	0.00048	1.66E-06	1.46E-02
propylene	0.03128	1.08E-04	9.49E-01
styrene	0.00126	4.36E-06	3.82E-02
toluene	0.0588	2.03E-04	1.78E+00
m & p-xylene	0.0364	1.26E-04	1.10E+00

[1] AADT from project traffic study

[2] 2 axle trucks are assumed to be T6-Instate small (Medium-Heavy Duty Diesel Truck <= 26,000 lbs.

[3] 3 axle trucks are assumed to be T6-Instate heavy (Medium-Heavy Duty Diesel Truck > 26,000 lbs.

[4] 4+ axle trucks are assumed to be Heavy-Heavy Duty Diesel Truck (the emissions factor used is the highest of T7-Tractor, T7-OOS, and T7-POLA) trucks

[5] Source: EMFAC2014 fleet percentages.

[6] Source: EMFAC2014 emission factors for 2020 (model year aggregate).

Route	Dist	County	Post Mile	Leg	Description	AADT Total	Total Trucks	Total Truck %	2 Axle Volume	3 Axle Volu me	4 Axle Volume	5 Axle Volume	2 Axle Percent	3 Axle Percent	4 Axle Percent	5 Axle Percent	EAL 2-Way (1,000)	
091	08	RIV	14.079	A	RIVERSIDE, VAN BUREN RD	173,000	8,651	5.00	5,969	519	346	1,817	69.00	6.00	4.00	21.00	934	81V

Total AADT from Caltrans website: http://www.dot.ca.gov/trafficops/census/, accessed 12/12/2016

METROLINK®

Southern California Regional Rail Authority

January 10, 2017

Ms. Stephanie Tang
Senior Planner
City of Riverside – Planning Division
Community Development Department
3900 Main Street, 3rd Floor
Riverside, CA 92522

RE: **Planning Cases P16-0112 (GPA), P16-0113 (ZC), P16-0114 (TTM), P16-0111 (PRD)**

Dear Ms. Tang:

The Southern California Regional Rail Authority (SCRRA) has received a copy of the proposal to subdivide a 6.85-acre property into a 54-lot planned residential subdivision in the City of Riverside. The property is located at 9160 through 9258 Indiana Avenue. Thank you for the opportunity to comment on key issues relative to SCRRA and operations of the railroad adjacent to the project site. As background information, SCRRA is a five-county Joint Powers Authority (JPA) that operates the regional commuter rail system known as Metrolink. The JPA consists of the Los Angeles County Metropolitan Transportation Authority (METRO), San Bernardino Associated Governments (SANBAG), Orange County Transportation Authority (OCTA), Riverside County Transportation Commission (RCTC) and Ventura County Transportation Commission (VCTC).

The railroad right of way adjacent to the proposed project is owned, operated and maintained by the BNSF Railway Company. The proposed project is also located between the existing at-grade crossings of Gibson Street and Jackson Street, south of Indiana Avenue. These two at-grade crossings fall within the City of Riverside's seven (7) mile Quiet Zone that went into effect of November 17, 2016.

Below is a list of general comments that are of concern for all proposed projects near or adjacent to the railroad right of way:

1. The proposed residential subdivision is located approximately 2.25 miles from the Metrolink La Sierra Station. We would encourage promoting Metrolink as a commuting option for the future residents of this development.
2. Currently there are about 25 Metrolink and 2 Amtrak passenger trains and 74 BNSF freight trains that operate on the rail line immediately adjacent to the proposed development. Trains operate 7 days per week and 24 hours per day.
3. Safety is of utmost importance to the railroads. As the development is being built alongside an active rail line in an existing FRA approved Quiet Zone where the locomotive engineers are not required to sound the train horns unless in emergencies when tracks are obstructed, we would encourage the developer to work with the BNSF Railway Company to ensure that pedestrian access is improved and the at-grade crossings of Gibson Street and Jackson Street are upgraded to the safest grade crossing safety standards. We would also request that a proper noise/barrier wall be built to

segregate the development from the railroad right of way. It appears that a playground/walkway may be built along the railroad and must be protected with a wall or adequate fence to preclude trespassing into the active rail line by children and others living in this future residential development.

4. For future mailings to SCRRA/Metrolink on planning documents please send to the following:

   Southern California Regional Rail Authority (Metrolink)
   Planning Department
   One Gateway Plaza, 12th floor
   Los Angeles, CA 90012

Thank you again for cooperating with SCRRA to help ensure the development of a successful project. If you have any questions regarding these comments please contact me at 213-452-0456 or via e-mail at mathieur@scrra.net.

Sincerely,

Ron Mathieu
Sr. Public Projects Specialist

Cc: John Shurson, BNSF
Michael Roberson, CPUC
Sheldon Peterson, RCTC
Roderick Diaz, SCRRA

Roadway Vehicle Exhaust Worksheet

	Train Emission Factors PM_{10} Moving (g/bhp-hr)
Tier 1	0.22
Tier 2	0.22
Tier 3	0.1
Tier 4	0.03

		Percent of Locomotives that are				Average Locomotive					Average PM10 Emissions Rate per Source	
	Locomotive HP	Tier 1	Tier 2	Tier 3	Tier 4	PM_{10} Emissions Rate (lb/hr)	Locomotives per train	trains per day	average speed (mph)	days per week	(lb/hr)	(lb/yr)
Metrolink Passenger	1800		25%		75%	0.31	1	27	50	6	0.000078	0.58
BNSF freight	4400	0%	75%	0%	25%	1.67	2	74	50	6	0.0023	17.3
										Total	0.0024	17.9

Source spacing 18.05 meters

EMFAC2014 Emission Rates
Region Type: County
Region: Orange (SC)
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	Speed (miles/hr)	VMT (miles/day)	ROG (gms/mile)	PM10 (gms/mile)	PM2.5 (gms/mile)	
South Coast	2025	Annual	Aggreg Light Vel	GAS	5	253,848	0.006564442	0.001371381	0.001261809	These EFs are derived by factoring EFs for LDA, LDT1, LDT2, LHD1, LHD2, MDV, MH, Motorcoach, and SBUS by VMT for each to get a weighted aggregate set of EFs.
South Coast	2025	Annual	Aggreg Light Vel	GAS	10	540,901	0.00893072	0.001843778	0.00169672	
South Coast	2025	Annual	Aggreg Light Vel	GAS	15	1,152,907	0.012624958	0.002622393	0.002413574	
South Coast	2025	Annual	Aggreg Light Vel	GAS	20	3,061,209	0.02345415	0.004929819	0.004537791	
South Coast	2025	Annual	Aggreg Light Vel	GAS	25	8,858,292	0.050364508	0.010607449	0.009765029	
South Coast	2025	Annual	Aggreg Light Vel	GAS	30	13,292,207	0.059162443	0.012452737	0.011465104	
South Coast	2025	Annual	Aggreg Light Vel	GAS	35	10,558,006	0.038672805	0.008146304	0.007501034	
South Coast	2025	Annual	Aggreg Light Vel	GAS	40	7,982,902	0.025217142	0.005335612	0.00491344	
South Coast	2025	Annual	Aggreg Light Vel	GAS	45	6,450,360	0.018641567	0.00392479	0.003614519	
South Coast	2025	Annual	Aggreg Light Vel	GAS	50	5,644,870	0.015725431	0.003309969	0.003048366	
South Coast	2025	Annual	Aggreg Light Vel	GAS	55	4,832,715	0.013635657	0.002882507	0.002654701	
South Coast	2025	Annual	Aggreg Light Vel	GAS	60	6,880,717	0.020387127	0.004407361	0.004059548	
South Coast	2025	Annual	Aggreg Light Vel	GAS	65	4,301,959	0.014491697	0.003131955	0.002884173	
South Coast	2025	Annual	Aggreg Light Vel	GAS	70	5,682	2.07745E-05	4.55596E-06	4.1949E-06	
South Coast	2025	Annual	Aggreg Light Vel	DSL	5	5,545	0.003951339	0.000747411	0.000688801	These EFs are derived by factoring EFs for LDA, LDT1, LDT2, LHD1, LHD2, MDV, MH, Motorcoach, and SBUS by VMT for each to get a weighted aggregate set of EFs.
South Coast	2025	Annual	Aggreg Light Vel	DSL	10	12,761	0.005278793	0.000954814	0.000880862	
South Coast	2025	Annual	Aggreg Light Vel	DSL	15	27,203	0.007221614	0.001370945	0.001265385	
South Coast	2025	Annual	Aggreg Light Vel	DSL	20	62,857	0.014068666	0.00289208	0.002667706	
South Coast	2025	Annual	Aggreg Light Vel	DSL	25	164,832	0.03232243	0.006773594	0.006245907	
South Coast	2025	Annual	Aggreg Light Vel	DSL	30	248,179	0.037887238	0.007966178	0.007347827	
South Coast	2025	Annual	Aggreg Light Vel	DSL	35	217,411	0.023093703	0.004867212	0.004494529	
South Coast	2025	Annual	Aggreg Light Vel	DSL	40	183,778	0.014140853	0.002996667	0.002772013	
South Coast	2025	Annual	Aggreg Light Vel	DSL	45	165,212	0.009977977	0.002104222	0.001950204	
South Coast	2025	Annual	Aggreg Light Vel	DSL	50	150,048	0.008298082	0.001755034	0.001627863	
South Coast	2025	Annual	Aggreg Light Vel	DSL	55	150,511	0.006843621	0.001469073	0.001367243	
South Coast	2025	Annual	Aggreg Light Vel	DSL	60	364,303	0.011313536	0.002595939	0.002448362	
South Coast	2025	Annual	Aggreg Light Vel	DSL	65	162,239	0.007106304	0.001583272	0.001480295	
South Coast	2025	Annual	Aggreg Light Vel	DSL	70	101	0.004482175	0.000518982	0.000495784	
South Coast	2025	Annual	T6 instate heavy	DSL	5	1362.165969	0.000396951	9.83872E-06	9.4131E-06	
South Coast	2025	Annual	T6 instate heavy	DSL	10	2982.289922	0.000703858	1.93767E-05	1.85385E-05	
South Coast	2025	Annual	T6 instate heavy	DSL	15	7099.946843	0.00118014	3.96399E-05	3.79251E-05	
South Coast	2025	Annual	T6 instate heavy	DSL	20	13533.92272	0.001627398	6.74125E-05	6.44962E-05	
South Coast	2025	Annual	T6 instate heavy	DSL	25	34051.07459	0.00300063	0.000154294	0.00014762	
South Coast	2025	Annual	T6 instate heavy	DSL	30	57561.6448	0.003738005	0.000240156	0.000229767	
South Coast	2025	Annual	T6 instate heavy	DSL	35	55237.13315	0.0026434	0.000213945	0.00020469	
South Coast	2025	Annual	T6 instate heavy	DSL	40	52026.84204	0.001834781	0.000188188	0.000180047	
South Coast	2025	Annual	T6 instate heavy	DSL	45	64928.7573	0.001687404	0.000220313	0.000210782	
South Coast	2025	Annual	T6 instate heavy	DSL	50	62268.78596	0.001192552	0.000198893	0.000190289	
South Coast	2025	Annual	T6 instate heavy	DSL	55	52911.1945	0.000746758	0.000159527	0.000152626	
South Coast	2025	Annual	T6 instate heavy	DSL	60	83672.71453	0.001013745	0.000245308	0.000234696	
South Coast	2025	Annual	T6 instate heavy	DSL	65	38399.33081	0.000465231	0.000112577	0.000107707	
South Coast	2025	Annual	T6 instate heavy	DSL	70	9.74258313	1.18037E-07	2.85629E-08	2.73272E-08	
South Coast	2025	Annual	T6 instate small	DSL	5	3403.437999	0.000885661	2.14209E-05	2.04943E-05	
South Coast	2025	Annual	T6 instate small	DSL	10	7451.39658	0.00157042	4.21871E-05	4.03621E-05	
South Coast	2025	Annual	T6 instate small	DSL	15	17739.56289	0.002633083	8.63042E-05	8.25707E-05	
South Coast	2025	Annual	T6 instate small	DSL	20	33815.1649	0.003630985	0.000146771	0.000140421	
South Coast	2025	Annual	T6 instate small	DSL	25	85078.26786	0.006694887	0.000335931	0.000321398	
South Coast	2025	Annual	T6 instate small	DSL	30	143820.5723	0.00834009	0.00052287	0.00050025	
South Coast	2025	Annual	T6 instate small	DSL	35	138012.6667	0.005897851	0.000465802	0.000445652	
South Coast	2025	Annual	T6 instate small	DSL	40	129991.5981	0.004093692	0.000409723	0.000391999	
South Coast	2025	Annual	T6 instate small	DSL	45	162227.6616	0.00376487	0.000479666	0.000458916	
South Coast	2025	Annual	T6 instate small	DSL	50	155581.5937	0.002660776	0.000433031	0.000414298	
South Coast	2025	Annual	T6 instate small	DSL	55	132201.1958	0.001666137	0.000347324	0.000332299	
South Coast	2025	Annual	T6 instate small	DSL	60	209060.3514	0.002261827	0.000534085	0.000510981	
South Coast	2025	Annual	T6 instate small	DSL	65	95942.59774	0.001038004	0.000245104	0.000234501	
South Coast	2025	Annual	T6 instate small	DSL	70	24.34231833	2.6336E-07	6.21872E-08	5.9497E-08	
South Coast	2025	Annual	T6TS	GAS	5	631.7695776	0.000146747	4.496E-06	4.1339E-06	
South Coast	2025	Annual	T6TS	GAS	10	1425.608078	0.000209497	6.38894E-06	5.87439E-06	
South Coast	2025	Annual	T6TS	GAS	15	3172.33269	0.000310656	9.44512E-06	8.68444E-06	
South Coast	2025	Annual	T6TS	GAS	20	5915.162958	0.000407065	1.23433E-05	1.13492E-05	
South Coast	2025	Annual	T6TS	GAS	25	14864.01239	0.000758456	2.2933E-05	2.10861E-05	
South Coast	2025	Annual	T6TS	GAS	30	23478.75543	0.000937571	2.82541E-05	2.59786E-05	
South Coast	2025	Annual	T6TS	GAS	35	21051.90274	0.000693564	2.08446E-05	1.91658E-05	
South Coast	2025	Annual	T6TS	GAS	40	19658.14572	0.000563304	1.68945E-05	1.55339E-05	
South Coast	2025	Annual	T6TS	GAS	45	23207.68482	0.000612226	1.82615E-05	1.67908E-05	
South Coast	2025	Annual	T6TS	GAS	50	21836.32484	0.000557908	1.65951E-05	1.52586E-05	
South Coast	2025	Annual	T6TS	GAS	55	17805.34708	0.00046313	1.3786E-05	1.26757E-05	
South Coast	2025	Annual	T6TS	GAS	60	21371.49015	0.000591025	1.77824E-05	1.63503E-05	
South Coast	2025	Annual	T6TS	GAS	65	10240.61114	0.000322506	9.65904E-06	8.88113E-06	
South Coast	2025	Annual	T6TS	GAS	70	2.069093895	7.00144E-08	2.11986E-09	1.94913E-09	

South Coast	2025	Annual	T7 NNOOS	DSL	5	539.7075399	0.000300519	5.62014E-06	5.37702E-06
South Coast	2025	Annual	T7 NNOOS	DSL	10	1085.056991	0.000489322	1.0164E-05	9.72428E-06
South Coast	2025	Annual	T7 NNOOS	DSL	15	2662.946265	0.000845762	2.14348E-05	2.05076E-05
South Coast	2025	Annual	T7 NNOOS	DSL	20	5342.406746	0.001227479	3.83649E-05	3.67052E-05
South Coast	2025	Annual	T7 NNOOS	DSL	25	13569.49769	0.002284822	8.86469E-05	8.48121E-05
South Coast	2025	Annual	T7 NNOOS	DSL	30	22877.64931	0.002838737	0.000137611	0.000131658
South Coast	2025	Annual	T7 NNOOS	DSL	35	22643.98166	0.002070578	0.000126446	0.000120976
South Coast	2025	Annual	T7 NNOOS	DSL	40	21854.61985	0.001472676	0.000113969	0.000109039
South Coast	2025	Annual	T7 NNOOS	DSL	45	23770.82376	0.001180411	0.000116286	0.000111255
South Coast	2025	Annual	T7 NNOOS	DSL	50	22109.98265	0.000809101	0.000101816	9.74119E-05
South Coast	2025	Annual	T7 NNOOS	DSL	55	21539.7496	0.000580871	9.36286E-05	8.95783E-05
South Coast	2025	Annual	T7 NNOOS	DSL	60	51553.89886	0.001193475	0.000217906	0.00020848
South Coast	2025	Annual	T7 NNOOS	DSL	65	21510.14349	0.000497961	9.09183E-05	8.69852E-05
South Coast	2025	Annual	T7 NNOOS	DSL	70	6.761235548	1.56523E-07	2.85781E-08	2.73419E-08
South Coast	2025	Annual	T7 NOOS	DSL	5	171.9226655	0.000117558	2.31533E-06	2.21517E-06
South Coast	2025	Annual	T7 NOOS	DSL	10	345.6425496	0.000191414	4.18724E-06	4.00611E-06
South Coast	2025	Annual	T7 NOOS	DSL	15	848.2757531	0.000330847	8.8305E-06	8.44849E-06
South Coast	2025	Annual	T7 NOOS	DSL	20	1701.812074	0.000480168	1.58052E-05	1.51214E-05
South Coast	2025	Annual	T7 NOOS	DSL	25	4322.534038	0.000893783	3.65198E-05	3.494E-05
South Coast	2025	Annual	T7 NOOS	DSL	30	7287.625536	0.001110465	5.66915E-05	5.4239E-05
South Coast	2025	Annual	T7 NOOS	DSL	35	7213.191212	0.000809974	5.20918E-05	4.98383E-05
South Coast	2025	Annual	T7 NOOS	DSL	40	6961.74172	0.000576085	4.69518E-05	4.49207E-05
South Coast	2025	Annual	T7 NOOS	DSL	45	7572.144317	0.000461756	4.79062E-05	4.58338E-05
South Coast	2025	Annual	T7 NOOS	DSL	50	7043.086987	0.000316506	4.19453E-05	4.01307E-05
South Coast	2025	Annual	T7 NOOS	DSL	55	6861.440486	0.000227227	3.85721E-05	3.69035E-05
South Coast	2025	Annual	T7 NOOS	DSL	60	16422.38259	0.000466867	8.97706E-05	8.58872E-05
South Coast	2025	Annual	T7 NOOS	DSL	65	6852.009524	0.000194794	3.74555E-05	3.58352E-05
South Coast	2025	Annual	T7 NOOS	DSL	70	2.153776909	6.1229E-08	1.17733E-08	1.1264E-08
South Coast	2025	Annual	T7 POLA	DSL	5	635.3282286	0.000468389	9.3415E-06	8.93739E-06
South Coast	2025	Annual	T7 POLA	DSL	10	1277.297953	0.000762657	1.6894E-05	1.61632E-05
South Coast	2025	Annual	T7 POLA	DSL	15	3134.743927	0.001318204	3.56278E-05	3.40866E-05
South Coast	2025	Annual	T7 POLA	DSL	20	6288.927917	0.001913149	6.3768E-05	6.10094E-05
South Coast	2025	Annual	T7 POLA	DSL	25	15973.62329	0.003561125	0.000147344	0.00014097
South Coast	2025	Annual	T7 POLA	DSL	30	26930.91228	0.004424456	0.000228729	0.000218835
South Coast	2025	Annual	T7 POLA	DSL	35	26655.84542	0.003227204	0.000210171	0.000201079
South Coast	2025	Annual	T7 POLA	DSL	40	25726.63135	0.002295313	0.000189433	0.000181239
South Coast	2025	Annual	T7 POLA	DSL	45	27982.33161	0.001839789	0.000193284	0.000184923
South Coast	2025	Annual	T7 POLA	DSL	50	26027.23711	0.001261065	0.000169234	0.000161913
South Coast	2025	Annual	T7 POLA	DSL	55	25355.97513	0.000905346	0.000155624	0.000148892
South Coast	2025	Annual	T7 POLA	DSL	60	60687.77036	0.00186015	0.000362192	0.000346523
South Coast	2025	Annual	T7 POLA	DSL	65	25321.12367	0.000776122	0.000151119	0.000144582
South Coast	2025	Annual	T7 POLA	DSL	70	7.959132468	2.43957E-07	4.7501E-08	4.54462E-08
South Coast	2025	Annual	T7 tractor	DSL	5	625.2851773	0.000437774	8.63671E-06	8.26309E-06
South Coast	2025	Annual	T7 tractor	DSL	10	1257.106865	0.000712808	1.56194E-05	1.49437E-05
South Coast	2025	Annual	T7 tractor	DSL	15	3085.190968	0.001232043	3.29398E-05	3.15148E-05
South Coast	2025	Annual	T7 tractor	DSL	20	6189.514697	0.0017881	5.89569E-05	5.64065E-05
South Coast	2025	Annual	T7 tractor	DSL	25	15721.11772	0.00332836	0.000136227	0.000130334
South Coast	2025	Annual	T7 tractor	DSL	30	26505.19763	0.004135262	0.000211472	0.000202324
South Coast	2025	Annual	T7 tractor	DSL	35	26234.47894	0.003016265	0.000194315	0.000185909
South Coast	2025	Annual	T7 tractor	DSL	40	25319.95356	0.002145285	0.000175141	0.000167565
South Coast	2025	Annual	T7 tractor	DSL	45	27539.99648	0.001719535	0.000178701	0.000170971
South Coast	2025	Annual	T7 tractor	DSL	50	25615.80745	0.001178638	0.000156466	0.000149697
South Coast	2025	Annual	T7 tractor	DSL	55	24955.15655	0.00084617	0.000143883	0.000137659
South Coast	2025	Annual	T7 tractor	DSL	60	59728.43885	0.001738566	0.000334865	0.000320379
South Coast	2025	Annual	T7 tractor	DSL	65	24920.85601	0.000725392	0.000139718	0.000133674
South Coast	2025	Annual	T7 tractor	DSL	70	7.833317225	2.28011E-07	4.39172E-08	4.20174E-08
South Coast	2025	Annual	T7IS	GAS	5	66.32237815	0.000147991	4.97602E-07	4.57526E-07
South Coast	2025	Annual	T7IS	GAS	10	149.6585487	0.000210488	7.06751E-07	6.49832E-07
South Coast	2025	Annual	T7IS	GAS	15	333.0275083	0.000310957	1.0443E-06	9.60195E-07
South Coast	2025	Annual	T7IS	GAS	20	620.9663909	0.000405945	1.36404E-06	1.25419E-06
South Coast	2025	Annual	T7IS	GAS	25	1560.405385	0.000753623	2.53306E-06	2.32905E-06
South Coast	2025	Annual	T7IS	GAS	30	2464.770307	0.000928354	3.1193E-06	2.86809E-06
South Coast	2025	Annual	T7IS	GAS	35	2210.002355	0.000684507	2.30025E-06	2.11499E-06
South Coast	2025	Annual	T7IS	GAS	40	2063.687491	0.000554294	1.86359E-06	1.7135E-06
South Coast	2025	Annual	T7IS	GAS	45	2436.313655	0.000600834	2.01365E-06	1.85147E-06
South Coast	2025	Annual	T7IS	GAS	50	2292.350004	0.000546298	1.82934E-06	1.68201E-06
South Coast	2025	Annual	T7IS	GAS	55	1869.183012	0.000452686	1.5193E-06	1.39694E-06
South Coast	2025	Annual	T7IS	GAS	60	2243.552241	0.000576989	1.95937E-06	1.80157E-06
South Coast	2025	Annual	T7IS	GAS	65	1075.046518	0.000314589	1.06417E-06	9.78469E-07
South Coast	2025	Annual	T7IS	GAS	70	0.217210883	6.82875E-08	2.33546E-10	2.14737E-10

Idling Emissions Factors

Region	CalYr	Season	Veh_Class	Fuel	ROG (gms/hr)	PM10 (gms/hr)	PM2.5 (gms/hr)
South Coast	2025	Annual	T6	DSL	0.000398262	7.01049E-06	6.70722E-06
South Coast	2025	Annual	T7	DSL	0.002745895	0.000155652	0.000148919

APPENDIX B

MODELING REPORTS

HARP Project Summary Report 7/12/2017 5:20:59 PM

PROJECT INFORMATION
HARP Version: 17023
Project Name: HAWTHORNE RESIDENTIAL
Project Output Directory: P:\SWK1502\HRA\HAWTHORNE RESIDENTIAL
HARP Database: NA

EMISSION INVENTORY
No. of Pollutants:3751
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
1	0	0	9901	DieselExhPM	1	0.0998	1.14E-05	1
1	0	0	88101	PM25	1	0.0938	1.07E-05	1
1	0	0	106990	1,3-Butadiene	1	0.167	1.9E-05	1
1	0	0	71432	Benzene	1	0.8	9.12E-05	1
1	0	0	100414	Ethyl Benzene	1	0.325	3.71E-05	1
1	0	0	78933	MEK	1	0.00576	6.58E-07	1
1	0	0	91203	Naphthalene	1	0.0146	1.66E-06	1
1	0	0	115071	Propylene	1	0.949	0.000108	1
1	0	0	100425	Styrene	1	0.0382	4.36E-06	1
1	0	0	108883	Toluene	1	1.78	0.000203	1
1	0	0	1330207	Xylenes	1	1.1	0.000126	1
2	0	0	9901	DieselExhPM	1	0.0998	1.14E-05	1
2	0	0	88101	PM25	1	0.0938	1.07E-05	1
2	0	0	106990	1,3-Butadiene	1	0.167	1.9E-05	1
2	0	0	71432	Benzene	1	0.8	9.12E-05	1
2	0	0	100414	Ethyl Benzene	1	0.325	3.71E-05	1
2	0	0	78933	MEK	1	0.00576	6.58E-07	1
2	0	0	91203	Naphthalene	1	0.0146	1.66E-06	1
2	0	0	115071	Propylene	1	0.949	0.000108	1
2	0	0	100425	Styrene	1	0.0382	4.36E-06	1
2	0	0	108883	Toluene	1	1.78	0.000203	1
2	0	0	1330207	Xylenes	1	1.1	0.000126	1
3	0	0	9901	DieselExhPM	1	0.0998	1.14E-05	1
3	0	0	88101	PM25	1	0.0938	1.07E-05	1
3	0	0	106990	1,3-Butadiene	1	0.167	1.9E-05	1
3	0	0	71432	Benzene	1	0.8	9.12E-05	1
3	0	0	100414	Ethyl Benzene	1	0.325	3.71E-05	1
3	0	0	78933	MEK	1	0.00576	6.58E-07	1
3	0	0	91203	Naphthalene	1	0.0146	1.66E-06	1
3	0	0	115071	Propylene	1	0.949	0.000108	1
3	0	0	100425	Styrene	1	0.0382	4.36E-06	1
3	0	0	108883	Toluene	1	1.78	0.000203	1
3	0	0	1330207	Xylenes	1	1.1	0.000126	1
4	0	0	9901	DieselExhPM	1	0.0998	1.14E-05	1
4	0	0	88101	PM25	1	0.0938	1.07E-05	1
4	0	0	106990	1,3-Butadiene	1	0.167	1.9E-05	1
4	0	0	71432	Benzene	1	0.8	9.12E-05	1
4	0	0	100414	Ethyl Benzene	1	0.325	3.71E-05	1
4	0	0	78933	MEK	1	0.00576	6.58E-07	1
4	0	0	91203	Naphthalene	1	0.0146	1.66E-06	1
4	0	0	115071	Propylene	1	0.949	0.000108	1
4	0	0	100425	Styrene	1	0.0382	4.36E-06	1
4	0	0	108883	Toluene	1	1.78	0.000203	1
4	0	0	1330207	Xylenes	1	1.1	0.000126	1
5	0	0	9901	DieselExhPM	1	0.0998	1.14E-05	1
5	0	0	88101	PM25	1	0.0938	1.07E-05	1
5	0	0	106990	1,3-Butadiene	1	0.167	1.9E-05	1
5	0	0	71432	Benzene	1	0.8	9.12E-05	1

338	0	0	1330207	Xylenes	1	0	0	1
339	0	0	9901	DieselExhPM	1	14.6	0.00195	1
339	0	0	88101	PM25	1	0	0	1
339	0	0	106990	1,3-Butadiene	1	0	0	1
339	0	0	71432	Benzene	1	0	0	1
339	0	0	100414	Ethyl Benzene	1	0	0	1
339	0	0	78933	MEK	1	0	0	1
339	0	0	91203	Naphthalene	1	0	0	1
339	0	0	115071	Propylene	1	0	0	1
339	0	0	100425	Styrene	1	0	0	1
339	0	0	108883	Toluene	1	0	0	1
339	0	0	1330207	Xylenes	1	0	0	1
340	0	0	9901	DieselExhPM	1	14.6	0.00195	1
340	0	0	88101	PM25	1	0	0	1
340	0	0	106990	1,3-Butadiene	1	0	0	1
340	0	0	71432	Benzene	1	0	0	1
340	0	0	100414	Ethyl Benzene	1	0	0	1
340	0	0	78933	MEK	1	0	0	1
340	0	0	91203	Naphthalene	1	0	0	1
340	0	0	115071	Propylene	1	0	0	1
340	0	0	100425	Styrene	1	0	0	1
340	0	0	108883	Toluene	1	0	0	1
340	0	0	1330207	Xylenes	1	0	0	1
341	0	0	9901	DieselExhPM	1	14.6	0.00195	1
341	0	0	88101	PM25	1	0	0	1
341	0	0	106990	1,3-Butadiene	1	0	0	1
341	0	0	71432	Benzene	1	0	0	1
341	0	0	100414	Ethyl Benzene	1	0	0	1
341	0	0	78933	MEK	1	0	0	1
341	0	0	91203	Naphthalene	1	0	0	1
341	0	0	115071	Propylene	1	0	0	1
341	0	0	100425	Styrene	1	0	0	1
341	0	0	108883	Toluene	1	0	0	1
341	0	0	1330207	Xylenes	1	0	0	1

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

100414MAXHR.txt
100414PER.txt
100425MAXHR.txt
100425PER.txt
106990MAXHR.txt
106990PER.txt
108883MAXHR.txt
108883PER.txt
115071MAXHR.txt
115071PER.txt
1330207MAXHR.txt
1330207PER.txt
71432MAXHR.txt
71432PER.txt
78933MAXHR.txt
78933PER.txt
88101MAXHR.txt
88101MAXHR.xlsx
88101PER.txt
91203MAXHR.txt
91203PER.txt
9901MAXHR.txt
9901MAXHR.xlsx

9901PER.txt

POLLUTANT HEALTH INFORMATION
Health Database: C:\HARP2\Tables\HEALTH1.mdb
Health Table Version: HEALTH16088
Official: True

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL	InhChronicREL	OralChronicREL	InhChronic8HRREL
9901	DieselExhPM	1.1			5		
88101	PM25						
106990	1,3-Butadiene	0.6		660	2		9
71432	Benzene	0.1		27	3		3
100414	Ethyl Benzene	0.0087			2000		
78933	MEK			13000			
91203	Naphthalene	0.12			9		
115071	Propylene				3000		
100425	Styrene			21000	900		
108883	Toluene			37000	300		
1330207	Xylenes			22000	700		

LIST OF RISK ASSESSMENT FILES
Health risk analysis files (\hra\)

30 Yr CancerRisk.csv
30 Yr CancerRiskSumByRec.csv
30 Yr GLCList.csv
30 Yr HRAInput.hra
30 Yr Output.txt
30 Yr PathwayRec.csv
30 Yr PolDB.csv
9 Yr CancerRisk.csv
9 Yr CancerRiskSumByRec.csv
9 Yr GLCList.csv
9 Yr HRAInput.hra
9 Yr Output.txt
9 Yr PathwayRec.csv
9 Yr PolDB.csv
AcuteGLCList.csv
AcuteHRAInput.hra
AcuteNCAcuteRisk.csv
AcuteNCAcuteRiskSumByRec.csv
AcuteOutput.txt
AcutePathwayRec.csv
AcutePolDB.csv
Chronic GLCList.csv
Chronic HRAInput.hra
Chronic NCChronicRisk.csv
Chronic NCChronicRiskSumByRec.csv
Chronic Output.txt
Chronic PathwayRec.csv
Chronic PolDB.csv

Spatial averaging files (\sa\)

```
**MODELOPTs:   RegDFAULT CONC      ELEV      FLGPOL    URBAN

                                           ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for   354 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =    322424.0 ;  Urban Roughness Length =  1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  TOXICS

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates PERIOD Averages

**This Run Includes:    354 Source(s);     354 Source Group(s); and      54 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:    354 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    20.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      5.1 MB of RAM.

**File for Summary of Results:   AERMOD.sum
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**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
EB91_01	0	0.10000E+01	458840.6	3752578.4	243.3	1.55	12.28	1.45	YES	
EB91_02	0	0.10000E+01	458862.5	3752593.2	244.4	1.55	12.28	1.45	YES	
EB91_03	0	0.10000E+01	458884.3	3752608.1	244.5	1.55	12.28	1.45	YES	
EB91_04	0	0.10000E+01	458906.2	3752622.9	244.5	1.55	12.28	1.45	YES	
EB91_05	0	0.10000E+01	458928.0	3752637.8	244.5	1.55	12.28	1.45	YES	
EB91_06	0	0.10000E+01	458949.9	3752652.6	244.6	1.55	12.28	1.45	YES	
EB91_07	0	0.10000E+01	458971.7	3752667.4	244.5	1.55	12.28	1.45	YES	
EB91_08	0	0.10000E+01	458993.6	3752682.2	244.5	1.55	12.28	1.45	YES	
EB91_09	0	0.10000E+01	459015.4	3752697.1	244.5	1.55	12.28	1.45	YES	
EB91_10	0	0.10000E+01	459037.3	3752711.9	244.4	1.55	12.28	1.45	YES	
EB91_11	0	0.10000E+01	459059.1	3752726.8	244.5	1.55	12.28	1.45	YES	
EB91_12	0	0.10000E+01	459081.0	3752741.6	244.5	1.55	12.28	1.45	YES	
EB91_13	0	0.10000E+01	459102.8	3752756.4	244.5	1.55	12.28	1.45	YES	
EB91_14	0	0.10000E+01	459124.7	3752771.3	244.4	1.55	12.28	1.45	YES	
EB91_15	0	0.10000E+01	459146.5	3752786.1	244.4	1.55	12.28	1.45	YES	
EB91_16	0	0.10000E+01	459168.4	3752800.9	244.4	1.55	12.28	1.45	YES	
EB91_17	0	0.10000E+01	459190.2	3752815.8	244.4	1.55	12.28	1.45	YES	
EB91_18	0	0.10000E+01	459212.1	3752830.6	244.4	1.55	12.28	1.45	YES	
EB91_19	0	0.10000E+01	459233.9	3752845.4	244.4	1.55	12.28	1.45	YES	
EB91_20	0	0.10000E+01	459255.8	3752860.3	244.4	1.55	12.28	1.45	YES	
EB91_21	0	0.10000E+01	459277.6	3752875.1	244.4	1.55	12.28	1.45	YES	
EB91_22	0	0.10000E+01	459299.5	3752889.9	244.2	1.55	12.28	1.45	YES	
EB91_23	0	0.10000E+01	459321.3	3752904.8	244.2	1.55	12.28	1.45	YES	
EB91_24	0	0.10000E+01	459343.2	3752919.6	244.0	1.55	12.28	1.45	YES	
EB91_25	0	0.10000E+01	459365.0	3752934.4	243.9	1.55	12.28	1.45	YES	
EB91_26	0	0.10000E+01	459386.9	3752949.3	243.6	1.55	12.28	1.45	YES	
EB91_27	0	0.10000E+01	459408.8	3752964.1	243.6	1.55	12.28	1.45	YES	
EB91_28	0	0.10000E+01	459430.6	3752978.9	243.4	1.55	12.28	1.45	YES	
EB91_29	0	0.10000E+01	459452.5	3752993.8	243.3	1.55	12.28	1.45	YES	
EB91_30	0	0.10000E+01	459474.3	3753008.6	243.2	1.55	12.28	1.45	YES	
EB91_31	0	0.10000E+01	459496.1	3753023.4	243.1	1.55	12.28	1.45	YES	
EB91_32	0	0.10000E+01	459518.0	3753038.3	243.1	1.55	12.28	1.45	YES	
EB91_33	0	0.10000E+01	459539.8	3753053.1	244.0	1.55	12.28	1.45	YES	
EB91_34	0	0.10000E+01	459561.7	3753067.9	245.8	1.55	12.28	1.45	YES	
EB91_35	0	0.10000E+01	459583.6	3753082.8	247.2	1.55	12.28	1.45	YES	
EB91_36	0	0.10000E+01	459605.4	3753097.6	248.8	1.55	12.28	1.45	YES	
EB91_37	0	0.10000E+01	459627.3	3753112.4	249.9	1.55	12.28	1.45	YES	
EB91_38	0	0.10000E+01	459649.1	3753127.3	250.3	1.55	12.28	1.45	YES	
EB91_39	0	0.10000E+01	459671.0	3753142.1	250.4	1.55	12.28	1.45	YES	
EB91_40	0	0.10000E+01	459692.8	3753156.9	250.6	1.55	12.28	1.45	YES	

**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
EB91_41	0	0.10000E+01	459714.7	3753171.8	250.6	1.55	12.28	1.45	YES	
EB91_42	0	0.10000E+01	459736.5	3753186.6	250.6	1.55	12.28	1.45	YES	
EB91_43	0	0.10000E+01	459758.4	3753201.4	250.7	1.55	12.28	1.45	YES	
EB91_44	0	0.10000E+01	459780.2	3753216.3	250.7	1.55	12.28	1.45	YES	
EB91_45	0	0.10000E+01	459802.1	3753231.1	250.7	1.55	12.28	1.45	YES	
EB91_46	0	0.10000E+01	459823.9	3753246.0	250.6	1.55	12.28	1.45	YES	
EB91_47	0	0.10000E+01	459845.8	3753260.8	250.6	1.55	12.28	1.45	YES	
EB91_48	0	0.10000E+01	459867.6	3753275.6	250.6	1.55	12.28	1.45	YES	
EB91_49	0	0.10000E+01	459889.5	3753290.5	250.5	1.55	12.28	1.45	YES	
EB91_50	0	0.10000E+01	459911.3	3753305.3	250.6	1.55	12.28	1.45	YES	
EB91_51	0	0.10000E+01	459933.2	3753320.1	250.6	1.55	12.28	1.45	YES	
EB91_52	0	0.10000E+01	459955.0	3753335.0	250.6	1.55	12.28	1.45	YES	
EB91_53	0	0.10000E+01	459976.9	3753349.8	250.5	1.55	12.28	1.45	YES	
EB91_54	0	0.10000E+01	459998.7	3753364.6	250.2	1.55	12.28	1.45	YES	
EB91_55	0	0.10000E+01	460020.6	3753379.5	250.2	1.55	12.28	1.45	YES	
EB91_56	0	0.10000E+01	460042.4	3753394.3	250.1	1.55	12.28	1.45	YES	
EB91_57	0	0.10000E+01	460064.3	3753409.1	250.1	1.55	12.28	1.45	YES	
EB91_58	0	0.10000E+01	460086.1	3753424.0	250.1	1.55	12.28	1.45	YES	
EB91_59	0	0.10000E+01	460108.0	3753438.8	250.1	1.55	12.28	1.45	YES	
EB91_60	0	0.10000E+01	460129.8	3753453.6	250.1	1.55	12.28	1.45	YES	
EB91_61	0	0.10000E+01	460151.7	3753468.5	250.0	1.55	12.28	1.45	YES	
EB91_62	0	0.10000E+01	460173.5	3753483.3	249.9	1.55	12.28	1.45	YES	
EB91_63	0	0.10000E+01	460195.4	3753498.1	249.7	1.55	12.28	1.45	YES	
EB91_64	0	0.10000E+01	460217.2	3753513.0	249.6	1.55	12.28	1.45	YES	
EB91_65	0	0.10000E+01	460239.1	3753527.8	249.4	1.55	12.28	1.45	YES	
EB91_66	0	0.10000E+01	460261.0	3753542.6	249.1	1.55	12.28	1.45	YES	
EB91_67	0	0.10000E+01	460282.8	3753557.5	248.9	1.55	12.28	1.45	YES	
EB91_68	0	0.10000E+01	460304.7	3753572.3	248.8	1.55	12.28	1.45	YES	
EB91_69	0	0.10000E+01	460326.5	3753587.1	248.7	1.55	12.28	1.45	YES	
EB91_70	0	0.10000E+01	460348.4	3753602.0	249.7	1.55	12.28	1.45	YES	
EB91_71	0	0.10000E+01	460370.2	3753616.8	250.7	1.55	12.28	1.45	YES	
EB91_72	0	0.10000E+01	460392.1	3753631.6	250.7	1.55	12.28	1.45	YES	
EB91_73	0	0.10000E+01	460413.9	3753646.5	250.7	1.55	12.28	1.45	YES	
EB91_74	0	0.10000E+01	460435.8	3753661.3	250.7	1.55	12.28	1.45	YES	
EB91_75	0	0.10000E+01	460457.6	3753676.1	250.7	1.55	12.28	1.45	YES	
EB91_76	0	0.10000E+01	460479.5	3753691.0	250.7	1.55	12.28	1.45	YES	
EB91_77	0	0.10000E+01	460501.3	3753705.8	250.7	1.55	12.28	1.45	YES	
EB91_78	0	0.10000E+01	460523.2	3753720.6	250.6	1.55	12.28	1.45	YES	
WB91_01	0	0.10000E+01	458833.0	3752598.1	243.6	1.55	12.26	1.45	YES	
WB91_02	0	0.10000E+01	458854.8	3752612.8	244.1	1.55	12.26	1.45	YES	

**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
WB91_03	0	0.10000E+01	458876.7	3752627.6	244.4	1.55	12.26	1.45	YES	
WB91_04	0	0.10000E+01	458898.5	3752642.3	244.5	1.55	12.26	1.45	YES	
WB91_05	0	0.10000E+01	458920.4	3752657.1	244.5	1.55	12.26	1.45	YES	
WB91_06	0	0.10000E+01	458942.2	3752671.9	244.5	1.55	12.26	1.45	YES	
WB91_07	0	0.10000E+01	458964.1	3752686.6	244.5	1.55	12.26	1.45	YES	
WB91_08	0	0.10000E+01	458985.9	3752701.4	244.5	1.55	12.26	1.45	YES	
WB91_09	0	0.10000E+01	459007.8	3752716.1	244.5	1.55	12.26	1.45	YES	
WB91_10	0	0.10000E+01	459029.6	3752730.9	244.4	1.55	12.26	1.45	YES	
WB91_11	0	0.10000E+01	459051.5	3752745.6	244.4	1.55	12.26	1.45	YES	
WB91_12	0	0.10000E+01	459073.3	3752760.4	244.4	1.55	12.26	1.45	YES	
WB91_13	0	0.10000E+01	459095.2	3752775.2	244.3	1.55	12.26	1.45	YES	
WB91_14	0	0.10000E+01	459117.0	3752789.9	244.5	1.55	12.26	1.45	YES	
WB91_15	0	0.10000E+01	459138.9	3752804.7	244.5	1.55	12.26	1.45	YES	
WB91_16	0	0.10000E+01	459160.7	3752819.4	244.5	1.55	12.26	1.45	YES	
WB91_17	0	0.10000E+01	459182.6	3752834.2	244.5	1.55	12.26	1.45	YES	
WB91_18	0	0.10000E+01	459204.4	3752849.0	244.5	1.55	12.26	1.45	YES	
WB91_19	0	0.10000E+01	459226.3	3752863.7	244.5	1.55	12.26	1.45	YES	
WB91_20	0	0.10000E+01	459248.1	3752878.5	244.5	1.55	12.26	1.45	YES	
WB91_21	0	0.10000E+01	459270.0	3752893.2	244.4	1.55	12.26	1.45	YES	
WB91_22	0	0.10000E+01	459291.8	3752908.0	244.4	1.55	12.26	1.45	YES	
WB91_23	0	0.10000E+01	459313.7	3752922.8	244.4	1.55	12.26	1.45	YES	
WB91_24	0	0.10000E+01	459335.5	3752937.5	244.0	1.55	12.26	1.45	YES	
WB91_25	0	0.10000E+01	459357.4	3752952.3	243.0	1.55	12.26	1.45	YES	
WB91_26	0	0.10000E+01	459379.2	3752967.0	241.7	1.55	12.26	1.45	YES	
WB91_27	0	0.10000E+01	459401.1	3752981.8	241.7	1.55	12.26	1.45	YES	
WB91_28	0	0.10000E+01	459423.0	3752996.5	241.5	1.55	12.26	1.45	YES	
WB91_29	0	0.10000E+01	459444.8	3753011.3	241.9	1.55	12.26	1.45	YES	
WB91_30	0	0.10000E+01	459466.6	3753026.1	241.9	1.55	12.26	1.45	YES	
WB91_31	0	0.10000E+01	459488.5	3753040.8	241.8	1.55	12.26	1.45	YES	
WB91_32	0	0.10000E+01	459510.4	3753055.6	241.7	1.55	12.26	1.45	YES	
WB91_33	0	0.10000E+01	459532.2	3753070.3	243.8	1.55	12.26	1.45	YES	
WB91_34	0	0.10000E+01	459554.1	3753085.1	247.1	1.55	12.26	1.45	YES	
WB91_35	0	0.10000E+01	459575.9	3753099.8	248.6	1.55	12.26	1.45	YES	
WB91_36	0	0.10000E+01	459597.8	3753114.6	249.7	1.55	12.26	1.45	YES	
WB91_37	0	0.10000E+01	459619.6	3753129.4	250.3	1.55	12.26	1.45	YES	
WB91_38	0	0.10000E+01	459641.5	3753144.1	250.6	1.55	12.26	1.45	YES	
WB91_39	0	0.10000E+01	459663.3	3753158.9	250.6	1.55	12.26	1.45	YES	
WB91_40	0	0.10000E+01	459685.2	3753173.6	250.7	1.55	12.26	1.45	YES	
WB91_41	0	0.10000E+01	459707.0	3753188.4	250.7	1.55	12.26	1.45	YES	
WB91_42	0	0.10000E+01	459728.9	3753203.2	250.7	1.55	12.26	1.45	YES	

**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
WB91_43	0	0.10000E+01	459750.7	3753217.9	250.7	1.55	12.26	1.45	YES	
WB91_44	0	0.10000E+01	459772.6	3753232.7	250.7	1.55	12.26	1.45	YES	
WB91_45	0	0.10000E+01	459794.4	3753247.4	250.7	1.55	12.26	1.45	YES	
WB91_46	0	0.10000E+01	459816.3	3753262.2	250.7	1.55	12.26	1.45	YES	
WB91_47	0	0.10000E+01	459838.1	3753276.9	250.7	1.55	12.26	1.45	YES	
WB91_48	0	0.10000E+01	459860.0	3753291.7	250.7	1.55	12.26	1.45	YES	
WB91_49	0	0.10000E+01	459881.8	3753306.5	250.7	1.55	12.26	1.45	YES	
WB91_50	0	0.10000E+01	459903.7	3753321.2	250.7	1.55	12.26	1.45	YES	
WB91_51	0	0.10000E+01	459925.5	3753336.0	250.7	1.55	12.26	1.45	YES	
WB91_52	0	0.10000E+01	459947.4	3753350.8	250.7	1.55	12.26	1.45	YES	
WB91_53	0	0.10000E+01	459969.2	3753365.5	250.7	1.55	12.26	1.45	YES	
WB91_54	0	0.10000E+01	459991.1	3753380.3	250.6	1.55	12.26	1.45	YES	
WB91_55	0	0.10000E+01	460012.9	3753395.0	250.5	1.55	12.26	1.45	YES	
WB91_56	0	0.10000E+01	460034.8	3753409.8	250.1	1.55	12.26	1.45	YES	
WB91_57	0	0.10000E+01	460056.6	3753424.5	249.9	1.55	12.26	1.45	YES	
WB91_58	0	0.10000E+01	460078.5	3753439.3	249.9	1.55	12.26	1.45	YES	
WB91_59	0	0.10000E+01	460100.3	3753454.1	249.9	1.55	12.26	1.45	YES	
WB91_60	0	0.10000E+01	460122.2	3753468.8	249.8	1.55	12.26	1.45	YES	
WB91_61	0	0.10000E+01	460144.0	3753483.6	249.7	1.55	12.26	1.45	YES	
WB91_62	0	0.10000E+01	460165.9	3753498.3	249.6	1.55	12.26	1.45	YES	
WB91_63	0	0.10000E+01	460187.7	3753513.1	249.4	1.55	12.26	1.45	YES	
WB91_64	0	0.10000E+01	460209.6	3753527.8	249.2	1.55	12.26	1.45	YES	
WB91_65	0	0.10000E+01	460231.4	3753542.6	249.0	1.55	12.26	1.45	YES	
WB91_66	0	0.10000E+01	460253.3	3753557.4	248.8	1.55	12.26	1.45	YES	
WB91_67	0	0.10000E+01	460275.1	3753572.1	248.7	1.55	12.26	1.45	YES	
WB91_68	0	0.10000E+01	460297.0	3753586.9	248.6	1.55	12.26	1.45	YES	
WB91_69	0	0.10000E+01	460318.8	3753601.6	248.6	1.55	12.26	1.45	YES	
WB91_70	0	0.10000E+01	460340.7	3753616.4	250.0	1.55	12.26	1.45	YES	
WB91_71	0	0.10000E+01	460362.5	3753631.2	250.7	1.55	12.26	1.45	YES	
WB91_72	0	0.10000E+01	460384.4	3753645.9	250.7	1.55	12.26	1.45	YES	
WB91_73	0	0.10000E+01	460406.2	3753660.7	250.7	1.55	12.26	1.45	YES	
WB91_74	0	0.10000E+01	460428.1	3753675.4	250.7	1.55	12.26	1.45	YES	
WB91_75	0	0.10000E+01	460449.9	3753690.2	250.7	1.55	12.26	1.45	YES	
WB91_76	0	0.10000E+01	460471.8	3753704.9	250.7	1.55	12.26	1.45	YES	
WB91_77	0	0.10000E+01	460493.6	3753719.7	250.7	1.55	12.26	1.45	YES	
WB91_78	0	0.10000E+01	460515.5	3753734.5	250.5	1.55	12.26	1.45	YES	
IND_01	0	0.10000E+01	460564.6	3753654.1	250.1	2.59	12.39	2.41	YES	
IND_02	0	0.10000E+01	460542.6	3753639.2	250.2	2.59	12.39	2.41	YES	
IND_03	0	0.10000E+01	460520.6	3753624.2	250.3	2.59	12.39	2.41	YES	
IND_04	0	0.10000E+01	460498.5	3753609.2	250.3	2.59	12.39	2.41	YES	

**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
IND_05	0	0.10000E+01	460476.5	3753594.3	250.2	2.59	12.39	2.41	YES	
IND_06	0	0.10000E+01	460454.5	3753579.3	250.1	2.59	12.39	2.41	YES	
IND_07	0	0.10000E+01	460432.4	3753564.4	249.8	2.59	12.39	2.41	YES	
IND_08	0	0.10000E+01	460410.4	3753549.4	249.4	2.59	12.39	2.41	YES	
IND_09	0	0.10000E+01	460388.4	3753534.5	249.1	2.59	12.39	2.41	YES	
IND_10	0	0.10000E+01	460366.3	3753519.5	249.1	2.59	12.39	2.41	YES	
IND_11	0	0.10000E+01	460344.3	3753504.5	249.4	2.59	12.39	2.41	YES	
IND_12	0	0.10000E+01	460322.3	3753489.6	249.7	2.59	12.39	2.41	YES	
IND_13	0	0.10000E+01	460300.2	3753474.6	250.0	2.59	12.39	2.41	YES	
IND_14	0	0.10000E+01	460278.2	3753459.7	250.2	2.59	12.39	2.41	YES	
IND_15	0	0.10000E+01	460256.2	3753444.7	250.6	2.59	12.39	2.41	YES	
IND_16	0	0.10000E+01	460234.1	3753429.8	251.1	2.59	12.39	2.41	YES	
IND_17	0	0.10000E+01	460212.1	3753414.8	251.3	2.59	12.39	2.41	YES	
IND_18	0	0.10000E+01	460190.1	3753399.9	251.4	2.59	12.39	2.41	YES	
IND_19	0	0.10000E+01	460168.0	3753384.9	251.5	2.59	12.39	2.41	YES	
IND_20	0	0.10000E+01	460146.0	3753369.9	251.5	2.59	12.39	2.41	YES	
IND_21	0	0.10000E+01	460124.0	3753355.0	251.6	2.59	12.39	2.41	YES	
IND_22	0	0.10000E+01	460101.9	3753340.0	251.7	2.59	12.39	2.41	YES	
IND_23	0	0.10000E+01	460079.9	3753325.1	251.6	2.59	12.39	2.41	YES	
IND_24	0	0.10000E+01	460057.9	3753310.1	251.7	2.59	12.39	2.41	YES	
IND_25	0	0.10000E+01	460035.8	3753295.2	251.7	2.59	12.39	2.41	YES	
IND_26	0	0.10000E+01	460013.8	3753280.2	251.8	2.59	12.39	2.41	YES	
IND_27	0	0.10000E+01	459991.8	3753265.2	251.8	2.59	12.39	2.41	YES	
IND_28	0	0.10000E+01	459969.7	3753250.3	251.8	2.59	12.39	2.41	YES	
IND_29	0	0.10000E+01	459947.7	3753235.3	251.8	2.59	12.39	2.41	YES	
IND_30	0	0.10000E+01	459925.7	3753220.4	251.7	2.59	12.39	2.41	YES	
IND_31	0	0.10000E+01	459903.6	3753205.4	251.6	2.59	12.39	2.41	YES	
IND_32	0	0.10000E+01	459881.6	3753190.5	251.6	2.59	12.39	2.41	YES	
IND_33	0	0.10000E+01	459859.6	3753175.5	251.7	2.59	12.39	2.41	YES	
IND_34	0	0.10000E+01	459837.5	3753160.5	251.8	2.59	12.39	2.41	YES	
IND_35	0	0.10000E+01	459815.5	3753145.6	251.9	2.59	12.39	2.41	YES	
IND_36	0	0.10000E+01	459793.5	3753130.6	251.9	2.59	12.39	2.41	YES	
IND_37	0	0.10000E+01	459771.4	3753115.7	251.9	2.59	12.39	2.41	YES	
IND_38	0	0.10000E+01	459749.4	3753100.7	251.8	2.59	12.39	2.41	YES	
IND_39	0	0.10000E+01	459727.4	3753085.8	251.7	2.59	12.39	2.41	YES	
IND_40	0	0.10000E+01	459705.3	3753070.8	251.6	2.59	12.39	2.41	YES	
IND_41	0	0.10000E+01	459683.3	3753055.9	251.5	2.59	12.39	2.41	YES	
IND_42	0	0.10000E+01	459661.3	3753040.9	251.5	2.59	12.39	2.41	YES	
IND_43	0	0.10000E+01	459639.2	3753025.9	251.5	2.59	12.39	2.41	YES	
IND_44	0	0.10000E+01	459617.2	3753011.0	251.4	2.59	12.39	2.41	YES	

**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
IND_45	0	0.10000E+01	459595.2	3752996.0	251.3	2.59	12.39	2.41	YES	
IND_46	0	0.10000E+01	459573.1	3752981.1	251.2	2.59	12.39	2.41	YES	
IND_47	0	0.10000E+01	459551.1	3752966.1	251.2	2.59	12.39	2.41	YES	
IND_48	0	0.10000E+01	459529.1	3752951.2	251.2	2.59	12.39	2.41	YES	
IND_49	0	0.10000E+01	459507.0	3752936.2	251.2	2.59	12.39	2.41	YES	
IND_50	0	0.10000E+01	459485.0	3752921.2	251.1	2.59	12.39	2.41	YES	
IND_51	0	0.10000E+01	459463.0	3752906.3	251.1	2.59	12.39	2.41	YES	
IND_52	0	0.10000E+01	459440.9	3752891.3	251.1	2.59	12.39	2.41	YES	
IND_53	0	0.10000E+01	459418.9	3752876.4	251.0	2.59	12.39	2.41	YES	
IND_54	0	0.10000E+01	459396.9	3752861.4	251.0	2.59	12.39	2.41	YES	
IND_55	0	0.10000E+01	459374.8	3752846.5	251.0	2.59	12.39	2.41	YES	
IND_56	0	0.10000E+01	459352.8	3752831.5	250.9	2.59	12.39	2.41	YES	
IND_57	0	0.10000E+01	459330.8	3752816.5	250.8	2.59	12.39	2.41	YES	
IND_58	0	0.10000E+01	459308.7	3752801.6	249.6	2.59	12.39	2.41	YES	
IND_59	0	0.10000E+01	459286.7	3752786.6	249.2	2.59	12.39	2.41	YES	
IND_60	0	0.10000E+01	459264.7	3752771.7	249.0	2.59	12.39	2.41	YES	
IND_61	0	0.10000E+01	459242.6	3752756.7	248.7	2.59	12.39	2.41	YES	
IND_62	0	0.10000E+01	459220.6	3752741.8	248.4	2.59	12.39	2.41	YES	
IND_63	0	0.10000E+01	459198.6	3752726.8	248.2	2.59	12.39	2.41	YES	
IND_64	0	0.10000E+01	459176.5	3752711.8	247.8	2.59	12.39	2.41	YES	
IND_65	0	0.10000E+01	459154.5	3752696.9	247.5	2.59	12.39	2.41	YES	
IND_66	0	0.10000E+01	459132.5	3752681.9	246.8	2.59	12.39	2.41	YES	
IND_67	0	0.10000E+01	459110.4	3752667.0	246.3	2.59	12.39	2.41	YES	
IND_68	0	0.10000E+01	459088.4	3752652.0	246.0	2.59	12.39	2.41	YES	
IND_69	0	0.10000E+01	459066.4	3752637.1	245.9	2.59	12.39	2.41	YES	
IND_70	0	0.10000E+01	459044.3	3752622.1	245.6	2.59	12.39	2.41	YES	
IND_71	0	0.10000E+01	459022.3	3752607.2	245.4	2.59	12.39	2.41	YES	
IND_72	0	0.10000E+01	459000.3	3752592.2	245.3	2.59	12.39	2.41	YES	
IND_73	0	0.10000E+01	458978.2	3752577.2	245.3	2.59	12.39	2.41	YES	
IND_74	0	0.10000E+01	458956.2	3752562.3	245.3	2.59	12.39	2.41	YES	
IND_75	0	0.10000E+01	458934.2	3752547.3	245.3	2.59	12.39	2.41	YES	
IND_76	0	0.10000E+01	458912.1	3752532.4	244.9	2.59	12.39	2.41	YES	
IND_77	0	0.10000E+01	458890.1	3752517.4	244.3	2.59	12.39	2.41	YES	
IND_78	0	0.10000E+01	458868.1	3752502.5	243.9	2.59	12.39	2.41	YES	
RR_001	0	0.10000E+01	460798.6	3753301.3	253.2	3.89	8.40	1.81	YES	
RR_002	0	0.10000E+01	460783.6	3753291.3	254.5	3.89	8.40	1.81	YES	
RR_003	0	0.10000E+01	460768.6	3753281.2	256.4	3.89	8.40	1.81	YES	
RR_004	0	0.10000E+01	460753.6	3753271.1	256.8	3.89	8.40	1.81	YES	
RR_005	0	0.10000E+01	460738.6	3753261.1	256.8	3.89	8.40	1.81	YES	
RR_006	0	0.10000E+01	460723.6	3753251.0	256.8	3.89	8.40	1.81	YES	

**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
RR_007	0	0.10000E+01	460708.6	3753240.9	256.8	3.89	8.40	1.81	YES	
RR_008	0	0.10000E+01	460693.7	3753230.9	256.8	3.89	8.40	1.81	YES	
RR_009	0	0.10000E+01	460678.7	3753220.8	256.8	3.89	8.40	1.81	YES	
RR_010	0	0.10000E+01	460663.7	3753210.7	256.8	3.89	8.40	1.81	YES	
RR_011	0	0.10000E+01	460648.7	3753200.7	256.8	3.89	8.40	1.81	YES	
RR_012	0	0.10000E+01	460633.7	3753190.6	256.8	3.89	8.40	1.81	YES	
RR_013	0	0.10000E+01	460618.7	3753180.5	256.8	3.89	8.40	1.81	YES	
RR_014	0	0.10000E+01	460603.8	3753170.5	256.7	3.89	8.40	1.81	YES	
RR_015	0	0.10000E+01	460588.8	3753160.4	256.8	3.89	8.40	1.81	YES	
RR_016	0	0.10000E+01	460573.8	3753150.3	256.8	3.89	8.40	1.81	YES	
RR_017	0	0.10000E+01	460558.8	3753140.3	256.8	3.89	8.40	1.81	YES	
RR_018	0	0.10000E+01	460543.8	3753130.2	256.8	3.89	8.40	1.81	YES	
RR_019	0	0.10000E+01	460528.8	3753120.1	256.8	3.89	8.40	1.81	YES	
RR_020	0	0.10000E+01	460513.8	3753110.1	256.8	3.89	8.40	1.81	YES	
RR_021	0	0.10000E+01	460497.8	3753101.9	256.8	3.89	8.40	1.81	YES	
RR_022	0	0.10000E+01	460481.2	3753094.9	256.8	3.89	8.40	1.81	YES	
RR_023	0	0.10000E+01	460464.5	3753087.9	256.9	3.89	8.40	1.81	YES	
RR_024	0	0.10000E+01	460447.9	3753080.9	257.0	3.89	8.40	1.81	YES	
RR_025	0	0.10000E+01	460430.9	3753075.0	257.1	3.89	8.40	1.81	YES	
RR_026	0	0.10000E+01	460413.3	3753071.2	257.1	3.89	8.40	1.81	YES	
RR_027	0	0.10000E+01	460395.6	3753067.3	257.2	3.89	8.40	1.81	YES	
RR_028	0	0.10000E+01	460378.0	3753063.5	257.4	3.89	8.40	1.81	YES	
RR_029	0	0.10000E+01	460360.4	3753059.6	257.5	3.89	8.40	1.81	YES	
RR_030	0	0.10000E+01	460342.7	3753055.8	257.7	3.89	8.40	1.81	YES	
RR_031	0	0.10000E+01	460325.1	3753051.9	257.8	3.89	8.40	1.81	YES	
RR_032	0	0.10000E+01	460307.5	3753048.1	258.0	3.89	8.40	1.81	YES	
RR_033	0	0.10000E+01	460289.8	3753044.2	258.1	3.89	8.40	1.81	YES	
RR_034	0	0.10000E+01	460272.2	3753040.4	258.2	3.89	8.40	1.81	YES	
RR_035	0	0.10000E+01	460254.5	3753036.5	258.3	3.89	8.40	1.81	YES	
RR_036	0	0.10000E+01	460236.9	3753032.7	258.3	3.89	8.40	1.81	YES	
RR_037	0	0.10000E+01	460219.3	3753028.8	258.4	3.89	8.40	1.81	YES	
RR_038	0	0.10000E+01	460201.6	3753025.0	258.4	3.89	8.40	1.81	YES	
RR_039	0	0.10000E+01	460184.0	3753021.1	258.4	3.89	8.40	1.81	YES	
RR_040	0	0.10000E+01	460166.3	3753017.3	258.3	3.89	8.40	1.81	YES	
RR_041	0	0.10000E+01	460148.7	3753013.4	258.4	3.89	8.40	1.81	YES	
RR_042	0	0.10000E+01	460131.1	3753009.6	258.4	3.89	8.40	1.81	YES	
RR_043	0	0.10000E+01	460113.4	3753005.7	258.4	3.89	8.40	1.81	YES	
RR_044	0	0.10000E+01	460095.8	3753001.9	258.4	3.89	8.40	1.81	YES	
RR_045	0	0.10000E+01	460078.2	3752998.0	258.3	3.89	8.40	1.81	YES	
RR_046	0	0.10000E+01	460060.5	3752994.2	258.3	3.89	8.40	1.81	YES	

**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
RR_047	0	0.10000E+01	460042.9	3752990.3	258.1	3.89	8.40	1.81	YES	
RR_048	0	0.10000E+01	460025.2	3752986.5	257.9	3.89	8.40	1.81	YES	
RR_049	0	0.10000E+01	460007.6	3752982.6	257.8	3.89	8.40	1.81	YES	
RR_050	0	0.10000E+01	459990.0	3752978.8	257.7	3.89	8.40	1.81	YES	
RR_051	0	0.10000E+01	459972.3	3752974.9	257.6	3.89	8.40	1.81	YES	
RR_052	0	0.10000E+01	459954.7	3752971.1	257.3	3.89	8.40	1.81	YES	
RR_053	0	0.10000E+01	459937.0	3752967.2	257.1	3.89	8.40	1.81	YES	
RR_054	0	0.10000E+01	459919.4	3752963.4	256.8	3.89	8.40	1.81	YES	
RR_055	0	0.10000E+01	459901.8	3752959.5	256.7	3.89	8.40	1.81	YES	
RR_056	0	0.10000E+01	459884.1	3752955.7	256.6	3.89	8.40	1.81	YES	
RR_057	0	0.10000E+01	459866.5	3752951.8	256.3	3.89	8.40	1.81	YES	
RR_058	0	0.10000E+01	459848.9	3752948.0	256.0	3.89	8.40	1.81	YES	
RR_059	0	0.10000E+01	459831.2	3752944.1	255.7	3.89	8.40	1.81	YES	
RR_060	0	0.10000E+01	459813.6	3752940.3	255.4	3.89	8.40	1.81	YES	
RR_061	0	0.10000E+01	459796.0	3752936.4	255.1	3.89	8.40	1.81	YES	
RR_062	0	0.10000E+01	459778.3	3752932.6	254.8	3.89	8.40	1.81	YES	
RR_063	0	0.10000E+01	459760.7	3752928.8	254.5	3.89	8.40	1.81	YES	
RR_064	0	0.10000E+01	459743.0	3752924.9	254.1	3.89	8.40	1.81	YES	
RR_065	0	0.10000E+01	459725.4	3752921.0	253.8	3.89	8.40	1.81	YES	
RR_066	0	0.10000E+01	459707.8	3752917.2	253.5	3.89	8.40	1.81	YES	
RR_067	0	0.10000E+01	459690.1	3752913.3	253.2	3.89	8.40	1.81	YES	
RR_068	0	0.10000E+01	459672.5	3752909.5	252.9	3.89	8.40	1.81	YES	
RR_069	0	0.10000E+01	459654.8	3752905.7	252.7	3.89	8.40	1.81	YES	
RR_070	0	0.10000E+01	459637.2	3752901.8	252.5	3.89	8.40	1.81	YES	
RR_071	0	0.10000E+01	459619.6	3752898.0	252.3	3.89	8.40	1.81	YES	
RR_072	0	0.10000E+01	459602.0	3752893.9	252.2	3.89	8.40	1.81	YES	
RR_073	0	0.10000E+01	459584.7	3752888.6	252.1	3.89	8.40	1.81	YES	
RR_074	0	0.10000E+01	459567.5	3752883.4	252.1	3.89	8.40	1.81	YES	
RR_075	0	0.10000E+01	459550.2	3752878.1	251.9	3.89	8.40	1.81	YES	
RR_076	0	0.10000E+01	459532.9	3752872.9	251.8	3.89	8.40	1.81	YES	
RR_077	0	0.10000E+01	459515.6	3752867.6	251.7	3.89	8.40	1.81	YES	
RR_078	0	0.10000E+01	459498.4	3752862.2	251.7	3.89	8.40	1.81	YES	
RR_079	0	0.10000E+01	459482.9	3752853.0	251.6	3.89	8.40	1.81	YES	
RR_080	0	0.10000E+01	459467.3	3752843.9	251.6	3.89	8.40	1.81	YES	
RR_081	0	0.10000E+01	459451.8	3752834.7	251.6	3.89	8.40	1.81	YES	
RR_082	0	0.10000E+01	459436.2	3752825.5	251.6	3.89	8.40	1.81	YES	
RR_083	0	0.10000E+01	459420.7	3752816.3	251.5	3.89	8.40	1.81	YES	
RR_084	0	0.10000E+01	459405.4	3752806.8	251.5	3.89	8.40	1.81	YES	
RR_085	0	0.10000E+01	459390.7	3752796.3	251.4	3.89	8.40	1.81	YES	
RR_086	0	0.10000E+01	459376.0	3752785.8	251.3	3.89	8.40	1.81	YES	

**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
RR_087	0	0.10000E+01	459361.4	3752775.2	251.2	3.89	8.40	1.81	YES	
RR_088	0	0.10000E+01	459346.7	3752764.7	251.1	3.89	8.40	1.81	YES	
RR_089	0	0.10000E+01	459332.0	3752754.2	251.0	3.89	8.40	1.81	YES	
RR_090	0	0.10000E+01	459318.0	3752743.0	251.0	3.89	8.40	1.81	YES	
RR_091	0	0.10000E+01	459306.9	3752728.8	251.0	3.89	8.40	1.81	YES	
RR_092	0	0.10000E+01	459295.9	3752714.5	251.0	3.89	8.40	1.81	YES	
RR_093	0	0.10000E+01	459284.8	3752700.2	251.1	3.89	8.40	1.81	YES	
RR_094	0	0.10000E+01	459273.8	3752685.9	251.0	3.89	8.40	1.81	YES	
RR_095	0	0.10000E+01	459262.8	3752671.6	250.9	3.89	8.40	1.81	YES	
RR_096	0	0.10000E+01	459251.7	3752657.3	250.9	3.89	8.40	1.81	YES	
RR_097	0	0.10000E+01	459240.7	3752643.0	250.9	3.89	8.40	1.81	YES	
RR_098	0	0.10000E+01	459229.7	3752628.8	250.8	3.89	8.40	1.81	YES	
RR_099	0	0.10000E+01	459218.6	3752614.5	250.6	3.89	8.40	1.81	YES	
RR_100	0	0.10000E+01	459207.6	3752600.2	250.3	3.89	8.40	1.81	YES	
RR_101	0	0.10000E+01	459196.6	3752585.9	249.8	3.89	8.40	1.81	YES	
RR_102	0	0.10000E+01	459185.5	3752571.6	249.4	3.89	8.40	1.81	YES	
RR_103	0	0.10000E+01	459174.5	3752557.3	249.1	3.89	8.40	1.81	YES	
RR_104	0	0.10000E+01	459163.5	3752543.0	248.8	3.89	8.40	1.81	YES	
RR_105	0	0.10000E+01	459152.4	3752528.8	248.7	3.89	8.40	1.81	YES	
RR_106	0	0.10000E+01	459141.4	3752514.5	248.7	3.89	8.40	1.81	YES	
RR_107	0	0.10000E+01	459130.3	3752500.2	248.7	3.89	8.40	1.81	YES	
RR_108	0	0.10000E+01	459119.3	3752485.9	248.6	3.89	8.40	1.81	YES	
RR_109	0	0.10000E+01	459108.3	3752471.6	248.6	3.89	8.40	1.81	YES	
RR_110	0	0.10000E+01	459097.2	3752457.3	248.6	3.89	8.40	1.81	YES	
RR_111	0	0.10000E+01	459086.2	3752443.0	248.6	3.89	8.40	1.81	YES	
RR_112	0	0.10000E+01	459075.2	3752428.7	248.5	3.89	8.40	1.81	YES	
RR_113	0	0.10000E+01	459064.1	3752414.5	248.6	3.89	8.40	1.81	YES	
RR_114	0	0.10000E+01	459053.1	3752400.2	248.5	3.89	8.40	1.81	YES	
RR_115	0	0.10000E+01	459042.0	3752385.9	248.5	3.89	8.40	1.81	YES	
RR_116	0	0.10000E+01	459031.0	3752371.6	248.4	3.89	8.40	1.81	YES	
RR_117	0	0.10000E+01	459020.0	3752357.3	248.4	3.89	8.40	1.81	YES	
RR_118	0	0.10000E+01	459008.9	3752343.0	248.2	3.89	8.40	1.81	YES	
RR_119	0	0.10000E+01	458997.9	3752328.7	248.1	3.89	8.40	1.81	YES	
RR_120	0	0.10000E+01	458986.9	3752314.4	248.0	3.89	8.40	1.81	YES	

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**MODELOPTs:   RegDFAULT CONC      ELEV      FLGPOL    URBAN

                                            *** DISCRETE CARTESIAN RECEPTORS ***
                                          (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                          (METERS)

    ( 459691.3, 3753026.4,     252.0,     252.0,       0.0);        ( 459705.5, 3753036.0,     252.1,     252.1,       0.0);
    ( 459721.8, 3753045.0,     252.2,     252.2,       0.0);        ( 459737.9, 3753055.6,     252.3,     252.3,       0.0);
    ( 459751.4, 3753065.4,     252.4,     252.4,       0.0);        ( 459804.4, 3753102.3,     252.5,     252.5,       0.0);
    ( 459820.1, 3753109.1,     252.6,     252.6,       0.0);        ( 459836.6, 3753118.6,     252.7,     252.7,       0.0);
    ( 459851.3, 3753129.9,     252.7,     252.7,       0.0);        ( 459875.0, 3753148.8,     252.7,     252.7,       0.0);
    ( 459886.3, 3753133.7,     253.3,     253.3,       0.0);        ( 459898.0, 3753117.5,     254.1,     254.1,       0.0);
    ( 459908.3, 3753104.0,     254.7,     254.7,       0.0);        ( 459916.2, 3753088.7,     255.1,     255.1,       0.0);
    ( 459926.3, 3753074.6,     255.7,     255.7,       0.0);        ( 459937.1, 3753060.3,     256.2,     256.2,       0.0);
    ( 459949.2, 3753041.0,     256.8,     256.8,       0.0);        ( 459645.1, 3753002.3,     251.7,     251.7,       0.0);
    ( 459759.6, 3753025.7,     253.1,     253.1,       0.0);        ( 459872.0, 3753064.5,     254.6,     254.6,       0.0);
    ( 459886.7, 3753074.8,     254.8,     254.8,       0.0);        ( 459870.7, 3753096.8,     254.0,     254.0,       0.0);
    ( 459745.5, 3753013.9,     253.0,     253.0,       0.0);        ( 459698.1, 3752984.8,     252.5,     252.5,       0.0);
    ( 459714.2, 3752995.2,     252.7,     252.7,       0.0);        ( 459855.0, 3753086.2,     253.9,     253.9,       0.0);
    ( 459840.9, 3753078.2,     253.8,     253.8,       0.0);        ( 459729.9, 3753004.9,     252.9,     252.9,       0.0);
    ( 459683.3, 3752945.0,     252.7,     252.7,       0.0);        ( 459825.0, 3753067.0,     253.6,     253.6,       0.0);
    ( 459810.4, 3753058.9,     253.5,     253.5,       0.0);        ( 459673.0, 3752959.9,     252.4,     252.4,       0.0);
    ( 459662.6, 3752973.3,     252.2,     252.2,       0.0);        ( 459795.2, 3753048.8,     253.4,     253.4,       0.0);
    ( 459652.8, 3752988.3,     252.0,     252.0,       0.0);        ( 459774.8, 3753034.9,     253.3,     253.3,       0.0);
    ( 459729.3, 3752971.3,     253.3,     253.3,       0.0);        ( 459918.1, 3753013.3,     256.6,     256.6,       0.0);
    ( 459911.2, 3753039.4,     255.9,     255.9,       0.0);        ( 459897.5, 3753030.4,     255.8,     255.8,       0.0);
    ( 459881.8, 3753019.8,     255.6,     255.6,       0.0);        ( 459760.0, 3752991.3,     253.7,     253.7,       0.0);
    ( 459746.3, 3752981.6,     253.5,     253.5,       0.0);        ( 459850.4, 3753000.0,     255.3,     255.3,       0.0);
    ( 459838.1, 3752990.5,     255.2,     255.2,       0.0);        ( 459821.5, 3752979.9,     255.1,     255.1,       0.0);
    ( 459775.6, 3753001.3,     253.9,     253.9,       0.0);        ( 459791.6, 3753011.5,     254.0,     254.0,       0.0);
    ( 459866.2, 3753010.8,     255.5,     255.5,       0.0);        ( 459811.3, 3753021.9,     254.2,     254.2,       0.0);
    ( 459826.4, 3753033.0,     254.3,     254.3,       0.0);        ( 459841.0, 3753044.0,     254.4,     254.4,       0.0);
    ( 459714.2, 3752961.8,     253.1,     253.1,       0.0);        ( 459855.6, 3753053.7,     254.5,     254.5,       0.0);
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                                   *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   rivr8.sfc                                                                            Met Version:  14134
  Profile file:   rivr8.pfl
  Surface format: FREE
  Profile format: FREE
  Surface station no.:        0                  Upper air station no.:     3190
                 Name: RIVERSIDE                                  Name: MIRAMAR
                 Year:   2008                                     Year:   2008

First 24 hours of scalar data
YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS    WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
08 01 01   1 01  -64.0  0.616 -9.000 -9.000 -999. 1157.    319.6  0.31   1.00   1.00    5.40   27.    9.1  287.5    5.5
08 01 01   1 02  -54.0  0.502 -9.000 -9.000 -999.  866.    204.9  0.31   1.00   1.00    4.50   40.    9.1  287.5    5.5
08 01 01   1 03  -16.4  0.152 -9.000 -9.000 -999.  347.     18.8  0.31   1.00   1.00    2.20   62.    9.1  287.0    5.5
08 01 01   1 04 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.31   1.00   1.00    3.10   67.    9.1  287.0    5.5
08 01 01   1 05 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.31   1.00   1.00    4.90   96.    9.1  286.4    5.5
08 01 01   1 06 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.31   1.00   1.00    3.10  342.    9.1  286.4    5.5
08 01 01   1 07 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.31   1.00   1.00    4.00   38.    9.1  287.0    5.5
08 01 01   1 08  -35.7  0.448 -9.000 -9.000 -999.  719.    220.9  0.31   1.00   0.53    4.00   62.    9.1  287.0    5.5
08 01 01   1 09   26.7  0.649  0.357  0.005   59. 1253.   -895.5  0.31   1.00   0.32    5.40  294.    9.1  288.1    5.5
08 01 01   1 10   76.5  0.503  0.700  0.009  157.  879.   -146.3  0.31   1.00   0.25    4.00   42.    9.1  289.2    5.5
08 01 01   1 11  123.5  0.418  1.124  0.012  404.  655.    -51.7  0.31   1.00   0.22    3.10   30.    9.1  290.9    5.5
08 01 01   1 12  130.9  0.715  1.311  0.005  605. 1451.   -245.0  0.31   1.00   0.21    5.80   37.    9.1  290.9    5.5
08 01 01   1 13   81.1  0.560  1.174  0.006  701. 1033.   -189.8  0.31   1.00   0.21    4.50    4.    9.1  290.9    5.5
08 01 01   1 14   76.4  0.604  1.171  0.005  739. 1124.   -252.5  0.31   1.00   0.23    4.90   13.    9.1  290.9    5.5
08 01 01   1 15   52.3  0.805  1.043  0.005  762. 1730.   -875.8  0.31   1.00   0.26    6.70   39.    9.1  290.9    5.5
08 01 01   1 16   11.1  0.377  0.624  0.011  767.  800.   -422.2  0.31   1.00   0.35    3.10  346.    9.1  290.4    5.5
08 01 01   1 17  -43.3  0.441 -9.000 -9.000 -999.  705.    173.6  0.31   1.00   0.63    4.00    9.    9.1  290.4    5.5
08 01 01   1 18  -29.0  0.400 -9.000 -9.000 -999.  608.    192.9  0.31   1.00   1.00    3.60   45.    9.1  289.9    5.5
08 01 01   1 19  -49.6  0.505 -9.000 -9.000 -999.  860.    227.3  0.31   1.00   1.00    4.50   25.    9.1  289.9    5.5
08 01 01   1 20  -64.0  0.730 -9.000 -9.000 -999. 1496.    533.1  0.31   1.00   1.00    6.30   60.    9.1  289.9    5.5
08 01 01   1 21  -29.1  0.400 -9.000 -9.000 -999.  736.    192.1  0.31   1.00   1.00    3.60  238.    9.1  288.8    5.5
08 01 01   1 22  -41.2  0.562 -9.000 -9.000 -999. 1010.    378.5  0.31   1.00   1.00    4.90   87.    9.1  287.5    5.5
08 01 01   1 23  -53.8  0.733 -9.000 -9.000 -999. 1504.    642.6  0.31   1.00   1.00    6.30   95.    9.1  287.0    5.5
08 01 01   1 24  -29.5  0.399 -9.000 -9.000 -999.  738.    189.5  0.31   1.00   1.00    3.60   37.    9.1  285.4    5.5


First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
08 01 01 01    5.5 0 -999.  -99.00   287.6   99.0  -99.00  -99.00
08 01 01 01    9.1 1   27.    5.40  -999.0   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
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**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOXICS IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR,	YR,	ZELEV,	ZHILL,	ZFLAG)	OF TYPE	NETWORK GRID-ID
EB91_01	HIGH	1ST HIGH VALUE IS	71.09508	ON 12071301: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_02	HIGH	1ST HIGH VALUE IS	66.96138	ON 12071301: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_03	HIGH	1ST HIGH VALUE IS	69.11663	ON 12071301: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_04	HIGH	1ST HIGH VALUE IS	71.93025	ON 12071301: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_05	HIGH	1ST HIGH VALUE IS	75.22528	ON 08082420: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_06	HIGH	1ST HIGH VALUE IS	79.35102	ON 08082420: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_07	HIGH	1ST HIGH VALUE IS	83.67315	ON 08082420: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_08	HIGH	1ST HIGH VALUE IS	87.99517	ON 08082420: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_09	HIGH	1ST HIGH VALUE IS	92.10355	ON 08081422: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_10	HIGH	1ST HIGH VALUE IS	97.40993	ON 08081422: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_11	HIGH	1ST HIGH VALUE IS	100.99249	ON 08081422: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_12	HIGH	1ST HIGH VALUE IS	105.39554	ON 12091120: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_13	HIGH	1ST HIGH VALUE IS	111.78301	ON 08061420: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_14	HIGH	1ST HIGH VALUE IS	120.30578	ON 08061420: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_15	HIGH	1ST HIGH VALUE IS	126.97273	ON 08061420: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_16	HIGH	1ST HIGH VALUE IS	133.85195	ON 08061420: AT (	459673.01,	3752959.93,	252.44,	252.44,	0.00)	DC	
EB91_17	HIGH	1ST HIGH VALUE IS	144.67941	ON 10081920: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_18	HIGH	1ST HIGH VALUE IS	154.76847	ON 10081920: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
EB91_19	HIGH	1ST HIGH VALUE IS	165.48782	ON 10081920: AT (	459673.01,	3752959.93,	252.44,	252.44,	0.00)	DC	
EB91_20	HIGH	1ST HIGH VALUE IS	177.58829	ON 10081920: AT (	459673.01,	3752959.93,	252.44,	252.44,	0.00)	DC	
EB91_21	HIGH	1ST HIGH VALUE IS	194.02286	ON 10081920: AT (	459662.62,	3752973.31,	252.21,	252.21,	0.00)	DC	
EB91_22	HIGH	1ST HIGH VALUE IS	211.43208	ON 10081920: AT (	459662.62,	3752973.31,	252.21,	252.21,	0.00)	DC	
EB91_23	HIGH	1ST HIGH VALUE IS	233.96922	ON 10081920: AT (	459652.79,	3752988.29,	251.96,	251.96,	0.00)	DC	
EB91_24	HIGH	1ST HIGH VALUE IS	258.81581	ON 10092824: AT (	459652.79,	3752988.29,	251.96,	251.96,	0.00)	DC	
EB91_25	HIGH	1ST HIGH VALUE IS	292.21124	ON 10081920: AT (	459645.15,	3753002.26,	251.74,	251.74,	0.00)	DC	

**MODELOPTs: RegDFAULT CONC   ELEV   FLGPOL   URBAN

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOXICS   IN MICROGRAMS/M**3   **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
EB91_26	HIGH	1ST HIGH VALUE IS	330.29642	ON 10092824: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
EB91_27	HIGH	1ST HIGH VALUE IS	373.60874	ON 09070920: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
EB91_28	HIGH	1ST HIGH VALUE IS	426.18884	ON 08082820: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
EB91_29	HIGH	1ST HIGH VALUE IS	490.48914	ON 10080319: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
EB91_30	HIGH	1ST HIGH VALUE IS	569.12689	ON 08080421: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
EB91_31	HIGH	1ST HIGH VALUE IS	658.01200	ON 08090321: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
EB91_32	HIGH	1ST HIGH VALUE IS	764.41847	ON 12091021: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
EB91_33	HIGH	1ST HIGH VALUE IS	832.48688	ON 09083121: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
EB91_34	HIGH	1ST HIGH VALUE IS	891.61994	ON 11102508: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
EB91_35	HIGH	1ST HIGH VALUE IS	687.13172	ON 11102508: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
EB91_36	HIGH	1ST HIGH VALUE IS	786.37222	ON 11102508: AT (	459691.27, 3753026.45, 251.96, 251.96, 0.00)	DC	
EB91_37	HIGH	1ST HIGH VALUE IS	747.93115	ON 11102508: AT (	459705.46, 3753036.04, 252.06, 252.06, 0.00)	DC	
EB91_38	HIGH	1ST HIGH VALUE IS	703.99273	ON 11102508: AT (	459737.90, 3753055.65, 252.30, 252.30, 0.00)	DC	
EB91_39	HIGH	1ST HIGH VALUE IS	721.77401	ON 11102508: AT (	459751.38, 3753065.41, 252.36, 252.36, 0.00)	DC	
EB91_40	HIGH	1ST HIGH VALUE IS	614.12606	ON 10061906: AT (	459737.90, 3753055.65, 252.30, 252.30, 0.00)	DC	
EB91_41	HIGH	1ST HIGH VALUE IS	693.26216	ON 11102508: AT (	459804.42, 3753102.28, 252.50, 252.50, 0.00)	DC	
EB91_42	HIGH	1ST HIGH VALUE IS	702.61655	ON 11102508: AT (	459820.09, 3753109.07, 252.59, 252.59, 0.00)	DC	
EB91_43	HIGH	1ST HIGH VALUE IS	666.75010	ON 11102508: AT (	459851.28, 3753129.86, 252.71, 252.71, 0.00)	DC	
EB91_44	HIGH	1ST HIGH VALUE IS	643.45775	ON 11102508: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
EB91_45	HIGH	1ST HIGH VALUE IS	664.15500	ON 11102508: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
EB91_46	HIGH	1ST HIGH VALUE IS	598.78517	ON 10061906: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
EB91_47	HIGH	1ST HIGH VALUE IS	570.62234	ON 11073110: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
EB91_48	HIGH	1ST HIGH VALUE IS	470.79435	ON 11060807: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
EB91_49	HIGH	1ST HIGH VALUE IS	395.64330	ON 10112824: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
EB91_50	HIGH	1ST HIGH VALUE IS	330.92820	ON 11012224: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	

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                                                 *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***

                                   ** CONC OF TOXICS   IN MICROGRAMS/M**3                          **

                                                   DATE                                                                         NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

EB91_51  HIGH   1ST HIGH VALUE IS     280.93096  ON 10112822: AT (  459874.98,  3753148.83,   252.67,    252.67,    0.00)  DC
EB91_52  HIGH   1ST HIGH VALUE IS     246.41871  ON 10112822: AT (  459874.98,  3753148.83,   252.67,    252.67,    0.00)  DC
EB91_53  HIGH   1ST HIGH VALUE IS     229.15328  ON 10093023: AT (  459937.08,  3753060.31,   256.19,    256.19,    0.00)  DC
EB91_54  HIGH   1ST HIGH VALUE IS     221.25390  ON 10093023: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_55  HIGH   1ST HIGH VALUE IS     205.54776  ON 08082424: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_56  HIGH   1ST HIGH VALUE IS     193.27638  ON 10092621: AT (  459937.08,  3753060.31,   256.19,    256.19,    0.00)  DC
EB91_57  HIGH   1ST HIGH VALUE IS     183.26955  ON 10092621: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_58  HIGH   1ST HIGH VALUE IS     164.84314  ON 10040704: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_59  HIGH   1ST HIGH VALUE IS     155.86695  ON 12080223: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_60  HIGH   1ST HIGH VALUE IS     144.71254  ON 09021920: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_61  HIGH   1ST HIGH VALUE IS     138.94876  ON 08101422: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_62  HIGH   1ST HIGH VALUE IS     131.56138  ON 08101422: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_63  HIGH   1ST HIGH VALUE IS     122.37222  ON 11120123: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_64  HIGH   1ST HIGH VALUE IS     116.62167  ON 10040703: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_65  HIGH   1ST HIGH VALUE IS     114.03059  ON 10040703: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_66  HIGH   1ST HIGH VALUE IS     109.88738  ON 10040703: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_67  HIGH   1ST HIGH VALUE IS     107.45286  ON 08111721: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_68  HIGH   1ST HIGH VALUE IS     104.21105  ON 08102223: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_69  HIGH   1ST HIGH VALUE IS      99.01044  ON 08102223: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_70  HIGH   1ST HIGH VALUE IS      85.45940  ON 09051723: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_71  HIGH   1ST HIGH VALUE IS      71.94471  ON 09051723: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_72  HIGH   1ST HIGH VALUE IS      68.30636  ON 08121707: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_73  HIGH   1ST HIGH VALUE IS      66.06617  ON 08121707: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_74  HIGH   1ST HIGH VALUE IS      63.37761  ON 08121707: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
EB91_75  HIGH   1ST HIGH VALUE IS      61.69128  ON 09092222: AT (  459949.25,  3753041.05,   256.83,    256.83,    0.00)  DC
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**MODELOPTs: RegDFAULT CONC   ELEV   FLGPOL   URBAN

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOXICS   IN MICROGRAMS/M**3 **

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                                                   DATE                                                                        NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)            RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

EB91_76  HIGH   1ST HIGH VALUE IS      59.99218  ON 09092222: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
EB91_77  HIGH   1ST HIGH VALUE IS      57.99520  ON 09092222: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
EB91_78  HIGH   1ST HIGH VALUE IS      56.06960  ON 09092222: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_01   HIGH   1ST HIGH VALUE IS      59.90142  ON 09092221: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_02   HIGH   1ST HIGH VALUE IS      62.28442  ON 09092221: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_03   HIGH   1ST HIGH VALUE IS      64.53667  ON 09092221: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_04   HIGH   1ST HIGH VALUE IS      67.69875  ON 09092221: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_05   HIGH   1ST HIGH VALUE IS      71.54608  ON 09092221: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_06   HIGH   1ST HIGH VALUE IS      74.95386  ON 09092221: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_07   HIGH   1ST HIGH VALUE IS      79.89328  ON 09092221: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_08   HIGH   1ST HIGH VALUE IS      85.02655  ON 09092221: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_09   HIGH   1ST HIGH VALUE IS      91.81402  ON 09092222: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_10   HIGH   1ST HIGH VALUE IS      98.30830  ON 09092222: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_11   HIGH   1ST HIGH VALUE IS     103.10297  ON 09092222: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_12   HIGH   1ST HIGH VALUE IS     106.76672  ON 09092222: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_13   HIGH   1ST HIGH VALUE IS     110.18507  ON 09092222: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_14   HIGH   1ST HIGH VALUE IS     112.73741  ON 09092222: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_15   HIGH   1ST HIGH VALUE IS     115.35643  ON 10010922: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_16   HIGH   1ST HIGH VALUE IS     118.09235  ON 09051723: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_17   HIGH   1ST HIGH VALUE IS     125.83402  ON 08102223: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_18   HIGH   1ST HIGH VALUE IS     135.04784  ON 08102223: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_19   HIGH   1ST HIGH VALUE IS     143.04463  ON 08111721: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_20   HIGH   1ST HIGH VALUE IS     153.19216  ON 10040703: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_21   HIGH   1ST HIGH VALUE IS     162.08582  ON 10040703: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
IND_22   HIGH   1ST HIGH VALUE IS     182.84545  ON 08101422: AT (  459949.25,  3753041.05,   256.83,    256.83,     0.00)  DC
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**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOXICS IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
IND_23	HIGH	1ST HIGH VALUE IS	201.87858	ON 08101422: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
IND_24	HIGH	1ST HIGH VALUE IS	221.15625	ON 12080223: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
IND_25	HIGH	1ST HIGH VALUE IS	245.50350	ON 10092621: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
IND_26	HIGH	1ST HIGH VALUE IS	271.54646	ON 10092621: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
IND_27	HIGH	1ST HIGH VALUE IS	301.94559	ON 09082522: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
IND_28	HIGH	1ST HIGH VALUE IS	366.38954	ON 10010201: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
IND_29	HIGH	1ST HIGH VALUE IS	478.82334	ON 10010201: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
IND_30	HIGH	1ST HIGH VALUE IS	643.67889	ON 10112905: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
IND_31	HIGH	1ST HIGH VALUE IS	976.10307	ON 10112822: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
IND_32	HIGH	1ST HIGH VALUE IS	1657.28661	ON 12070106: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
IND_33	HIGH	1ST HIGH VALUE IS	3278.02027	ON 11102508: AT (	459874.98, 3753148.83, 252.67, 252.67, 0.00)	DC	
IND_34	HIGH	1ST HIGH VALUE IS	2650.56006	ON 10061906: AT (	459851.28, 3753129.86, 252.71, 252.71, 0.00)	DC	
IND_35	HIGH	1ST HIGH VALUE IS	3057.98931	ON 11102508: AT (	459836.65, 3753118.57, 252.74, 252.74, 0.00)	DC	
IND_36	HIGH	1ST HIGH VALUE IS	3199.59191	ON 11102508: AT (	459820.09, 3753109.07, 252.59, 252.59, 0.00)	DC	
IND_37	HIGH	1ST HIGH VALUE IS	2889.86847	ON 11111816: AT (	459804.42, 3753102.28, 252.50, 252.50, 0.00)	DC	
IND_38	HIGH	1ST HIGH VALUE IS	2289.99334	ON 11073110: AT (	459751.38, 3753065.41, 252.36, 252.36, 0.00)	DC	
IND_39	HIGH	1ST HIGH VALUE IS	3575.09577	ON 11102508: AT (	459751.38, 3753065.41, 252.36, 252.36, 0.00)	DC	
IND_40	HIGH	1ST HIGH VALUE IS	3413.38737	ON 11102508: AT (	459721.75, 3753045.01, 252.21, 252.21, 0.00)	DC	
IND_41	HIGH	1ST HIGH VALUE IS	3840.32388	ON 11102508: AT (	459705.46, 3753036.04, 252.06, 252.06, 0.00)	DC	
IND_42	HIGH	1ST HIGH VALUE IS	3225.16542	ON 11111816: AT (	459691.27, 3753026.45, 251.96, 251.96, 0.00)	DC	
IND_43	HIGH	1ST HIGH VALUE IS	2063.50696	ON 10061906: AT (	459652.79, 3752988.29, 251.96, 251.96, 0.00)	DC	
IND_44	HIGH	1ST HIGH VALUE IS	3769.27078	ON 11071307: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
IND_45	HIGH	1ST HIGH VALUE IS	1659.03560	ON 10090707: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
IND_46	HIGH	1ST HIGH VALUE IS	1001.78382	ON 11060907: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
IND_47	HIGH	1ST HIGH VALUE IS	682.05411	ON 11060907: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	

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**MODELOPTs:   RegDFAULT CONC      ELEV      FLGPOL    URBAN

                                                  *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***

                                     ** CONC OF TOXICS   IN MICROGRAMS/M**3                          **

                                                   DATE                                                                 NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)            RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)   OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

IND_48   HIGH   1ST HIGH VALUE IS     490.58647  ON 11060907: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC
IND_49   HIGH   1ST HIGH VALUE IS     383.12521  ON 11060907: AT (  459652.79,  3752988.29,   251.96,   251.96,    0.00)  DC
IND_50   HIGH   1ST HIGH VALUE IS     306.13140  ON 11060907: AT (  459652.79,  3752988.29,   251.96,   251.96,    0.00)  DC
IND_51   HIGH   1ST HIGH VALUE IS     246.39516  ON 11060907: AT (  459652.79,  3752988.29,   251.96,   251.96,    0.00)  DC
IND_52   HIGH   1ST HIGH VALUE IS     207.35069  ON 11060907: AT (  459662.62,  3752973.31,   252.21,   252.21,    0.00)  DC
IND_53   HIGH   1ST HIGH VALUE IS     176.59940  ON 11060907: AT (  459662.62,  3752973.31,   252.21,   252.21,    0.00)  DC
IND_54   HIGH   1ST HIGH VALUE IS     149.96439  ON 11060907: AT (  459662.62,  3752973.31,   252.21,   252.21,    0.00)  DC
IND_55   HIGH   1ST HIGH VALUE IS     131.18106  ON 11060907: AT (  459673.01,  3752959.93,   252.44,   252.44,    0.00)  DC
IND_56   HIGH   1ST HIGH VALUE IS     115.52595  ON 11060907: AT (  459673.01,  3752959.93,   252.44,   252.44,    0.00)  DC
IND_57   HIGH   1ST HIGH VALUE IS     101.88443  ON 11060907: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_58   HIGH   1ST HIGH VALUE IS      99.89928  ON 12091120: AT (  459821.49,  3752979.90,   255.05,   255.05,    0.00)  DC
IND_59   HIGH   1ST HIGH VALUE IS      97.60232  ON 08081422: AT (  459821.49,  3752979.90,   255.05,   255.05,    0.00)  DC
IND_60   HIGH   1ST HIGH VALUE IS      94.04786  ON 08082420: AT (  459821.49,  3752979.90,   255.05,   255.05,    0.00)  DC
IND_61   HIGH   1ST HIGH VALUE IS      91.12217  ON 08082420: AT (  459821.49,  3752979.90,   255.05,   255.05,    0.00)  DC
IND_62   HIGH   1ST HIGH VALUE IS      88.11155  ON 08082420: AT (  459821.49,  3752979.90,   255.05,   255.05,    0.00)  DC
IND_63   HIGH   1ST HIGH VALUE IS      86.70790  ON 10080219: AT (  459729.28,  3752971.26,   253.26,   253.26,    0.00)  DC
IND_64   HIGH   1ST HIGH VALUE IS      87.16928  ON 10080219: AT (  459714.21,  3752961.75,   253.09,   253.09,    0.00)  DC
IND_65   HIGH   1ST HIGH VALUE IS      88.65202  ON 10080219: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_66   HIGH   1ST HIGH VALUE IS      89.80768  ON 10080219: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_67   HIGH   1ST HIGH VALUE IS      88.40399  ON 10092421: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_68   HIGH   1ST HIGH VALUE IS      86.14064  ON 10092421: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_69   HIGH   1ST HIGH VALUE IS      82.00167  ON 10092421: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_70   HIGH   1ST HIGH VALUE IS      79.86482  ON 08070823: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_71   HIGH   1ST HIGH VALUE IS      77.01402  ON 08070823: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_72   HIGH   1ST HIGH VALUE IS      73.93129  ON 08070823: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
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**MODELOPTs:   RegDFAULT CONC      ELEV      FLGPOL    URBAN

                                    *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***

                             ** CONC OF TOXICS   IN MICROGRAMS/M**3                            **

                                              DATE                                                                   NETWORK
GROUP ID                         AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

IND_73   HIGH   1ST HIGH VALUE IS      70.51697  ON 08070823: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_74   HIGH   1ST HIGH VALUE IS      67.18427  ON 08070823: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_75   HIGH   1ST HIGH VALUE IS      64.57971  ON 08072021: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_76   HIGH   1ST HIGH VALUE IS      63.72827  ON 08072021: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_77   HIGH   1ST HIGH VALUE IS      63.73879  ON 08081324: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
IND_78   HIGH   1ST HIGH VALUE IS      63.26418  ON 08081324: AT (  459683.32,  3752944.96,   252.74,   252.74,    0.00)  DC
RR_001   HIGH   1ST HIGH VALUE IS      25.80031  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_002   HIGH   1ST HIGH VALUE IS      26.62246  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_003   HIGH   1ST HIGH VALUE IS      27.44481  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_004   HIGH   1ST HIGH VALUE IS      28.25435  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_005   HIGH   1ST HIGH VALUE IS      29.06217  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_006   HIGH   1ST HIGH VALUE IS      29.86631  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_007   HIGH   1ST HIGH VALUE IS      30.65967  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_008   HIGH   1ST HIGH VALUE IS      31.43773  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_009   HIGH   1ST HIGH VALUE IS      32.19271  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_010   HIGH   1ST HIGH VALUE IS      32.91770  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_011   HIGH   1ST HIGH VALUE IS      33.60265  ON 11122102: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_012   HIGH   1ST HIGH VALUE IS      34.58974  ON 12040703: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_013   HIGH   1ST HIGH VALUE IS      35.87740  ON 12040703: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_014   HIGH   1ST HIGH VALUE IS      37.20857  ON 11012405: AT (  459926.26,  3753074.62,   255.66,   255.66,    0.00)  DC
RR_015   HIGH   1ST HIGH VALUE IS      38.93764  ON 11012405: AT (  459937.08,  3753060.31,   256.19,   256.19,    0.00)  DC
RR_016   HIGH   1ST HIGH VALUE IS      40.63825  ON 11012405: AT (  459937.08,  3753060.31,   256.19,   256.19,    0.00)  DC
RR_017   HIGH   1ST HIGH VALUE IS      42.40222  ON 11012405: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_018   HIGH   1ST HIGH VALUE IS      44.49645  ON 11012405: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
RR_019   HIGH   1ST HIGH VALUE IS      46.54874  ON 11012405: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
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                                                  *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***

                                  ** CONC OF TOXICS   IN MICROGRAMS/M**3                          **

                                                        DATE                                                                 NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

RR_020   HIGH   1ST HIGH VALUE IS      48.51851  ON 11012405: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_021   HIGH   1ST HIGH VALUE IS      50.52532  ON 11012405: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_022   HIGH   1ST HIGH VALUE IS      52.64069  ON 11012405: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_023   HIGH   1ST HIGH VALUE IS      54.77662  ON 11012405: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_024   HIGH   1ST HIGH VALUE IS      56.92651  ON 11012405: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_025   HIGH   1ST HIGH VALUE IS      59.26402  ON 11012405: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_026   HIGH   1ST HIGH VALUE IS      62.80358  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_027   HIGH   1ST HIGH VALUE IS      66.72310  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_028   HIGH   1ST HIGH VALUE IS      70.99499  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_029   HIGH   1ST HIGH VALUE IS      75.64237  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_030   HIGH   1ST HIGH VALUE IS      80.71671  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_031   HIGH   1ST HIGH VALUE IS      86.25267  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_032   HIGH   1ST HIGH VALUE IS      92.31515  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_033   HIGH   1ST HIGH VALUE IS      98.95521  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_034   HIGH   1ST HIGH VALUE IS     106.20244  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_035   HIGH   1ST HIGH VALUE IS     114.15813  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_036   HIGH   1ST HIGH VALUE IS     122.87794  ON 12122001: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_037   HIGH   1ST HIGH VALUE IS     132.66298  ON 12122024: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_038   HIGH   1ST HIGH VALUE IS     147.64542  ON 12122024: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_039   HIGH   1ST HIGH VALUE IS     164.32192  ON 12122024: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_040   HIGH   1ST HIGH VALUE IS     183.01289  ON 12122024: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_041   HIGH   1ST HIGH VALUE IS     203.21486  ON 12122024: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_042   HIGH   1ST HIGH VALUE IS     224.77529  ON 12122024: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_043   HIGH   1ST HIGH VALUE IS     246.23602  ON 12122024: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC

RR_044   HIGH   1ST HIGH VALUE IS     294.11927  ON 12111201: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
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**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOXICS IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
RR_045	HIGH	1ST HIGH VALUE IS	350.02577	ON 12111201: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
RR_046	HIGH	1ST HIGH VALUE IS	406.97582	ON 12121823: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
RR_047	HIGH	1ST HIGH VALUE IS	491.78766	ON 12102008: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
RR_048	HIGH	1ST HIGH VALUE IS	594.92640	ON 12110208: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
RR_049	HIGH	1ST HIGH VALUE IS	888.93589	ON 12110208: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
RR_050	HIGH	1ST HIGH VALUE IS	1116.90263	ON 11081107: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
RR_051	HIGH	1ST HIGH VALUE IS	1227.50331	ON 11081207: AT (	459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
RR_052	HIGH	1ST HIGH VALUE IS	1652.18495	ON 12110208: AT (	459918.12, 3753013.28, 256.56, 256.56, 0.00)	DC	
RR_053	HIGH	1ST HIGH VALUE IS	2002.44741	ON 11081207: AT (	459918.12, 3753013.28, 256.56, 256.56, 0.00)	DC	
RR_054	HIGH	1ST HIGH VALUE IS	1952.79930	ON 11071207: AT (	459918.12, 3753013.28, 256.56, 256.56, 0.00)	DC	
RR_055	HIGH	1ST HIGH VALUE IS	1572.53104	ON 09051207: AT (	459918.12, 3753013.28, 256.56, 256.56, 0.00)	DC	
RR_056	HIGH	1ST HIGH VALUE IS	1635.58391	ON 12110208: AT (	459850.36, 3753000.02, 255.33, 255.33, 0.00)	DC	
RR_057	HIGH	1ST HIGH VALUE IS	2067.44955	ON 11081107: AT (	459838.12, 3752990.52, 255.24, 255.24, 0.00)	DC	
RR_058	HIGH	1ST HIGH VALUE IS	2471.39046	ON 12110208: AT (	459821.49, 3752979.90, 255.05, 255.05, 0.00)	DC	
RR_059	HIGH	1ST HIGH VALUE IS	3047.47817	ON 11081207: AT (	459821.49, 3752979.90, 255.05, 255.05, 0.00)	DC	
RR_060	HIGH	1ST HIGH VALUE IS	2589.51796	ON 11071207: AT (	459821.49, 3752979.90, 255.05, 255.05, 0.00)	DC	
RR_061	HIGH	1ST HIGH VALUE IS	1990.98952	ON 09051207: AT (	459821.49, 3752979.90, 255.05, 255.05, 0.00)	DC	
RR_062	HIGH	1ST HIGH VALUE IS	1592.43230	ON 11081107: AT (	459746.33, 3752981.56, 253.54, 253.54, 0.00)	DC	
RR_063	HIGH	1ST HIGH VALUE IS	1786.75558	ON 11081107: AT (	459729.28, 3752971.26, 253.26, 253.26, 0.00)	DC	
RR_064	HIGH	1ST HIGH VALUE IS	2119.38755	ON 12110208: AT (	459714.21, 3752961.75, 253.09, 253.09, 0.00)	DC	
RR_065	HIGH	1ST HIGH VALUE IS	2558.34691	ON 11081207: AT (	459714.21, 3752961.75, 253.09, 253.09, 0.00)	DC	
RR_066	HIGH	1ST HIGH VALUE IS	2949.35010	ON 12110208: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
RR_067	HIGH	1ST HIGH VALUE IS	3608.94290	ON 11081207: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
RR_068	HIGH	1ST HIGH VALUE IS	2903.56690	ON 09051207: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
RR_069	HIGH	1ST HIGH VALUE IS	2004.03804	ON 09051207: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	

**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOXICS IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
RR_070	HIGH	1ST HIGH VALUE IS	1253.17347	ON 09051207: AT (	459673.01,	3752959.93,	252.44,	252.44,	0.00)	DC	
RR_071	HIGH	1ST HIGH VALUE IS	879.76193	ON 09051207: AT (	459662.62,	3752973.31,	252.21,	252.21,	0.00)	DC	
RR_072	HIGH	1ST HIGH VALUE IS	654.57520	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_073	HIGH	1ST HIGH VALUE IS	536.06206	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_074	HIGH	1ST HIGH VALUE IS	447.33757	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_075	HIGH	1ST HIGH VALUE IS	380.09627	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_076	HIGH	1ST HIGH VALUE IS	327.11620	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_077	HIGH	1ST HIGH VALUE IS	283.88095	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_078	HIGH	1ST HIGH VALUE IS	247.72373	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_079	HIGH	1ST HIGH VALUE IS	213.32148	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_080	HIGH	1ST HIGH VALUE IS	185.40027	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_081	HIGH	1ST HIGH VALUE IS	161.78281	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_082	HIGH	1ST HIGH VALUE IS	142.53510	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_083	HIGH	1ST HIGH VALUE IS	126.32029	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_084	HIGH	1ST HIGH VALUE IS	112.33342	ON 11060907: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_085	HIGH	1ST HIGH VALUE IS	100.36100	ON 10070507: AT (	459683.32,	3752944.96,	252.74,	252.74,	0.00)	DC	
RR_086	HIGH	1ST HIGH VALUE IS	92.36906	ON 12081020: AT (	459652.79,	3752988.29,	251.96,	251.96,	0.00)	DC	
RR_087	HIGH	1ST HIGH VALUE IS	86.88102	ON 12071301: AT (	459918.12,	3753013.28,	256.56,	256.56,	0.00)	DC	
RR_088	HIGH	1ST HIGH VALUE IS	84.25557	ON 10080219: AT (	459918.12,	3753013.28,	256.56,	256.56,	0.00)	DC	
RR_089	HIGH	1ST HIGH VALUE IS	82.18371	ON 10080219: AT (	459918.12,	3753013.28,	256.56,	256.56,	0.00)	DC	
RR_090	HIGH	1ST HIGH VALUE IS	79.80276	ON 10080219: AT (	459918.12,	3753013.28,	256.56,	256.56,	0.00)	DC	
RR_091	HIGH	1ST HIGH VALUE IS	77.40976	ON 10080219: AT (	459918.12,	3753013.28,	256.56,	256.56,	0.00)	DC	
RR_092	HIGH	1ST HIGH VALUE IS	74.86094	ON 10092421: AT (	459918.12,	3753013.28,	256.56,	256.56,	0.00)	DC	
RR_093	HIGH	1ST HIGH VALUE IS	72.20692	ON 10092421: AT (	459918.12,	3753013.28,	256.56,	256.56,	0.00)	DC	
RR_094	HIGH	1ST HIGH VALUE IS	70.41898	ON 08070823: AT (	459918.12,	3753013.28,	256.56,	256.56,	0.00)	DC	

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 **MODELOPTs:   RegDFAULT CONC      ELEV      FLGPOL    URBAN

                                                   *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***

                                        ** CONC OF TOXICS   IN MICROGRAMS/M**3                          **

                                                          DATE                                                                      NETWORK
GROUP ID                                 AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

RR_095    HIGH   1ST HIGH VALUE IS      68.44578  ON 08070823: AT (  459918.12,  3753013.28,   256.56,    256.56,    0.00)  DC
RR_096    HIGH   1ST HIGH VALUE IS      66.00429  ON 08072021: AT (  459918.12,  3753013.28,   256.56,    256.56,    0.00)  DC
RR_097    HIGH   1ST HIGH VALUE IS      64.09051  ON 08072021: AT (  459918.12,  3753013.28,   256.56,    256.56,    0.00)  DC
RR_098    HIGH   1ST HIGH VALUE IS      62.95062  ON 08072920: AT (  459918.12,  3753013.28,   256.56,    256.56,    0.00)  DC
RR_099    HIGH   1ST HIGH VALUE IS      62.09256  ON 08072920: AT (  459918.12,  3753013.28,   256.56,    256.56,    0.00)  DC
RR_100    HIGH   1ST HIGH VALUE IS      63.83146  ON 12072020: AT (  459850.36,  3753000.02,   255.33,    255.33,    0.00)  DC
RR_101    HIGH   1ST HIGH VALUE IS      67.02499  ON 12072020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_102    HIGH   1ST HIGH VALUE IS      66.89995  ON 12072020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_103    HIGH   1ST HIGH VALUE IS      66.28653  ON 08080620: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_104    HIGH   1ST HIGH VALUE IS      65.20557  ON 08080620: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_105    HIGH   1ST HIGH VALUE IS      63.28383  ON 08080620: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_106    HIGH   1ST HIGH VALUE IS      61.58648  ON 08081222: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_107    HIGH   1ST HIGH VALUE IS      60.27524  ON 12071222: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_108    HIGH   1ST HIGH VALUE IS      59.05783  ON 10010717: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_109    HIGH   1ST HIGH VALUE IS      57.72079  ON 10010717: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_110    HIGH   1ST HIGH VALUE IS      56.56686  ON 10010717: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_111    HIGH   1ST HIGH VALUE IS      55.49368  ON 12081020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_112    HIGH   1ST HIGH VALUE IS      54.44471  ON 12081020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_113    HIGH   1ST HIGH VALUE IS      53.14954  ON 12081020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_114    HIGH   1ST HIGH VALUE IS      52.01871  ON 12081020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_115    HIGH   1ST HIGH VALUE IS      50.77257  ON 12081020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_116    HIGH   1ST HIGH VALUE IS      49.66045  ON 12081020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_117    HIGH   1ST HIGH VALUE IS      48.54369  ON 12081020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_118    HIGH   1ST HIGH VALUE IS      47.45708  ON 12081020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
RR_119    HIGH   1ST HIGH VALUE IS      46.45788  ON 12081020: AT (  459821.49,  3752979.90,   255.05,    255.05,    0.00)  DC
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**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOXICS IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
RR_120	HIGH	1ST HIGH VALUE IS	45.78993	ON 12080822: AT (	459918.12, 3753013.28, 256.56, 256.56, 0.00)	DC	
WB91_01	HIGH	1ST HIGH VALUE IS	68.89251	ON 12071301: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_02	HIGH	1ST HIGH VALUE IS	69.21257	ON 08082420: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_03	HIGH	1ST HIGH VALUE IS	71.17340	ON 08082420: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_04	HIGH	1ST HIGH VALUE IS	73.86130	ON 08082420: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_05	HIGH	1ST HIGH VALUE IS	76.59085	ON 08082420: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_06	HIGH	1ST HIGH VALUE IS	79.93905	ON 08081422: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_07	HIGH	1ST HIGH VALUE IS	83.29017	ON 08081422: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_08	HIGH	1ST HIGH VALUE IS	86.70138	ON 08081422: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_09	HIGH	1ST HIGH VALUE IS	90.30925	ON 12091120: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_10	HIGH	1ST HIGH VALUE IS	95.62930	ON 12092620: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_11	HIGH	1ST HIGH VALUE IS	101.82018	ON 08061420: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_12	HIGH	1ST HIGH VALUE IS	107.74295	ON 08061420: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_13	HIGH	1ST HIGH VALUE IS	113.11558	ON 08061420: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_14	HIGH	1ST HIGH VALUE IS	118.21921	ON 08061420: AT (	459673.01, 3752959.93, 252.44, 252.44, 0.00)	DC	
WB91_15	HIGH	1ST HIGH VALUE IS	126.74019	ON 10081920: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_16	HIGH	1ST HIGH VALUE IS	134.47526	ON 10081920: AT (	459683.32, 3752944.96, 252.74, 252.74, 0.00)	DC	
WB91_17	HIGH	1ST HIGH VALUE IS	142.15082	ON 10081920: AT (	459673.01, 3752959.93, 252.44, 252.44, 0.00)	DC	
WB91_18	HIGH	1ST HIGH VALUE IS	151.50255	ON 10081920: AT (	459673.01, 3752959.93, 252.44, 252.44, 0.00)	DC	
WB91_19	HIGH	1ST HIGH VALUE IS	163.57359	ON 10081920: AT (	459662.62, 3752973.31, 252.21, 252.21, 0.00)	DC	
WB91_20	HIGH	1ST HIGH VALUE IS	173.82183	ON 10081920: AT (	459662.62, 3752973.31, 252.21, 252.21, 0.00)	DC	
WB91_21	HIGH	1ST HIGH VALUE IS	191.23529	ON 10081920: AT (	459652.79, 3752988.29, 251.96, 251.96, 0.00)	DC	
WB91_22	HIGH	1ST HIGH VALUE IS	206.75009	ON 10081920: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
WB91_23	HIGH	1ST HIGH VALUE IS	227.56827	ON 10081920: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	
WB91_24	HIGH	1ST HIGH VALUE IS	255.35746	ON 10092824: AT (	459645.15, 3753002.26, 251.74, 251.74, 0.00)	DC	

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                                                   *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***

                                     ** CONC OF TOXICS   IN MICROGRAMS/M**3                          **

                                                         DATE                                                                      NETWORK
GROUP ID                                  AVERAGE CONC     (YYMMDDHH)            RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

WB91_25  HIGH   1ST HIGH VALUE IS     304.56276  ON 09080421: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC

WB91_26  HIGH   1ST HIGH VALUE IS     365.05891  ON 08090621: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC

WB91_27  HIGH   1ST HIGH VALUE IS     406.47018  ON 09071021: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC

WB91_28  HIGH   1ST HIGH VALUE IS     460.48709  ON 08071121: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC

WB91_29  HIGH   1ST HIGH VALUE IS     506.83718  ON 09071022: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC

WB91_30  HIGH   1ST HIGH VALUE IS     574.51714  ON 08090321: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC

WB91_31  HIGH   1ST HIGH VALUE IS     646.60208  ON 08100620: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC

WB91_32  HIGH   1ST HIGH VALUE IS     726.63687  ON 08090421: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC

WB91_33  HIGH   1ST HIGH VALUE IS     741.93092  ON 10082121: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC

WB91_34  HIGH   1ST HIGH VALUE IS     709.01813  ON 11102508: AT (  459645.15,  3753002.26,   251.74,   251.74,    0.00)  DC

WB91_35  HIGH   1ST HIGH VALUE IS     544.13065  ON 11111816: AT (  459691.27,  3753026.45,   251.96,   251.96,    0.00)  DC

WB91_36  HIGH   1ST HIGH VALUE IS     598.93234  ON 11102508: AT (  459691.27,  3753026.45,   251.96,   251.96,    0.00)  DC

WB91_37  HIGH   1ST HIGH VALUE IS     563.91356  ON 11102508: AT (  459721.75,  3753045.01,   252.21,   252.21,    0.00)  DC

WB91_38  HIGH   1ST HIGH VALUE IS     566.94684  ON 11102508: AT (  459737.90,  3753055.65,   252.30,   252.30,    0.00)  DC

WB91_39  HIGH   1ST HIGH VALUE IS     541.10453  ON 11102508: AT (  459751.38,  3753065.41,   252.36,   252.36,    0.00)  DC

WB91_40  HIGH   1ST HIGH VALUE IS     488.23012  ON 11111816: AT (  459804.42,  3753102.28,   252.50,   252.50,    0.00)  DC

WB91_41  HIGH   1ST HIGH VALUE IS     580.61734  ON 11102508: AT (  459804.42,  3753102.28,   252.50,   252.50,    0.00)  DC

WB91_42  HIGH   1ST HIGH VALUE IS     542.81839  ON 11102508: AT (  459820.09,  3753109.07,   252.59,   252.59,    0.00)  DC

WB91_43  HIGH   1ST HIGH VALUE IS     566.09241  ON 11102508: AT (  459851.28,  3753129.86,   252.71,   252.71,    0.00)  DC

WB91_44  HIGH   1ST HIGH VALUE IS     568.50898  ON 11102508: AT (  459874.98,  3753148.83,   252.67,   252.67,    0.00)  DC

WB91_45  HIGH   1ST HIGH VALUE IS     479.36278  ON 10020924: AT (  459874.98,  3753148.83,   252.67,   252.67,    0.00)  DC

WB91_46  HIGH   1ST HIGH VALUE IS     477.56271  ON 10061906: AT (  459874.98,  3753148.83,   252.67,   252.67,    0.00)  DC

WB91_47  HIGH   1ST HIGH VALUE IS     451.74121  ON 11073110: AT (  459874.98,  3753148.83,   252.67,   252.67,    0.00)  DC

WB91_48  HIGH   1ST HIGH VALUE IS     397.74917  ON 11060807: AT (  459874.98,  3753148.83,   252.67,   252.67,    0.00)  DC

WB91_49  HIGH   1ST HIGH VALUE IS     323.39973  ON 10040523: AT (  459874.98,  3753148.83,   252.67,   252.67,    0.00)  DC
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**MODELOPTs:   RegDFAULT CONC      ELEV      FLGPOL    URBAN

                                                 *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***

                                   ** CONC OF TOXICS   IN MICROGRAMS/M**3                            **

                                                 DATE                                                                       NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)            RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

WB91_50  HIGH   1ST HIGH VALUE IS     301.46053  ON 10112824: AT (  459874.98,  3753148.83,   252.67,   252.67,    0.00)  DC
WB91_51  HIGH   1ST HIGH VALUE IS     250.20457  ON 10092621: AT (  459874.98,  3753148.83,   252.67,   252.67,    0.00)  DC
WB91_52  HIGH   1ST HIGH VALUE IS     225.45570  ON 10112822: AT (  459874.98,  3753148.83,   252.67,   252.67,    0.00)  DC
WB91_53  HIGH   1ST HIGH VALUE IS     208.59090  ON 09020321: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_54  HIGH   1ST HIGH VALUE IS     198.24767  ON 10093023: AT (  459937.08,  3753060.31,   256.19,   256.19,    0.00)  DC
WB91_55  HIGH   1ST HIGH VALUE IS     189.99481  ON 09082522: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_56  HIGH   1ST HIGH VALUE IS     185.64449  ON 08082424: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_57  HIGH   1ST HIGH VALUE IS     175.94407  ON 10092621: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_58  HIGH   1ST HIGH VALUE IS     166.33026  ON 10092621: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_59  HIGH   1ST HIGH VALUE IS     151.93440  ON 11080705: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_60  HIGH   1ST HIGH VALUE IS     145.70766  ON 12080223: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_61  HIGH   1ST HIGH VALUE IS     136.34471  ON 09021920: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_62  HIGH   1ST HIGH VALUE IS     132.03689  ON 08101422: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_63  HIGH   1ST HIGH VALUE IS     126.40386  ON 08101422: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_64  HIGH   1ST HIGH VALUE IS     118.31017  ON 11120123: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_65  HIGH   1ST HIGH VALUE IS     111.89957  ON 10040703: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_66  HIGH   1ST HIGH VALUE IS     111.04616  ON 10040703: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_67  HIGH   1ST HIGH VALUE IS     106.65355  ON 10040703: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_68  HIGH   1ST HIGH VALUE IS     102.54003  ON 08111721: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_69  HIGH   1ST HIGH VALUE IS      98.57151  ON 08102223: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_70  HIGH   1ST HIGH VALUE IS      82.40238  ON 08102223: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_71  HIGH   1ST HIGH VALUE IS      72.17671  ON 09051723: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_72  HIGH   1ST HIGH VALUE IS      68.49894  ON 09051723: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_73  HIGH   1ST HIGH VALUE IS      64.65000  ON 11110221: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
WB91_74  HIGH   1ST HIGH VALUE IS      61.98446  ON 08121707: AT (  459949.25,  3753041.05,   256.83,   256.83,    0.00)  DC
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**MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOXICS IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
WB91_75	HIGH	1ST HIGH VALUE IS	59.98203	ON 08121707: AT	(459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
WB91_76	HIGH	1ST HIGH VALUE IS	57.61637	ON 08121707: AT	(459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
WB91_77	HIGH	1ST HIGH VALUE IS	56.25354	ON 09092222: AT	(459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	
WB91_78	HIGH	1ST HIGH VALUE IS	55.74237	ON 09092222: AT	(459949.25, 3753041.05, 256.83, 256.83, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

```
*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of          638 Warning Message(s)
A Total of         2006 Informational Message(s)

A Total of        43848 Hours Were Processed

A Total of            7 Calm Hours Identified

A Total of         1999 Missing Hours Identified (  4.56 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
OU W565    1257       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1258       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1259       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1260       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1261       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1262       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1263       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1264       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1265       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1266       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1267       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1268       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1269       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1270       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1271       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1272       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1273       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1274       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1275       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1276       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1277       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1278       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1279       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1280       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1281       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1282       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1283       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1284       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1285       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1286       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1287       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1288       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1289       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1290       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1291       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1292       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1293       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1294       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1295       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1296       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1297       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1298       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1299       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1300       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1301       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1302       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1303       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1304       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1305       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1306       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1307       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1308       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1309       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1310       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1311       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
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OU W565    1313       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1314       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1315       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1316       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1317       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
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OU W565    1834       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1835       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1836       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1837       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1838       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1839       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1840       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1841       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1842       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1843       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1844       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1845       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1846       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1847       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1848       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1849       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1850       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1851       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1852       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1853       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1854       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1855       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1856       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1857       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1858       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1859       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1860       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1861       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1862       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1863       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1864       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1865       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1866       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1867       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1868       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1869       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1870       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1871       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1872       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1873       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1874       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1875       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1876       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1877       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1878       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1879       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1880       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1881       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1882       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1883       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1884       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1885       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
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OU W565    1887       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1888       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1889       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1890       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1891       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1892       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1893       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE
OU W565    1894       PERPLT: Possible Conflict With Dynamically Allocated FUNIT     PLOTFILE

   ************************************
   *** AERMOD Finishes Successfully ***
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```

Appendix C:
Burrowing Owl Habitat Assessment

BERKELEY
CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

May 8, 2017

Mr. Steve Berzansky
BP Partners Riverside, LLC
7111 Indiana Avenue, Suite 300
Riverside California 92508

Subject: Results of Burrowing Owl Habitat Assessment for the Hawthorne School Site, City of Riverside, California (LSA Project No. BPR1601)

Dear Mr. Berzansky:

This report documents the results of a burrowing owl (*Athene cunicularia*) habitat assessment LSA conducted on the 7-acre property (Assessor's Parcel Numbers 233-180-007 and 233-170-001) located at 9170 Indiana Avenue in the City of Riverside, Riverside County, California (attached Figure 1). No burrowing owls or features potentially occupied by burrowing owls occur on the property or on the accessible adjacent open land to the west.

METHODS

The habitat assessment for burrows and owls was conducted in accordance with the MSHCP *Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area* (County of Riverside Environmental Programs Department, March 29, 2006). The survey was conducted by Maria Lum. Table A lists the survey dates, times, and weather conditions.

Table A: Habitat Assessment Dates, Times, and Weather Conditions

Survey	Date (2016)	Time (24-Hour) (start/finish)	Temp. (°F) (start/finish)	Wind (mph)	Cloud Cover
Habitat Assessment	April 4	0900/1000	64	0	0%
Burrowing Owl Focused Survey	Not Required				

The habitat assessment was conducted by walking belt transects throughout the project site and on a portion of the vacant field located on the west side of the project site. Transects spaced approximately 50 feet allowed for 100 percent visual coverage of the ground surface (attached Figure 2). The entire site was examined for suitable habitat conditions, ground squirrel activity, suitable burrows, burrowing owls, and owl sign (e.g., feathers, pellets, whitewash, and prey remnants).

1500 Iowa Avenue, Suite 200, Riverside, California 92507 951.781.9310 www.lsa.net

EXISTING SETTING

The project site is located in a highly developed area of the City of Riverside. It is surrounded by residential development to the north and east, vacant land to the west, and railroad tracks to the south. The western grassy play yard is mowed. The adjacent open parcel located to the west of the project is used as staging area for the road work on Gibson Avenue. The east play yard is unmaintained and disturbed with tall weedy vegetation and mulch. Numerous shade trees, some dying from lack of irrigation, were planted along the fences and next to the school buildings. Most of the property is paved and occupied by school buildings. In the grassy areas, one playground is located next to the railroad tracks and another is located east of the school buildings. Attached Figure 3 shows existing conditions and indicates photograph locations. Site photographs are attached as Figure 4 to show typical conditions of the project.

RESULTS

A list of dominant species occurring on the project is attached. Dominant non-native grassland species include rat-tail fescue (*Festuca myuros*) and mouse barley (*Hordeum murinum*). Tansy mustard (*Descurainia pinnata*) is common in the eastern playground area. Bird species observed during the survey are typical species found in urban areas and consisted of mourning dove (*Zenaida macroura*), European starling (*Sturnus vulgaris*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Carduelis psaltria*). Numerous inactive old nests are in the dying trees along the railroad fence and the east fence. Intact nests, possibly active, are in the walkway awnings and in suitable perches on the school buildings.

One fossorial mammal burrow is outside the project but could not be used by a burrowing owl because the entrance was blocked by chain link fence and surrounded by tall vegetation. No burrowing owls or burrowing owl sign (e.g., whitewash, pellets, scat, tracks, and/or feathers) were observed during the habitat suitability assessment on the project site and adjacent vacant area.

CONCLUSIONS

The project site is developed and paved with unsuitable habitat conditions for burrowing owl due to the presence of several mature ornamental trees, tall dense vegetation, compacted soils, and lack of adjacent foraging grassland areas. No burrows potentially occupied by burrowing owl were found during the initial survey. Therefore, focused burrowing owl surveys are not required for the project because of the unsuitable site conditions. The site is unsuitable for burrowing owls due to lack of foraging areas on site and in the adjacent areas and the numerous buildings and trees that provide cover for avian and mammalian predators and increase risk of predation.

The project must avoid take of nesting birds to comply with California Fish and Game Code Sections 3500–3516 and the Migratory Bird Treaty Reform Act of 2004 (MBTRA) (Pub. L. No. 108-447, 118 Stat. 2809, 3071-72). The regulations are not applicable to European starlings or house sparrows since they are non-native species. LSA suggests the following biological mitigation measure:

Mitigation Measure BIO-1: If project activities are planned during the bird nesting season (February 15 to August 31), nesting bird survey(s) consisting of up to three site visits within the week prior to clearing and demolition activities shall be conducted to ensure birds protected under the MBTA are not disturbed by on-site activities. Any such survey(s) shall be conducted by a qualified biologist. If no active nests are found, no additional measures are required. If active nests are found, the nest locations shall be mapped by the biologist. The nesting bird species will be documented and, to the degree feasible, the nesting stage (e.g., incubation of eggs, feeding of young, near fledging) determined. Based on the species present and surrounding habitat, a no-disturbance buffer shall be established around each active nest. The buffer shall be identified by a qualified biologist and confirmed by the City. No construction or ground disturbance activities shall be conducted within the buffer until the biologist has determined the nest is no longer active and has informed the City and construction supervisor that activities may resume.

Sincerely,

LSA ASSOCIATES, INC.

Maria A. Lum

Maria A. Lum
Associate/Biologist

Attachments: List of Species Observed
Figure 1: Regional and Project Location Map
Figure 2: Project Study Area
Figure 3: Existing Site Conditions Photograph Key Map
Figure 4: Site Photographs

LSA

List of Species Observed at the Hawthorne Project Site, Riverside California on April 4, 2017

Scientific Name	Common Name
MAGNOLIOPHYTA: MAGNOLIOPSIDA	**DICOT FLOWERING PLANTS**
Anacardiaceae	**Sumac family**
Schinus molle (non-native species)	Peruvian peppertree
Bomacaceae	**Baobab family**
Chorisia speciosa (non-native species)	Floss-silk tree
Brassicaceae	**Mustard family**
Sisymbrium irio	London rocket
Fagaceae	**Beech family**
Quercus virginiana (non-native species)	Southern live oak
Moraceae	**Mulberry family**
Morus alba (non-native species)	White mulberry
Sapindaceae	**Soapberry family**
Cupaniopsis anacardioides (non-native species)	Carrotwood
Ulmaceae	**Elm family**
Ulmus parvifolia (non-native species)	Chinese elm
MAGNOLIOPHYTA: LILIOPSIDA	**MONOCOT FLOWERING PLANTS**
Poaceae	**Grass family**
Festuca myrous	rat-tail fescue
Hordeum murinum	mouse barley
REPTILIA	**REPTILES**
Crotaphytidae	**Collared and Leopard Lizards**
Sceloporus occidentalis	Western fence lizard
AVES	**BIRDS**
Columbidae	**Pigeons and Doves**
Zenaida macroura	Mourning dove
Mimidae	**Mockingbirds and Thrashers**
Mimus polyglottos	Northern mockingbird
Sturnidae	**Starlings**
Sturnus vulgaris (non-native species)	European starling
Fringillidae	**Finches**
Carpodacus mexicanus	House finch
Spinus psaltria	Lesser goldfinch

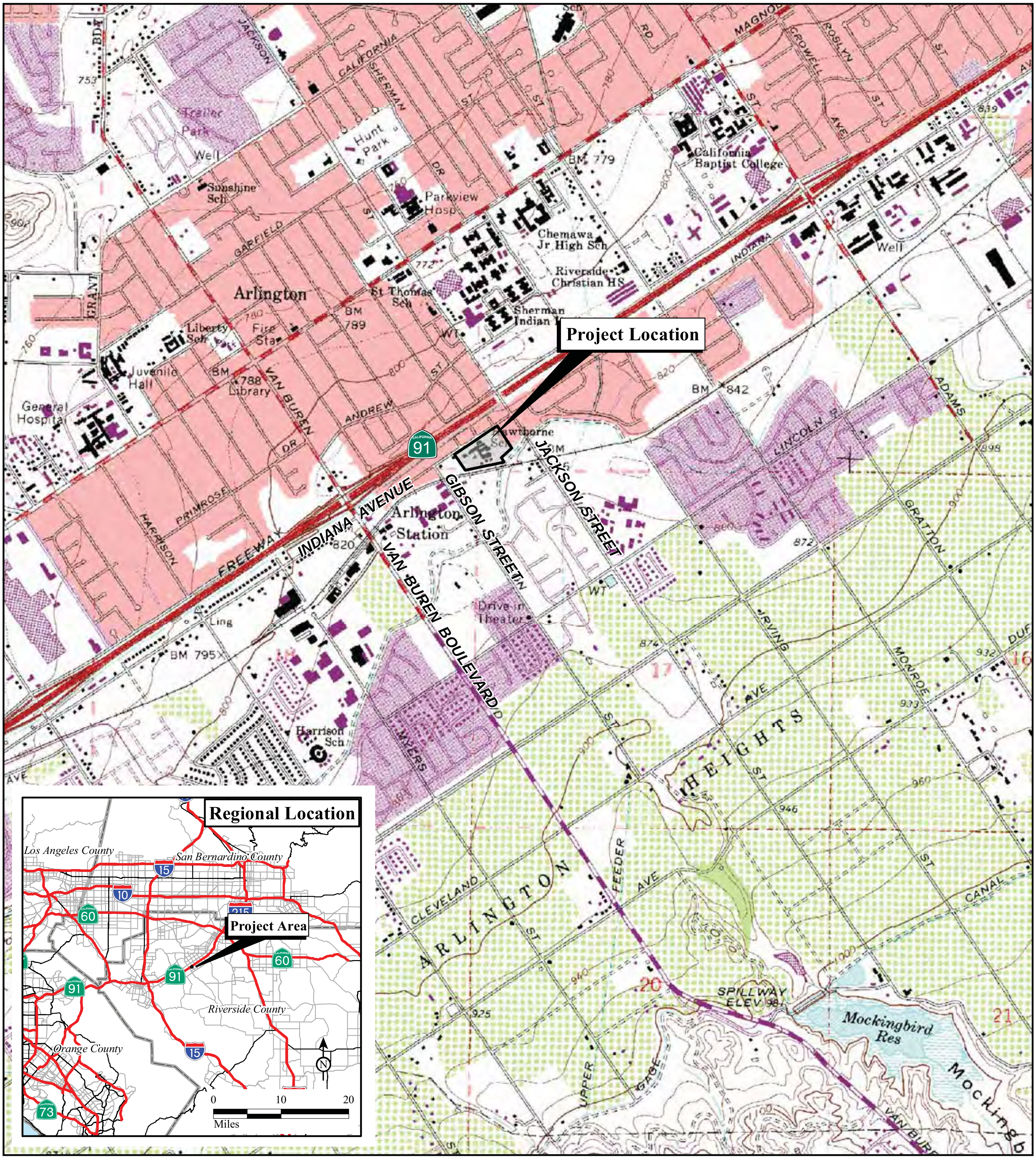

FIGURE 1

0 1000 2000

FEET

SOURCE: USGS 7.5' Quad: Riverside West (80), CA; ESRI Streetmap, 2013/Riverside County, 2015.

Hawthorne

Burrowing Owl Pre-Construction Study

Regional and Project Location

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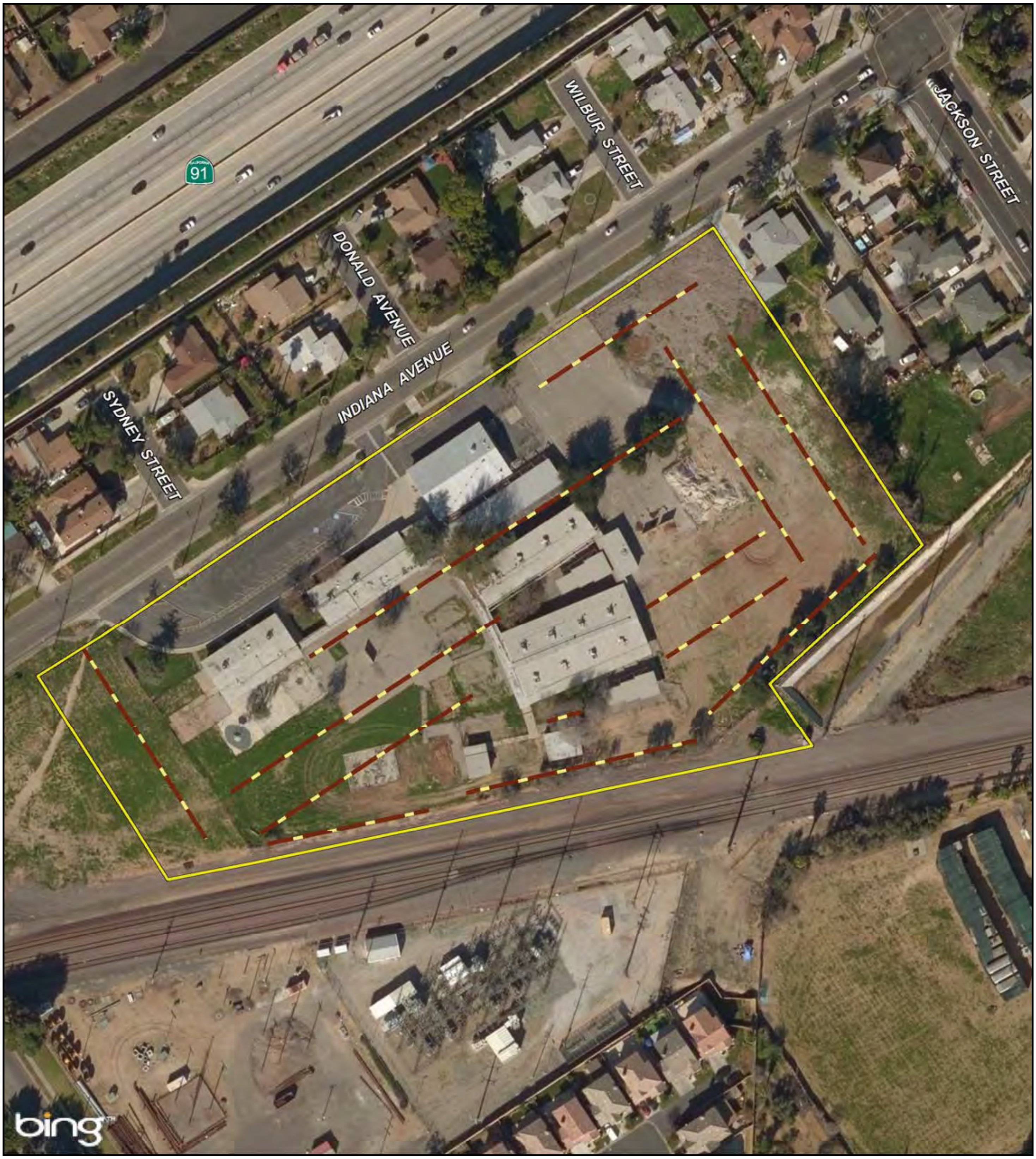

LSA

LEGEND

Burrowing Owl Survey Area

Survey Transects

N

0 70 140

FEET

SOURCE: Bing Aerial, 2016.

FIGURE 2

Hawthorne
Burrowing Owl Pre-Construction Study

Project Study Area

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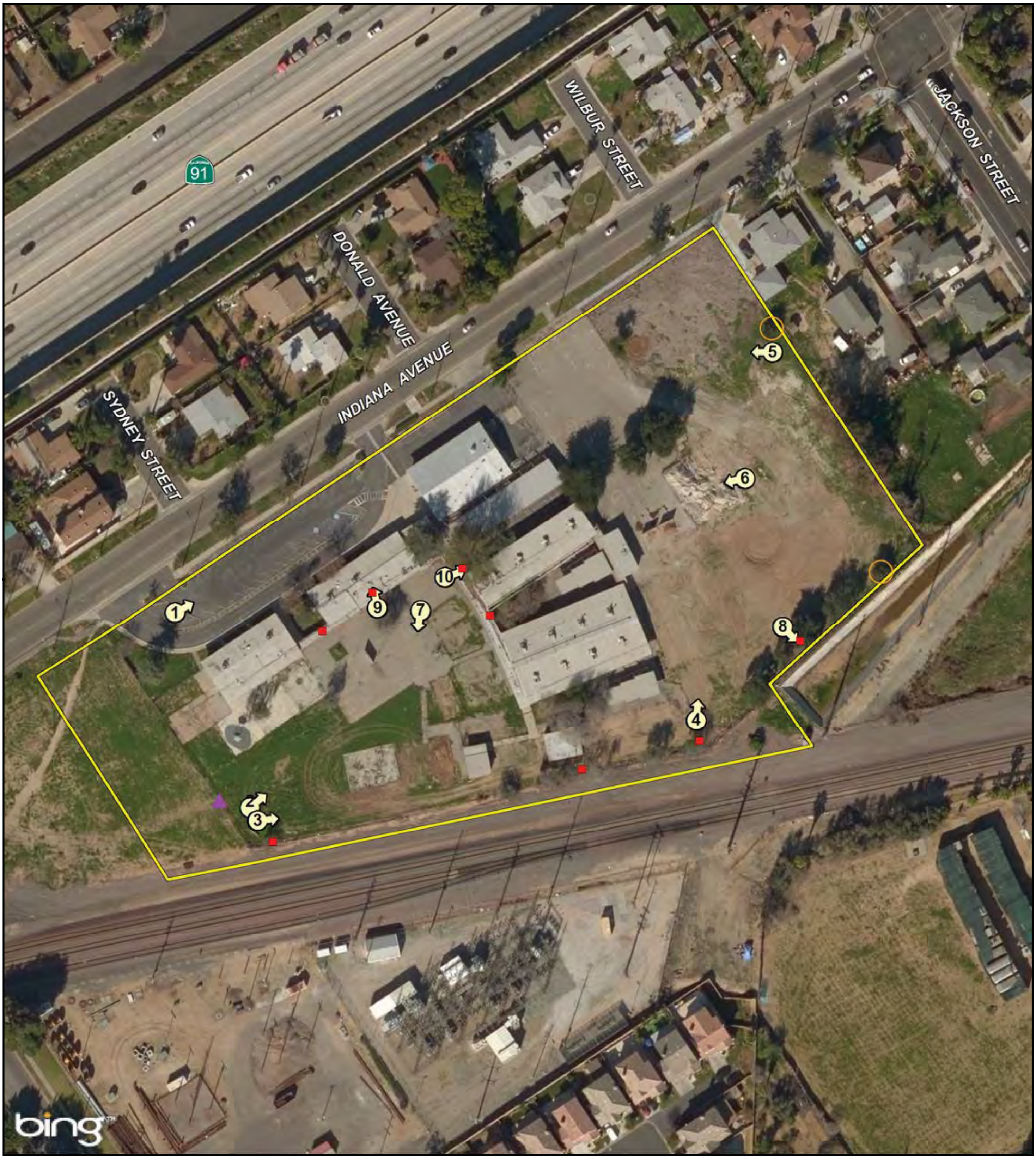

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LEGEND

StudyArea

Bird Nest

Mammal Burrow

Oak Tree

Photograph Location

N

0 70 140
FEET

SOURCE: Bing Aerial, 2016.

FIGURE 3

Hawthorne
Burrowing Owl Pre-Construction Study

Existing Site Conditions
Photograph Key Map

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Photograph 1: *View of school parking lot on Indiana Avenue.*

Photograph 2: *View of flat, compact mowed play yard from the west side of school property.*

Photograph 3: *View of recently mowed grassy play yard on southwest area next to railroad tracks.*

Photograph 4: *View of tall vegetation and dead eucalyptus trees in the east field.*

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FIGURE 4a

Hawthorne
Burrowing Owl Pre-Construction Study

Site Photographs

Photograph 5: *View of the northeast corner of school property with deep wood mulch.*

Photograph 6: *View of large carrotwood trees at paved playground on east side of school buildings.*

Photograph 7: *View of paved playground west of school buildings.*

Photograph 8: *Bird nests were in several trees planted along the south fence.*

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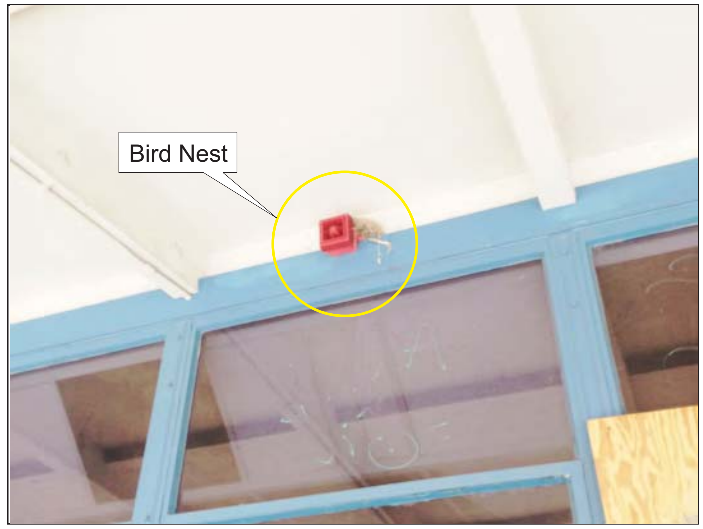
FIGURE 4b

Hawthorne
Burrowing Owl Pre-Construction Study

Site Photographs

Photograph 9: *Bird nests were in several locations in the walkway awnings.*



Photograph 10: *Birds constructed nests outside of school buildings. Nests may also be inside since many windows are broken.*

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FIGURE 4c

Hawthorne
Burrowing Owl Pre-Construction Study

Site Photographs