November 2023 | Initial Study

BUS YARD AT ISAAC L. SOWERS MIDDLE SCHOOL PROJECT

Huntington Beach City School District

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PLACEWORKS

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Abbreviations and Acronyms

AAQS	ambient air quality standards
AB	Assembly Bill
ACM	asbestos-containing materials
ADT	average daily traffic
amsl	above mean sea level
AQMP	air quality management plan
AST	aboveground storage tank
BAU	business as usual
bgs	below ground surface
BMP	best management practices
CAA	Clean Air Act
CAFE	corporate average fuel economy
CalARP	California Accidental Release Prevention Program
CalEMA	California Emergency Management Agency
Cal/EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
Cal/OSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources, Recycling, and Recovery
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDE	California Department of Education
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
cfs	cubic feet per second
CGS	California Geologic Survey
CMP	congestion management program
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level

Abbreviations and Acronyms

CO	carbon monoxide
CO_2e	carbon dioxide equivalent
Corps	US Army Corps of Engineers
CSO	combined sewer overflows
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
EIR	environmental impact report
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	greenhouse gases
GWP	global warming potential
HCM	Highway Capacity Manual
HQTA	high quality transit area
HVAC	heating, ventilating, and air conditioning system
IPCC	Intergovernmental Panel on Climate Change
L_{dn}	day-night noise level
L_{eq}	equivalent continuous noise level
LBP	lead-based paint
LCFS	low-carbon fuel standard
LOS	level of service
LST	localized significance thresholds
M_W	moment magnitude
MCL	maximum contaminant level
MEP	maximum extent practicable
mgd	million gallons per day
MMT	million metric tons

Abbreviations and Acronyms

MPO	metropolitan planning organization
MT	metric ton
MWD	Metropolitan Water District of Southern California
NAHC	Native American Heritage Commission
NO_X	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
O_3	ozone
OES	California Office of Emergency Services
PM	particulate matter
POTW	publicly owned treatment works
ppm	parts per million
PPV	peak particle velocity
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
RMP	risk management plan
RMS	root mean square
RPS	renewable portfolio standard
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SIP	state implementation plan
SLM	sound level meter
SoCAB	South Coast Air Basin
SO_X	sulfur oxides
SQMP	stormwater quality management plan
SRA	source receptor area [or state responsibility area]
SUSMP	standard urban stormwater mitigation plan
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TNM	transportation noise model

Abbreviations and Acronyms

tpd	tons per day
TRI	toxic release inventory
TTCP	traditional tribal cultural places
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
UWMP	urban water management plan
V/C	volume-to-capacity ratio
VdB	velocity decibels
VHFHSZ	very high fire hazard severity zone
VMT	vehicle miles traveled
VOC	volatile organic compound
WQMP	water quality management plan
WSA	water supply assessment

1. Introduction

The Huntington Beach City School District (District) is proposing to construct a bus yard at the northwest corner of the existing Isaac L. Sowers Middle School (Sowers Middle School) site at 9300 Indianapolis Avenue, Huntington Beach, Orange County.

1.1 PROJECT LOCATION

The project site is located in the Sowers Middle School existing campus located at 9300 Indianapolis Avenue, Huntington Beach, in Orange County. Regional access to the campus is from Interstate 405 (I-405) approximately 2.65 miles northeast, State Route 39 (SR-39) approximately 1.38 miles west, State Route 1 (SR-1) approximately 1.65 miles southwest, and State Route 55 (SR-55) approximately 4.0 miles east of the project site. The project sire is surrounded by (see Figure 1, *Regional Location*, and Figure 2, *Local Vicinity*).

1.2 ENVIRONMENTAL SETTING

1.2.1 Existing Land Uses

The project site is approximately 0.8 acres and is located within the Sowers Middle School campus. The site has been previously disturbed and developed with parking lot, buildings, and walkways as part of the Sowers Middle School. The project site is occupied by existing campus facilities from the Sowers Middle School as shown in Figure 3, *Aerial Photograph*.

1.2.2 Surrounding Land Use

The project site is bounded by the existing Sowers Park to the west; hardcourts, parking, and driving aisles as part of Sowers Middle School to the east; classroom buildings and turf athletic field to the south, and Indianapolis to the north. The nearest residential uses are approximately 75 feet to the north across Indianapolis Avenue, and there are also residences approximately 350 feet to the east along Cohasset Lane, approximately 370 feet west across the Talbert Channel, and approximately 715 feet south beyond middle school facilities.

The Sowers Middle School campus is in a residential neighborhood and is bounded by Indianapolis Avenue to the north, Sowers Park and the Talbert Channel along the west and residential property to the east and south (see Figure 3). The Saints Simon & Jude Catholic Church and School are located northwest from the campus across Indianapolis Avenue.

1. Introduction

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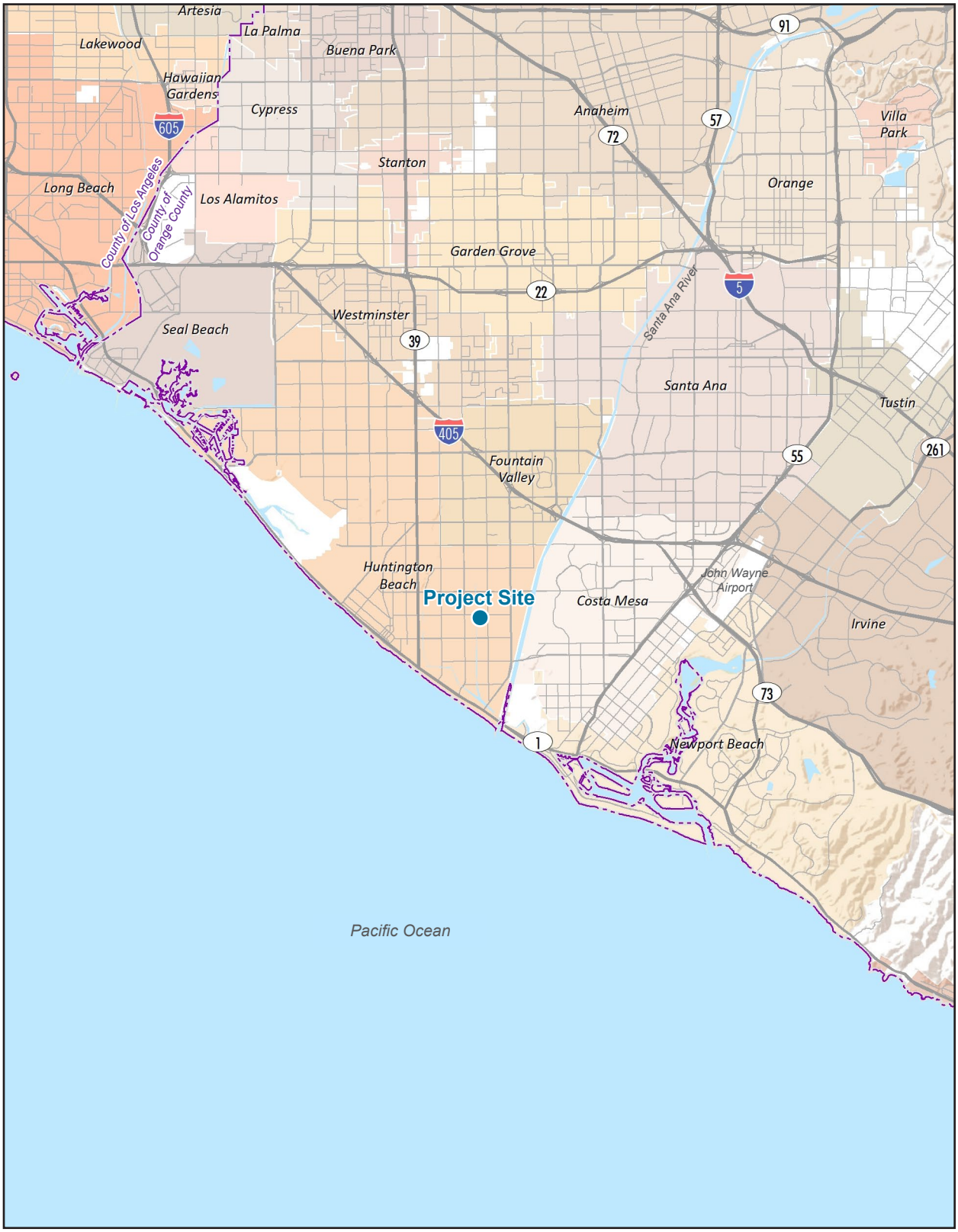
Figure 1 - Regional Location



County Boundary

Note: Unincorporated county areas are shown in white.

Source: ESRI, 2022.

0 3
Scale (Miles)

1. Introduction

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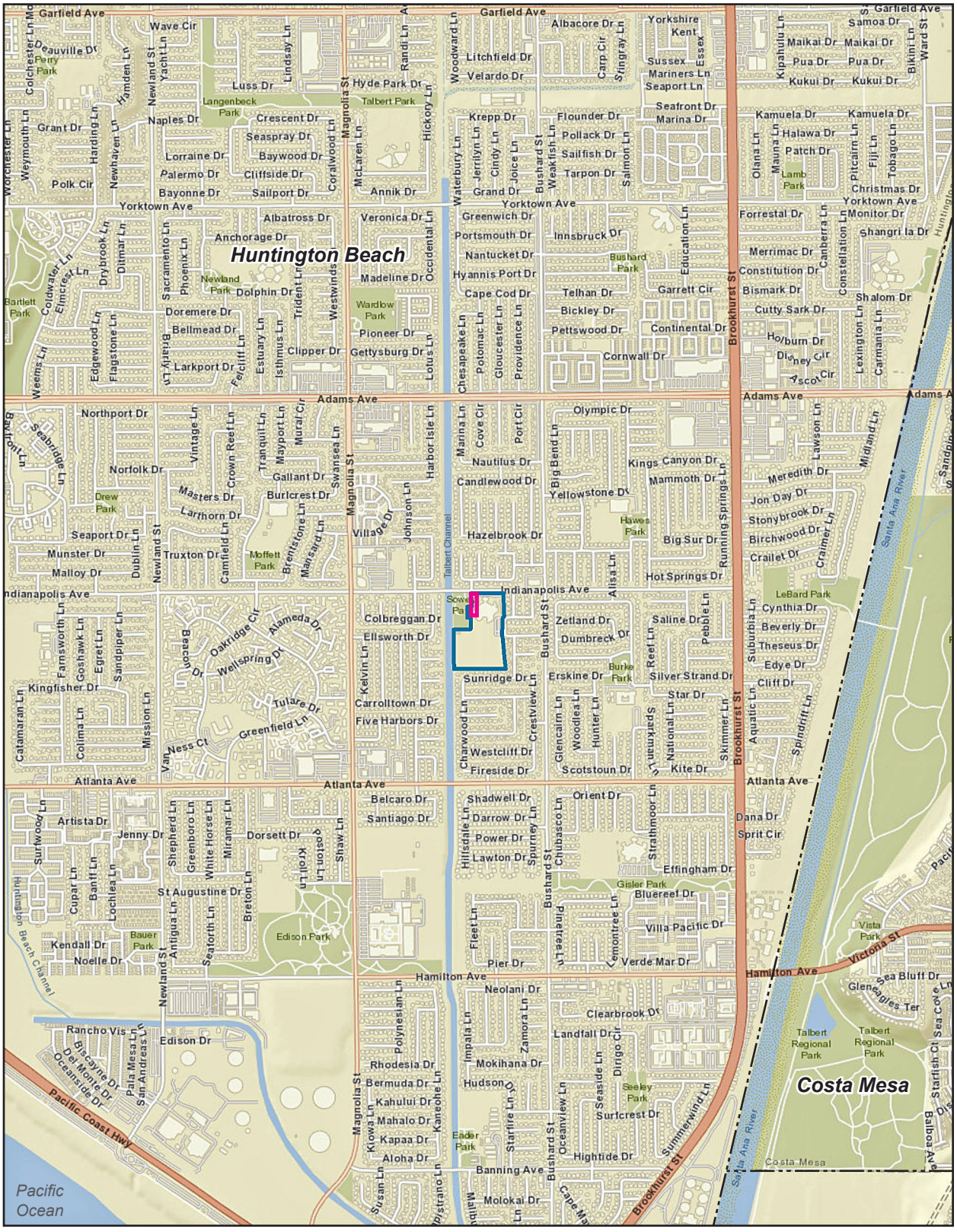
Figure 2 - Local Vicinity



Sowers Middle School
Project Site
City Boundary

0 2,000
Scale (Feet)

Source: ESRI, 2022.

1. Introduction

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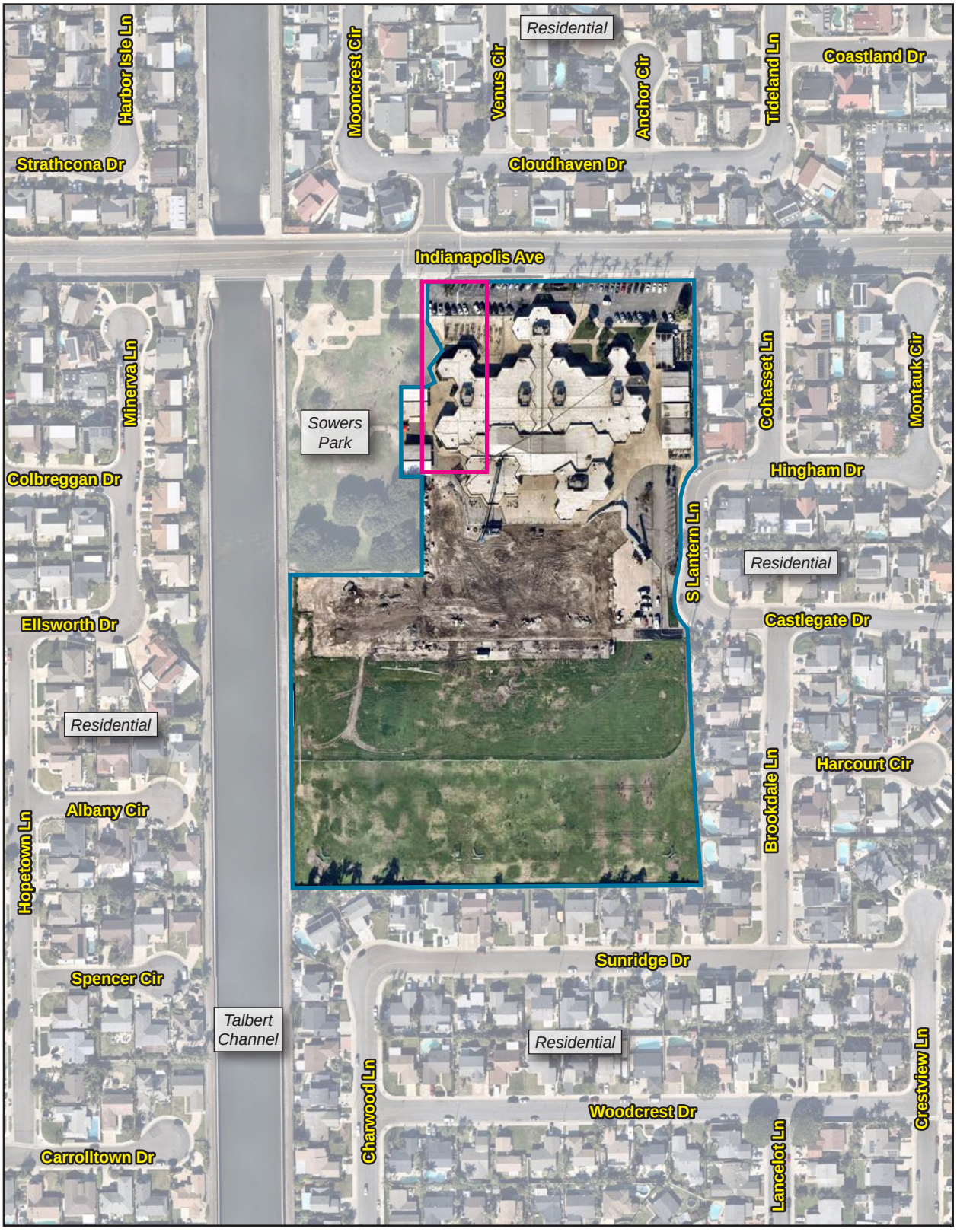
Figure 3 - Aerial Photograph



Sowers Middle School

Project Site

0 250

Scale (Feet)

Source: Nearmap, 2023.

1. Introduction

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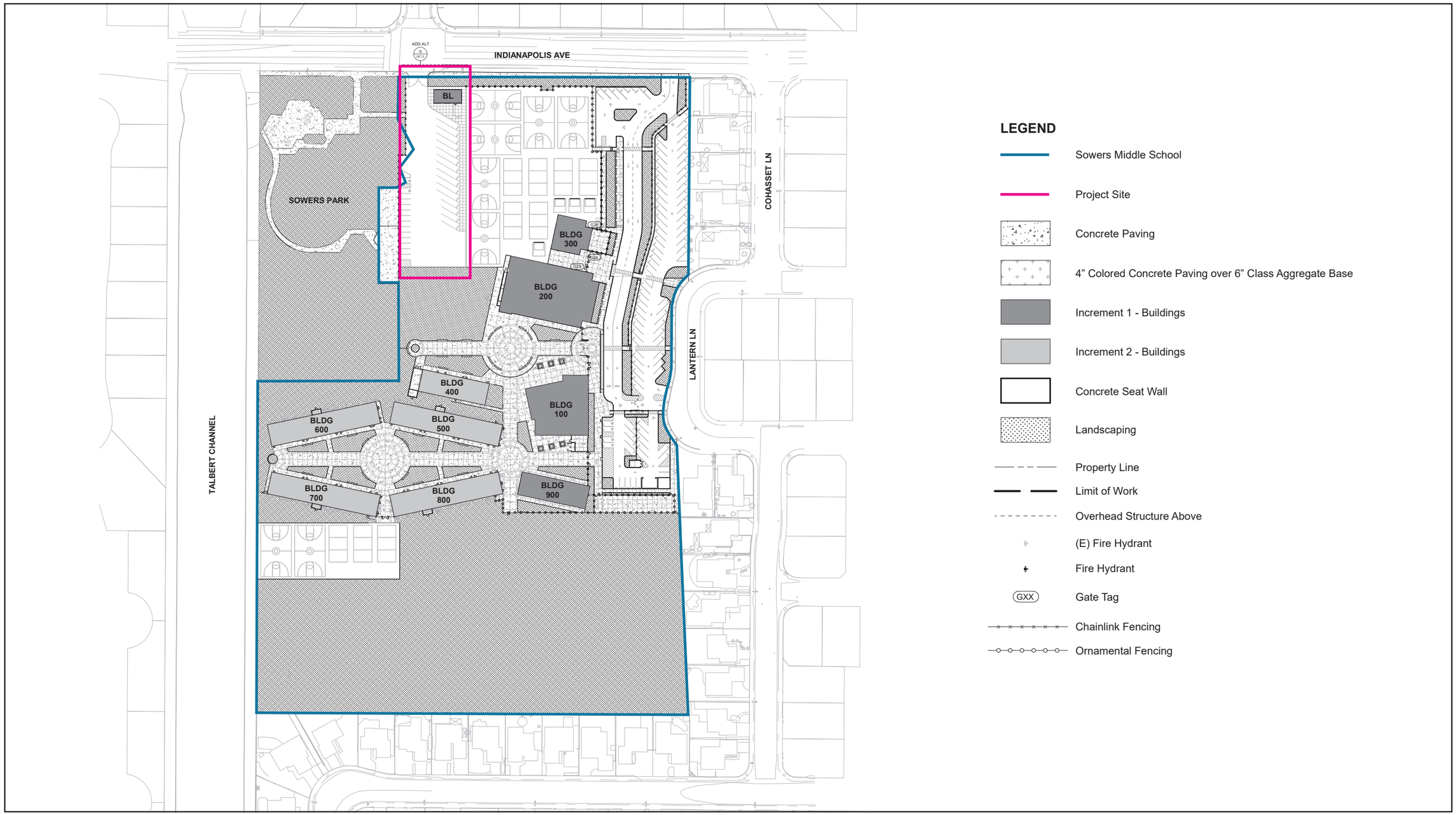
Figure 4 - Conceptual Site Plan



Source: Studio W. Architects, 2022.

1. Introduction

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1.3 PROJECT DESCRIPTION

1.3.1 Proposed Land Use

The proposed project would consist of a bus yard located at the northwestern corner of the existing Sowers Middle school campus and a lounge for District staff (proposed project). The District proposes 15 bus parking stalls, 12 regular parking stalls, two handicapped stalls, and an approximately 900-square-foot building with lounge and restrooms (see Figure 4*, Conceptual Site Plan*). The District would maintain 15 buses – seven diesel, three gasoline, and five compressed natural gas (CNG) buses. Bus yard activities would include pre-trip bus testing between the hours of 5:45 am and 7:00 am on school days. Startup testing includes momentary testing of horns and blinkers, air brakes, wheelchair lifts and bus idling for approximately 35 minutes. Any maintenance, refueling, and washing activities would occur at an off-site location, as under current conditions.

Access and Circulation

Vehicle access to the site is currently provided via Indianapolis Avenue at Titan Lane. The proposed project would continue to use this access point; however, it would be restricted to buses and employees.

Fencing and sound walls

An eight-foot CMU wall will be placed along the west border of the bus yard as well as the access points will contain a gate. The project would also include an 8-foot wall to the north and 8-foot walls to the east and west of the bus yard to reduce project noise at adjacent receptors.

1.3.2 Project Phasing

The proposed project is part of the Sowers Middle School improvement project. To accommodate students at the site during construction, redevelopment of the site would occur in two phases. As previously mentioned, the project site has existing campus facilities which will be demolished and graded as part of the Sowers Middle School improvement project's Phase 1. The construction activities regarding the proposed project would occur during Phase 2. Construction activities as part of the proposed project would involve building construction, asphalt paving, and architectural coating. Phase 2 would take approximately 12 months from summer 2024 to summer 2025.

Construction

Construction activities would include building construction, architectural coating, asphalt paving, finishing, and landscaping. All proposed improvements and areas of disturbances would occur within the project site. Construction is proposed to take place between the hours of 7 AM and 7 PM Monday through Saturday as allowed in Section 17.05.180, Time of Grading Operations, of the City's Municipal Code.

A construction worksite traffic control plan would be prepared and implemented by the District. The plan would identify haul routes, hours of construction, protective devices, warning signs, and access. The active construction and staging areas would be located on the project site.

1.4 EXISTING ZONING AND GENERAL PLAN

The project site is designated as Public/Semipublic with an underlying residential low density designation (PS/RL) and zoned Public-Semipublic (PS). The PS zoning permits school land use on approval of a conditional use permit by the Planning Commission, according to Chapter 214, PS Public-Semipublic District, of the Huntington Beach Municipal Code.

1.5 CITY ACTION REQUESTED

The Initial Study/Mitigated Negative Declaration examines the potential environmental impacts of the proposed Bus Yard project (proposed project). This Initial Study/Mitigated Negative Declaration is also being prepared to address various actions by the District to adopt and implement the proposed project. It is the intent of this Initial Study/Mitigated Negative Declaration to enable the District to make an informed decision with respect to the proposed project. The District would be required to approve the Initial Study/Mitigated Negative Declaration and approve the proposed project.

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2. Environmental Checklist

2.1 PROJECT INFORMATION

1. **Project Title:** Bus Yard at Sowers Middle School.

2. **Lead Agency** Name and Address:
   Huntington Beach City School District
   8750 Dorsett Drive
   Huntington Beach, CA 92646

3. **Contact Person and Phone Number:**
   Mark Manstof, Director, Facilities, Maintenance, Operations, and Transportation
   949.445.0075

4. **Project Location:** The project site is located in the Sowers Middle School existing campus located at 9300 Indianapolis Avenue, Huntington Beach, in Orange County.

5. **Project Sponsor's Name and Address:**
   Huntington Beach City School District
   8750 Dorsett Drive
   Huntington Beach, CA 92646

6. **General Plan Designation:** Public/Semipublic with an underlying residential low density designation (PS/RL).

7. **Zoning:** Public-Semipublic.

8. **Description of Project:**
   The District plans to relocate the bus yard and construct an approximately 900-square-foot building with lounge and restrooms at the northwest corner of the existing Isaac L. Sowers Middle School. The capacity of the proposed school would not change and access to the site would continue to exist via Indianapolis Avenue at Titan Lane.

9. **Surrounding Land Uses and Setting:**
   The project site is bounded by Sowers Park to the west, Sowers Middle School to the east, classroom buildings and turf athletic field to the south, and Indianapolis to the north. Residential uses are 75 feet to the north across Indianapolis Avenue, 350 feet to the east along Cohasset Lane, 370 feet west across the Talbert Channel, and 715 feet south beyond middle school facilities. The Saints Simon & Jude Catholic Church and School is located northwest from the campus across Indianapolis Avenue.

10. Other Public Agencies Whose Approval Is Required (e.g., permits, financing approval, or participating agreement):

- City of Huntington Beach
- California Department of Education, School Facilities Planning Division (CDE)
- California Department of General Services, Division of State Architect (DSA)
- Santa Ana Regional Water Quality Control Board

11. 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, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

> 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 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.94 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.

The District did not receive a request for consultation by any tribe. See Section 3.18, *Tribal Cultural Resources*, for more information in regard to tribal cultural resources.

2. Environmental Checklist

2.2 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 / Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☐ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities / Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

2.3 DETERMINATION (TO BE COMPLETED BY THE LEAD AGENCY)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find 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.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find 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.

☐ I find 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	*Date*

2.4 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 would 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.

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 Analyses Used.** Identify and state where they are available for review.

   b) I**mpacts 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 which 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.

2. Environmental Checklist

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. 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.

2. Environmental Checklist

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3. Environmental Analysis

Section 2.4 provided a checklist of environmental impacts. This section provides an evaluation of the impact categories and questions contained in the checklist and identifies mitigation measures, if applicable.

3.1 AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

a) Have a substantial adverse effect on a scenic vista?

No Impact. A scenic vista is a viewpoint that provides expansive views of a highly valued landscape for the benefit of the public. Some scenic vistas are officially designated by public agencies or informally designated by tourist guides. Vistas provide visual access or panoramic views to a large geographic area and are generally at a point where surrounding views are greater than one mile away. Panoramic views are usually associated with vantage points over a section of urban or natural areas that provide a geographic orientation not commonly available. Examples of panoramic views might include an urban skyline, valley, mountain range, large open space area, the ocean, or other water bodies. A substantial adverse effect to a scenic vista is one that degrades the view from such a designated view spot.

The City's General Plan states that the City's defining coastline, scenic viewsheds, and diverse neighborhoods create a unique sense of place and quality of life. The project site is surrounded by residential uses within a school site. Upon project completion, the project site would be occupied by 15 bus parking stalls, 12 regular parking stalls, two handicapped stalls, and an approximately 900-square-foot building on the site The proposed

project would continue to be within a school site and serve as facilities for the school site. Therefore, the proposed project would not significantly change the existing environment as the proposed project would relocate the new bus yard at the north side of the campus for District school. Therefore, the proposed project would not obstruct or alter scenic vistas and result in a less than significant impact.

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

No Impact. A scenic highway is generally considered a stretch of public roadway that is designated a scenic corridor by a federal, state, or local agency. The California Department of Transportation (Caltrans) defines a scenic highway as any freeway, highway, road, or other public right-of-way that traverses an area of exceptional scenic quality.

According to the California Department of Transportation's (Caltrans) Scenic Highway System Map, the closest designated state scenic highway is SR-1, approximately 1.62 miles south of the project site (Caltrans 2023). The proposed project will occur within the project site boundaries and will not affect scenic resources along these highways due to distance, topography, and intervening development (e.g., buildings, structures, mature trees). Therefore, the project implementation will not obstruct views of any scenic resources within any officially designated or eligible scenic highways. Therefore, no impact would occur.

c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less than Significant Impact. The project site is located within a fully urbanized area with development surrounding the site in all directions. The project site is currently occupied by the existing school buildings and upon project completion, the project site would be a bus yard for the existing school. The project site is zoned as PS which according to Chapter 214, PS Public-Semipublic District, of the City's Municipal Code permits school land uses. Therefore, the proposed project is consistent with its PS zoning. The proposed project would not adversely affect scenic views.

The proposed project would not substantially change the existing character of the site. The proposed project would be compatible with the existing development pattern onsite and the character of the surrounding area. Although the visual qualities of the project site during construction would not appear better than the existing condition of the properties, the construction worksite would be temporary. The finished project would include a parking lot and a lounge with exterior finishes that would complement the surrounding area. Although project implementation would alter the visual appearance of the site, the improvements would not substantially degrade the visual character and quality of the project site and surrounding area. Therefore, impacts would be less than significant.

3. Environmental Analysis

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

Less Than Significant Impact. The two major causes of light pollution are glare and spill light. Spill light is caused by misdirected light that illuminates areas outside the intended area to be lit. Glare occurs when a bright object is against a dark background, such as oncoming vehicle headlights or an unshielded light bulb. The project site currently generates light from its buildings (interior and exterior).

As shown in Figure 3 the project site is surrounded by light emitting sources such as residential uses to the north and east, and a park to the west. Residential uses are considered light-sensitive receptors. The proposed lighting would be directed onto the intended area to be lit and would not spill off the project site. In addition, the proposed project would need to comply with Section 231.18c, Illumination, from the City's Municipal Code which states that all parking area lighting must be energy-efficient and designed to not glare adjacent residential properties and security lighting must be provided in areas accessible to the public during nighttime hours, with a timeclock or photo-sensor system. The new proposed lounge would also need to comply with the Building Energy Efficiency Standards which would ensure energy efficient operation and adequate illumination. The most recent standards became effective January 1, 2020. Therefore, compliance with local and state regulations would result in less than significant.

3.2 AGRICULTURE AND FORESTRY 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 Dept. of Conservation 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 compiled 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 forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY 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 Dept. of Conservation 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 compiled 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 forest carbon measurement methodology provided in 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?				X
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				X
d)	Result in the loss of forest land or conversion of forest land to non-forest use?				X
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?				X

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?

No Impact. The project site has no agricultural or farm use on it, nor is there agricultural or farm use in its immediate proximity. No project-related farmland conversion impact would occur. The project is mapped as "Urban and Built-Up Land" (CDC 2023a). No impact would occur.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The zoning designation for the project site is PS. The proposed project would not conflict with agricultural zoning or a Williamson Act contract as it is not zoned for agricultural use. Williamson Act contracts restrict the use of privately-owned land to agriculture and compatible open space uses under contract with local governments; in exchange, the land is taxed based on actual use rather than potential market value. There is no Williamson Act contract in effect onsite. No impact would occur.

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

No Impact. Project development would not conflict with existing zoning for forest land, timberland, or timberland production. Forest land is defined as "land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits" (California PRC § 12220[g]). Timberland is defined as "land…which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including trees" (California PRC § 4526). The project site is zoned as PS. The proposed project would not cause rezoning of forestland or timberland. Therefore, no impact would occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The project site does not contain forestland, nor is the project site zoned as forestland. The proposed project would not convert forestland to non-forest use or result in a loss of forestland. Therefore, no impact would occur.

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?

No Impact. According to the California Important Farmland Finder, there is no important farmland or forest land on the project site or within the surrounding vicinity. Development from the proposed project would not indirectly cause conversion of such land to nonagricultural or non-forest use. No impact would occur.

3.3 AIR QUALITY

The Air Quality section addresses the impacts of the proposed project on ambient air quality and the exposure of people, especially sensitive individuals, to unhealthy pollutant concentrations. A background discussion on the air quality regulatory setting, meteorological conditions, existing ambient air quality in the vicinity of the project site, and air quality modeling can be found in Appendix A, *Air Quality, Greenhouse Gas Emissions Data, and Health Risk Assessment*.

Methodology

The Air Quality Emissions Technical Memorandum uses the original analysis of air quality emissions impacts from re-development of the proposed Isaac L. Sowers Middle School campus not only for the proposed school bus parking lot and lounge. Therefore, the construction emissions in the analysis provided are conservative because the model accounts for a larger project.

Air Pollutants of Concern

Criteria Air Pollutants

Pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and State law under the National and California Clean Air Act, respectively. Air pollutants are categorized as primary and/or secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxides (NOX), sulfur dioxide (SO2), coarse inhalable particulate matter (PM10), fine inhalable particulate matter (PM2.5), and lead (Pb) are primary air pollutants. Of these, all of them except for ROGs are "criteria air pollutants," which means that ambient air quality standards (AAQS) have been established for them. The National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect those "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Areas are classified under the federal and California Clean Air Act as either in attainment or nonattainment for each criteria pollutant based on whether the AAQS have been achieved. The South Coast Air Basin (SoCAB), which is managed by the South Coast Air Quality Management District (South Coast AQMD), is nonattainment area for California and National O_3, California PM_{10} and $PM_{2.5}$ AAQS (South Coast AQMD 2022). South Coast AQMD has adopted regional construction and operational emissions thresholds to determine a project's cumulative impact on air quality in the SoCAB. Thresholds that are applicable for all projects uniformly, regardless of size or scope. South Coast AQMD has identified thresholds of significance for criteria pollutant emissions and criteria air pollutant precursors, including ROG, NO_X, CO, SOx, PM_{10}, and $PM_{2.5}$. Development projects below the regional significance thresholds are not expected to generate sufficient criteria pollutant emissions to violate any air quality standard, contribute substantially to an existing or projected air quality violation, or substantially contribute to health impacts.

3. Environmental Analysis

Toxic Air Contaminants

In addition to criteria air pollutants, both the State and federal government regulate the release of toxic air contaminants (TACs). The California Health and Safety Code define 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 Section 112(b) of the federal Clean Air Act (42 United States Code Section 7412[b]) is a toxic air contaminant. Under State law, the California Environmental Protection Agency, acting through the California Air Resources Board (CARB), is authorized to identify a substance as a TAC if it determines that the substance is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or may pose a present or potential hazard to human health. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.

Health Risk

Whenever a project would require use of chemical compounds that have been identified in South Coast AQMD Rule 1401, placed on CARB's air toxics list pursuant to Assembly Bill 1807, or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment is required by the South Coast AQMD. The purpose of this environmental evaluation is to identify the significant effects of the proposed project on the environment, not the significant effects of the environment on the proposed project. (*California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369 (Case No. S213478)*). CEQA does not require CEQA-level environmental document to analyze the environmental effects of attracting development and people to an area. However, the environmental document must analyze the impacts of environmental hazards on future users when a proposed project exacerbates an existing environmental hazard or condition. Residential, commercial, and office uses do not emit substantial quantities of TACs, and these thresholds typically apply to new industrial projects.

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management district 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?			X	
b) 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?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. South Coast AQMD adopted the 2022 Air Quality Management Plan on December 2, 2022. Regional growth projections are used by South Coast AQMD to forecast future emission levels in the SoCAB. For southern California, these regional growth projections are provided by the Southern California Association of Governments (SCAG) and are partially based on land use designations included in city/county general plans. Typically, only large, regionally significant projects have the potential to affect the regional growth projections.

The proposed project involves the construction and operation of the bus yard at the Sowers Middle School. The project is not considered a project of statewide, regional, or area-wide significance that would require intergovernmental review under Section 15206 of the CEQA Guidelines. Because the proposed use would be consistent with the land use and zoning designation, it would not substantially affect the regional growth projections. Furthermore, the relocation of the bus parking lot at the north side of the campus for District school bus parking and new lounge building for District staff will be located on the same site as and will have the same purpose and capacity. Therefore, the proposed project would not affect the regional emissions inventory or conflict with strategies in the AQMP. Thus, implementation of the proposed project would not interfere with or obstruct implementation of the AQMP. This impact would be less than significant.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact. The following describes project-related impacts from short-term construction activities and long-term operation of the proposed project.

Regional Construction Emissions

Construction activities would result in the generation of air pollutants. These emissions would primarily be 1) exhaust from off-road diesel-powered construction equipment; 2) dust generated by construction activities; 3) exhaust from on-road vehicles; and 4) off-gassing of volatile organic compounds (VOCs) from paints and asphalt.

Construction activities for the proposed project is anticipated to disturb 0.8 acres during Phase 2. The project would involve building and asphalt demolition as well as debris haul and reprocessing, site preparation, grading, building construction, paving, and architectural coating. Construction of Phase 1 is anticipated to take approximately 12 months from fall 2022 to summer 2022. Phase 2 would commence after Phase 1 is complete and would take approximately 12 months from summer 2024 to summer 2025. Construction emissions were estimated using CalEEMod 2020.4 and based on the preliminary construction duration provided by the District. Construction emissions modeling is shown in Table 1, *Maximum Daily Regional Construction Emissions (Phase 2)*. Maximum daily emissions for VOC, NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$ from construction-related activities would be less than their respective South Coast AQMD regional significance threshold values. Therefore, construction of the proposed project would not generate a cumulatively considerable net increase in criteria air pollutant emissions.

3. Environmental Analysis

Table 1 Maximum Daily Regional Construction Emissions (Phase 2)

Construction Phase	Pollutants (lb/day)[1, 2, 3]					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Year 2023						
Demolition & Demo Debris Haul	2	24	21	<1	3	1
Site Preparation	3	28	19	<1	10	6
Grading	2	18	15	<1	4	2
Building Construction	2	16	19	<1	2	1
Year 2024						
Building Construction	2	15	19	<1	2	1
Building Construction, Paving and Coating	14	24	34	<1	3	1
Maximum Daily Construction Emissions						
Maximum Daily Emissions	14	28	34	<1	10	6
South Coast AQMD Regional Construction Threshold	**75**	**100**	**550**	**150**	**150**	**55**
Significant?	No	No	No	No	No	No

Source: CalEEMod Version 2020.4

[1] Based on the preliminary information provided by the applicant. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by South Coast AQMD of construction equipment.

[2] Includes implementation of fugitive dust control measures required by South Coast AQMD under Rule 403, including watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

[3] Conservative modeling as at the time of the analysis Phase 2 construction schedule was modeled from Fall 2023 to Summer 2024, yielding less efficient construction equipment compared to future years.

Regional Operational Emissions

Long-term air pollutant emissions associated with the proposed project include area sources (e.g., landscape fuel use, aerosols, architectural coatings, and asphalt pavement), energy use (i.e., natural gas use from cooling, heating, and cooking), and mobile sources (i.e., on-road vehicles). The primary source of long-term criteria air pollutant emissions generated by the proposed project would be emissions from project-generated vehicle trips. However, since student capacity will not increase the proposed project would not generate an increase in daily weekday trips. The proposed project also would relocate the new parking lot at the north side of the campus for District school bus parking and a lounge for District staff. The bus fleet consists of seven diesel-fueled, five compressed-natural gas (CNG) fueled, and three gasoline-fueled buses, which are currently parked offsite. The relocation of the bus parking lot to the project site would not result in an increase in regional vehicle miles traveled (VMT) or associated vehicle emissions. Therefore, proposed project operations would not generate a cumulatively considerable net increase in criteria air pollutant emissions. This impact would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. The proposed project could expose sensitive receptors to elevated pollutant concentrations if it causes or significantly contributes to elevated pollutant concentration levels. Unlike regional

emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

Localized Construction Emissions

Construction LSTs

Localized significance thresholds are based on the California AAQS, which are the most stringent AAQS to provide a margin of safety in the protection of public health and welfare. They are designated to protect sensitive receptors most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. The screening-level construction LSTs are based on the size of the project site, distance to the nearest sensitive receptor, and Source Receptor Area 18 (SRA), which is where the project site is located. The nearest off-site residential sensitive receptor are the residents on the east side of the campus along Cohasset Lane, Lantern Lane, and Brooklyn Lane. Other receptors include the students who will be attending school during operation of Phase 2 on campus.

Air pollutant emissions generated by construction activities would cause temporary increases in air pollutant concentrations. Table 2, *Localized Construction Emissions (Phase 2)*, show that the maximum daily on-site construction emissions (pounds per day) for NO_x, CO, PM_{10}, and $PM_{2.5}$ would be less than their respective South Coast AQMD screening-level LSTs. Therefore, project-related construction activities would not expose sensitive receptors to substantial criteria air pollutant concentrations.

Table 2 Localized Construction Emissions (Phase 2)

Construction Activity	Pollutants(lbs/day)[1]			
	NO_X	**CO**	**PM_{10}[2]**	**$PM_{2.5}$[2]**
South Coast AQMD ≤1.00 Acre LST	**92**	**647**	**4.00**	**3.00**
Asphalt Demolition & Demo Debris Haul	21	20	2.81	1.20
Exceeds LST?	No	No	No	No
South Coast AQMD 1.31 Acre LST	**104**	**745**	**4.93**	**3.62**
Building Construction 2023	14	16	0.70	0.66
Building Construction 2024	13	16	0.61	0.58
Exceeds LST?	No	No	No	No
South Coast AQMD 2.00 Acre LST	**131**	**962**	**7.00**	**5.00**
Building Construction 2024, Paving and Architectural Coating	23	30	1.07	1.01
Exceeds LST?	**No**	**No**	**No**	**No**
South Coast AQMD 2.50 Acre LST	**142**	**1,087**	**8.16**	**5.67**
Building and Asphalt Demolition & Demo Debris Haul[3]	46	50	4.02	2.33
Grading	18	15	3.80	2.18
Exceeds LST?	No	No	No	No
South Coast AQMD 3.50 Acre LST	**164**	**1,336**	**10.49**	**7.00**
Site Preparation	28	18	9.67	5.48
Exceeds LST?	No	No	No	No

Source: CalEEMod Version 2020.4. South Coast AQMD 2008 and 2011.
Notes: In accordance with South Coast AQMD methodology, only onsite stationary sources and mobile equipment are included in the analysis. Screening level LSTs are based on receptors within 82 feet (25 meters) of the project site in Source Receptor Area (SRA) 18 for NO_X, CO, PM_{10} and $PM_{2.5}$.

[1] Based on the preliminary information provided by the applicant. Where specific information for project-related construction activities or processes was not available, modeling was based on CalEEMod defaults. These defaults are based on construction surveys conducted by the South Coast AQMD.
[2] Includes fugitive dust control measures required by South Coast AQMD under Rule 403, such as watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Construction Health Risk

South Coast AQMD currently does not require health risk assessments for short-term emissions from construction equipment. Emissions from construction equipment primarily consist of diesel particulate matter (DPM). The Office of Environmental Health Hazard Assessment (OEHHA) adopted new guidance for the preparation of health risk assessments in March 2015 (OEHHA 2015). OEHHA has developed a cancer risk factor and noncancer chronic reference exposure level for DPM, but these factors are based on continuous exposure over a 30-year time frame. No short-term acute exposure levels have been developed for DPM. South Coast AQMD currently does not require the evaluation of long-term excess cancer risk or chronic health impacts for a short-term project. The proposed project site would be developed in approximately twelve months during Phase 1 and during Phase 2. The relatively short duration when compared to a 30-year time frame would limit exposures of on-site and off-site receptors. In addition, exhaust emissions from off-road vehicles associated with overall project-related construction activities would not exceed the screening-level LSTs. Therefore, project-related construction activities would not expose sensitive receptors to substantial TAC concentrations.

Localized Operational Emissions

Operational LSTs

The proposed project includes a new parking lot at the north side of the campus for District school bus parking and a lounge for District staff. No bus maintenance nor fueling is proposed for the bus parking lot. However, diesel buses idling in the proposed bus parking lot could temporarily increase PM_{10} and $PM_{2.5}$ emissions in proximate to existing residences. To reduce school bus idling emissions, CARB has promulgated the Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools (13 CCR Chapter 10 § 2480), which would limit TAC emissions onsite. The Rule generally restricts a school bus or transit bus from non-essential idling for more than five minutes when within 100 feet of a school. Essential idling would include the morning pre-check, which occurs between 5:45 to 7:00 AM weekdays. Buses idle approximately 30 to 35 minutes depending on what needs to be checked out on the bus (air brakes, wheelchair lift, reverse alarms, horn, air horn, air brakes etc.). To reduce diesel particulate matter (DPM), the District was awarded the grant to replace two diesel buses with two liquefied compressed natural gas (LNG) buses. As a result, there would be five diesel buses onsite with implementation of the proposed project.

Though operation of the proposed project could result in an increase in emissions from school bus idling, air pollutant emissions generated from these activities compared to the existing land use would be nominal overall because it would only occur for up to 35 minutes a day during the precheck (see Table 3, *Operational LSTs from Bus Idling*). As shown in this table, localized air quality impacts from proposed project-related operations would not exceed the South Coast AQMD's screening-level thresholds for on-site operational emissions and impacts would be less than significant.

Table 3 Operational LSTs from Bus Idling

Construction Activity	Pollutants (lbs/day)	
	PM_{10}	$PM_{2.5}$
South Coast AQMD 0.64 Acre LST	**1.00**	**1.00**
Bus Idling[1]	0.03	0.002
Exceeds LST?	No	No

Source: South Coast AQMD 2008 and 2011.
Notes: In accordance with South Coast AQMD methodology, only onsite stationary sources and mobile equipment are included in the analysis. Screening level LSTs are based on receptors within 82 feet (25 meters) of the project site in Source Receptor Area (SRA) 18.
[1] Bus idling emissions determined using emission factors from EMFAC2021 for SBUS category, year 2022 in Orange County (CARB 2022).

Operational Health Risk

CARB, the California Air Pollution Control Officer's Association (CAPCOA), and South Coast AQMD have identified exposure to elevated concentrations of vehicle generated TACs as a potential air quality hazard for sensitive land uses by. Typically, new major sources of TACs are more commonly associated with industrial manufacturing or warehousing facilities. For instance, CARB only recommends quantitative health risk evaluations for trucking distribution facilities if the number of diesel-fueled trucks per day exceeds 100.

School sites are not typically considered a major source of TACs. The proposed project includes a new parking lot at the north side of the campus for District school bus parking and a lounge for District staff. The size of the existing bus fleet, which consists of seven diesel-fueled, five CNG-fueled, and three gasoline-fueled buses, would not be affected the proposed project. As identified above, the District received a grant to replace two of the diesel buses with two CNG buses, which will reduce future TAC emissions associated with the District bus fleet. No bus maintenance nor fueling is proposed for the bus parking lot, and bus idling would be restricted per the requirements of Title 13 CCR 2480.

Overall, the relocation of the bus parking lot to the project site would not result in a substantial increase in bus trips per day nor TAC emissions, and localized health risk impacts at nearby sensitive receptors (i.e., residences to the east and north; existing students at Sowers Middle School) would be less than significant.

CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9.0 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to AAQS is typically demonstrated through an analysis of localized CO concentrations, typically produced at intersections where vehicles queue for longer periods and are subject to reduced speeds. The SoCAB has been designated as attainment under both the national and California AAQS for CO. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact (BAAQMD 2017).

3. Environmental Analysis

Operation of the proposed project would not generate an increase in peak hour vehicle trips during the weekday. Therefore, development and operation of the proposed project would not produce the volume of traffic required (i.e., 24,000 to 44,000 peak hour vehicle trips) to generate a CO hotspot at intersections or the proposed student drop-off zone.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact. The threshold for odor is if a project creates an odor nuisance pursuant to South Coast AQMD Rule 402, Nuisance, which 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 provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

Operational Phase Odors

The type of facilities that are considered to have objectionable odors include wastewater treatments plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. The proposed project does not include any of these uses and school uses typically are not associated with foul odors that constitute a public nuisance. Odors associated with the bus parking lot are not expected to generate substantial odors as bus idling would be restrict per Title 13 CCR 2480 and due to the relatively low number of District buses overall (15 total). Odor impacts would be less than significant.

Construction Phase Odors

Emissions from construction equipment, such as diesel exhaust and volatile organic compounds from architectural coatings and paving activities may generate odors. However, these odors would be low in concentration, temporary, and would not affect a substantial number of people. Odor impacts would be less than significant.

3.4 BIOLOGICAL RESOURCES

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. 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?			X	
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?			X	
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			X	
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?			X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
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?			X	

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?

Less Than Significant Impact. Candidate species are plants and animals that have been studied and the US Fish and Wildlife Service (USFWS) has concluded that they should be proposed for addition to the federal endangered and threatened species list. Sensitive biological resources are habitats[1] or individual species that have special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, or rare. The California Department of Fish and Wildlife (CDFW), USFWS, and organizations like the California Native Plant Society maintain watch lists of such resources.

[1] Per the California Department of Fish and Wildlife, habitat is where a given plant or animal species meets its requirements for food, cover, and water in both space and time.

"Special status species" is a universal term in the scientific community for species that are considered sufficiently rare that they require special consideration and/or protection and should be or have been listed as rare, threatened, or endangered by USFWS and/or CDFW.

Candidate and Sensitive Species

The project site is currently developed with buildings from a school and is within an urbanized portion of the City. The project site is bound by Sowers Park and residential developments. Given that the project site and surrounding area are developed and disturbed by human activities, it is unlikely that there is candidate or sensitive species onsite. Therefore, impacts would be less than significant.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No Impact. Sensitive natural communities are communities that are considered rare in the region by regulatory agencies; known to provide habitat for sensitive animal or plant species; or known to be important wildlife corridors. Riparian habitats are those occurring along the banks of rivers and streams.

As shown in Figure ERC-3, *Natural and Urbanized Communities*, of the City's Environmental Resources and Conservation Element, the project site is not in a sensitive natural community identified by the CDFW and is classified as an urban area. In addition, the project site is developed with an existing school. No riparian habitats are identified onsite (USFWS 2023). As such, no impacts would occur.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. Wetlands are defined under the federal Clean Water Act as land that is flooded or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that normally does support, a prevalence of vegetation adapted to life in saturated soils. Wetlands include areas such as streams, swamps, marshes, and bogs. The project site is currently developed with an existing school and no wetland or drainage areas are identified on the project site (USFWS 2023). Therefore, no impacts would occur to wetlands or drainage areas.

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?

Less Than Significant Impact. Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas, such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors, allowing animals to move between various locations within their range.

The Migratory Bird Treaty Act (50 Code of Federal Regulations Part 10 and Part 21) protects migratory birds, their occupied nests, and their eggs from disturbance or destruction. "Migratory birds" include all nongame, wild birds found in the U.S., except for the house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), and rock pigeon (*Columba livia).*

The proposed project is in an urbanized area. There is one significant habitat feature (e.g., wetlands or riparian areas) adjacent to the project site. The Talbert Channel is located one mile west of the project site and is a 19.67 acre Riverine habitat classified as R1ABVX which is defined as a "permanently flooded, tidally influenced riverine deepwater habitat created by an excavation" by the UFWS. The project development is not expected to impact wildlife movement from the channel. As shown on Figure 3, there are no trees on the project site; therefore, the proposed project would not result in direct impacts on migratory birds. Therefore, impacts would be less than significant.

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

No Impact. The City of Huntington Beach Municipal Code Section 13.50.040, Permits Required, protects street trees in the public right-of-way. The project site is currently occupied by a portion of the existing facilities from the Sowers Middle School such as the existing parking lot, bike racks, and buildings. As shown in Figure 3, there are no trees on the project site. Future development on the project site would not remove trees, so no impact to City trees would occur. The proposed project would not violate applicable local policies or ordinances protecting trees. No impact would occur.

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?

Less Than Significant Impact. The project site is within the Orange County Transportation Authority (OCTA) NCCP/HCP. The OCTA identifies the M2 Freeway Projects/Covered Projects along the I-405 which is located five miles from the project site. The OCTA identifies one restoration project, Harriett Wieder Regional Park, which is in the City of Huntington Beach (CDFW 2017). Harriett Wieder Regional Park is located approximately 3.84 miles northwest of the project site. As future development on the project would occur within the project site and the project site is currently occupied by facilities from the Sowers Middle School, it is unlikely the project site would contain sensitive biological resources. There are no reserves located on or adjacent to the project site. The proposed project would not conflict with local policies protecting biological resources applicable to the site. Impacts would be less than significant.

3.5 CULTURAL RESOURCES

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		X		
c) Disturb any human remains, including those interred outside of dedicated cemeteries?			X	

a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

No Impact. Section 15064.5 defines historic resources as resources listed or determined to be eligible for listing by the State Historical Resources Commission, a local register of historical resources, or the lead agency. Generally, a resource is considered "historically significant" if it meets one of the following criteria:

i) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

ii) Is associated with the lives of persons important in our past;

iii) Embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important creative individual, or possesses high artistic values;

iv) Has yielded, or may be likely to yield, information important in prehistory or history.

The project site is occupied by buildings from the Sowers Middle School which opened in 1980. There are no state or national historic resources on the project site (NPS 2023; OHP 2023). Construction of the proposed project would occur within the project boundary. Therefore, no impacts would occur.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Less Than Significant Impact With Mitigation Incorporated. Implementation of the proposed project would require ground disturbing activities such as ground clearing, excavation, grading, and other construction activities. Although the project site is already developed, potential buried resources could be unearthed during ground disturbing activities. Mitigation Measure CUL-1 requires that if any evidence of cultural resources is discovered, all work within the vicinity of the find will stop until a qualified archaeological consultant can assess

the find and make recommendations. Therefore, impacts to archaeological resources would be reduced to a less than significant impact with mitigation.

Mitigation Measures

CUL-1 During construction activities, if archeological resources are encountered, the contractor shall be responsible for immediate notification and securing of the site area immediately. A qualified archaeologist approved by the District shall be retained to establish procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of cultural resource finds. If major archeological resources are discovered that require long-term halting or redirecting of grading, a report shall be prepared identifying such findings to the City and the County of Orange. Discovered cultural resources shall be offered to the County of Orange or its designee on a first-refusal basis.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Less Than Significant Impact. The project site is currently developed and would require grading and other ground disturbing activities. California Health and Safety Code Section 7050.5 requires that if human remains are discovered on a project site, disturbance of the site shall halt until the coroner has investigated the circumstances, manner, and cause of death, and has made recommendations concerning their treatment and disposition to the person responsible for the excavation, or to his or her authorized representative. If the coroner determines that the remains are not subject to his or her authority and has reason to believe they are a Native American, he or she shall contact the NAHC by telephone within 24 hours. Impacts related to disturbance of human remains would be less than significant.

3.6 ENERGY

Existing Conditions

Southern California Gas Company (SoCalGas) supplies natural gas to much of southern and central California – from Visalia in the north to the Mexican border – including the infrastructure for the City of Huntington Beach.

Southern California Edison (SCE) is one of the nation's largest electric utility to provide electricity and services to more than 15 million people in a 50,000 square-mile area of central, coastal and Southern California (SCE 2023).

The current project site is served by both electricity and natural gas connections. Electricity is supplied to the project site by SCE. Natural gas and associated infrastructure are provided and maintained by SoCalGas.

Current energy demands are derived from the operation of the existing campus facilities from Sowers Middle School. Energy demand from the existing land uses comes from building energy (e.g., electricity used for lighting and natural gas used for heating).

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. ENERGY. Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			X	

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less Than Significant Impact. The following discusses the potential energy demands from construction activities associated with the development of the proposed project and its operation.

Short-Term Construction Impacts

Electrical Energy

Construction of the proposed project would not require electricity to power most construction equipment. The electricity used during construction would vary during different phases of construction, where the majority of construction equipment during demolition and excavation, site preparation, trenching, and grading would be gas- or diesel-powered; however, the later construction activities, such as architectural coatings, could require

electric-powered equipment. Overall, the use of electricity would be temporary in nature and would fluctuate according to the activity of construction. Additionally, it is anticipated that the majority of electric-powered construction equipment would be hand tools (e.g., power drills, table saws, compressors) and lighting, which would not result in substantial electricity usage during construction activities. Therefore, as electricity consumption during project construction would be minimal and would occur when necessary to complete construction of the proposed project, project-related construction activities would not result in wasteful or unnecessary electricity demands, and impacts would be less than significant.

Natural Gas Energy

It is not anticipated that construction equipment used for the proposed project would be powered by natural gas, and no natural gas demand is anticipated during construction. Therefore, impacts would be less than significant with respect to natural gas usage.

Transportation Energy

Transportation energy use depends on the type and number of trips, vehicle miles traveled, fuel efficiency of vehicles, and travel mode. Transportation energy used during construction would come from the transport and use of construction equipment, delivery vehicles, and construction employee vehicles that would use diesel fuel and/or gasoline. The use of energy resources by these vehicles would fluctuate according to the activity of construction and would be temporary. Upon completion of project construction, all construction equipment would cease. Furthermore, the construction contractors are anticipated to minimize non-essential idling of construction equipment during construction in accordance with Section 2449 of the California Code of Regulations, Title 13, Article 4.8, Chapter 9, which limits the nonessential idling of diesel-powered off-road equipment to five minutes. Such required practices would limit wasteful and unnecessary energy consumption.

In general, there are no unusual characteristics that would directly or indirectly cause construction activities to be any less efficient than would occur elsewhere (restrictions on equipment, labor, types of activities, etc.). The proposed utility infrastructure would connect to the existing water, sewer, storm drain system, and electricity networks in the area since the land use intensity will remain the same. Therefore, it is expected that construction energy usage associated with the proposed project would not be any more inefficient, wasteful, or unnecessary than similar projects and impacts would be less than significant with respect to construction-related energy demands.

Long-Term Impacts During Operation

Operation of the proposed project is expected to decrease energy consumption for electricity and natural gas. Operational use of energy would include heating, cooling, and ventilation of the building; water heating; operation of electrical systems, use of on-site equipment and appliances; and indoor, outdoor, perimeter, and parking lot lighting.

Electrical Energy

The proposed project involves relocating the bus yard and constructing a 966-square-foot building with lounge and restrooms to the northwest corner of the Sowers Middle School. Electrical service to the proposed project would be provided by SCE connections to existing electrical lines and new on-site infrastructure.

3. Environmental Analysis

The proposed building would be required to comply with the Building Energy Efficiency Standards and California Green Building Standards Code (CALGreen). New buildings in compliance with these standards would generally have greater energy efficiency than existing buildings onsite. Encouraging sustainable and energy-efficient building practices and using more renewable energy strategies will further reduce building-related per capita energy. In addition, the proposed project would need to comply with Section 231.18c, Illumination, from the City's Municipal Code which states that all parking area lighting must be energy-efficient. Thus, operation of the proposed buildings would not result in wasteful or unnecessary electricity.

Natural Gas

Implementation of the proposed project would not generate an increased demand for natural gas since there will be no increase in faculty nor students; therefore, natural gas demands would not significantly change onsite.

Transportation Energy

The proposed project would not increase student or staff capacity for the school thus, implementation of the proposed project would not generate additional vehicle fuel usage or vehicle miles traveled compared to existing conditions. Vehicle access to the site would continue to be provided via Indianapolis Avenue at Titan Lane.

The proposed project would provide parking spaces for staff and buses. Additionally, fuel efficiency of vehicles during the buildout year of 2024 would, on average, improve compared to vehicle fuel efficiencies experienced under existing conditions, thereby resulting in a lower per capita fuel consumption in 2024 assuming travel distances, travel modes, and trip rates remain the same. The improvement in fuel efficiency would be attributable to the statewide fuel reduction strategies and regulatory compliances (e.g., CAFE standards), resulting in new cars that are more fuel efficient and the attrition of older, less fuel-efficient vehicles. The CAFE standards are not directly applicable to land use development projects, but to car manufacturers. Thus, the District's students and staff do not have direct control in determining the fuel efficiency of vehicles manufactured and that are made available. However, compliance with the CAFE standards by car manufacturers would ensure that vehicles produced in future years have greater fuel efficiency and would generally result in an overall benefit of reducing fuel usage by providing the population of the project site's region more fuel-efficient vehicle options.

As electricity consumed in California is required to meet the increasing renewable energy mix requirements under the State's RPS and accelerated by SB 100, greater proportions of electricity consumed for transportation energy demand envisioned under the proposed project would continue to be sourced from renewable energy sources rather than fossil fuels. Since vehicle fuel efficiencies would improve year over year through the buildout year of 2024 and result in a decrease in overall per capita transportation energy consumption, impacts would be less than significant with respect to operation-related fuel usage.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Less Than Significant Impact. The State's electricity grid is transitioning to renewable energy under California's Renewable Energy Program. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. Electricity production from renewable sources is generally considered carbon neutral. Executive Order S-14-08, signed in November 2008, expanded the state's renewable portfolios standard (RPS) to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011

(SB X1-2). Senate Bill 350 (de Leon) was signed into law September 2015 and establishes tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. Senate Bill 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures. On September 10, 2018, Senate Bill 100 (SB 100) was signed and raised California's RPS requirements to 60 percent by 2030, with interim targets, and 100 percent by 2045. The bill also established a state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under SB 100 the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

The statewide RPS goal is not directly applicable to individual development projects but to utilities and energy providers such as SCE, which is the utility that would provide all of the electricity needs for the proposed project. Compliance of SCE in meeting the RPS goals would ensure the State meets its objective in transitioning to renewable energy. Furthermore, implementation of the proposed project would be compliant with the current CALGreen and Title 24 Building Energy Efficiency Standards, which would result in greater energy efficiency and more renewable energy use than existing buildings.

Therefore, implementation of the proposed project would not conflict or obstruct plans for renewable energy or energy efficiency, and impacts would be less than significant.

3.7 GEOLOGY AND SOILS

The analysis related to paleontological resources in this section is based in part on the following:

- Paleontological Records Search for the Bus Yard at Sowers Middle School Project, Natural History Museum of Los Angeles County, March 26, 2023

A complete copy of the report is included in Appendix B to this Initial Study.

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS. Would the project:				
a) Directly or indirectly cause 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.			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
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?				
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				

a) Directly or indirectly cause 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.

Less Than Significant Impact. Fault rupture impacts occur when a structure is situated on top of an active fault that displaces in two separate directions during an earthquake. The Alquist-Priolo Earthquake Fault Zoning Act was adopted in 1972 to prevent the construction of buildings in areas where active faults have surface expression. Surface fault rupture is earth surface broken by fault movement. Sudden surface rupture from severe earthquakes can cause extensive property damage, but even slow fault movement (known as "fault creep") can cause displacement that results in offset or disfiguring of curbs, streets, buildings, and other infrastructure.

The project site is near an Alquist-Priolo Earthquake Fault Zone (CDC 2023b). The City's Natural and Environmental Hazards Element states the City is in a seismically active area with local faults such as the Newport-Inglewood Fault Zone, which runs through the City (Huntington Beach 2017a). Therefore, the proposed building could be subject to potential impacts related to seismic activities at or from nearby faults. However, as required by the Alquist-Priolo Earthquake Fault Zoning Act, the approval of projects within Earthquake Fault Zones must be in accordance with the policies and criteria established by the Surface Mining and Geology Board (SMGB) (CPRC, Division 2, Chapter 7.5, Section 2623 (a)). SMGB regulations require that fault investigation reports be prepared by a professional geologist registered in the State of California (CCR, Title 14, Division 2, Chapter 8.1.3, Section 3603 (d)). Additionally, the Seismic Hazards Mapping Act requires projects for human-occupancy that are within mapped fault zones to obtain a site-specific geotechnical report prior to the issuance of individual grading permits. Further, each new development would be required to retain a licensed geotechnical engineer to design new structures to withstand probable seismically induced ground shaking. Furthermore, all new development in California is subject to the seismic design criteria of the 2022 California Building Code (CBC), or the most recent version, which requires that all improvements be constructed to withstand anticipated ground shaking from regional fault sources. The CBC standards require all new developments to be designed consistent with a site specific, design-level geotechnical report, which would be fully compliant with the seismic recommendations of a California-registered professional geotechnical engineer.

Adherence to the applicable CBC requirements, the Alquist-Priolo Fault Zoning Act, and the Seismic Hazards Mapping Act would ensure that the proposed project would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Compliance with state and local regulations would therefore mitigate impacts due to rupture of known fault to less than significant.

ii) Strong seismic ground shaking?

Less Than Significant Impact. Due the location and underlying geology of the City, the proposed project could be subject to strong seismic ground shaking. The proposed project would have to comply with the California Building Code (CBC), which requires stringent earthquake-resistant design parameters and common engineering practices requiring special design and construction methods that reduce or eliminate potential geologic hazards such as ground shaking. In addition, compliance with Policy HAZ-1.A and Policy HAZ-1.C in the City's General Plan Natural and Environmental Hazards Element would help to ensure that structures are more resilient to earthquakes and other geologic and seismic hazards, protecting against injury. Policy HAZ-1.A looks to "ensure that new and significantly retrofitted structures are sited and

designed to reduce the risk of damage from geologic and seismic hazards." Policy HAZ-1.C states "Construct new key facilities to be resistant to damage from geologic and seismic hazards". Adhering to these state and local regulations would make impacts associated with ground shaking less than significant.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefaction refers to loose, saturated sand, or gravel deposits that lose their load-supporting capability when subjected to intense shaking. Liquefaction potential varies based upon three main contributing factors: 1) cohesionless, granular soils having relatively low densities (usually of Holocene age); 2) shallow groundwater (generally less than 50 feet); and 3) moderate to high seismic ground shaking As shown in Figure HAZ-3, *Seismic Hazard Zones (Liquefaction and Landslide)*, of the City's Natural and Environmental Hazards Element, the project site is in an area of the City where there is a high to very high potential for liquefaction to occur. However, the City's Natural and Environmental Hazards Element includes goals and policies that address development in areas prone to liquefaction hazards and help to mitigate the risks posed by liquefaction. Policy HAZ-1.A and Policy HAZ1.C addresses existing structures and works to support retrofits of existing structures to improve resiliency to geologic and seismic hazards. Additionally, all structures would be required to be built to adhere to the 2022 CBC, or the most recent version, which provides minimum standards to protect property and public welfare by regulating design and construction to prevent significant damage due to ground shaking during seismic events. Therefore, impacts would be less than significant.

iv) Landslides?

Less Than Significant Impact. Land slide is a type of erosion in which masses of earth and rock move downslope as a single unit. As shown in Figure HAZ-3, *Seismic Hazard Zones (Liquefaction and Landslide)*, in the City's Natural and Environmental Hazards Element, the project site is not mapped within an earthquake induces landslide zone. The project site is relatively flat. Furthermore, all structures on the site would be required to comply with the CBC, which provides minimum standards to protect property and public welfare by regulating design and construction to reduce the effects of adverse soil conditions such as landslides. Impacts would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. Erosion is a normal and inevitable geologic process whereby earthen materials are loosened, worn away, decomposed, or dissolved, and removed from one place and transported to another. The project site is vacant with some disturbance activity. The project site would implement structural and nonstructural best management practices before and during construction to control surface runoff and erosion to retain sediment on the project site. Once the proposed project is constructed, soil erosion would be controlled with improvements installed on the project site. Therefore, a less than significant impact would occur.

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?

Less Than Significant Impact. As discussed in 3.7.a.iii and iv, the project site is within a liquefaction or landslide zone. However, compliance with the CBC would reduce impacts to less than significant level. Lateral spreading is a phenomenon where large blocks of intact, non-liquefied soil move downslope on a large, liquefied substratum; the mass moves toward an unconfined area, such as a descending slope or stream-cut bluff and has been known to move on slope gradients as little as one degree. The topography of the site is relatively flat, and therefore, impacts from lateral spreading would be less than significant.

Subsidence of basins attributed to overdraft of groundwater aquifers or over pumping of petroleum reserves has been reported in various parts of California. Collapsible soils may appear strong and stable in their natural (dry) state, but they rapidly consolidate under wetting, generating large and often unexpected settlements. Seismically induced settlement consists of dynamic settlement of unsaturated soil (above groundwater) and liquefaction-induced settlement (below groundwater). These settlements occur primarily in low-density sandy soil due to the reduction in volume during and shortly after an earthquake. The project site is within areas of land subsidence according to United States Geological Survey (USGS 2023). However, the proposed project would not require the withdrawal of groundwater from the site. Impacts from subsidence would be less than significant.

The proposed project would be required to comply with CBC and DSA criteria which would ensure adequate design and construction of building foundations to resist soil movement. Therefore, impacts would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less Than Significant Impact. Expansive soils swell when they become wet and shrink when they dry, resulting in the potential for cracked building foundations. The construction of the new building onsite would adhere to the 2022 CBC, or most recent version. Additionally, since the site would be part of a school site, the California Geological Survey and Division of the State Architect would ensure that all potential impacts to the buildings would be sufficiently reduced. Therefore, the project site would not have less than significant impacts on exposing people or the proposed structures to adverse effects associated with expansive soils.

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?

No Impact. The proposed project would not require the installation of a septic tank or alternative wastewater disposal system but would utilize the local sewer system. Therefore, no impact would result from soil conditions in relation to septic tanks or other on-site water disposal systems.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact With Mitigation Incorporated. Paleontological resources are fossilized remains of past life on earth, such as bones, shells, leaves, tracks, burrows, and impressions. The project site is currently developed. The proposed project would include grading and other ground disturbing construction activities to accommodate the construction of the proposed project and utility requirements. According to a peloton logical records search conducted by the Natural History Museum of Los Angeles County (Appendix C), there are no fossil localities that lie directly within the proposed project area but there are fossil localities nearby from the same sedimentary deposits that occur in the project site either at the surface or depth. Therefore, due to the ground disturbance associated with construction, there is potential that a natural landform beneath the site would be encountered during construction and that subsurface resources and/or paleontological resources would be discovered. Implementation of Mitigation Measure GEO-1 would ensure that if resources are discovered during ground disturbing activities that resources would be recovered in accordance with state and federal requirements. Implementation of Mitigation Measure GEO-1 would reduce impacts to paleontological resources to a less than significant level.

Mitigation Measures

GEO-1 If unique paleontological resources are discovered during excavation and/or construction activities, construction shall stop within 50 feet of the find, and a qualified paleontologist shall be consulted to determine whether the resource requires further study. The paleontologist shall make recommendations to the District to protect the discovered resources. Any paleontological resources recovered shall be provided to the Natural History Museum of Los Angeles County (NHMLA), or repository willing and able to accept and house the resource to preserve for future scientific study.

3.8 GREENHOUSE GAS EMISSIONS

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as greenhouse gases (GHGs), into the atmosphere. The primary source of these GHGs is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHGs—water vapor, carbon dioxide (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons.[2]

Information on manufacture of cement, steel, and other "life cycle" emissions that would occur as a result of the project are not applicable and are not included in the analysis.[3] Black carbon emissions are not included in the GHG analysis because the California Air Resources Board (CARB) does not include this pollutant in the state's Senate Bill 32 (SB 32) / Assembly Bill (AB) 1279 inventory and treats this short-lived climate pollutant separately.[4]

[2] Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant, but part of the feedback loop rather than a primary cause of change.

[3] Life cycle emissions include indirect emissions associated with materials manufacture. However, these indirect emissions involve numerous parties, each of which is responsible for GHG emissions of their particular activity. The California Resources Agency, in adopting the CEQA Guidelines Amendments on GHG emissions found that lifecycle analyses was not warranted for project-specific CEQA analysis in most situations, for a variety of reasons, including lack of control over some sources, and the possibility of double-counting emissions (CNRA 2018). Because the amount of materials consumed during the operation or construction of the proposed project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials are also not known, calculation of life cycle emissions would be speculative. A life-cycle analysis is not warranted (OPR 2008).

[4] Particulate matter emissions, which include black carbon, are analyzed in Section 3.3, Air Quality. Black carbon emissions have sharply declined due to efforts to reduce on-road and off-road vehicle emissions, especially diesel particulate matter. The state's existing air quality policies will virtually eliminate black carbon emissions from on-road diesel engines within 10 years (CARB 2017.).

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than Significant. Global climate change is not confined to a particular project area and is generally accepted as the consequence of global industrialization over the last 200 years. A typical project, even a very large one, does not generate enough greenhouse gas emissions on its own to influence global climate change significantly; hence, the issue of global climate change is, by definition, a cumulative environmental impact.

Long-term greenhouse gas (GHG) emissions associated with the proposed project include area sources, energy use, mobile sources (i.e., on-road vehicles), water use/wastewater generation, and solid waste disposal. The primary source of long-term GHG emissions generated by the proposed project would be emissions from project-generated vehicle trips. However, since student capacity will not increase, the proposed project would not generate an increase in trips. The proposed project would also relocate the new parking lot at the north side of the campus for District school bus parking and a lounge for District staff. The bus fleet consists of seven diesel-fueled, five compressed-natural gas (CNG) fueled, and three gasoline-fueled buses, which are currently parked offsite. The relocation of the bus parking lot to the project site would not result in an increase in regional vehicle miles traveled (VMT) or associated vehicle emissions. Therefore, proposed project operations would not generate a cumulatively considerable net increase in GHG emissions. This impact would be less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less than Significant. Applicable plans adopted for the purpose of reducing GHG emissions include CARB's Scoping Plan, the Southern California Association of Governments' (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). A consistency analysis with these plans is presented below.

CARB 2022 Scoping Plan

CARB's latest Climate Change Scoping Plan (2022) outlines the State's strategies to reduce GHG emissions in accordance with the targets established under AB 32, SB 32, and AB 1279. The Scoping Plan is applicable to State agencies and is not directly applicable to cities/counties and individual projects. Nonetheless, the Scoping Plan has been the primary tool that is used to develop performance-based and efficiency-based CEQA criteria and GHG reduction targets for climate action planning efforts.

Statewide strategies to reduce GHG emissions in the 2022 Climate Change Scoping Plan include: implementing SB 100, which expands the RPS to 60 percent by 2030; expanding the Low Carbon Fuel Standards (LCFS) to 18 percent by 2030; implementing the Mobile Source Strategy to deploy zero-electric vehicle buses and trucks; implementing the Sustainable Freight Action Plan; implementing the Short-Lived Climate Pollutant Reduction Strategy, which reduces methane and hydrofluorocarbons to 40 percent below 2013 levels by 2030 and black carbon emissions to 50 percent below 2013 levels by 2030; continuing to implement SB 375; creating a post-2020 Cap-and-Trade Program; and developing an Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Statewide strategies to reduce GHG emissions include the low carbon fuel standards, California Appliance Energy Efficiency regulations, California Renewable Energy Portfolio standard, changes in the CAFE standards, and other early action measures as necessary to ensure the State is on target to achieve the GHG emissions reduction goals of AB 32, SB 32, and AB 1279. In addition, new developments are required to comply with the current Building Energy Efficiency Standards and CALGreen. The proposed project would comply with these GHG emissions reduction measures since they are statewide strategies. The proposed project's GHG emissions would be reduced from compliance with statewide measures that have been adopted since AB 32, SB 32, and AB 1279 were adopted. Therefore, impacts would be less than significant.

SCAG's Regional Transportation Plan / Sustainable Communities Strategy

SCAG adopted the 2020-2045 RTP/SCS (Connect SoCal) in September 2020. Connect SoCal finds that land use strategies that focus on new housing and job growth in areas rich with destinations and mobility options would be consistent with a land use development pattern that supports and complements the proposed transportation network. The overarching strategy in Connect SoCal is to plan for the southern California region to grow in more compact communities in transit priority areas and priority growth areas; provide neighborhoods with efficient and plentiful public transit; establish abundant and safe opportunities to walk, bike, and pursue other forms of active transportation; and preserve more of the region's remaining natural lands and farmlands (SCAG 2020). Connect SoCal's transportation projects help more efficiently distribute population, housing, and employment growth, and forecast development is generally consistent with regional-level general plan data to promote active transportation and reduce GHG emissions. The projected regional development, when integrated with the proposed regional transportation network in Connect SoCal, would reduce per-capita GHG emissions related to vehicular travel and achieve the GHG reduction per capita targets for the SCAG region.

The Connect SoCal Plan does not require that local general plans, specific plans, or zoning be consistent with the SCS, but provides incentives for consistency to governments and developers. Project implementation would not result in an increase in VMT. Therefore, the proposed project would not interfere with SCAG's ability to implement the regional strategies in Connect SoCal, and impacts would be less than significant.

3.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. 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?			X	
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?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	
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 or excessive noise for people residing or working in the project area?				X
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			X	

a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?

Less Than Significant Impact. Project construction would require small amounts of hazardous materials, including fuels, greases and other lubricants, and coatings, such as paint. The handling, use, transport, and disposal of hazardous materials by the construction phase of the project would comply with existing regulations of several agencies, including the Department of Toxic Substances Control, US Environmental Protection Agency, Occupational Safety & Health Administration, Caltrans, and the Los Angeles County Fire Department. The proposed project would operate as a new bus yard and lounge for District staff. Project maintenance may require the use of cleaners, solvents, pesticides, and other custodial products that are potentially hazardous. These materials would be used in relatively small quantities, clearly labeled, and stored in compliance with state and federal requirements. With the exercise of normal safety practices, the project would not create substantial hazards to the public or the environment. Therefore, a less than significant impact would occur.

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?

Less Than Significant Impact. Construction projects typically maintain supplies onsite for containing and cleaning small spills. However, construction activities would not involve a significant amount of hazardous materials, and their use would be temporary. Furthermore, project construction workers would be trained on the proper use, storage, and disposal of hazardous materials. Operation of the site would consist of a bus yard and lounge for staff thus, daily activities from the operation of the proposed project would not warrant use of hazardous materials in quantities that could result in hazardous conditions.

The proposed project would include best management practices (BMPs) to reduce or eliminate pollutants in stormwater discharges. BMPs for hazardous materials may include, but are not limited to, off-site refueling, placement of generators on impervious surfaces, establishing cleanout areas for cement, etc. While the risk of exposure to hazardous materials cannot be eliminated, adherence to existing regulations would ensure compliance with safety standards related to the use and storage of hazardous materials and with the safety procedures mandated by applicable federal, state, and local laws and regulations. Compliance with these regulations would ensure that risks resulting from the routine transportation, use, storage, or disposal of hazardous materials or hazardous wastes associated with the proposed project and the potential for accident or upset is less than significant.

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

Less Than Significant Impact. The two closest schools are Ralph E Hawes Elementary School and Huntington Christian School, both approximately 0.6 miles away from the project site. The proposed project includes the construction of a new bus yard and a lounge for District staff. No significant amounts of hazardous materials, substances, or wastes would be transported, used, or disposed of in conjunction with the future uses on the project site nor within one-quarter mile of an existing or proposed school. The proposed project would not emit hazardous emissions or handle hazardous materials or substances. Impacts would be less than significant.

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?

Less Than Significant Impact. California Government Code Section 65962.5 specifies that the California Department of Toxic Substances Control (DTSC), California Department of Health Services, State Water Quality Control Board (SWRCB), and local enforcement agencies compile lists for various types of hazardous materials sites, including hazardous waste facilities subject to corrective action, designated border zone properties, hazardous waste discharges to public land, public drinking water wells containing detectable levels of organic contaminants, underground storage tanks with reported unauthorized releases, and solid waste disposal facilities from which hazardous waste has migrated. The site lists that were assembled pursuant to the original regulations have largely been subsumed by lists currently maintained by the SWRCB (GeoTracker) and DTSC (Envirostor).

3. Environmental Analysis

A review of these two databases determined that the project site is not listed on either GeoTracker or EnviroStor. Therefore, the impacts are less than significant.

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

No Impact. The nearest airport is John Wayne/Orange County Airport located in the City of Santa Ana, approximately 9.7 miles to the northeast of the project site. The project site is not within the airport land use plan. Therefore, implementation of the proposed project would not result in a safety hazard for people residing or working in the project area. No impact would occur.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The proposed project would not conflict with adopted emergency response or evacuation plans. The surrounding roadways would continue to provide emergency access to the project site and surrounding properties during construction and operation. Both the City Fire Marshal and DSA would be required to approve fire access around the site. The proposed project would not result in inadequate emergency access, and impacts would be less than significant.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less Than Significant Impact. The project site is not located in a very high fire hazard severity zone (CAL FIRE 2023). The project site is located in an urbanized portion of the City. The proposed project would be required to comply with the 2022 CBC and 2022 California Fire Code (CFC). Therefore, the impact related to wildfire exposure would be less than significant.

3.10 HYDROLOGY AND WATER QUALITY

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:			X	
i) result in a substantial erosion or siltation on- or off-site;			X	
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;			X	
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or			X	
iv) impede or redirect flood flows?			X	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			X	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact. The project site is within the jurisdiction of the Santa Ana Regional Water Quality Control Board (SARWQCB). Drainage and surface water discharges during construction and operation of the proposed project would not violate any water quality standards or waste discharge requirements. However, site preparation and other soil-disturbing activities during construction could temporarily increase the amount of soil erosion and siltation entering the local stormwater drainage system.

The proposed project would disturb approximately 0.8 acre. Pursuant to Section 402 of the Clean Water Act, the US Environmental Protection Agency has established regulations under the National Pollution Discharge Elimination System (NPDES).

3. Environmental Analysis

Construction

Clearing, grading, excavation, and construction activities associated with the project would have the potential to impact water quality through soil erosion and increase the amount of silt and debris carried in runoff. Additionally, the use of construction materials such as fuels, solvents, and paints may present a risk to surface water quality. To minimize these potential impacts, the proposed project would be required to comply with Chapter 17.05, Grading and Excavation Code, of the City of Huntington Beach Municipal Code. The This code sets forth rules and regulations to control excavation, grading, and earthwork construction, as well as water quality requirements.

Operation

For project operation, structural best management practices (BMPs), such as landscaping, would reduce runoff. In addition, the proposed project must comply with Section 14.25.040, New Development and Significant Redevelopment, of the City of Huntington Beach Municipal Code. This section establishes that all new development and significant redevelopment must comply with the DAMP, any conditions and requirements established by the Community Development Department and/or Public Works Department, and the Statewide Water Quality Control Plan for Ocean Waters of California to control trash. Therefore, a less than significant impact related to water quality would occur.

The proposed project would also be required to comply with applicable federal, state, and local regulations. Provided that the proposed project complies with the City's Municipal Code and standard BMPs are implemented the proposed project would not substantially degrade water quality. A less than significant impact would occur.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less Than Significant Impact. The proposed project does not propose groundwater wells that would extract groundwater from an aquifer, nor would the proposed project affect recharge capabilities for the basin, as there are no wetlands onsite. Therefore, a less than significant would occur.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) Result in a substantial erosion or siltation on- or off-site?

The proposed project would not alter the course of a stream or river. Construction of the project would increase the potential for erosion and siltation. However, the proposed project would include BMPs such as landscaping, which would reduce runoff, and improvements would be constructed over a short period of time. Therefore, a less than significant impact would occur.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

The proposed project would not alter the course of a stream. Project implementation would include pervious and impervious surfaces on site. With the use of BMPs and compliance with local, state, and federal regulations, to ensure that drainage patterns and stormwater runoff are maintained, impacts would be less than significant.

iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less Than Significant Impact. Project implementation would include pervious and impervious surfaces on site. With the proposed BMPs, impacts associated with impervious surfaces would be reduced. The proposed project would be required to comply with local, state, and federal regulations pertaining to stormwater. Therefore, the proposed project would not exceed the capacity of existing or planned stormwater drainage systems. Impacts would be less than significant.

iv) Impede or redirect flood flows?

Less Than Significant Impact. The project site is developed with existing school buildings and is within Zone X, indicating minimal risk of flooding (Flood Insurance Rate Map ID #06059C0262J) (FEMA 2009). Since the likelihood of floods in the project area is low, the proposed project would have a less than significant impact on impeding or redirecting flood flows.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less Than Significant Impact. A seiche is a surface wave created when a body of water is shaken, usually by earthquake activity. Seiches are of concern relative to water storage facilities because inundation from a seiche can occur if the wave overflows a containment wall, such as the wall of a reservoir, water storage tank, dam or other artificial body of water.

The project site is at the northern edge of the tsunami zone in Huntington Beach. In the project vicinity, the tsunami zone is located south of Indianapolis Avenue, which is the northern boundary of the project site. The area immediately north of Indianapolis Avenue is outside the tsunami zone. Given the project's proximity to areas outside the tsunami zone, including two "safe areas" identified by the City (Moffet Park and Hawes Park), workers on site would not be subject to substantial risk due to tsunami.

According to the FEMA Map Service Center website (FEMA 2009), the project site is within an area with reduced flood risk due to a levee. In addition, based on a review of maps from the Office of Emergency Services (2015), the site is within dam inundation zone for Prado Dam, located about 24 miles northeast of the site in Riverside County. It is highly unlikely that the Prado Dam would experience a catastrophic failure, even in the case of a maximum credible earthquake. Typically, earthen dams show ample warning before experiencing catastrophic failure and a full breach (i.e., prior leaking, cracking, or a partial breach), which would allow enough time for the safe evacuation of students and staff. Additionally, the Prado Reservoir is typically dry and only impounds water during periods of intense rainfall. As flood waters are not estimated to reach the school site

for at least 11 hours, there would be adequate time for the safe evacuation of students and staff at the school site in the unlikely event of a dam failure.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The proposed project would not obstruct or conflict with the implementation of a water quality control plan or sustainable water management plan. The proposed project would comply with the water quality and use requirements of these plans through the implementation of BMPs. Therefore, impacts would be less than significant.

3.11 LAND USE AND PLANNING

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?				X
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			X	

a) Physically divide an established community?

No Impact. The project site is surrounded by residential uses, Sowers Park, and the Talbert Channel along the west. The project site is within an existing school site. The construction and operation of the proposed project would continue to be located within Sowers Middle School grounds. The proposed project would not divide an established community because it would occur entirely on an existing school property. Therefore, no impact would occur.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less Than Significant Impact. The project site is currently zoned PS, and the existing General Plan land use designation is Public/Semipublic with an underlying residential low-density designation (PS/RL). The PS zoning permits city-owned maintenance and service facilities, according to Chapter 214, PS Public-Semipublic District, of the Huntington Beach Municipal Code. The proposed project would not change the zoning or land use designations of the site. The proposed project would not change the uses on site, and the impacts would be less than significant.

3.12 MINERAL RESOURCES

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?				X
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?				X

a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?

No Impact. There are four mineral resources zones (MRZ):

- MRZ-1. Adequate information indicates that no significant mineral deposits are present or likely to be present.
- MRZ-2. Adequate information indicates that significant mineral deposits are present or there is a high likelihood for their presence, and development should be controlled.
- MRZ-3. The significance of mineral deposits cannot be determined form the available data.
- MRZ-4. There is insufficient data to assign any other MRZ designation.

The project site is in MRZ-3, which indicates information is unavailable or historic mining has not occurred; therefore, the significance of mineral resources is unknown (Huntington Beach 2017b). The project site and its surroundings areas are not developed for mineral extraction. The areas surrounding the project site are developed with buildings; therefore, no loss of known resources would result from project implementation. No impact would occur.

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?

No Impact. The policies in the City's Environmental Resources and Conservation Element indicate that mineral resource extractions occur in the MRZ-2 zones within the City. The project site does not have any mining activities occurring onsite. Therefore, the proposed project would not result in a loss of availability of a mining site, and no impact would occur.

3.13 NOISE

The analysis in this section is based in part on the following:

- *Noise Analysis*, Placceworks, May 2023

A complete copy of the report is included in Appendix C to this Initial Study.

Noise Fundamentals

Noise is defined as unwanted sound and, when overexposed, is known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Based on these known adverse effects of noise, federal, state, and local governments have established criteria to protect public health and safety and to prevent the disruption of certain human activities, such as classroom instruction, communication, or sleep. Additional information on noise and vibration fundamentals and applicable regulations are contained in Appendix C.

Environmental Setting

Existing Noise Environment

The project site is partially within the 60 dBA CNEL noise contour along Indianapolis Avenue according to the City of Huntington Beach General Plan Noise Element's Existing Noise Contour and is anticipated to experience a 1 dBA increase by 2040. Most of the project site, however, is outside the 60 dBA CNEL noise contour. The noise environment in the project vicinity is dominated by traffic on Indianapolis Avenue. Noise from residential streets and residential activity, such as property maintenance and persons talking also contribute to the noise environment in the project vicinity.

Because the project proposes a bus yard that would operate during the defined nighttime hours (10:00 PM to 7:00 AM) in the municipal code, PlaceWorks staff conducted short-term noise measurements between the hours of 6:00 AM and 7:00 AM on Friday, February 4, 2022. Ambient noise summary and measurement data can be found in Appendix C.

Ambient Noise Monitoring

To determine a nighttime baseline noise level in the project area, ambient noise monitoring was conducted by PlaceWorks on Friday, February 4, of 2022. Two short-term (15-minute) measurements were made during the hours of 6:00 AM and 7:00 AM. The primary noise source around the measurements was traffic along Indianapolis Avenue. Meteorological conditions during the measurement periods were favorable for outdoor sound measurements and were noted to be typical for the season.

The sound level meter used (Larson Davis LxT) for noise monitoring satisfy the American National Standards Institute (ANSI) standard for Type 1 instrumentation. The sound level meter was set to "slow" response and "A" weighting (dBA). The meter was calibrated prior to the monitoring periods. All measurements were at least 5 feet above the ground and away from reflective surfaces. The results of short-term noise monitoring are

summarized in Table 4, *Short-Term Noise Measurement Summary*. Noise measurement locations are shown in Figure 5, Approximate Noise Monitoring Locations, and are described below:

- **Short-Term Location 1 (ST-1)** was south of 9322 Indianapolis Avenue and approximately 15 feet north of Indianapolis Avenue's nearest westbound travel lane centerline. A 15-minute noise measurement began at 6:19 AM on Friday, February 4, 2022. The noise environment is characterized primarily by traffic noise from Indianapolis Avenue. Traffic noise levels generally ranged from 68 dBA to 76 dBA.
- **Short-Term Location 2 (ST-2)** was at the western property line between 20551 Cohasset Lane Isaac L. Sowers Middle School. A 15-minute noise measurement began at 6:42 AM on Friday, February 4, 2022. The noise environment is characterized primarily by HVAC noise from the school portables and birds. Secondary noise sources include traffic from Indianapolis Avenue. Noise levels were generally steady measuring at 59 dBA.

Table 4 Short-Term Noise Measurement Summary

Monitoring Location	Description	15-minute Noise Level, dBA		
		L_{eq}	L_{max}	L_{min}
ST-1	South of 9322 Indianapolis Avenue 02/04/2022, 6:19 a.m.	60.3	77.4	45.3
ST-2	Between 20551 Cohasset Lane Isaac L. Sowers Middle School 02/04/2022, 6:42 a.m.	59.1	61.0	52.8

Sensitive Receptors

The project site would be bounded by the existing Sowers Park to the west; hardcourts, parking, and driving aisles as part of Sowers Middle School to the east; classroom buildings and turf athletic field to the south, and Indianapolis Avenue to the north. The nearest residential uses are approximately 75 feet to the north across Indianapolis Avenue, and there are also residences approximately 350 feet to the east along Cohasset Lane, approximately 370 feet west across the Talbert Channel, and approximately 730 feet south beyond the Project site.

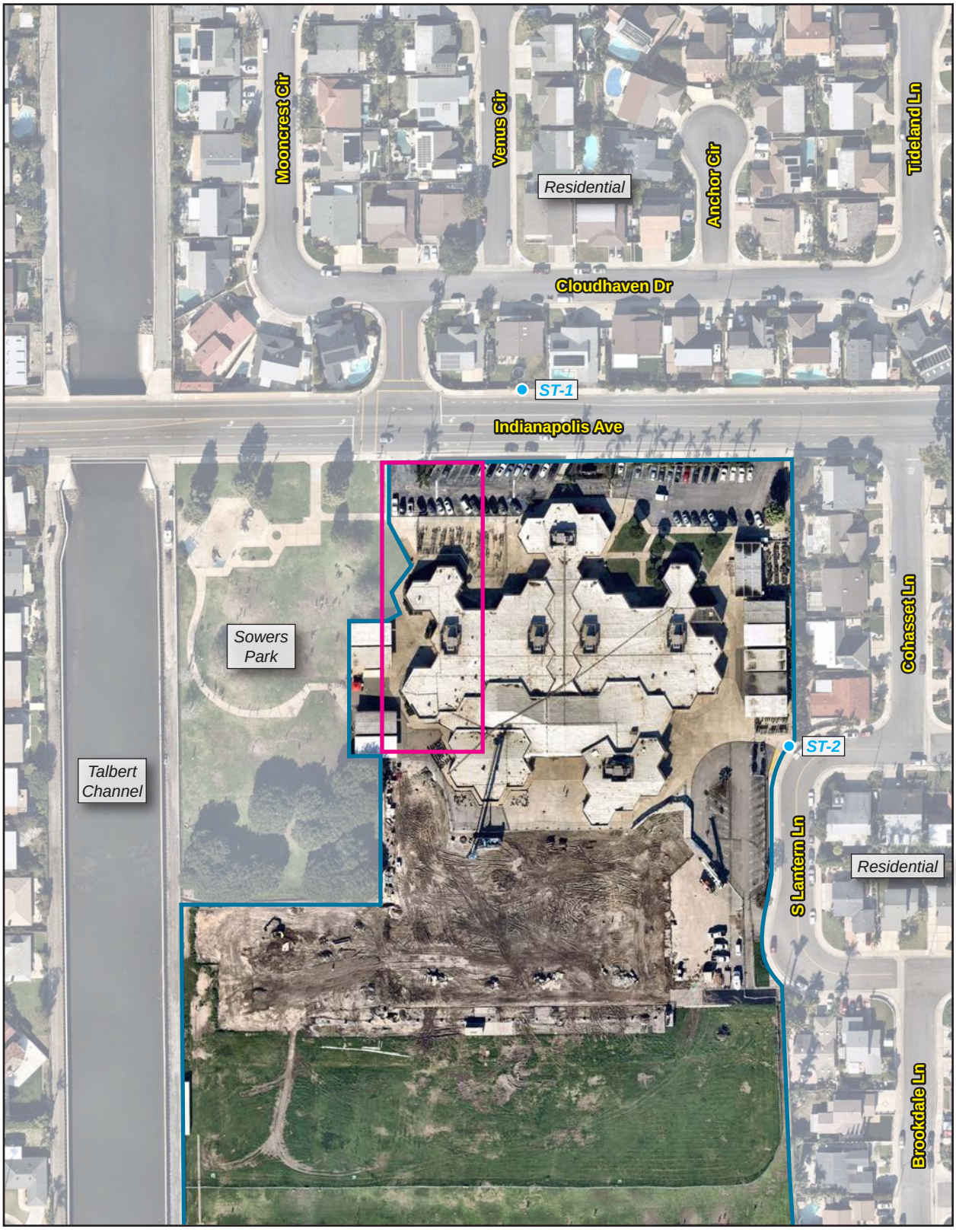
Applicable Standards

State Noise Regulations

California Building Code

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a general plan that includes a noise element which is to be prepared according to guidelines adopted by the Governor's Office of Planning and Research. The purpose of the noise element is to "limit the exposure of the community to excessive noise levels."

Figure 5 - Approximate Noise Monitoring Locations



Sowers Middle School
Project Site
ST-X Short-Term Noise Measurement Locations (2)

0 160
Scale (Feet)

Source: Nearmap, 2023.

3. Environmental Analysis

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The California Green Building Standards Code (CALGreen) has requirements for insulation that affects exterior-interior noise transmission for nonresidential structures. Pursuant to CALGreen Section 5.507.4.1, Exterior Noise Transmission, an architectural acoustics study may be required when a project site is within a 65 dBA CNEL or L_{dn} noise contour of an airport, freeway or expressway, railroad, industrial sources or fixed-guideway sources. Where noise contours are not readily available, if buildings are exposed to a noise level of 65 dBA L_{eq} during any hour of operation, specific wall and ceiling assembly and sound-rated windows may be necessary to reduce interior noise to acceptable levels.

City of Huntington Beach Municipal Code Standards

Exterior Noise Standards

Municipal Code Chapter 8.40, Noise Control, provides noise standards for residential properties. Table 5, *City of Huntington Beach Exterior Noise Standards*, summarizes allowable exterior noise levels at the receiving property lines of residences.

Table 5 City of Huntington Beach Exterior Noise Standards

Land Use	Time of Day	dBA L_{eq}	dBA L_{max}
Low-Density Residential	7:00 AM to 10:00 PM	55	75
	10:00 PM to 7:00 AM	50	70

Source: City of Huntington Beach Municipal Code, Section 8.40.050, Exterior *Noise Standards*.
Notes:
In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA
In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level
In the event that the noise source and the affected property are within different land use categories, the noise standards of the affected property shall apply.

Special Provisions

Under Section 8.40.090, *Special Provisions*, the following activities are exempted:

- School bands, school athletics and school entertainment events, provided such events are conducted on school property or authorized by special permit from the City
- Activities lawfully permitted in public parks, public playgrounds and public or private school grounds
- Any mechanical device, apparatus or equipment used, related to or connected with emergency City work, including City contractors.
- Noise sources associated with construction, repair, remodeling, or grading of any real property, provided that: (1) the City has issued a building, grading or similar permit for such activities; (2) said activities do not take place between the hours of 7:00 PM and 7:00 AM, Monday through Saturday, or at any time on Sunday or a Federal holiday; and (3) the average construction noise levels do not exceed 80 dBA Leq at nearby noise-sensitive land uses. If outdoor construction activities are permitted by the City after 7:00 PM or before 7:00 AM, the average construction Noise Levels at nearby noise-sensitive land uses shall be limited to 50 dBA L_{eq}.

Vibration Standards

Section 8.40.113, Vibration, of the Municipal Code, states that it is unlawful for any person to create, maintain or cause any operational ground vibration on any property which exceeds 72 VdB at nearby vibration-sensitive land uses. The vibration limit at vibration-sensitive uses with high sensitivity such as operations conducting medical research and imaging shall be 65 VdB.

Would the project result in:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. NOISE. Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Generation of excessive groundborne vibration or groundborne noise levels?		X		
c) For a project located within the vicinity of a private airstrip or 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?				X

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. Project construction is anticipated to begin in the summer of 2024. Two types of short-term noise impacts could occur during construction: (1) mobile-source noise from transport of workers, material deliveries, and debris and soil haul and (2) stationary-source noise from use of construction equipment.

Construction Vehicles

The transport of workers and materials to and from the construction site would incrementally increase noise levels along site access roadways. Individual construction vehicle pass-bys may create momentary noise levels of up to approximately 85 dBA L_{max} at 50 feet from the worker and vendor vehicles. However, these occurrences would generally be infrequent and last for only short periods of time. Existing average daily trips in the project vicinity are 8,000 and higher.[5] The addition from temporary worker and vendor trips to construct the bus yard would result in less than a 1 dBA increase to existing traffic levels on adjacent roadways.

[5] Huntington Beach Circulation Element EIR, 2012. *Existing Average Daily Traffic Volumes* provided by Austin-Foust Associates.

Construction Equipment

Noise generated by onsite construction equipment is based on the type of equipment used, its location relative to sensitive receptors, and the timing and duration of noise-generating activities. Each stage of construction involves different kinds of equipment and has distinct noise characteristics. Noise levels from construction activities are typically dominated by the loudest equipment. The dominant equipment noise source is typically the engine, although work-piece noise (such as dropping of materials) can also be noticeable.

The noise produced at each construction stage is determined by combining the L_{eq} contributions from each piece of equipment used at a given time, while accounting for the ongoing time-variations of noise emissions. Heavy equipment, such as a dozer or a loader, can have maximum, short-duration noise levels of up to 85 dBA Lmax at 50 feet. However, overall noise emissions vary considerably, depending on the specific activity performed at any given moment. Noise attenuation due to distance, the number and type of equipment, and the load and power requirements to accomplish tasks at each construction phase would result in different noise levels from construction activities at a given receptor. Since noise from construction equipment is intermittent and diminishes at a rate of at least 6 dBA per doubling of distance (conservatively ignoring other attenuation effects from air absorption, ground effects, and shielding effects), the average noise levels at noise-sensitive receptors could vary considerably, because mobile construction equipment would move around the site with different loads and power requirements.

On-site Construction Noise

Average noise levels from project-related construction activities are calculated by modeling the three loudest pieces of equipment per activity phase. Equipment for asphalt and building demolition, site preparation, rough grading, and paving is modeled at spatially averaged distances (i.e., from the acoustical center of the general construction site to the property line of the nearest receptors) because the area around the center of construction activities best represents the potential average construction-related noise levels at the various sensitive receptors for mobile equipment.

The project's expected construction equipment mix was categorized by construction activity using the FHWA Roadway Construction Noise Model (RCNM). The associated, aggregate sound levels—grouped by construction activity—are summarized in Table 6, *Project-Related Construction Noise (dBA L_{eq})*. RCNM modeling input and output worksheets are included in Appendix C.

Table 6 Project-Related Construction Noise (dBA L_{eq})

Construction Activity Phase	RCNM Reference Noise Level	Residences to the north	Residences to the east	Residences to the south	Residences to the west
Distance in feet	50	230	415	890	435
Asphalt/Building Demolition	85	71	66	60	66
Site Preparation	83	70	65	58	65
Rough Grading	85	71	66	60	66
Paving	85	72	67	60	66
Maximum dBA Leq		**72**	**67**	**60**	**66**
Exceed 80 Leq dBA Threshold?		**No**	**No**	**Yes**	**No**

Notes: Calculations performed with the FHWA RCNM software are included in Appendix C.

3. Environmental Analysis

Bus Yard Operational Noise

In addition to the circulation connectivity enhancement, the project proposes a bus yard at the northeast corner of Sowers Park. Bus yard activities would include pre-trip bus testing between the hours of 5:45 am and 7:00 am on school days. Startup testing includes momentary testing of horns and blinkers, air brakes, wheelchair lifts and bus idling for approximately 30 minutes. Any maintenance, refueling, and washing activities happen at an off-site location, as current conditions do.

PlaceWorks staff conducted noise monitoring at a similar bus facility at the Coachella Valley Unified School District Bus Yard in 2013. A 10-minute noise measurement of bus testing—including idling, back-up beeps, and air brake discharge—resulted in a noise level of 64 dBA L_{eq} and 83 dBA L_{max} at a distance of 30 feet. On a separate occasion PlaceWorks staff conducted noise measurements of an OCTA bus horn at a distance of 20 feet. At 20 feet, the noise from the horn was approximately 74 dBA L_{eq} and 80 L_{max}. When adjusted to a distance of 30 feet, the horn noise level is 70 dBA L_{eq} and 76 dBA L_{max}. The nearest noise sensitive receptors are residences approximately 75 feet to the north across Indianapolis Avenue. Noise monitoring was conducted on Friday, February 4, 2022, between the early morning hours of 6:00 AM and 7:00 AM (see Table 4), approximately the time when buses would conduct their pre-trip bus testing. Ambient noise measurements were taken at the nearest receptors to the north, along Indianapolis Avenue and behind the residences to the east between the school and Cohasset Lane. At these receptors the existing ambient is higher than the municipal code noise standards. Therefore, as mentioned in the municipal code, when the measured ambient is higher than the standard, the measured ambient shall become the standard. Due to the distance between the major roadway and residences directly south of the proposed bus yard, the more stringent noise standard in the municipal code of 45 dBA L_{eq} and 65 dBA L_{max} (nighttime hours with 5 dBA penalty for impulsive noise) is used.

Northern Receptors

The nearest noise sensitive receptors north of the proposed bus yard are approximately 75 feet from the edge of the proposed bus yard. As shown in Table 7, *Project Related Bus Yard Noise Levels (dBA L_{eq})*, and Table 8, *Project Related Bus Yard Noise Levels (dBA L_{max}),* at 75 feet noise levels would exceed the existing ambient L_{eq} and L_{max} for receptors to the north by approximately 8 dBA during testing of bus horns. Table 9, *Project Related Bus Yard Noise Levels with 7-Foot-Wall (dBA L_{eq})*, and Table 10, *Project Related Bus Yard Noise Levels with 7-Foot-Wall* (dBA L_{max}), show the mitigated noise levels with the installation of a 7-foot wall. With the sound wall, the highest noise levels produced by bus horns would be reduced to 55 dBA and would not exceed the existing ambient noise environment.

Table 7 Project Related Bus Yard Noise Levels (dBA L_{eq})

Worst Case Scenario by Activity	City Noise Standard at the Property Line[1,2]	Measured Ambient at the Property Line[3]	Level at Residences to the North at 75 Feet	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	45	60	56	Yes
Bus Horn[1]	45	60	63	Yes

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.
3 In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

Table 8 Project Related Bus Yard Noise Levels (dBA L_{max})

Worst Case Scenario by Activity	City Noise Standard at the Property Line[1,2]	Measured Ambient at the Property Line[3]	Level at Residences to the North at 75 Feet	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	65	77	75	Yes
Bus Horn[1]	65	77	68	No

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.
3 In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

Table 9 Project Related Bus Yard Noise Levels with 7-Foot-Wall (dBA L_{eq})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Measured Ambient at the Property Line[3]	Level at Residences to the North at 75 Feet with Wall	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	45	60	49	No
Bus Horn[1]	45	60	55	No

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.
3 In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

Table 10 Project Related Bus Yard Noise Levels with 7-Foot-Wall (dBA L_{max})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Measured Ambient at the Property Line[3]	Level at Residences to the North at 75 Feet with Wall	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	65	77	67	No
Bus Horn[1]	65	77	61	No

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.
3 In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

Eastern Receptors

The nearest noise sensitive receptors east of the proposed bus yard are approximately 350 feet. As shown in Table 11, *Project Related Bus Yard Noise Levels (dBA L_{eq})*, and Table 12, *Project Related Bus Yard Noise Levels(dBA L_{max})*, based on measured ambient noise levels and with the applicable 5 dBA penalty for impulsive noise (bus horns, beeps, alarms) noise levels would not exceed the existing L_{eq} ambient and L_{max} municipal code standard of 65 dBA (ambient is lower than MC threshold) at the nearest receptors to the east. However, to prevent noise levels from increasing over ambient for residences to the northeast (e.g. homes that are not blocked from the line of sight from the bus yard with the 7 foot wall for the north, therefore no mitigation from the wall occurs) a 6-foot wall would be necessary to reduce noise levels for those residents. Table 13, *Project Related Bus Yard*

3. Environmental Analysis

Noise Levels with 6-Foot-Wall (dBA L_{eq}), and Table 14, *Project Related Bus Yard Noise Levels with 6-Foot-Wall (dBA Lmax)*, show the noise levels with a sound wall for the residents located directly east of the bus yard.

Table 11 Project Related Bus Yard Noise Levels (dBA L_{eq})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Measured Ambient at the Property Line[3]	Level at Residences to the East at 350 Feet	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	45	59	43	No
Bus Horn[1]	45	59	49	No

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.
3 In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

Table 12 Project Related Bus Yard Noise Levels (dBA L_{max})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Level at Residences to the South at 730 Feet	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	65	61	No
Bus Horn[1]	65	55	No

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.

Table 13 Project Related Bus Yard Noise Levels with 6-Foot-Wall (dBA L_{eq})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Measured Ambient at the Property Line[3]	Level at Residences to the East at 350 Feet with Wall	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	45	59	37	No
Bus Horn[1]	45	59	43	No

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.
3 In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

Table 14 Project Related Bus Yard Noise Levels with 6-Foot-Wall (dBA L_{max})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Level at Residences to the South at 730 Feet with Wall	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	65	55	No
Bus Horn[1]	65	49	No

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.

Southern Receptors

The nearest noise sensitive receptors south of the proposed bus yard are approximately 730 feet. The presumed ambient noise environment of 45 and 65 dBA (with 5 dBA penalty for impulsive noise) is used at these receptors further away from the major roadway noise source for a conservative analysis. As shown in Table 15, *Project Related Bus Yard Noise Levels(dBA L_{eq})*,and Table 16, *Project Related Bus Yard Noise Levels (dBA L_{max})*, at 730 feet noise levels would not exceed the nighttime noise standards of 45 dBA L_{eq} and 65 dBA L_{max}.

Table 15 Project Related Bus Yard Noise Levels (dBA L_{eq})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Level at Residences to the South at 730 Feet	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	45	36	No
Bus Horn[1]	45	43	No

Notes

1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.

2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.

Table 16 Project Related Bus Yard Noise Levels (dBA Lmax)

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Level at Residences to the South at 730 Feet	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	65	55	No
Bus Horn[1]	65	48	No

Notes

1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.

2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.

Western Receptors

The nearest noise sensitive receptors west of the proposed bus yard are approximately 370 feet. The presumed ambient of 45 and 65 dBA (with 5 dBA penalty for impulsive noise) is used at these receptors for a conservative analysis. As shown in Table 17, *Project Related Bus Yard Noise Levels (dBA L_{max})*, at 370 feet noise levels would not exceed the nighttime noise standards of 65 dBA L_{max}. However, Table 18, *Project Related Bus Yard Noise Levels (dBA L_{eq})*, shows that the nighttime noise standard of 45 dBA L_{eq} would be exceeded by approximately 4 dBA during testing of bus horns. Table 19, *Project Related Bus Yard Noise Levels with 6-Foot-Wall, (dBA Leq)*, and Table 20, *Project Related Bus Yard Noise Levels with 6-Foot-Wall (dBA L_{max})*, show the noise levels with the installation of a 6-foot wall. With the sound wall, bus horn levels would be reduced to 43 dBA and would not exceed the 45 L_{eq} noise standard.

3. Environmental Analysis

Table 17 Project Related Bus Yard Noise Levels (dBA L_{eq})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Level at Residences to the West at 370 Feet	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	45	42	No
Bus Horn[1]	45	49	Yes

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.
3 In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

Table 18 Project Related Bus Yard Noise Levels (dBA L_{max})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Level at Residences to the West at 370 Feet	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	65	61	No
Bus Horn[1]	65	54	No

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.
3 In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

Table 19 Project Related Bus Yard Noise Levels with 6-Foot-Wall (dBA L_{eq})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Level at Residences to the West at 370 Feet with Wall	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	45	36	No
Bus Horn[1]	45	43	No

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 a.m. and 7:00 am which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.
3 In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

Table 20 Mitigated Project Related Bus Yard Noise Levels with 6-Foot-Wall (dBA L_{max})

Worst Case Scenario by Activity	City Noise Standard at the Property Line with Penalty[1,2]	Level at Residences to the West at 370 Feet with Wall	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air Brakes[1]	65	55	No
Bus Horn[1]	65	48	No

Notes
1 In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.
2 Bus testing would occur between 5:45 AM. and 7:00 AM which would fall under nighttime hours of 10:00 PM to 7:00 AM as defined in the Municipal Code.
3 In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

With the proposed permanent sound walls that would abut the north, east, and western border along the entirety of the bus yard, noise impacts from the proposed project would be reduced to less than significant.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact With Mitigation Incorporated.

Operational Vibration

The operation of the proposed project would not include any substantial long-term vibration sources. Thus, no significant vibration effects from operations sources would occur.

Construction Vibration

Vibration Annoyance

Groundborne vibration is rarely annoying to people who are outdoors, so it is usually evaluated in terms of indoor receivers. For annoyance, vibration is typically noticed nearby when objects in a building generate noise from rattling windows or picture frames. Since construction activities are typically distributed throughout the project site, vibration annoyance impacts are typically based on average vibration levels (levels that would be experienced by sensitive receptors most of the time). However, to represent the worst-case vibration level, distances to the nearest sensitive receptor buildings are measured from the edge of the proposed bus yard. For vibration annoyance, the City of Huntington Beach and the FTA vibration level limit of 72 VdB will apply to the surrounding residential receptors.

Table 21, *Worst Case Annoyance Vibration Levels from Construction Equipment,* shows the vibration levels from typical earthmoving construction equipment at the nearest sensitive receptors. As shown in the table, construction-generated vibration levels would exceed 72 VdB for the residences to the north regarding usage of a vibratory roller. Therefore, impacts related to construction vibration annoyance would be potentially significant. Implementation of Mitigation Measure N-1 would reduce these impacts to less than significant.

Table 21 Worst Case Annoyance Vibration Levels from Construction Equipment

	Vibration Levels (VdB)				
Equipment	Reference Levels at 25 feet	Single-Family Residence at 9312 Cloud Haven Drive (80 feet North)	Single-Family Residence at 20521 Cohasset Lane (370 feet East)	Single-Family Residence at 9271 Sunridge Drive (745 feet South)	Single-Family Residence at 20512 Minerva Lane (400 feet West)
Vibratory Roller	94.0	**78.8**	58.9	49.8	57.9
Static Roller	82.0	66.8	46.9	37.8	45.9
Hoe Ram	87.0	71.8	51.9	42.8	50.9
Large Bulldozer	87.0	71.8	51.9	42.8	50.9
Caisson Drilling	87.0	71.8	51.9	42.8	50.9
Loaded Trucks	86.0	70.8	50.9	41.8	49.9
Jackhammer	79.0	63.8	43.9	34.8	42.9
Small Bulldozer	58.0	42.8	22.9	13.8	21.9
FTA Threshold	-	72	72	72	72
Exceeds Threshold?	-	**Yes**	**No**	**No**	**No**

Source: FTA 2006.
Bold numbers indicate values that exceed the FTA annoyance criteria.
Distances are from the edge of the overall construction zone to the nearest receptor building within each land use type.

Vibration Damage

Construction Vibration

Construction operations can generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor-building construction. The effects from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight architectural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures.

For reference, a vibration level of 0.2 in/sec PPV is used as the limit for non-engineered timber and masonry buildings (which would apply to the surrounding residential structures) (FTA 2018). Vibration damage is measured from the edge of the project site to the nearest structure (home) façade because vibration damage, unlike human vibration perception or annoyance, is determined by measuring instantaneous peak particle velocity generated by equipment. Table 22, *Vibration Damage Levels for Typical Construction Equipment*, summarizes vibration levels for typical construction equipment at a reference distance of 25 feet and at the nearest sensitive receptors. The nearest structure to proposed construction activities is the single-family residences approximately 80 feet or less to the north of the project site.

Table 22 Vibration Damage Levels for Typical Construction Equipment

	PPV (in/sec)				
Equipment	FTA Reference at 25 feet	Single-Family Residence at 9312 Cloud Haven Drive (80 feet North)	Single-Family Residence at 20521 Cohasset Lane (370 feet East)	Single-Family Residence at 9271 Sunridge Drive (745 feet South)	Single-Family Residence at 20512 Minerva Lane (400 feet West)
Vibratory Roller	0.21	0.037	0.004	0.001	0.003
Static Roller	0.05	0.009	0.001	0.000	0.001
Hoe Ram	0.089	0.016	0.002	0.001	0.001
Large Bulldozer	0.089	0.016	0.002	0.001	0.001
Caisson Drilling	0.089	0.016	0.002	0.001	0.001
Loaded Trucks	0.076	0.013	0.001	0.000	0.001
Jackhammer	0.035	0.006	0.001	0.000	0.001
Small Bulldozer	0.003	0.001	0.000	0.000	0.000

Sources: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018. New Zealand Transport Agency 2012.
NA= Not Applicable
Bold = Threshold exceedance

With implementation of Mitigation Measure N-1, vibration levels would not cause an exceedance of 0.2 in/sec PPV at the nearby sensitive receptors of the proposed project, resulting in a less than significant impact.

Mitigation Measure N-1

N-1 The Huntington Beach School District and its construction contractor shall implement the following measures during all ground-disturbing activities:

- Vibratory compaction that is within 25 to 135 feet of any surrounding sensitive receptor structure shall be conducted with the use of a static roller in lieu of a vibratory roller. At a distance greater than 25 feet, a vibratory roller would no longer exceed 0.20 inches per second (in/sec) peak particle velocity PPV, however, it would exceed the 72 VdB threshold as set by the FTA and the City of Huntington Beach at distances up to 135 feet. Therefore, a static roller shall be used within 25 to 135 feet where levels would be reduced to 0.20 in/sec PPV or less and be below the 72 VdB annoyance threshold. At distances greater than 135 feet from all surrounding receptors, vibratory compaction would be okay for use.

c) For a project located within the vicinity of a private airstrip or 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?

No impact. The nearest aviation use would be the Civic Center Helipad, approximately 2.2 miles northwest of the project site, and the nearest public airstrip would be approximately six miles to the northeast at John Wayne Airport located in the City of Santa Ana (Airnav 2023). Therefore, the proposed project would not expose people residing or working in the project site to excessive aircraft noise levels from aviation use. No impact would occur.

3.14 POPULATION AND HOUSING

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. POPULATION AND HOUSING. Would the project:				
a) Induce substantial unplanned 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)?				X
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

a) Induce substantial unplanned 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)?

No Impact. The proposed project would result in no increase in student enrollment or staff and would not directly increase population growth in the area. No construction of homes or businesses is proposed, nor any extension of roads or other infrastructure. Project implementation would not induce population growth. No impact would occur.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The project site is located within an existing school site. Project construction would be restricted to the existing campus, and no housing would be displaced or replaced. No impact would occur.

3.15 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:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. PUBLIC SERVICES. Would the project:				
a) 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:				
Fire protection?			X	
Police protection?			X	
Schools?				X
Parks?				X
Other public facilities?				X

a) Fire protection?

Less Than Significant Impact. Fire protection services are provided by the City of Huntington Beach Fire Department (HBFD). The project site is currently served for fire protection services. The closest fire station to the project site is the Bushard Station 3, located at 19711 Bushard St, approximately 1.1-mile north of the project site. The proposed project would not bring additional employees to the site nor proposed new access points. Therefore, project implementation would not substantially affect the City's Fire Department's response times or require expansion of fire protection services such that new or physically altered fire stations would be required. Impacts would be less than significant.

b) Police protection?

Less Than Significant Impact. Law enforcement and police protection services are provided by the Huntington Beach Police Department at 2000 Main St., approximately 3.3 miles northwest of the project site. The project site is currently served for police protection services. The proposed project would not bring additional employees or personnel into the project site. Therefore, the proposed project would not warrant additional law enforcement facilities. Impacts related to police protection services would be less than significant.

3. Environmental Analysis

c) Schools?

No Impact. School service needs are related to the size of a residential population, geographic area served, and community characteristics. The proposed project is not a residential project; therefore, would not increase demand for school services. The proposed project would not result in changes in land uses (e.g., housing) that would result in population growth or create a greater demand for school services. Therefore, no impact would occur.

d) Parks?

No Impact. Impacts to public parks and recreational facilities are generally caused by population or employment growth. The proposed project would not increase population or employment. The proposed project would not result in the increased demand for additional parks and recreation services either on-site or in the surrounding area. Therefore, physical impacts to parks and recreation from increased population growth would not occur. No impacts to parks would occur.

e) Other public facilities?

No Impact. The proposed project would not result in impacts associated with the provision of other new or physically altered public facilities (e.g., libraries, hospitals, childcare, teen or senior centers). Physical impacts to public services are usually associated with population in-migration and growth, which increase the demand for public services and facilities. No new population would be generated by the proposed uses; therefore, no increased demand on other public facilities is anticipated. No impacts to other public facilities would occur.

3.16 RECREATION

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. RECREATION.				
a) Would the project 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?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

a) Would the project 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?

No Impact. The proposed project would result in 15 bus parking stalls, 12 regular parking stalls, two handicapped stalls, and a building on the site. The proposed project would not increase number of employees or change the function of the facility. Although the project site is adjacent to Sowers Park, construction impacts would not occur since all construction activities would be restricted to the project site and would not block access to the park. The project would not increase the use or physically impact the existing neighborhood and regional parks or other facilities. No impact would occur.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

No Impact. The proposed project does not include recreational facilities or require the construction or expansion of recreational facilities; therefore, no impact would occur.

3.17 TRANSPORTATION

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			X	
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?				X
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
d) Result in inadequate emergency access?				

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less Than Significant Impact. The proposed project would not adversely affect the school's vehicular, pedestrian, or bicycle access, nor the onsite circulation system. The proposed project would result in the relocation of the bus parking lot at the north side of the campus for the school's bus parking. The existing access point on Indianapolis Avenue would remain, however would be limited to buses and staff parking.

The project site is currently occupied by a portion of the existing facilities from the Sowers Middle School such as the existing parking lot, bike racks, and buildings. Bike racks would be provided on the school campus to accommodate student and staff members who would ride bicycles to and from the school. The proposed project would not significantly affect any public transportation facilities or operation because the proposed project would not result in an increase in capacity; therefore, there would be no change to public transit users.

The proposed project would not adversely affect the internal circulation system, nor would it affect the performance of any transit or non-motorized transportation facilities. The proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway bicycle, and pedestrian facilities. Therefore, impacts would be less than significant.

b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

No Impact. Vehicle delays and levels of service (LOS) have historically been used as the basis for determining the significance of traffic impacts as standard practice in California Environmental Quality Act (CEQA) documents. On September 27, 2013, SB 743 was signed into law, starting a process that fundamentally changed transportation impact analyses as part of CEQA compliance. SB 743 eliminate auto delay, LOS, and other similar measures of vehicular capacity or traffic congestion as the sole basis for determining significant impacts under CEQA. As part of the new CEQA Guidelines, the new criteria "shall promote the reduction of

greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses" (Public Resources Code Section 21099(b)(1)).

Pursuant to SB 743, the California Natural Resources Agency adopted revisions to the CEQA Guidelines on December 28, 2018, to implement SB 743. CEQA Guidelines Section 15064.3 describes how transportation impacts are to be analyzed after SB 743. Under the new Guidelines, metrics related to "vehicle miles traveled" (VMT) were required beginning July 1, 2020, to evaluate the significance of transportation impacts under CEQA for development projects, land use plans, and transportation infrastructure projects. The State provided an "opt-in period" and did not require lead agencies to apply for a VMT metric until July 1, 2020. However, in January 2020, State courts stated that under the Public Resources Code Section 21099, subdivision (b)(2), "automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment" under CEQA, except for roadway capacity projects. As stated in the "Technical Advisory on Evaluating Transportation Impact in CEQA" (California Office or Planning and Research, December 2018) and the "Vehicle Miles Traveled – Focused Transportation Impact Study Guide (Caltrans, May 20, 2020), projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact and can be screened from a CEQA VMT analysis because they fall into the small project category. While the proposed project would not result in an increase in the number of students at the project site, the traffic associated with these students and staff would be traveling on the area's roadway network regardless of the status of the proposed project. As there would be no increase in traffic volumes and as the proposed project is well below the CEQA VMT threshold of 110 trips per day, the proposed project can be screened from any further CEQA VMT analysis and would not result in a significant impact relative to VMT.

In addition, Orange County states that projects that generate 500 or fewer average daily tripes (ADT) would generally have total project emissions that could be less than 1,300 metric tons, which is below the common GHG emissions threshold is 3,000 metric tons (MT) of carbon dioxide equivalent (CO2e) per year[6] (County 2020). Based on this qualitative analysis, the County establishes a screening criteria for small projects of up to 500 ADT.

Therefore, the proposed project would have no VMT impacts. No significant impact would occur.

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

Less Than Significant Impact. The proposed project would relocate the new bus yard at the north side of the campus for District school bus parking and create a lounge for existing staff. Bus and staff parking would be provided through the existing access point located on Indianapolis Avenue. The design of new parking lot would be required to adhere to the requirements of the Division of the State Architect and the City of Huntington Beach Fire Department. Compliance with established design standards would ensure that hazards due to design features would not occur. As the proposed project would not result in adverse changes to the

[6] Carbon dioxide equivalent (CO2e) is a concept developed to provide one metric that includes the effects of numerous GHGs. The global warming potential (GWP) of each GHG characterizes the ability of each GHG to trap heat in the atmosphere relative to another GHG. The GWPs of all GHGs are combined to derive the CO2e.

access or circulation features at the project site or surrounding areas, and would improve access and circulation, no impacts would occur. The proposed project would not provide any on- or off-site access or circulation features that would create or increase any design hazards or incompatible uses. Impacts would be less than significant.

d) Result in inadequate emergency access?

Less Than Significant Impact. The proposed project would continue to use the access and circulation features at the project site via Indianapolis Avenue therefore the project site would accommodate emergency ingress and egress by fire trucks, police units, and ambulance/paramedic vehicles. Additionally, the design of the new parking lot would be required to adhere to the requirements of the Division of the State Architect and the City of Huntington Beach Fire Department. Compliance with established design standards would ensure emergency access within the site is adequate. Therefore, impacts would be less than significant.

3.18 TRIBAL CULTURAL RESOURCES

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES.				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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:				
i) 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), or				X
ii) 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 § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

a) 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:

i) 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), or

No Impact. The project site contains buildings belonging to the Sowers Middle school; the project site is not identified as a state or national historic resource, as indicated in Section 3.5(a), above. Construction of the proposed project would be within the footprint of the school's boundaries. Therefore, there would be no impacts to tribal cultural resources.

ii) 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.

3. Environmental Analysis

Less Than Significant Impact With Mitigation Incorporated. As part of the AB 52 process, Native American tribes must submit a written request to the District to be notified of projects within their traditionally and culturally affiliated area. District must provide written, formal notification to those tribes within 14 days of deciding to undertake a project. The tribe must respond to the District within 30 days of receiving this notification if they want to engage in consultation on the project, and the District must begin the consultation process within 30 days of receiving the tribe's request. Consultation concludes under these circumstances: 1) the parties agree to mitigation measures to avoid a significant effect on a tribal cultural resources; 2) a party, acting in good faith and after reasonable effort, concludes mutual agreement cannot be reached; or 3) a tribe does not engage in the consultation process or provide comments.

The District has not been contacted, per AB 52, and the consultation process has not been triggered. Additionally, the project site is not identified as historically significant in a California Register of Historic Resources or meets any of the criteria for listing in the National Register of Historic Places. Although the project site is currently developed, as the proposed project would include ground-disturbing activities, there is a potential to discover previously unidentified subsurface tribal cultural resources. Therefore, Mitigation Measures TCR-1 through TCR-3 have been incorporated to reduce impacts to a less than significant level.

Mitigation Measures

TCR-1 Retain a Native American Monitor/Consultant: The Project Applicant shall be required to retain and compensate for the services of a Tribal monitor/consultant who is both ancestrally affiliated with the project area and is listed under the Native American Heritage Commission's (NAHC) Tribal Contact list for the area of the project location. This list is provided by the NAHC. A Native American monitor shall be retained by the Lead Agency or owner of the project to be on site to monitor all project-related, ground disturbing construction activities (i.e., boring, grading, excavation, potholing, trenching, etc.). A monitor associated with one of the NAHC recognized Tribal governments which have commented on the project shall provide the Native American monitor. The monitor/consultant will only be present onsite during the construction phases that involve ground disturbing activities. The Tribal Monitor/consultant will complete daily monitoring logs that will provide descriptions of the day's activities, including construction activities, locations, soil, and any cultural materials identified. The onsite monitoring shall end when the project site grading and excavation activities are completed, or when the Tribal Representatives and monitor/consultant have indicated that the site has a low potential for impacting Tribal Cultural Resources.

TCR-2 Unanticipated Discovery of Tribal Cultural and Archaeological Resources. Upon discovery of any tribal cultural or archaeological resources, cease construction activities in the immediate vicinity of find until the find can be assessed. All tribal cultural and archaeological resources unearthed by project construction activities shall be evaluated by the qualified archaeologist and tribal monitor/consultant. If the resources are Native American in origin, tribes shall coordinate with the landowner regarding treatment and curation of these resources. Typically, the Tribe will request preservation in place or recovery for educational purposes. Work may continue on other parts of the project while evaluation and, if necessary, additional protective

mitigation takes place (CEQA Guidelines Section 1506.5[f]). If a resource is determined by the qualified archaeologist to constitute a "historical resource" or "unique archaeological resource," time allotment and funding sufficient to allow for implementation of avoidance measures, or appropriate mitigation, must be available. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources and Public Resources Code Sections 21083.2(b) for unique archaeological resources. Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. Any historic archaeological material that is not Native American in origin shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or an institution agrees to accept the material. If no institution accepts the archaeological material, they shall be donated to a local school or historical society in the area for educational purposes.

TCR-3 Unanticipated Discovery of Human Remains and Associated Funerary Objects: Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in PRC 5097.98, are also to be treated according to this statute. Health and Safety Code 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and excavation halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the NAHC and PRC 5097.98 shall be followed.

3.19 UTILITIES AND SERVICE SYSTEMS

Would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			X	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
c) Result in a determination by the waste water 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?			X	
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less Than Significant Impact. The proposed project involves the construction of a bus yard and a lounge for District staff. The proposed project would result in no change to student capacity. The proposed project would demolish and reconstruct all utilities onsite. Therefore, as utilities would not be expanded or relocated, impacts would be less than significant.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less Than Significant Impact. The proposed project is within the SARWQCB region. As student capacity at the site would not change, the water needs are expected to remain the same when compared to existing conditions; therefore, the City's water supply would be sufficient for the proposed project and impacts would be less than significant.

c) Result in a determination by the waste water 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?

Less Than Significant Impact. Orange County Sanitation is responsible for the collection of wastewater within the City. The proposed project would construct a lounge for the District staff on the project site. The proposed project is not expected to increase service capacity; therefore, it is anticipated that the wastewater facilities would continue to have adequate capacity to serve the proposed project. Therefore, impacts would be less than significant.

d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant Impact. Waste from the proposed project would be transported to the Rainbow Transfer/Recycling Company Inc. at 17121 Nichols Street in the City. The Rainbow Transfer/Recycling Company, Inc. has a maximum daily permitted disposal rate of 4,000 tons per day (CalRecycle 2023).

The proposed project would not result in an increase in the student or staff populations; therefore, generation of waste during operational activities would be less than significant. Project impacts on landfill capacity would be less than significant.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less Than Significant Impact. Solid waste would be generated during construction and operation of the proposed project. The proposed project would comply with all regulations pertaining to solid waste, such as the California Integrated Waste Management Act. The District and its construction contractor would comply with all applicable laws and regulations and make every effort to reuse and/or recycle the construction debris that would otherwise be taken to a landfill. Hazardous waste, such as paint used during construction, would be disposed of only at facilities permitted to receive them in accordance with local, state, and federal regulations. The proposed project would comply with all applicable local, state, and federal statutes and regulations related to solid waste disposal. Therefore, impacts would be less than significant.

3.20 WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?			X	
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?			X	
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?			X	
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?			X	

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The proposed project would not conflict with adopted emergency response or evacuation plans. The surrounding roadways would continue to provide emergency access to the project site and surrounding properties during construction and operation. The proposed project would not result in inadequate emergency access, and impacts would be less than significant.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less Than Significant Impact. There are three primary factors used in assessing wildfire hazards—topography, weather, and fuel. The project site is relatively flat and is in a predominantly urbanized environment. The proposed project would not impact weather or topography. At project completion, the site would include pervious and impervious surfaces. According to CAL FIRE, the project site is not within a very high fire hazard severity zone (CAL FIRE 2023). Therefore, the project and site conditions would not contribute to an increase in exposure to wildfire risk. By complying with the CBC and CFC, impacts would be less than significant.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less Than Significant Impact. The proposed project consists of constructing a new lounge and parking lot on the project site. The proposed project would require connections to utilities such as electricity, water, and sewer. The utilities would be installed to meet service requirements. The construction of the proposed new lounge would not directly increase fire risk. The project site is currently developed and located in an urbanized portion of the City. Impacts would be less than significant.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Less Than Significant Impact. The project site is relatively flat and within Zone X, indicating minimal risk of flooding (FEMA 2009). However, landslides have been mapped on the project site (CDC 2023b). The proposed project would be subject to compliance with the CBC. Compliance with the CBC would ensure impacts would be less than significant.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XXI. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to substantially 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, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		
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.)			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

a) Does the project have the potential to substantially 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, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less Than Significant Impact With Mitigation Incorporated. As substantiated in Section 3.5, *Cultural Resources*, no historic resources were identified on-site; therefore, the project site does not have the potential to eliminate important examples of California history or prehistory. Because the property has been previously disturbed, it is not anticipated that unknown tribal cultural resources are present on-site. However, compliance with Mitigation Measure CUL-1 would ensure that impacts to cultural resources would not occur.

As substantiated in Section 3.7, *Geology and Soils*, the proposed project would require limited grading and other ground disturbing construction activities to accommodate the construction of the proposed project and utility requirements. Due to the ground disturbance associated with construction, there is potential that a natural landform beneath the site would be encountered during construction and that subsurface resources and/or paleontological resources would be discovered. However, compliance with Mitigation Measure GEO-1 would ensure that impacts to paleontological resources would not occur.

As discussed in Section 3.18, *Tribal Cultural Resources*, the project site is not identified as historically significant in the California Register of Historic Resources or meets any of the criteria for listing in the National Register of Historic Places. Although the project site is currently developed, as the proposed project would include

ground-disturbing activities, there is a potential to discover previously unidentified subsurface tribal cultural resources. However, compliance with Mitigation Measure TCR-1 through TCR-3 would ensure that impacts to tribal cultural resources would not occur.

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.)

Less Than Significant Impact. The issues relevant to project development are confined to the immediate project site and surrounding area. Additionally, the project site is in an area of the City where supporting utility infrastructure (e.g., water, wastewater, electricity, natural gas, and drainage) and public services (e.g., solid waste collection) are currently available. Project implementation would not require the construction of new or expansion of existing utility infrastructure and services.

Impacts related to other topical areas, such as air quality, GHG, hydrology and water quality, and traffic, would not be cumulatively considerable with development of the project in conjunction with other cumulative projects. In consideration of the preceding factors, the project's contribution to cumulative impacts would be rendered less than significant; therefore, project impacts would not be cumulatively considerable.

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

Less Than Significant Impact. As discussed in the respective topical sections of this Initial Study, implementation of the proposed project would not result in significant impacts in the areas of GHG, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, or wildfire, which may cause adverse effects on human beings. Therefore, impacts related to these environmental effects were deemed to be less than significant.

3. Environmental Analysis

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Appendix A Air Quality, Greenhouse Gas Emissions Data, and Health Risk Assessment

Appendix

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TECHNICAL MEMORANDUM

DATE	February 8, 2022
TO	Huntington Beach City School District
ADDRESS	8750 Dorsett Drive Huntington Beach, CA 92646
CONTACT	Joel Rojas, Director of Development Services
FROM	Dwayne Mears, Principal Nicole Vermilion, Principal Emily Parks, Project Planner Steve Bush, Senior Engineer
SUBJECT	Isaac L. Sowers Middle School Project Air Quality Technical Memorandum
PROJECT NUMBER	HBCS-01

This Air Quality Emissions Technical Memorandum evaluates the potential air quality emissions impacts from re-development of the proposed Isaac L. Sowers Middle School campus (proposed project) in accordance with the California Environmental Quality Act (CEQA). The analysis evaluates the impacts from project-related construction activities compared to the significance criteria adopted by the South Coast Air Quality Management District (South Coast AQMD) for projects in the South Coast Air Basin (SoCAB). Additionally, a qualitative evaluation is provided of operational impacts associated with the proposed school bus parking lot.

Methodology

Projected construction-related air pollutant emissions are calculated using the California Emissions Estimator Model (CalEEMod), version 2020.4. CalEEMod compiles an emissions inventory of construction (fugitive dust, off-gas emissions, on-road emissions, and off-road emissions); area sources; mobile sources; and indirect emissions from energy use, waste disposal (annual only), and water/wastewater (annual only) use. The calculated emissions of the project are compared to thresholds of significance for individual projects using the South Coast AQMD's *CEQA Air Quality Handbook* (1993).

THRESHOLDS OF SIGNIFICANCE

The analysis of the proposed project's air quality impacts follows the guidance and methodologies recommended in the *CEQA Air Quality Handbook* and the significance thresholds on South Coast AQMD's website. CEQA allows the significance criteria established by the applicable air quality management or air pollution control district to be used to assess a project's impacts on air quality. South Coast AQMD has established thresholds of significance for regional air quality emissions for construction activities and project operation. In addition to the daily thresholds, projects are also subject to the ambient air quality standards

(AAQS). These are addressed though an analysis of localized carbon monoxide (CO) impacts and localized significance thresholds (LSTs).

Regional Significance Thresholds

South Coast AQMD has adopted regional construction and operational emissions thresholds to determine a project's cumulative impact on air quality in the SoCAB. Table 1, *South Coast AQMD Regional Significance Thresholds*, lists thresholds that are applicable for all projects uniformly, regardless of size or scope. There is growing evidence that although ultrafine particulates ($PM_{1.0}$) contribute a very small portion of the overall atmospheric mass concentration, they represent a greater proportion of the health risk from particulate matter (PM). However, the United States Environmental Protection Agency (EPA) and California Air Resources Board (CARB) have not yet adopted AAQS to regulate ultrafine particulates; therefore, South Coast AQMD has not developed thresholds for them.

Table 1 South Coast AQMD Regional Significance Thresholds

Air Pollutant	Construction Phase	Operational Phase
Reactive Organic Gases (ROGs)/ Volatile Organic Compounds (VOCs)	75 lbs/day	55 lbs/day
Nitrogen Oxides (NO_X)	100 lbs/day	55 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Sulfur Oxides (SO_X)	150 lbs/day	150 lbs/day
Coarse Particulates (PM_{10})	150 lbs/day	150 lbs/day
Fine Particulates ($PM_{2.5}$)	55 lbs/day	55 lbs/day

Source: South Coast AQMD 2019.

Projects that exceed the regional significance threshold contribute to the nonattainment designation of the SoCAB. The attainment designations are based on the AAQS, which are set at levels of exposure that are determined to not result in adverse health. Exposure to fine particulate pollution and ozone causes myriad health impacts, particularly to the respiratory and cardiovascular systems:

- Linked to increased cancer risk ($PM_{2.5}$, toxic air contaminants [TACs])
- Aggravates respiratory disease (O_3, $PM_{2.5}$)
- Increases bronchitis (O_3, $PM_{2.5}$)
- Causes chest discomfort, throat irritation, and increased effort to take a deep breath (O_3)
- Reduces resistance to infections and increases fatigue (O_3)
- Reduces lung growth in children ($PM_{2.5}$)
- Contributes to heart disease and heart attacks ($PM_{2.5}$)
- Contributes to premature death (O_3, $PM_{2.5}$)
- Linked to lower birth weight in newborns ($PM_{2.5}$) (South Coast AQMD 2011a)

Exposure to fine particulates and ozone aggravates asthma attacks and can amplify other lung ailments such as emphysema and chronic obstructive pulmonary disease. Exposure to current levels of $PM_{2.5}$ is responsible for an estimated 4,300 cardiopulmonary-related deaths per year in the SoCAB. In addition, University of Southern California scientists responsible for a landmark children's health study found that lung growth

improved as air pollution declined for children aged 11 to 15 in five communities in the SoCAB (South Coast AQMD 2015).

Mass emissions in Table 1 are not correlated with concentrations of air pollutants but contribute to the cumulative air quality impacts in the SoCAB. Therefore, regional emissions from a single project do not usually trigger a regional health impact. South Coast AQMD is the primary agency responsible for ensuring the health and welfare of individuals sensitive to elevated concentrations of air quality in the SoCAB. To achieve the health-based standards established by the EPA, South Coast AQMD prepares an air quality management plan (AQMP) that details regional programs to attain the AAQS.

CO HOTSPOTS

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Hot spots are typically produced at intersections where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds. With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the SoCAB and in the state have steadily declined.

In 2007, the SoCAB was designated in attainment for CO under both the California AAQS and National AAQS. The CO hotspot analysis conducted for attainment by South Coast AQMD did not predict a violation of CO standards at the busiest intersections in Los Angeles during the peak morning and afternoon periods.[1] As identified in South Coast AQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SoCAB in previous years were a result of unusual meteorological and topographical conditions and not a result of congestion at a particular intersection (South Coast AQMD 2003). To generate a significant CO impact under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix (BAAQMD 2017).

LOCALIZED SIGNIFICANCE THRESHOLDS

South Coast AQMD developed LSTs for emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ generated at the project site (off-site mobile-source emissions are not included in the LST analysis). LSTs represent the maximum emissions at a project site that are not expected to cause or contribute to an exceedance of the most stringent federal or state AAQS and are shown in Table 2, *South Coast AQMD Localized Significance Thresholds*.

[1] The four intersections were: Long Beach Boulevard and Imperial Highway; Wilshire Boulevard and Veteran Avenue; Sunset Boulevard and Highland Avenue; and La Cienega Boulevard and Century Boulevard. The busiest intersection evaluated (Wilshire and Veteran) had a daily traffic volume of approximately 100,000 vehicles per day, with LOS E in the morning peak hour and LOS F in the evening peak hour.

Table 2 South Coast AQMD Localized Significance Thresholds

Air Pollutant (Relevant AAQS)	Concentration
1-Hour CO Standard (CAAQS)	20 ppm
8-Hour CO Standard (CAAQS)	9.0 ppm
1-Hour NO_2 Standard (CAAQS)	0.18 ppm
Annual NO_2 Standard (CAAQS)	0.03 ppm
24-Hour PM_{10} Standard – Construction (South Coast AQMD)[1]	10.4 µg/m3
24-Hour $PM_{2.5}$ Standard – Construction (South Coast AQMD)[1]	10.4 µg/m3
24-Hour PM_{10} Standard – Operation (South Coast AQMD)[1]	2.5 µg/m3
24-Hour $PM_{2.5}$ Standard – Operation (South Coast AQMD)[1]	2.5 µg/m3

Source: South Coast AQMD 2019.
ppm – parts per million; $\mu g/m^3$ – micrograms per cubic meter
[1] Threshold is based on South Coast AQMD Rule 403. Since the SoCAB is in nonattainment for PM_{10} and $PM_{2.5}$, the threshold is established as an allowable change in concentration. Therefore, background concentration is irrelevant.

To assist lead agencies, South Coast AQMD developed screening-level LSTs to back-calculate the mass amount (lbs. per day) of emissions generated on-site that would trigger the levels shown in Table 2 for projects under 5 acres. These "screening-level" LSTs are the localized significance thresholds for all projects of 5 acres and less; however, they can be used as screening criteria for larger projects to determine whether dispersion modeling may be required in order to compare concentrations of air pollutants generated by the project to the localized concentrations shown in Table 2. In accordance with South Coast AQMD's LST methodology, the screening-level construction LSTs are based on the acreage disturbed per day by equipment use. The screening-level construction LSTs for the project site in Source Receptor Area 18 (SRA 18), North Coastal Orange County, are shown in Table 3, *South Coast AQMD Screening-Level Construction Localized Significance Thresholds*.

Table 3 South Coast AQMD Screening-Level Construction Localized Significance Thresholds

	Threshold (lbs/day)			
Acreage Disturbed	Nitrogen Oxides (NO_X)[1]	Carbon Monoxide (CO)[1]	Coarse Particulates (PM_{10})[2]	Fine Particulates ($PM_{2.5}$)[2]
Phase 1				
≤ 1.00 Acres Disturbed Per Day	92	647	4.00	3.00
1.31 Acres Disturbed Per Day	104	745	4.93	3.62
2.00 Acres Disturbed Per Day	131	962	7.00	5.00
2.50 Acres Disturbed Per Day	142	1,087	8.16	5.67
3.50 Acres Disturbed Per Day	164	1,336	10.49	7.00

Table 3 South Coast AQMD Screening-Level Construction Localized Significance Thresholds

Acreage Disturbed	Threshold (lbs/day)			
	Nitrogen Oxides (NO_X)[1]	Carbon Monoxide (CO)[1]	Coarse Particulates (PM_{10})[2]	Fine Particulates ($PM_{2.5}$)[2]
Phase 2				
≤ 1.00 Acres Disturbed Per Day	92	647	4.00	3.00
1.31 Acres Disturbed Per Day	104	745	4.93	3.62
2.00 Acres Disturbed Per Day	131	962	7.00	5.00
2.50 Acres Disturbed Per Day	142	1,087	8.16	5.67
3.50 Acres Disturbed Per Day	164	1,336	10.49	7.00

Source: South Coast AQMD 2008; South Coast AQMD 2011, Based on receptors in SRA 18 – North Coastal Orange County.
Note: The LST Methodology uses lookup tables based on site acreage to determine emissions for CEQA purposes. The acreage disturbed is the maximum daily disturbed acreage determined using the equipment mix for the different construction activities for this project.
[1] Screening level LSTs are based on receptors within 82 feet (25 meters) of the project site in Source Receptor Area (SRA) 18 for NO_x, CO, PM_{10} and $PM_{2.5}$.

Health Risk

Whenever a project would require use of chemical compounds that have been identified in South Coast AQMD Rule 1401, placed on CARB's air toxics list pursuant to Assembly Bill 1807, or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment is required by the South Coast AQMD. Table 4, *South Coast AQMD Toxic Air Contaminants Incremental Risk Thresholds*, lists the South Coast AQMD's toxic air contaminant (TAC) incremental risk thresholds for operation of a project. The purpose of this environmental evaluation is to identify the significant effects of the proposed project on the environment, not the significant effects of the environment on the proposed project. (*California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369 (Case No. S213478)*). CEQA does not require CEQA-level environmental document to analyze the environmental effects of attracting development and people to an area. However, the environmental document must analyze the impacts of environmental hazards on future users when a proposed project exacerbates an existing environmental hazard or condition. Residential, commercial, and office uses do not emit substantial quantities of TACs, and these thresholds typically apply to new industrial projects.

Table 4 South Coast AQMD Toxic Air Contaminants Incremental Risk Thresholds

Maximum Incremental Cancer Risk	≥ 10 in 1 million
Cancer Burden (in areas ≥ 1 in 1 million)	> 0.5 excess cancer cases
Hazard Index (project increment)	≥ 1.0

Source: South Coast AQMD 2019.

Environmental Impacts

a) Conflict with or obstruct implementation of the applicable air quality plan?

South Coast AQMD adopted the 2016 Air Quality Management Plan on March 3, 2017. Regional growth projections are used by South Coast AQMD to forecast future emission levels in the SoCAB. For southern California, these regional growth projections are provided by the Southern California Association of

Governments (SCAG) and are partially based on land use designations included in city/county general plans. Typically, only large, regionally significant projects have the potential to affect the regional growth projections.

The proposed project involves the construction and operation of re-developed Isaac L. Sowers Middle School. The project is not considered a project of statewide, regional, or area-wide significance that would require intergovernmental review under Section 15206 of the CEQA Guidelines. Because the proposed use would be consistent with the land use and zoning designation, it would not substantially affect the regional growth projections. Furthermore, the new structures will be located on the same site as the structures being replaced and will have the same purpose and capacity as the structure replaced. Therefore, the proposed project would not affect the regional emissions inventory or conflict with strategies in the AQMP. Thus, implementation of the proposed project would not interfere with or obstruct implementation of the AQMP.

b) 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?

The following describes project-related impacts from short-term construction activities and long-term operation of the proposed project.

Regional Construction Emissions

Construction activities would result in the generation of air pollutants. These emissions would primarily be 1) exhaust from off-road diesel-powered construction equipment; 2) dust generated by construction activities; 3) exhaust from on-road vehicles; and 4) off-gassing of volatile organic compounds (VOCs) from paints and asphalt.

Construction activities for the re-development of the middle is anticipated to disturb 4.30 acres during Phase 1 and 4.73 acres for Phase 2 on the project site. The project would involve building and asphalt demolition as well as debris haul and reprocessing, site preparation, grading, building construction, paving, and architectural coating. Construction of Phase 1 is anticipated to take approximately 12 months from fall 2022 to summer 2022. Phase 2 would commence after Phase 1 is complete and would take approximately 12 months from fall 2023 to summer 2024. Construction emissions were estimated using CalEEMod 2020.4 and based on the preliminary construction duration provided by the District. Construction emissions modeling is shown in Table 5, *Maximum Daily Regional Construction Emissions (Phase 1)*, and Table 6, *Maximum Daily Regional Construction Emissions (Phase 2)*. Maximum daily emissions for VOC, NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$ from construction-related activities would be less than their respective South Coast AQMD regional significance threshold values. Therefore, construction of the proposed project would not generate a cumulatively considerable net increase in criteria air pollutant emissions.

Table 5 Maximum Daily Regional Construction Emissions (Phase 1)

Construction Phase	Pollutants (lb/day)[1, 2]					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Year 2022						
Demolition & Demo Debris Haul	3	26	21	<1	2	1
Site Preparation	3	33	20	<1	10	6
Grading	2	21	16	<1	4	2
Building Construction	2	17	20	<1	2	1
Year 2023						
Building Construction	2	16	19	<1	2	1
Building Construction, Paving and Coating	24	26	34	<1	3	2
Maximum Daily Construction Emissions						
Maximum Daily Emissions	24	33	34	<1	10	6
South Coast AQMD Regional Construction Threshold	**75**	**100**	**550**	**150**	**150**	**55**
Significant?	No	No	No	No	No	No

Source: CalEEMod Version 2020.4

[1] Based on the preliminary information provided by the applicant. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by South Coast AQMD of construction equipment.

[2] Includes implementation of fugitive dust control measures required by South Coast AQMD under Rule 403, including watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Table 6 Maximum Daily Regional Construction Emissions (Phase 2)

Construction Phase	Pollutants (lb/day)[1, 2]					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Year 2023						
Demolition & Demo Debris Haul	2	24	21	<1	3	1
Site Preparation	3	28	19	<1	10	6
Grading	2	18	15	<1	4	2
Building Construction	2	16	19	<1	2	1
Year 2024						
Building Construction	2	15	19	<1	2	1
Building Construction, Paving and Coating	14	24	34	<1	3	1
Maximum Daily Construction Emissions						
Maximum Daily Emissions	14	28	34	<1	10	6
South Coast AQMD Regional Construction Threshold	**75**	**100**	**550**	**150**	**150**	**55**
Significant?	No	No	No	No	No	No

Source: CalEEMod Version 2020.4

[1] Based on the preliminary information provided by the applicant. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by South Coast AQMD of construction equipment.

[2] Includes implementation of fugitive dust control measures required by South Coast AQMD under Rule 403, including watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Regional Operational Emissions

Long-term air pollutant emissions associated with the proposed project include area sources (e.g., landscape fuel use, aerosols, architectural coatings, and asphalt pavement), energy use (i.e., natural gas use from cooling, heating, and cooking), and mobile sources (i.e., on-road vehicles). The proposed project would demolish the existing classroom spaces and construct thirty teaching spaces as well as circulation improvements to the existing parking lots and other educational buildings. The primary source of long-term criteria air pollutant emissions generated by the proposed project would be emissions from project-generated vehicle trips. However, since student capacity will not increase the proposed project would not generate an increase in daily weekday trips. The proposed project would also replace older classroom buildings with newer buildings that are constructed to meet the latest California Building and Energy Efficiency Standards. The proposed project also includes a new parking lot at the north side of the campus for District school bus parking and a lounge for District staff. The bus fleet consists of seven diesel-fueled, five compressed-natural gas (CNG) fueled, and three gasoline-fueled buses, which are currently parked offsite. The relocation of the bus parking lot to the project site would not result in an increase in regional VMT or associated vehicle emissions. Therefore, proposed project operations would not generate a cumulatively considerable net increase in criteria air pollutant emissions.

c) Expose sensitive receptors to substantial pollutant concentrations?

The proposed project could expose sensitive receptors to elevated pollutant concentrations if it causes or significantly contributes to elevated pollutant concentration levels. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

Localized Construction Emissions

CONSTRUCTION LSTS

Localized significance thresholds are based on the California AAQS, which are the most stringent AAQS to provide a margin of safety in the protection of public health and welfare. They are designated to protect sensitive receptors most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. The screening-level construction LSTs are based on the size of the project site, distance to the nearest sensitive receptor, and SRA. The nearest off-site residential sensitive receptor are the residents on the east side of the campus along Cohasset Lane, Lantern Lane, and Brooklyn Lane. Other receptors include the students who will be attending school during operation of Phase 1 and Phase 2 on campus.

Air pollutant emissions generated by construction activities would cause temporary increases in air pollutant concentrations. Table 7, *Localized Construction Emissions (Phase 1)*, and Table 8, *Localized Construction Emissions (Phase 2)*, show that the maximum daily on-site construction emissions (pounds per day) for NO_x, CO, PM_{10}, and $PM_{2.5}$ would be less than their respective South Coast AQMD screening-level LSTs. Therefore, project-related construction activities would not expose sensitive receptors to substantial criteria air pollutant concentrations.

Table 7 Localized Construction Emissions (Phase 1)

Construction Activity	Pollutants(lbs/day)[1]			
	NO_X	CO	PM_{10}[2]	$PM_{2.5}$[2]
South Coast AQMD ≤1.00 Acre LST	**92**	**647**	**4.00**	**3.00**
Asphalt Demolition & Demo Debris Haul	26	21	1.48	1.19
Exceeds LST?	No	No	No	No
South Coast AQMD 1.31 Acre LST	**104**	**745**	**4.93**	**3.62**
Building Construction 2022	16	16	0.81	0.76
Building Construction 2023	14	16	0.70	0.66
Exceeds LST?	No	No	No	No
South Coast AQMD 2.00 Acre LST	**131**	**962**	**7.00**	**5.00**
Building Construction 2023, Paving and Architectural Coating	24	30	1.21	1.13
Exceeds LST?	No	No	No	No
South Coast AQMD 2.50 Acre LST	**142**	**1,087**	**8.16**	**5.67**
Grading	21	15	3.97	2.33
Exceeds LST?	No	No	No	No
South Coast AQMD 3.50 Acre LST	**164**	**1,336**	**10.49**	**7.00**
Site Preparation	33	20	10.02	5.80
Exceeds LST?	No	No	No	No

Source: CalEEMod Version 2020.4. South Coast AQMD 2008 and 2011.

Notes: In accordance with South Coast AQMD methodology, only onsite stationary sources and mobile equipment are included in the analysis. Screening level LSTs are based on receptors within 82 feet (25 meters) of the project site in Source Receptor Area (SRA) 18 for NO_X, CO, PM_{10} and $PM_{2.5}$.

1 Based on the preliminary information provided by the applicant. Where specific information for project-related construction activities or processes was not available, modeling was based on CalEEMod defaults. These defaults are based on construction surveys conducted by the South Coast AQMD.

2 Includes fugitive dust control measures required by South Coast AQMD under Rule 403, such as watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Table 8 Localized Construction Emissions (Phase 2)

Construction Activity	Pollutants(lbs/day)[1]			
	NO_X	CO	PM_{10}[2]	$PM_{2.5}$[2]
South Coast AQMD ≤1.00 Acre LST	**92**	**647**	**4.00**	**3.00**
Asphalt Demolition & Demo Debris Haul	21	20	2.81	1.20
Exceeds LST?	No	No	No	No
South Coast AQMD 1.31 Acre LST	**104**	**745**	**4.93**	**3.62**
Building Construction 2023	14	16	0.70	0.66
Building Construction 2024	13	16	0.61	0.58
Exceeds LST?	No	No	No	No
South Coast AQMD 2.00 Acre LST	**131**	**962**	**7.00**	**5.00**
Building Construction 2024, Paving and Architectural Coating	23	30	1.07	1.01
Exceeds LST?	**No**	**No**	**No**	**No**
South Coast AQMD 2.50 Acre LST	**142**	**1,087**	**8.16**	**5.67**
Building and Asphalt Demolition & Demo Debris Haul[3]	46	50	4.02	2.33
Grading	18	15	3.80	2.18
Exceeds LST?	No	No	No	No
South Coast AQMD 3.50 Acre LST	**164**	**1,336**	**10.49**	**7.00**
Site Preparation	28	18	9.67	5.48
Exceeds LST?	No	No	No	No

Source: CalEEMod Version 2020.4. South Coast AQMD 2008 and 2011.

Notes: In accordance with South Coast AQMD methodology, only onsite stationary sources and mobile equipment are included in the analysis. Screening level LSTs are based on receptors within 82 feet (25 meters) of the project site in Source Receptor Area (SRA) 18 for NO_X, CO, PM_{10} and $PM_{2.5}$.

1 Based on the preliminary information provided by the applicant. Where specific information for project-related construction activities or processes was not available, modeling was based on CalEEMod defaults. These defaults are based on construction surveys conducted by the South Coast AQMD.

2 Includes fugitive dust control measures required by South Coast AQMD under Rule 403, such as watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

CONSTRUCTION HEALTH RISK

South Coast AQMD currently does not require health risk assessments for short-term emissions from construction equipment. Emissions from construction equipment primarily consist of diesel particulate matter (DPM). The Office of Environmental Health Hazard Assessment (OEHHA) adopted new guidance for the preparation of health risk assessments in March 2015 (OEHHA 2015). OEHHA has developed a cancer risk factor and noncancer chronic reference exposure level for DPM, but these factors are based on continuous exposure over a 30-year time frame. No short-term acute exposure levels have been developed for DPM. South Coast AQMD currently does not require the evaluation of long-term excess cancer risk or chronic health impacts for a short-term project. The proposed project site would be developed in approximately twelve months during Phase 1 and during Phase 2. The relatively short duration when compared to a 30-year time frame would limit exposures of on-site and off-site receptors. In addition, exhaust emissions from off-road vehicles associated with overall project-related construction activities would not exceed the screening-level LSTs. Therefore, project-related construction activities would not expose sensitive receptors to substantial TAC concentrations.

Localized Operational Emissions

OPERATIONAL LSTS

The proposed project includes a new parking lot at the north side of the campus for District school bus parking and a lounge for District staff. No bus maintenance nor fueling is proposed for the bus parking lot. However, diesel buses idling in the proposed bus parking lot could temporarily increase PM_{10} and $PM_{2.5}$ emissions in proximate to existing residences. To reduce school bus idling emissions, CARB has promulgated the Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools (13 CCR Chapter 10 § 2480), which would limit TAC emissions onsite. The Rule generally restricts a school bus or transit bus from non-essential idling for more than five minutes when within 100 feet of a school. Essential idling would include the morning pre-check, which occurs between 5:45 to 7:00 AM weekdays. Buses idle approximately 30 to 35 minutes depending on what needs to be checked out on the bus (air brakes, wheelchair lift, reverse alarms, horn, air horn, air brakes etc.). To reduce diesel particulate matter (DPM), the District was awarded the grant to replace two diesel buses with two LNG buses. As a result, there would be five diesel buses onsite with implementation of the proposed project.

Though operation of the proposed project could result in an increase in emissions from school bus idling, air pollutant emissions generated from these activities compared to the existing land use would be nominal overall because it would only occur for up to 35 minutes a day during the precheck (see Table 8, *Operational LSTs from Bus Idling*). As shown in this table, localized air quality impacts from proposed project-related operations would not exceed the South Coast AQMD's screening-level thresholds for on-site operational emissions and impacts would be less than significant.

Table 8 Operational LSTs from Bus Idling

Construction Activity	Pollutants (lbs/day)	
	PM_{10}	$PM_{2.5}$
South Coast AQMD 0.64 Acre LST	**1.00**	**1.00**
Bus Idling[1]	0.003	0.002
Exceeds LST?	No	No

Source: South Coast AQMD 2008 and 2011.
Notes: In accordance with South Coast AQMD methodology, only onsite stationary sources and mobile equipment are included in the analysis. Screening level LSTs are based on receptors within 82 feet (25 meters) of the project site in Source Receptor Area (SRA) 18.
[1] Bus idling emissions determined using emission factors from EMFAC2021 for SBUS category, year 2022 in Orange County (CARB 2022).

OPERATIONAL HEALTH RISK

CARB, the California Air Pollution Control Officer's Association (CAPCOA), and South Coast AQMD have identified exposure to elevated concentrations of vehicle generated TACs as a potential air quality hazard for sensitive land uses by. Typically, new major sources of TACs are more commonly associated with industrial manufacturing or warehousing facilities. For instance, CARB only recommends quantitative health risk evaluations for trucking distribution facilities if the number of diesel-fueled trucks per day exceeds 100.

School sites are not typically considered a major source of TACs. The proposed project includes a new parking lot at the north side of the campus for District school bus parking and a lounge for District staff. The size of the existing bus fleet, which consists of seven diesel-fueled, five CNG-fueled, and three gasoline-fueled buses, would not be affected the proposed project. As identified above, the District received a grant to replace two of the diesel buses with two CNG buses, which will reduce future TAC emissions associated with the District bus fleet. No bus maintenance nor fueling is proposed for the bus parking lot, and bus idling would be restricted per the requirements of Title 13 CCR 2480.

Overall, the relocation of the bus parking lot to the project site would not result in a substantial increase in bus trips per day nor TAC emissions, and localized health risk impacts at nearby sensitive receptors (i.e., residences to the east and north; existing students at Sowers Middle School) would be less than significant.

CO HOTSPOTS

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9.0 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to AAQS is typically demonstrated through an analysis of localized CO concentrations, typically produced at intersections where vehicles queue for longer periods and are subject to reduced speeds. The SoCAB has been designated as attainment under both the national and California AAQS for CO. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact (BAAQMD 2017).

Operation of the proposed project would not generate an increase in peak hour vehicle trips during the weekday. Therefore, development and operation of the proposed project would not produce the volume of traffic required (i.e., 24,000 to 44,000 peak hour vehicle trips) to generate a CO hotspot at intersections or the proposed student drop-off zone.

d) Create objectionable odors affecting a substantial number of people?

The threshold for odor is if a project creates an odor nuisance pursuant to South Coast AQMD Rule 402, Nuisance, which 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 provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

Operational Phase Odors

The type of facilities that are considered to have objectionable odors include wastewater treatments plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. The proposed project does not include any of these uses and school uses typically are not associated with foul odors that constitute a public nuisance. Odors associated with the bus parking lot are not expected to generate substantial odors as bus idling would be restrict per Title 13 CCR 2480 and due to the relatively low number of District buses overall (15 total). Odor impacts would be less than significant.

Construction Phase Odors

Emissions from construction equipment, such as diesel exhaust and volatile organic compounds from architectural coatings and paving activities may generate odors. However, these odors would be low in concentration, temporary, and would not affect a substantial number of people. Odor impacts would be less than significant.

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Appendix: Air Quality Modeling Data

February 8, 2022

Assumptions Worksheet

CalEEMod Inputs- Isaac L. Sowers Middle School Redevelopment Project (Phase 1), Construction

Name:	Isaac L. Sowers Middle School Redevelopment Project P1
Project Number:	HBCS-01.0
Project Location:	9300 Indianapolis Avenue in Huntington Beach
County/Air Basin:	Orange
Climate Zone:	8
Land Use Setting:	Urban
Operational Year:	2023
Utility Company:	Southern California Edison
Air Basin:	South Coast Air Basin
Air District:	South Coast AQMD
SRA:	18- North Coastal Orange County

Project Site Acreage	4.30
Disturbed Site Acreage	4.30

Project Components	SQFT	Tons	
Demolition			
Asphalt Demolition	35,577	527	
New Construction	***SQFT***	***Building Footprint***	***ACRES***
Teaching Spaces	26,973	30,500	0.70
Administration Building	8,368	8,368	0.19
Stem Building	4,244	4,244	0.10
TOTAL BUILDING SQFT	**39,585**		**0.99**
Parking Lot	27,876	**NA**	0.64
Total Other Asphalt Surfaces	19,715	**NA**	0.45
Landscape	42,890	**NA**	0.98
Hardscape	53,715	**NA**	1.23
Other non-asphalt surfaces	**96,605**	**NA**	**2.22**
Total	**183,781**		**4.30**

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Educational	Junior High School	39.59	1000 sqft	0.99	39,585
Parking	Parking Lot	27.88	1000 sqft	0.64	27,876
Parking	Other Asphalt Surfaces	19.72	1000 sqft	0.45	19,715
Parking	Other Non-asphalt Surfaces	96.61	1000 sqft	2.22	96,605
				4.30	

Demolition

Component	Amount to be Demolished (Tons)	Haul Truck Capacity (Tons)[1]	Haul Distance (miles)[1]	Total Trip Ends	Duration (days)	Trip Ends/Day
Asphalt demo haul	527	20	20	53	20	3
Total	527			53		

Notes:

[1] CalEEMod defaults used for haul truck capacity and haul distance.

Architectural Coating

	Percent Painted
% Interior Painted	100%
% Exterior Painted:	100%

Rule 1113 < 50 flat / ≤ 100 nonflat

	VOC Content (grams/liter)
Interior	50
Exterior	50

Structures	Land Use Square Feet	CalEEMod Factor[1]	Total Paintable Surface Area	Paintable Interior Area[2]	Paintable Exterior Area[2]
Non-Residential Structures					
Junior High School	39,585	2.0	79,170	59,378	19,793
			79,170	**59,378**	**19,793**
Parking[3]					
Parking Lot	27,876	6%	1,673	-	1,673
			1,673		**1,673**

Notes

[1] The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user.

[2] CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

[3] Architectural coatings for the parking lot is based on CalEEMod methodology applied to a surface parking lot (i.e., striping), in which 6% of surface area is painted. This parking lot will remain and only be re-striped.

Construction Mitigation

South Coast AQMD Rule 403

Replace Ground Cover	PM10:	5	% Reduction
	PM25:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph

South Coast AQMD Rule 1186

	Clean Paved Road	9	% PM Reduction

Southern California Edison Carbon Intensity Factors

	lbs/MWH
CO_2:[1,2]	509.98
CH_4:[3]	0.033
N_2O:[3]	0.004

Notes:

[1] Based on CO2e intensity factor of 512 pounds per megawatt hour; Southern California Edison. 2021. 2020 Sustainability Report. https://www.edison.com/home/sustainability/sustainability-report.html

[2] Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.

[3] CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265
Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).		

Phase 1 Hardscape/Landscape Calculation

	SQFT	*Building Footprint*	*ACRES*
Parking Lot	27,876	NA	0.64
hardcourt (Total Other Asphalt Surfaces)	19,715	NA	0.45
Landscape	42,890	NA	0.98
Hardscape (sidewalks)	53,715	NA	1.23
Other non-asphalt surfaces	**96,605**	NA	2.22
TOTAL	**144,196**		3.31

Construction Activities and Schedule Assumptions: Isaac L. Sowers Middle School Redevelopment Project (Phase 1)

* based on information provided by the District

		CalEEMod Default Construction Schedule		
Construction Activities	**Phase Type**	**Start Date**	**End Date**	**CalEEMod Duration (Workday)**
Demolition	Demolition	9/1/2022	9/28/2022	20
Site Preparation	Site Preparation	9/29/2022	10/5/2022	5
Grading	Grading	10/6/2022	10/17/2022	8
Building Construction	Building Construction	10/18/2022	9/4/2023	230
Paving	Paving	8/10/2023	9/4/2023	18
Architectural Coating	Architectural Coating	8/10/2023	9/4/2023	18

Normalization Calculations

CalEEMod Defaults Construction Duration	
368	days of construction
1.01	years of construction
12.10	months of construction

Assumed Construction Duration	
9/1/2022	8/31/2023
364	days
11.97	months

Norm Factor: 0.99

		Construction Schedule		
Construction Activities	**Phase Type**	**Start Date**	**End Date**	**CalEEMod Duration (Workday)**
Asphalt Demolition	Demolition	9/1/2022	9/28/2022	20
Asphalt Demolition Debris Haul	Demolition	9/1/2022	9/28/2022	20
Site Preparation	Site Preparation	9/29/2022	10/5/2022	5
Grading	Grading	10/6/2022	10/17/2022	8
Building Construction	Building Construction	10/18/2022	8/31/2023	228
Paving	Paving	8/8/2023	8/31/2023	18
Architectural Coating	Architectural Coating	8/8/2023	8/31/2023	18

Overlapping Construction Schedule

Asphalt Demolition & Demo Debris Haul	9/1/2022	9/28/2022	20
Site Preparation	9/29/2022	10/5/2022	5
Grading	10/6/2022	10/17/2022	8
Building Construction 2022	10/18/2022	12/31/2022	54
Building Construction 2023	1/1/2023	8/7/2023	156
Building Construction 2023, Paving and Architectural Coating	8/8/2023	8/31/2023	18

CalEEMod Construction Off-Road Equipment Inputs

**Based on CalEEMod defaults, assumed equipment would not be shared for most conservative results*

General Construction Hours: 8 hours btwn 7:00 AM to 4:00 PM (with 1 hr break), Mon-Fri

Construction Equipment Details						
Equipment	**model**	**# of Equipment**	**hr/day**	**hp**	**load factor***	**total trips**
Asphalt Demolition						
Concrete/Industrial Saws		1	8	81	0.73	
Excavators		3	8	158	0.38	
Rubber Tired Dozers		2	8	247	0.4	
Worker Trips						15
Vendor Trips						0
Hauling Trips						0
Water Trucks (Added to Vendor Trips)						2
Asphalt Demolition Debris Haul						
NO EQUIPMENT NEEDED						
Hauling Trips						53
Site Preparation						
Rubber Tired Dozers		3	8	247	0.4	
Tractors/Loaders/Backhoes		4	8	97	0.37	
Worker Trips						18
Vendor Trips						0
Hauling Trips						
Water Trucks (Added to Vendor Trips)						2
Grading						
Excavators		1	8	158	0.38	
Graders		1	8	187	0.41	
Rubber Tired Dozers		1	8	247	0.4	
Tractors/Loaders/Backhoes		3	8	97	0.37	
Worker Trips						15
Vendor Trips						0
Hauling Trips						0
Water Trucks (Added to Vendor Trips)						2

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	
	Worker Trips						91
	Vendor Trips						36
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						0
Paving							
	Cement and Mortar Mixes		2	6	9	0.56	
	Pavers		1	8	130	0.42	
	Paving equipment		2	6	132	0.36	
	Rollers		2	6	80	0.38	
	Tractors/Loaders/Backhoes		1	8	97	0.37	
	Worker Trips						20
	Vendor Trips						0
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						0
Architectural Coating							
	Air Compressors		1	6	78	0.48	
	Worker Trips						18
	Vendor Trips						0
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						0

Pavement Volume to Weight Conversion

Component	Total SF of Area[1]	Assumed Thickness (foot)[2]	Debris Volume (cu. ft)	Weight of Crushed Asphalt (lbs/cf)[3]	AC Mass (lbs)	AC Mass (tons)
Asphalt Demo	35,577	0.333	11,859	89	1,054,133	527.07
Total	35,577					527

Notes:

[1] Provided by Applicant.

[2] Pavements and Surface Materials. Nonpoint Education for Municipal Officials, Technical Paper Number 8. University of Connecticut Cooperative Extension System, 1999.

[3] https://www.calrecycle.ca.gov/swfacilities/cdi/Tools/Calculations

CalEEMod Inputs- Isaac L. Sowers Middle School Redevelopment Project (Phase 2), Construction

Name:	Isaac L. Sowers Middle School Redevelopment Project P2
Project Number:	HBCS-01.0
Project Location:	9300 Indianapolis Avenue in Huntington Beach
County/Air Basin:	Orange
Climate Zone:	8
Land Use Setting:	Urban
Operational Year:	2024
Utility Company:	Southern California Edison
Air Basin:	South Coast Air Basin
Air District:	South Coast AQMD
SRA:	18- North Coastal Orange County

Project Site Acreage	4.73
Disturbed Site Acreage	4.73

Project Components	SQFT	Tons
Demolition		
Building Demolition	80,781	3,716
Asphalt Demolition	16,694	247
New Construction	***SQFT***	***ACRES***
Gym Building	13,278	0.30
Locker Room Building	3,090	0.07
Lounge Building	966	0.02
TOTAL BUILDING SQFT	**17,334**	**0.40**
Parking Lot	79,983	1.84
Total Other Asphalt Surfaces	78,960	1.81
Landscape	341	0.01
Hardscape	29,421	0.68
Other non-asphalt surfaces	**29,762**	**0.68**
Total	**206,039**	**4.73**

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Educational	Junior High School	17.33	1000 sqft	0.40	17,334
Parking	Parking Lot	79.98	1000 sqft	1.84	79,983
Parking	Other Asphalt Surfaces	78.96	1000 sqft	1.81	78,960
Parking	Other Non-asphalt Surfaces	29.76	1000 sqft	0.68	29,762
				4.73	

Demolition

Component	Amount to be Demolished (Tons)	Haul Truck Capacity (Tons)[1]	Haul Distance (miles)[1]	Total Trip Ends	Duration (days)	Trip Ends/Day
Building demo haul	3,716	20	20	372	20	19
Asphalt demo haul	247	20	20	25	20	1
Total	**3,963**			**397**		**20**

Notes:

[1] CalEEMod defaults used for haul truck capacity and haul distance.

Architectural Coating

	Percent Painted
% Interior Painted	100%
% Exterior Painted:	100%

Rule 1113 < 50 flat / ≤ 100 nonflat

	VOC Content (grams/liter)
Interior	50
Exterior	50

Structures	Land Use Square Feet	CalEEMod Factor[1]	Total Paintable Surface Area	Paintable Interior Area[2]	Paintable Exterior Area[2]
Non-Residential Structures					
Junior High School	17,334	2.0	34,668	26,001	8,667
			34,668	**26,001**	**8,667**
Parking[3]					
Parking Lot	79,983	6%	4,799	-	4,799
			4,799		**4,799**

Notes

[1] The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user.

[2] CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

[3] Architectural coatings for the parking lot is based on CalEEMod methodology applied to a surface parking lot (i.e., striping), in which 6% of surface area is painted. This parking lot will remain and only be re-striped.

Construction Mitigation

South Coast AQMD Rule 403

Replace Ground Cover	PM10:	5	% Reduction
	PM25:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph

South Coast AQMD Rule 1186

	Clean Paved Road	9	% PM Reduction

Southern California Edison Carbon Intensity Factors

	lbs/MWH
CO_2:[1,2]	509.98
CH_4:[3]	0.033
N_2O:[3]	0.004

Notes:

[1] Based on CO2e intensity factor of 512 pounds per megawatt hour; Southern California Edison. 2021. 2020 Sustainability Report. https://www.edison.com/home/sustainability/sustainability-report.html

[2] Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.

[3] CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265

Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).

Phase 2 Hardscape/Landscape Calculation

	SQFT	*Building Footprint*	*ACRES*
Parking Lot	79,983	NA	1.84
hardcourt (Total Other Asphalt Surfaces)	78,960	NA	1.81
Landscape	341	NA	0.01
Hardscape (sidewalks)	29,421	NA	0.68
Other non-asphalt surfaces	**29,762**	NA	0.68
TOTAL	**188,705**		4.33

Construction Activities and Schedule Assumptions: Isaac L. Sowers Middle School Redevelopment Project (Phase 2)

* based on information provided by the District

		CalEEMod Default Construction Schedule		
Construction Activities	**Phase Type**	**Start Date**	**End Date**	**CalEEMod Duration (Workday)**
Demolition	Demolition	9/1/2023	9/28/2023	20
Site Preparation	Site Preparation	9/29/2023	10/5/2023	5
Grading	Grading	10/6/2023	10/17/2023	8
Building Construction	Building Construction	10/18/2023	9/3/2024	230
Paving	Paving	8/9/2024	9/3/2024	18
Architectural Coating	Architectural Coating	8/9/2024	9/3/2024	18

Normalization Calculations

CalEEMod Defaults Construction Duration	
368	days of construction
1.01	years of construction
12.10	months of construction

Assumed Construction Duration	
9/1/2023	8/31/2024
365	days
12.00	months

Norm Factor: 0.99

Normalized Construction Schedule

Building and Asphalt Demolition	9/1/2023	9/28/2023	20
Building and Asphalt Demolition Debris Haul	9/1/2023	9/28/2023	20
Site Preparation	9/29/2023	10/5/2023	5
Grading	10/6/2023	10/17/2023	8
Building Construction	10/18/2023	8/30/2024	228
Paving	8/7/2024	8/30/2024	18
Architectural Coating	8/7/2024	8/30/2024	18

Overlapping Construction Schedule

Building and Asphalt Demolition & Demo Debris Haul	9/1/2023	9/28/2023	20
Site Preparation	9/29/2023	10/5/2023	5
Grading	10/6/2023	10/17/2023	8
Building Construction 2023	10/18/2023	12/31/2023	53
Building Construction 2024	1/1/2024	8/6/2024	157
Building Construction 2024, Paving and Architectural Coating	8/7/2024	8/30/2024	18

CalEEMod Construction Off-Road Equipment Inputs

**Based on CalEEMod defaults, assumed equipment would not be shared for most conservative results*

General Construction Hours: 8 hours btwn 7:00 AM to 4:00 PM (with 1 hr break), Mon-Fri

Construction Equipment Details						
Equipment	**model**	**# of Equipment**	**hr/day**	**hp**	**load factor***	**total trips**
Demolition (Building and Asphalt)						
Concrete/Industrial Saws		1	8	81	0.73	
Excavators		3	8	158	0.38	
Rubber Tired Dozers		2	8	247	0.4	
Worker Trips						15
Vendor Trips						0
Hauling Trips						0
Water Trucks (Added to Vendor Trips)						2
Demolition Debris Haul						
NO EQUIPMENT NEEDED						
Hauling Trips						397
Site Preparation						
Rubber Tired Dozers		3	8	247	0.4	
Tractors/Loaders/Backhoes		4	8	97	0.37	
Worker Trips						18
Vendor Trips						0
Hauling Trips						
Water Trucks (Added to Vendor Trips)						2
Grading						
Excavators		1	8	158	0.38	
Graders		1	8	187	0.41	
Rubber Tired Dozers		1	8	247	0.4	
Tractors/Loaders/Backhoes		3	8	97	0.37	
Worker Trips						15
Vendor Trips						0
Hauling Trips						0
Water Trucks (Added to Vendor Trips)						2

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	
	Worker Trips						87
	Vendor Trips						34
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						0
Paving							
	Cement and Mortar Mixes		2	6	9	0.56	
	Pavers		1	8	130	0.42	
	Paving equipment		2	6	132	0.36	
	Rollers		2	6	80	0.38	
	Tractors/Loaders/Backhoes		1	8	97	0.37	
	Worker Trips						20
	Vendor Trips						0
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						0
Architectural Coating							
	Air Compressors		1	6	78	0.48	
	Worker Trips						17
	Vendor Trips						0
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						0

Demo Haul Trip Calculation

*Conversion factors**

0.046	ton/SF
1.2641662	tons/cy
20	tons
15.82070459	CY
0.791035229	CY/ton

Building	BSF Demo[1]	Tons/SF	Tons	Haul Truck (CY)[2]	Haul Truck (Ton)[2]	Round Trips	Total Trip Ends
Combined Building Demo	80,781	0.046	3715.926	15.82	20.00	186	372

Notes:

[1] Square-foot of building demolition debris to be hauled offsite provided by Applicant

[2] CalEEMod default used.

Pavement Volume to Weight Conversion

Component	Total SF of Area[1]	Assumed Thickness (foot)[2]	Debris Volume (cu. ft)	Weight of Crushed Asphalt (lbs/cf)[3]	AC Mass (lbs)	AC Mass (tons)
Asphalt Demo	16,694	0.333	5,565	89	494,637	247.32
Total	16,694					247

Notes:

[1] Provided by Applicant.

[2] Pavements and Surface Materials. Nonpoint Education for Municipal Officials, Technical Paper Number 8. University of Connecticut Cooperative Extension System, 1999.

[3] CalRecycle. Solid Waste Cleanup Program Weights and Volumes for Project Estimates. https://www.calrecycle.ca.gov/swfacilities/cdi/Tools/Calculations

Emissions Worksheet

Regional Construction Emissions Worksheet (Phase 1):

Asphalt Demolition								
			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Winter						
	Off-Road		2.64	25.72	20.59	0.04	1.24	1.16
	Total		**2.64**	**25.72**	**20.59**	**0.04**	**1.24**	**1.16**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.09	0.03	0.00	0.01	0.00
	Worker		0.05	0.03	0.46	0.00	0.16	0.04
	Total		**0.05**	**0.13**	**0.49**	**0.00**	**0.17**	**0.05**
TOTAL			***2.69***	***25.85***	***21.09***	***0.04***	***1.41***	***1.20***
Onsite		**2022**						
	Off-Road		2.64	25.72	20.59	0.04	1.24	1.16
	Total		**2.64**	**25.72**	**20.59**	**0.04**	**1.24**	**1.16**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.09	0.03	0.00	0.01	0.00
	Worker		0.05	0.03	0.46	0.00	0.16	0.04
	Total		**0.05**	**0.13**	**0.49**	**0.00**	**0.17**	**0.05**
TOTAL			***2.69***	***25.85***	***21.09***	***0.04***	***1.41***	***1.20***

Asphalt Demolition Debris Haul							
			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Winter						
	Fugitive Dust						0.24	0.04
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**0.24**	**0.04**
Offsite								
	Hauling		0.01	0.42	0.12	0.00	0.05	0.01
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.01**	**0.42**	**0.12**	**0.00**	**0.05**	**0.01**
TOTAL			***0.01***	***0.42***	***0.12***	***0.00***	***0.29***	***0.05***
Onsite		**2022**						
	Fugitive Dust		0.00	0.00	0.00	0.00	0.24	0.04
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**0.24**	**0.04**
Offsite								
	Hauling		0.01	0.42	0.12	0.00	0.05	0.01
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.01**	**0.42**	**0.12**	**0.00**	**0.05**	**0.01**
TOTAL			***0.01***	***0.42***	***0.12***	***0.00***	***0.29***	***0.05***

Site Preparation

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Winter						
	Fugitive Dust						8.40	4.32
	Off-Road		3.17	33.08	19.70	0.04	1.61	1.48
	Total		**3.17**	**33.08**	**19.70**	**0.04**	**10.02**	**5.80**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.09	0.03	0.00	0.01	0.00
	Worker		0.06	0.04	0.55	0.00	0.19	0.05
	Total		**0.06**	**0.13**	**0.58**	**0.00**	**0.20**	**0.05**
TOTAL			***3.23***	***33.22***	***20.28***	***0.04***	***10.22***	***5.86***
Onsite		**2022**						
	Fugitive Dust		0.00	0.00	0.00	0.00	8.40	4.32
	Off-Road		3.17	33.08	19.70	0.04	1.61	1.48
	Total		**3.17**	**33.08**	**19.70**	**0.04**	**10.02**	**5.80**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.09	0.03	0.00	0.01	0.00
	Worker		0.06	0.04	0.55	0.00	0.19	0.05
	Total		**0.06**	**0.13**	**0.58**	**0.00**	**0.20**	**0.05**
TOTAL			***3.23***	***33.22***	***20.28***	***0.04***	***10.22***	***5.86***

Grading

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Winter						
	Fugitive Dust						3.03	1.46
	Off-Road		1.95	20.86	15.27	0.03	0.94	0.87
	Total		**1.95**	**20.86**	**15.27**	**0.03**	**3.97**	**2.33**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.09	0.03	0.00	0.01	0.00
	Worker		0.05	0.03	0.46	0.00	0.16	0.04
	Total		**0.05**	**0.13**	**0.49**	**0.00**	**0.17**	**0.05**
TOTAL			***2.00***	***20.98***	***15.76***	***0.03***	***4.14***	***2.38***
Onsite		**2022**						
	Fugitive Dust		0.00	0.00	0.00	0.00	3.03	1.46
	Off-Road		1.95	20.86	15.27	0.03	0.94	0.87
	Total		**1.95**	**20.86**	**15.27**	**0.03**	**3.97**	**2.33**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.09	0.03	0.00	0.01	0.00
	Worker		0.05	0.03	0.46	0.00	0.16	0.04
	Total		**0.05**	**0.13**	**0.49**	**0.00**	**0.17**	**0.05**
TOTAL			***2.00***	***20.98***	***15.76***	***0.03***	***4.14***	***2.38***

Building Construction

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Winter						
	Off-Road		1.71	15.62	16.36	0.03	0.81	0.76
	Total		**1.71**	**15.62**	**16.36**	**0.03**	**0.81**	**0.76**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.06	1.68	0.59	0.01	0.23	0.08
	Worker		0.30	0.20	2.78	0.01	0.94	0.26
	Total		**0.36**	**1.88**	**3.38**	**0.02**	**1.17**	**0.33**
TOTAL			***2.06***	***17.50***	***19.74***	***0.04***	***1.98***	***1.09***
Onsite		**2022**						
	Off-Road		1.71	15.62	16.36	0.03	0.81	0.76
	Total		**1.71**	**15.62**	**16.36**	**0.03**	**0.81**	**0.76**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.06	1.68	0.59	0.01	0.23	0.08
	Worker		0.30	0.20	2.78	0.01	0.94	0.26
	Total		**0.36**	**1.88**	**3.38**	**0.02**	**1.17**	**0.33**
TOTAL			***2.06***	***17.50***	***19.74***	***0.04***	***1.98***	***1.09***

Building Construction

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2023** Winter						
	Off-Road		1.57	14.38	16.24	0.03	0.70	0.66
	Total		**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.04	1.32	0.54	0.01	0.22	0.07
	Worker		0.28	0.18	2.59	0.01	0.94	0.26
	Total		**0.32**	**1.50**	**3.13**	**0.01**	**1.16**	**0.32**
TOTAL			***1.89***	***15.88***	***19.37***	***0.04***	***1.86***	***0.98***
Onsite		**2023**						
	Off-Road		1.57	14.38	16.24	0.03	0.70	0.66
	Total		**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.04	1.32	0.54	0.01	0.22	0.07
	Worker		0.28	0.18	2.59	0.01	0.94	0.26
	Total		**0.32**	**1.50**	**3.13**	**0.01**	**1.16**	**0.32**
TOTAL			***1.89***	***15.88***	***19.37***	***0.04***	***1.86***	***0.98***

Paving

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2023** Winter						
	Off-Road		0.92	8.79	12.19	0.02	0.44	0.40
	Paving		0.16				0.00	0.00
	Total		**1.08**	**8.79**	**12.19**	**0.02**	**0.44**	**0.40**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.06	0.04	0.57	0.00	0.21	0.06
	Total		**0.06**	**0.04**	**0.57**	**0.00**	**0.21**	**0.06**
TOTAL			***1.14***	***8.83***	***12.76***	***0.02***	***0.64***	***0.46***
Onsite		**2023**						
	Off-Road		0.92	8.79	12.19	0.02	0.44	0.40
	Paving		0.16	0.00	0.00	0.00	0.00	0.00
	Total		**1.08**	**8.79**	**12.19**	**0.02**	**0.44**	**0.40**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.06	0.04	0.57	0.00	0.21	0.06
	Total		**0.06**	**0.04**	**0.57**	**0.00**	**0.21**	**0.06**
TOTAL			***1.14***	***8.83***	***12.76***	***0.02***	***0.64***	***0.46***

Architectural Coating

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2023** Winter						
	Archit. Coating		20.82				0.00	0.00
	Off-Road		0.19	1.30	1.81	0.00	0.07	0.07
	Total		**21.01**	**1.30**	**1.81**	**0.00**	**0.07**	**0.07**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.06	0.04	0.51	0.00	0.19	0.05
	Total		**0.06**	**0.04**	**0.51**	**0.00**	**0.19**	**0.05**
TOTAL			***21.06***	***1.34***	***2.32***	***0.00***	***0.26***	***0.12***
Onsite		**2023**						
	Archit. Coating		20.82	0.00	0.00	0.00	0.00	0.00
	Off-Road		0.19	1.30	1.81	0.00	0.07	0.07
	Total		**21.01**	**1.30**	**1.81**	**0.00**	**0.07**	**0.07**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.06	0.04	0.51	0.00	0.19	0.05
	Total		**0.06**	**0.04**	**0.51**	**0.00**	**0.19**	**0.05**
TOTAL			***21.06***	***1.34***	***2.32***	***0.00***	***0.26***	***0.12***

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Asphalt Demolition & Demo Debris Haul	***3***	***26***	***21***	***0***	***2***	***1***
Site Preparation	***3***	***33***	***20***	***0***	***10***	***6***
Grading	***2***	***21***	***16***	***0***	***4***	***2***
Building Construction 2022	***2***	***17***	***20***	***0***	***2***	***1***
Building Construction 2023	***2***	***16***	***19***	***0***	***2***	***1***
Building Construction 2023, Paving and Architectural Coating	***24***	***26***	***34***	***0***	***3***	***2***
MAX DAILY	**24**	**33**	**34**	**0**	**10**	**6**
Regional Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

Construction LST Worksheet (Phase 1):

Asphalt Demolition						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2022**				
	Off-Road		25.72	20.59	1.24	1.16
	Total		**25.72**	**20.59**	**1.24**	**1.16**
Onsite		**2022**				
	Off-Road		25.72	20.59	1.24	1.16
	Total		**25.72**	**20.59**	**1.24**	**1.16**
TOTAL			***25.72***	***20.59***	***1.24***	***1.16***

Asphalt Demolition Debris Haul						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2022**				
	Fugitive Dust				0.24	0.04
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.24**	**0.04**
Onsite		**2022**				
	Fugitive Dust		0.00	0.00	0.24	0.04
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.24**	**0.04**
	Total		**0.00**	**0.00**	**0.00**	**0.00**
TOTAL			***0.00***	***0.00***	***0.24***	***0.04***

Site Preparation						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2022**				
	Fugitive Dust				8.40	4.32
	Off-Road		33.08	19.70	1.61	1.48
	Total		**33.08**	**19.70**	**10.02**	**5.80**
TOTAL			***33.08***	***19.70***	***10.02***	***5.80***
Onsite		**2022**				
	Fugitive Dust		0.00	0.00	8.40	4.32
	Off-Road		33.08	19.70	1.61	1.48
	Total		**33.08**	**19.70**	**10.02**	**5.80**
TOTAL			***33.08***	***19.70***	***10.02***	***5.80***

Grading						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2022**				
	Fugitive Dust				3.03	1.46
	Off-Road		20.86	15.27	0.94	0.87
	Total		**20.86**	**15.27**	**3.97**	**2.33**
TOTAL			***20.86***	***15.27***	***3.97***	***2.33***
Onsite		**2022**				
	Fugitive Dust		0.00	0.00	3.03	1.46
	Off-Road		20.86	15.27	0.94	0.87
	Total		**20.86**	**15.27**	**3.97**	**2.33**

TOTAL			***20.86***	***15.27***	***3.97***	***2.33***

Building Construction						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2022**				
	Off-Road		15.62	16.36	0.81	0.76
	Total		**15.62**	**16.36**	**0.81**	**0.76**
TOTAL			***15.62***	***16.36***	***0.81***	***0.76***
Onsite		**2022**				
	Off-Road		15.62	16.36	0.81	0.76
	Total		**15.62**	**16.36**	**0.81**	**0.76**
TOTAL			***15.62***	***16.36***	***0.81***	***0.76***

Building Construction						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Off-Road		14.38	16.24	0.70	0.66
	Total		**14.38**	**16.24**	**0.70**	**0.66**
TOTAL			***14.38***	***16.24***	***0.70***	***0.66***
Onsite		**2023**				
	Off-Road		14.38	16.24	0.70	0.66
	Total		**14.38**	**16.24**	**0.70**	**0.66**
TOTAL			***14.38***	***16.24***	***0.70***	***0.66***

Paving						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Off-Road		8.79	12.19	0.44	0.40
	Paving				0.00	0.00
	Total		**8.79**	**12.19**	**0.44**	**0.40**
TOTAL			***8.79***	***12.19***	***0.44***	***0.40***
Onsite		**2023**				
	Off-Road		8.79	12.19	0.44	0.40
	Paving		0.00	0.00	0.00	0.00
	Total		**8.79**	**12.19**	**0.44**	**0.40**
TOTAL			***8.79***	***12.19***	***0.44***	***0.40***

Architectural Coating						
			NOx	CO	PM10 Total	PM2.5 Total
TOTAL			***0.00***	***0.00***	***0.00***	***0.00***
Onsite		**2023**				
	Archit. Coating				0.00	0.00
	Off-Road		1.30	1.81	0.07	0.07
	Total		**1.30**	**1.81**	**0.07**	**0.07**
TOTAL			***1.30***	***1.81***	***0.07***	***0.07***
Onsite		**2023**				
	Archit. Coating		0.00	0.00	0.00	0.00
	Off-Road		1.30	1.81	0.07	0.07
	Total		**1.30**	**1.81**	**0.07**	**0.07**
TOTAL			***1.30***	***1.81***	***0.07***	***0.07***

	NOx	**CO**	**PM10 Total**	**PM2.5 Total**
Asphalt Demolition & Demo Debris Haul	***26***	***21***	***1.48***	***1.19***
≤ 1.00 Acre LST	***92***	***647***	***4.00***	***3.00***
Exceeds LST?	***no***	***no***	***no***	***no***
Site Preparation	***33***	***20***	***10.02***	***5.80***

3.50 Acre LST	*164*	*1,336*	*10.49*	*7.00*
Exceeds LST?	*no*	*no*	*no*	*no*
Grading	*21*	*15*	*3.97*	*2.33*
2.50 Acre LST	*142*	*1,087*	*8.16*	*5.67*
Exceeds LST?	*no*	*no*	*no*	*no*
Building Construction 2022	*16*	*16*	*0.81*	*0.76*
1.31 Acre LST	*104*	*745*	*4.93*	*3.62*
Exceeds LST?	*no*	*no*	*no*	*no*
Building Construction 2023	*14*	*16*	*0.70*	*0.66*
1.31 Acre LST	*104*	*745*	*4.93*	*3.62*
Exceeds LST?	*no*	*no*	*no*	*no*
Building Construction 2023, Paving and Architectural Coating	*24*	*30*	*1.21*	*1.13*
2.00 Acre LST	*131*	*962*	*7.00*	*5.00*
Exceeds LST?	*no*	*no*	*no*	*no*

Regional Construction Emissions Worksheet (Phase 2):

Building and Asphalt Demolition							
			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2023** Winter						
	Off-Road		2.27	21.48	19.64	0.04	1.00	0.93
	Total		**2.27**	**21.48**	**19.64**	**0.04**	**1.00**	**0.93**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.07	0.03	0.00	0.01	0.00
	Worker		0.05	0.03	0.43	0.00	0.16	0.04
	Total		**0.05**	**0.10**	**0.46**	**0.00**	**0.17**	**0.05**
TOTAL			***2.32***	***21.59***	***20.10***	***0.04***	***1.17***	***0.97***
Onsite		**2023**						
	Off-Road		2.27	21.48	19.64	0.04	1.00	0.93
	Total		**2.27**	**21.48**	**19.64**	**0.04**	**1.00**	**0.93**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.07	0.03	0.00	0.01	0.00
	Worker		0.05	0.03	0.43	0.00	0.16	0.04
	Total		**0.05**	**0.10**	**0.46**	**0.00**	**0.17**	**0.05**
TOTAL			***2.32***	***21.59***	***20.10***	***0.04***	***1.17***	***0.97***

Demolition Debris Haul								
			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2023** Winter						
	Fugitive Dust						1.81	0.27
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**1.81**	**0.27**
Offsite								
	Hauling		0.04	2.47	0.82	0.01	0.34	0.10
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.04**	**2.47**	**0.82**	**0.01**	**0.34**	**0.10**
TOTAL			***0.04***	***2.47***	***0.82***	***0.01***	***2.15***	***0.38***
Onsite		**2023**						
	Fugitive Dust		0.00	0.00	0.00	0.00	1.81	0.27
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**1.81**	**0.27**
Offsite								
	Hauling		0.04	2.47	0.82	0.01	0.34	0.10
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.04**	**2.47**	**0.82**	**0.01**	**0.34**	**0.10**
TOTAL			***0.04***	***2.47***	***0.82***	***0.01***	***2.15***	***0.38***

Site Preparation

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2023** Winter						
	Fugitive Dust						8.40	4.32
	Off-Road		2.66	27.52	18.24	0.04	1.27	1.16
	Total		**2.66**	**27.52**	**18.24**	**0.04**	**9.67**	**5.48**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.07	0.03	0.00	0.01	0.00
	Worker		0.06	0.04	0.51	0.00	0.19	0.05
	Total		**0.06**	**0.11**	**0.54**	**0.00**	**0.20**	**0.05**
TOTAL			***2.72***	***27.63***	***18.79***	***0.04***	***9.87***	***5.54***
Onsite		**2023**						
	Fugitive Dust		0.00	0.00	0.00	0.00	8.40	4.32
	Off-Road		2.66	27.52	18.24	0.04	1.27	1.16
	Total		**2.66**	**27.52**	**18.24**	**0.04**	**9.67**	**5.48**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.07	0.03	0.00	0.01	0.00
	Worker		0.06	0.04	0.51	0.00	0.19	0.05
	Total		**0.06**	**0.11**	**0.54**	**0.00**	**0.20**	**0.05**
TOTAL			***2.72***	***27.63***	***18.79***	***0.04***	***9.87***	***5.54***

Grading

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2023** Winter						
	Fugitive Dust						3.03	1.46
	Off-Road		1.71	17.94	14.75	0.03	0.77	0.71
	Total		**1.71**	**17.94**	**14.75**	**0.03**	**3.80**	**2.18**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.07	0.03	0.00	0.01	0.00
	Worker		0.05	0.03	0.43	0.00	0.16	0.04
	Total		**0.05**	**0.10**	**0.46**	**0.00**	**0.17**	**0.05**
TOTAL			***1.76***	***18.04***	***15.21***	***0.03***	***3.97***	***2.22***
Onsite		**2023**						
	Fugitive Dust		0.00	0.00	0.00	0.00	3.03	1.46
	Off-Road		1.71	17.94	14.75	0.03	0.77	0.71
	Total		**1.71**	**17.94**	**14.75**	**0.03**	**3.80**	**2.18**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.07	0.03	0.00	0.01	0.00
	Worker		0.05	0.03	0.43	0.00	0.16	0.04
	Total		**0.05**	**0.10**	**0.46**	**0.00**	**0.17**	**0.05**
TOTAL			***1.76***	***18.04***	***15.21***	***0.03***	***3.97***	***2.22***

Building Construction

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2023** Winter						
	Off-Road		1.57	14.38	16.24	0.03	0.70	0.66
	Total		**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.03	1.24	0.51	0.01	0.21	0.07
	Worker		0.27	0.17	2.48	0.01	0.90	0.24
	Total		**0.30**	**1.42**	**2.98**	**0.01**	**1.11**	**0.31**
TOTAL			***1.87***	***15.80***	***19.23***	***0.04***	***1.81***	***0.97***
Onsite		**2023**						
	Off-Road		1.57	14.38	16.24	0.03	0.70	0.66
	Total		**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.03	1.24	0.51	0.01	0.21	0.07
	Worker		0.27	0.17	2.48	0.01	0.90	0.24
	Total		**0.30**	**1.42**	**2.98**	**0.01**	**1.11**	**0.31**
TOTAL			***1.87***	***15.80***	***19.23***	***0.04***	***1.81***	***0.97***

Building Construction

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2024** Winter						
	Off-Road		1.47	13.44	16.17	0.03	0.61	0.58
	Total		**1.47**	**13.44**	**16.17**	**0.03**	**0.61**	**0.58**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.03	1.24	0.51	0.01	0.21	0.07
	Worker		0.25	0.15	2.31	0.01	0.90	0.24
	Total		**0.29**	**1.40**	**2.81**	**0.01**	**1.11**	**0.31**
TOTAL			***1.76***	***14.84***	***18.98***	***0.04***	***1.72***	***0.89***
Onsite		**2024**						
	Off-Road		1.47	13.44	16.17	0.03	0.61	0.58
	Total		**1.47**	**13.44**	**16.17**	**0.03**	**0.61**	**0.58**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.03	1.24	0.51	0.01	0.21	0.07
	Worker		0.25	0.15	2.31	0.01	0.90	0.24
	Total		**0.29**	**1.40**	**2.81**	**0.01**	**1.11**	**0.31**
TOTAL			***1.76***	***14.84***	***18.98***	***0.04***	***1.72***	***0.89***

Paving

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2024** Winter						
	Off-Road		0.88	8.27	12.22	0.02	0.40	0.37
	Paving		0.53				0.00	0.00
	Total		**1.41**	**8.27**	**12.22**	**0.02**	**0.40**	**0.37**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.06	0.04	0.53	0.00	0.21	0.06
	Total		**0.06**	**0.04**	**0.53**	**0.00**	**0.21**	**0.06**
TOTAL			***1.47***	***8.31***	***12.75***	***0.02***	***0.61***	***0.42***
Onsite		**2024**						
	Off-Road		0.88	8.27	12.22	0.02	0.40	0.37
	Paving		0.53	0.00	0.00	0.00	0.00	0.00
	Total		**1.41**	**8.27**	**12.22**	**0.02**	**0.40**	**0.37**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.06	0.04	0.53	0.00	0.21	0.06
	Total		**0.06**	**0.04**	**0.53**	**0.00**	**0.21**	**0.06**
TOTAL			***1.47***	***8.31***	***12.75***	***0.02***	***0.61***	***0.42***

Architectural Coating

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2024** Winter						
	Archit. Coating		10.16				0.00	0.00
	Off-Road		0.18	1.22	1.81	0.00	0.06	0.06
	Total		**10.34**	**1.22**	**1.81**	**0.00**	**0.06**	**0.06**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.05	0.03	0.45	0.00	0.18	0.05
	Total		**0.05**	**0.03**	**0.45**	**0.00**	**0.18**	**0.05**
TOTAL			***10.39***	***1.25***	***2.26***	***0.00***	***0.24***	***0.11***
Onsite		**2024**						
	Archit. Coating		10.16	0.00	0.00	0.00	0.00	0.00
	Off-Road		0.18	1.22	1.81	0.00	0.06	0.06
	Total		**10.34**	**1.22**	**1.81**	**0.00**	**0.06**	**0.06**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.05	0.03	0.45	0.00	0.18	0.05
	Total		**0.05**	**0.03**	**0.45**	**0.00**	**0.18**	**0.05**
TOTAL			***10.39***	***1.25***	***2.26***	***0.00***	***0.24***	***0.11***

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Building and Asphalt Demolition & Demo Debris Haul	***2***	***24***	***21***	***0***	***3***	***1***
Site Preparation	***3***	***28***	***19***	***0***	***10***	***6***
Grading	***2***	***18***	***15***	***0***	***4***	***2***
Building Construction 2023	***2***	***16***	***19***	***0***	***2***	***1***
Building Construction 2024	***2***	***15***	***19***	***0***	***2***	***1***
Building Construction 2024, Paving and Architectural Coating	***14***	***24***	***34***	***0***	***3***	***1***
MAX DAILY	**14**	**28**	**34**	**0**	**10**	**6**
Regional Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

Construction LST Worksheet (Phase 2):

Building and Asphalt Demolition						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Off-Road		21.48	19.64	1.00	0.93
	Total		**21.48**	**19.64**	**1.00**	**0.93**
TOTAL			***21.48***	***19.64***	***1.00***	***0.93***
Onsite		**2023**				
	Off-Road		21.48	19.64	1.00	0.93
	Total		**21.48**	**19.64**	**1.00**	**0.93**
TOTAL			***21.48***	***19.64***	***1.00***	***0.93***

Demolition Debris Haul						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Fugitive Dust				1.81	0.27
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**1.81**	**0.27**
Onsite		**2023**				
	Fugitive Dust		0.00	0.00	1.81	0.27
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**1.81**	**0.27**
TOTAL			***0.00***	***0.00***	***1.81***	***0.27***

Site Preparation						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Fugitive Dust				8.40	4.32
	Off-Road		27.52	18.24	1.27	1.16
	Total		**27.52**	**18.24**	**9.67**	**5.48**
Onsite		**2023**				
	Fugitive Dust		0.00	0.00	8.40	4.32
	Off-Road		27.52	18.24	1.27	1.16
	Total		**27.52**	**18.24**	**9.67**	**5.48**
TOTAL			***27.52***	***18.24***	***9.67***	***5.48***

Grading						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Fugitive Dust				3.03	1.46
	Off-Road		17.94	14.75	0.77	0.71
	Total		**17.94**	**14.75**	**3.80**	**2.18**
Onsite		**2023**				
	Fugitive Dust		0.00	0.00	3.03	1.46
	Off-Road		17.94	14.75	0.77	0.71
	Total		**17.94**	**14.75**	**3.80**	**2.18**

TOTAL			***17.94***	***14.75***	***3.80***	***2.18***

Building Construction						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2023**				
	Off-Road		14.38	16.24	0.70	0.66
	Total		**14.38**	**16.24**	**0.70**	**0.66**
Onsite		**2023**				
	Off-Road		14.38	16.24	0.70	0.66
	Total		**14.38**	**16.24**	**0.70**	**0.66**
TOTAL			***14.38***	***16.24***	***0.70***	***0.66***

Building Construction						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2024**				
	Off-Road		13.44	16.17	0.61	0.58
	Total		**13.44**	**16.17**	**0.61**	**0.58**
Onsite		**2024**				
	Off-Road		13.44	16.17	0.61	0.58
	Total		**13.44**	**16.17**	**0.61**	**0.58**
TOTAL			***13.44***	***16.17***	***0.61***	***0.58***

Paving						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2024**				
	Off-Road		8.27	12.22	0.40	0.37
	Paving				0.00	0.00
	Total		**8.27**	**12.22**	**0.40**	**0.37**
TOTAL			***8.27***	***12.22***	***0.40***	***0.37***
Onsite		**2024**				
	Off-Road		8.27	12.22	0.40	0.37
	Paving		0.00	0.00	0.00	0.00
	Total		**8.27**	**12.22**	**0.40**	**0.37**
TOTAL			***8.27***	***12.22***	***0.40***	***0.37***

Architectural Coating						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		**2024**				
	Archit. Coating				0.00	0.00
	Off-Road		1.22	1.81	0.06	0.06
	Total		**1.22**	**1.81**	**0.06**	**0.06**
Onsite		**2024**				
	Archit. Coating		0.00	0.00	0.00	0.00
	Off-Road		1.22	1.81	0.06	0.06
	Total		**1.22**	**1.81**	**0.06**	**0.06**
TOTAL			***1.22***	***1.81***	***0.06***	***0.06***

	NOx	**CO**	**PM10 Total**	**PM2.5 Total**
Building and Asphalt Demolition & Demo Debris Haul	***21***	***20***	***2.81***	***1.20***
≤ 1 Acre LST	***92***	***647***	***4.00***	***3.00***
Exceeds LST?	***no***	***no***	***no***	***no***
Site Preparation	***28***	***18***	***9.67***	***5.48***
3.50 Acre LST	***164***	***1,336***	***10.49***	***7.00***

Exceeds LST?	*no*	*no*	*no*	*no*
Grading	*18*	*15*	*3.80*	*2.18*
2.50 Acre LST	*142*	*1,087*	*8.16*	*5.67*
Exceeds LST?	*no*	*no*	*no*	*no*
Building Construction 2023	*14*	*16*	*0.70*	*0.66*
1.31 Acre LST	*104*	*745*	*4.93*	*3.62*
Exceeds LST?	*no*	*no*	*no*	*no*
Building Construction 2024	*13*	*16*	*0.61*	*0.58*
1.31 Acre LST	*104*	*745*	*4.93*	*3.62*
Exceeds LST?	*no*	*no*	*no*	*no*
Building Construction 2024, Paving and Architectural Coating	*23*	*30*	*1.07*	*1.01*
2.00 Acre LST	*131*	*962*	*7.00*	*5.00*
Exceeds LST?	*no*	*no*	*no*	*no*

CalEEMod Construction Model

Phase 1

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

Isaac L. Sowers Middle School Redevelopment Project P1

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior High School	39.59	1000sqft	0.99	39,585.00	0
Other Asphalt Surfaces	19.72	1000sqft	0.45	19,715.00	0
Other Non-Asphalt Surfaces	96.61	1000sqft	2.22	96,605.00	0
Parking Lot	27.88	1000sqft	0.64	27,876.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2020 SCE Sustainability Report, see assumptions file

Land Use - Based on District info., see assumptions file

Construction Phase - Based on District info, see assumptions file

Off-road Equipment - No extra equipment required for hauling phase

Trips and VMT - Assume 2 vt/day/water truck, see assumptions file

Demolition -

Architectural Coating - See assumptions file

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

Construction Off-road Equipment Mitigation - SCAQMD rule 403, SCAQMD rule 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	8,652.00	1,673.00
tblAreaCoating	Area_Parking	8652	10692
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	228.00
tblLandUse	LandUseSquareFeet	39,590.00	39,585.00
tblLandUse	LandUseSquareFeet	19,720.00	19,715.00
tblLandUse	LandUseSquareFeet	96,610.00	96,605.00
tblLandUse	LandUseSquareFeet	27,880.00	27,876.00
tblLandUse	LotAcreage	0.91	0.99
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	52.00	53.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	30.00	36.00
tblTripsAndVMT	WorkerTripNumber	77.00	91.00
tblTripsAndVMT	WorkerTripNumber	15.00	18.00

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

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					
2022	0.0981	0.9027	0.8604	1.7900e-003	0.1197	0.0427	0.1624	0.0497	0.0399	0.0895	0.0000	159.2497	159.2497	0.0324	3.5600e-003	161.1213
2023	0.3620	1.4740	1.8257	3.8600e-003	0.1104	0.0665	0.1769	0.0298	0.0625	0.0923	0.0000	343.7814	343.7814	0.0577	9.7300e-003	348.1218
Maximum	**0.3620**	**1.4740**	**1.8257**	**3.8600e-003**	**0.1197**	**0.0665**	**0.1769**	**0.0497**	**0.0625**	**0.0923**	**0.0000**	**343.7814**	**343.7814**	**0.0577**	**9.7300e-003**	**348.1218**

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					
2022	0.0981	0.9027	0.8604	1.7900e-003	0.0693	0.0427	0.1120	0.0262	0.0399	0.0661	0.0000	159.2495	159.2495	0.0324	3.5600e-003	161.1211
2023	0.3620	1.4740	1.8257	3.8600e-003	0.1021	0.0665	0.1685	0.0277	0.0625	0.0902	0.0000	343.7811	343.7811	0.0577	9.7300e-003	348.1215
Maximum	**0.3620**	**1.4740**	**1.8257**	**3.8600e-003**	**0.1021**	**0.0665**	**0.1685**	**0.0277**	**0.0625**	**0.0902**	**0.0000**	**343.7811**	**343.7811**	**0.0577**	**9.7300e-003**	**348.1215**

	ROG	NOx	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

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

Percent Reduction	0.00	0.00	0.00	0.00	25.50	0.00	17.29	32.12	0.00	14.04	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	9-1-2022	11-30-2022	0.7907	0.7907
2	12-1-2022	2-28-2023	0.5910	0.5910
3	3-1-2023	5-31-2023	0.5818	0.5818
4	6-1-2023	8-31-2023	0.8581	0.8581
		Highest	0.8581	0.8581

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Asphalt Demolition	Demolition	9/1/2022	9/28/2022	5	20	a
2	Asphalt Demolition Debris Haul	Demolition	9/1/2022	9/28/2022	5	20	b
3	Site Preparation	Site Preparation	9/29/2022	10/5/2022	5	5	c
4	Grading	Grading	10/6/2022	10/17/2022	5	8	d
5	Building Construction	Building Construction	10/18/2022	8/31/2023	5	228	e
6	Paving	Paving	8/8/2023	8/31/2023	5	18	f
7	Architectural Coating	Architectural Coating	8/8/2023	8/31/2023	5	18	g

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 8

Acres of Paving: 3.31

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 59,378; Non-Residential Outdoor: 19,793; Striped Parking Area: 1,673

OffRoad Equipment

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Asphalt Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Asphalt Demolition	Excavators	3	8.00	158	0.38
Asphalt Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
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
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

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
Asphalt Demolition	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Asphalt Demolition Debris Haul	0	0.00	0.00	53.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	91.00	36.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Asphalt Demolition - 2022

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	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

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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	3.0000e-005	9.4000e-004	3.2000e-004	0.0000	1.3000e-004	1.0000e-005	1.3000e-004	4.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3763	0.3763	2.0000e-005	5.0000e-005	0.3929
Worker	4.5000e-004	3.4000e-004	4.6900e-003	1.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.2931	1.2931	3.0000e-005	3.0000e-005	1.3036
Total	**4.8000e-004**	**1.2800e-003**	**5.0100e-003**	**1.0000e-005**	**1.7800e-003**	**2.0000e-005**	**1.7900e-003**	**4.8000e-004**	**2.0000e-005**	**4.9000e-004**	**0.0000**	**1.6693**	**1.6693**	**5.0000e-005**	**8.0000e-005**	**1.6965**

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	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

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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	3.0000e-005	9.4000e-004	3.2000e-004	0.0000	1.2000e-004	1.0000e-005	1.3000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3763	0.3763	2.0000e-005	5.0000e-005	0.3929
Worker	4.5000e-004	3.4000e-004	4.6900e-003	1.0000e-005	1.5200e-003	1.0000e-005	1.5300e-003	4.1000e-004	1.0000e-005	4.1000e-004	0.0000	1.2931	1.2931	3.0000e-005	3.0000e-005	1.3036
Total	**4.8000e-004**	**1.2800e-003**	**5.0100e-003**	**1.0000e-005**	**1.6400e-003**	**2.0000e-005**	**1.6600e-003**	**4.4000e-004**	**2.0000e-005**	**4.5000e-004**	**0.0000**	**1.6693**	**1.6693**	**5.0000e-005**	**8.0000e-005**	**1.6965**

3.3 Asphalt Demolition Debris Haul - 2022

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					5.6400e-003	0.0000	5.6400e-003	8.5000e-004	0.0000	8.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**5.6400e-003**	**0.0000**	**5.6400e-003**	**8.5000e-004**	**0.0000**	**8.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

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Category	tons/yr										MT/yr					
Hauling	1.1000e-004	4.3400e-003	1.1700e-003	2.0000e-005	4.5000e-004	3.0000e-005	4.9000e-004	1.2000e-004	3.0000e-005	1.5000e-004	0.0000	1.6255	1.6255	1.5000e-004	2.6000e-004	1.7070
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1000e-004**	**4.3400e-003**	**1.1700e-003**	**2.0000e-005**	**4.5000e-004**	**3.0000e-005**	**4.9000e-004**	**1.2000e-004**	**3.0000e-005**	**1.5000e-004**	**0.0000**	**1.6255**	**1.6255**	**1.5000e-004**	**2.6000e-004**	**1.7070**

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					2.4100e-003	0.0000	2.4100e-003	3.6000e-004	0.0000	3.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.4100e-003**	**0.0000**	**2.4100e-003**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	4.3400e-003	1.1700e-003	2.0000e-005	4.2000e-004	3.0000e-005	4.6000e-004	1.2000e-004	3.0000e-005	1.5000e-004	0.0000	1.6255	1.6255	1.5000e-004	2.6000e-004	1.7070
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1000e-004**	**4.3400e-003**	**1.1700e-003**	**2.0000e-005**	**4.2000e-004**	**3.0000e-005**	**4.6000e-004**	**1.2000e-004**	**3.0000e-005**	**1.5000e-004**	**0.0000**	**1.6255**	**1.6255**	**1.5000e-004**	**2.6000e-004**	**1.7070**

3.4 Site Preparation - 2022

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					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9300e-003	0.0827	0.0492	1.0000e-004		4.0300e-003	4.0300e-003		3.7100e-003	3.7100e-003	0.0000	8.3599	8.3599	2.7000e-003	0.0000	8.4274
Total	**7.9300e-003**	**0.0827**	**0.0492**	**1.0000e-004**	**0.0491**	**4.0300e-003**	**0.0532**	**0.0253**	**3.7100e-003**	**0.0290**	**0.0000**	**8.3599**	**8.3599**	**2.7000e-003**	**0.0000**	**8.4274**

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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	1.0000e-005	2.4000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0941	0.0941	1.0000e-005	1.0000e-005	0.0982
Worker	1.4000e-004	1.0000e-004	1.4100e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3879	0.3879	1.0000e-005	1.0000e-005	0.3911
Total	**1.5000e-004**	**3.4000e-004**	**1.4900e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.3000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4820**	**0.4820**	**2.0000e-005**	**2.0000e-005**	**0.4893**

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					0.0210	0.0000	0.0210	0.0108	0.0000	0.0108	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9300e-003	0.0827	0.0492	1.0000e-004		4.0300e-003	4.0300e-003		3.7100e-003	3.7100e-003	0.0000	8.3598	8.3598	2.7000e-003	0.0000	8.4274
Total	**7.9300e-003**	**0.0827**	**0.0492**	**1.0000e-004**	**0.0210**	**4.0300e-003**	**0.0250**	**0.0108**	**3.7100e-003**	**0.0145**	**0.0000**	**8.3598**	**8.3598**	**2.7000e-003**	**0.0000**	**8.4274**

Mitigated Construction Off-Site

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	1.0000e-005	2.4000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0941	0.0941	1.0000e-005	1.0000e-005	0.0982
Worker	1.4000e-004	1.0000e-004	1.4100e-003	0.0000	4.6000e-004	0.0000	4.6000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3879	0.3879	1.0000e-005	1.0000e-005	0.3911
Total	**1.5000e-004**	**3.4000e-004**	**1.4900e-003**	**0.0000**	**4.9000e-004**	**0.0000**	**4.9000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4820**	**0.4820**	**2.0000e-005**	**2.0000e-005**	**0.4893**

3.5 Grading - 2022

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					0.0283	0.0000	0.0283	0.0137	0.0000	0.0137	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7900e-003	0.0834	0.0611	1.2000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.4219	10.4219	3.3700e-003	0.0000	10.5062
Total	**7.7900e-003**	**0.0834**	**0.0611**	**1.2000e-004**	**0.0283**	**3.7600e-003**	**0.0321**	**0.0137**	**3.4600e-003**	**0.0172**	**0.0000**	**10.4219**	**10.4219**	**3.3700e-003**	**0.0000**	**10.5062**

Unmitigated Construction Off-Site

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	ROG	NOx	CO	SO2	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	1.0000e-005	3.8000e-004	1.3000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.1505	0.1505	1.0000e-005	2.0000e-005	0.1572
Worker	1.8000e-004	1.4000e-004	1.8800e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5172	0.5172	1.0000e-005	1.0000e-005	0.5214
Total	**1.9000e-004**	**5.2000e-004**	**2.0100e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.1000e-004**	**1.8000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6677**	**0.6677**	**2.0000e-005**	**3.0000e-005**	**0.6786**

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					0.0121	0.0000	0.0121	5.8600e-003	0.0000	5.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7900e-003	0.0834	0.0611	1.2000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.4219	10.4219	3.3700e-003	0.0000	10.5062
Total	**7.7900e-003**	**0.0834**	**0.0611**	**1.2000e-004**	**0.0121**	**3.7600e-003**	**0.0159**	**5.8600e-003**	**3.4600e-003**	**9.3200e-003**	**0.0000**	**10.4219**	**10.4219**	**3.3700e-003**	**0.0000**	**10.5062**

Mitigated Construction Off-Site

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	ROG	NOx	CO	SO2	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	1.0000e-005	3.8000e-004	1.3000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.1505	0.1505	1.0000e-005	2.0000e-005	0.1572
Worker	1.8000e-004	1.4000e-004	1.8800e-003	1.0000e-005	6.1000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.7000e-004	0.0000	0.5172	0.5172	1.0000e-005	1.0000e-005	0.5214
Total	**1.9000e-004**	**5.2000e-004**	**2.0100e-003**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**6.6000e-004**	**1.7000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6677**	**0.6677**	**2.0000e-005**	**3.0000e-005**	**0.6786**

3.6 Building Construction - 2022

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	0.0461	0.4216	0.4418	7.3000e-004		0.0218	0.0218		0.0206	0.0206	0.0000	62.5658	62.5658	0.0150	0.0000	62.9405
Total	**0.0461**	**0.4216**	**0.4418**	**7.3000e-004**		**0.0218**	**0.0218**		**0.0206**	**0.0206**	**0.0000**	**62.5658**	**62.5658**	**0.0150**	**0.0000**	**62.9405**

Unmitigated Construction Off-Site

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	1.6000e-003	0.0457	0.0157	1.8000e-004	6.1200e-003	4.2000e-004	6.5500e-003	1.7700e-003	4.1000e-004	2.1700e-003	0.0000	18.2869	18.2869	1.0500e-003	2.6200e-003	19.0946
Worker	7.4000e-003	5.5700e-003	0.0769	2.3000e-004	0.0270	1.5000e-004	0.0271	7.1600e-003	1.4000e-004	7.3000e-003	0.0000	21.1804	21.1804	5.3000e-004	5.3000e-004	21.3523
Total	**9.0000e-003**	**0.0513**	**0.0926**	**4.1000e-004**	**0.0331**	**5.7000e-004**	**0.0337**	**8.9300e-003**	**5.5000e-004**	**9.4700e-003**	**0.0000**	**39.4673**	**39.4673**	**1.5800e-003**	**3.1500e-003**	**40.4469**

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	0.0461	0.4216	0.4418	7.3000e-004		0.0218	0.0218		0.0206	0.0206	0.0000	62.5657	62.5657	0.0150	0.0000	62.9405
Total	**0.0461**	**0.4216**	**0.4418**	**7.3000e-004**		**0.0218**	**0.0218**		**0.0206**	**0.0206**	**0.0000**	**62.5657**	**62.5657**	**0.0150**	**0.0000**	**62.9405**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	1.6000e-003	0.0457	0.0157	1.8000e-004	5.7300e-003	4.2000e-004	6.1600e-003	1.6700e-003	4.1000e-004	2.0800e-003	0.0000	18.2869	18.2869	1.0500e-003	2.6200e-003	19.0946
Worker	7.4000e-003	5.5700e-003	0.0769	2.3000e-004	0.0249	1.5000e-004	0.0250	6.6500e-003	1.4000e-004	6.7800e-003	0.0000	21.1804	21.1804	5.3000e-004	5.3000e-004	21.3523
Total	**9.0000e-003**	**0.0513**	**0.0926**	**4.1000e-004**	**0.0306**	**5.7000e-004**	**0.0312**	**8.3200e-003**	**5.5000e-004**	**8.8600e-003**	**0.0000**	**39.4673**	**39.4673**	**1.5800e-003**	**3.1500e-003**	**40.4469**

3.6 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1368	1.2515	1.4132	2.3400e-003		0.0609	0.0609		0.0573	0.0573	0.0000	201.6701	201.6701	0.0480	0.0000	202.8695
Total	**0.1368**	**1.2515**	**1.4132**	**2.3400e-003**		**0.0609**	**0.0609**		**0.0573**	**0.0573**	**0.0000**	**201.6701**	**201.6701**	**0.0480**	**0.0000**	**202.8695**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	3.1100e-003	0.1150	0.0462	5.6000e-004	0.0197	5.6000e-004	0.0203	5.6900e-003	5.4000e-004	6.2300e-003	0.0000	56.1361	56.1361	3.3300e-003	8.0600e-003	58.6216
Worker	0.0224	0.0160	0.2303	7.2000e-004	0.0869	4.5000e-004	0.0874	0.0231	4.2000e-004	0.0235	0.0000	66.0819	66.0819	1.5400e-003	1.6000e-003	66.5960
Total	**0.0255**	**0.1310**	**0.2765**	**1.2800e-003**	**0.1066**	**1.0100e-003**	**0.1077**	**0.0288**	**9.6000e-004**	**0.0297**	**0.0000**	**122.2180**	**122.2180**	**4.8700e-003**	**9.6600e-003**	**125.2176**

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	0.1368	1.2515	1.4132	2.3400e-003		0.0609	0.0609		0.0573	0.0573	0.0000	201.6699	201.6699	0.0480	0.0000	202.8692
Total	**0.1368**	**1.2515**	**1.4132**	**2.3400e-003**		**0.0609**	**0.0609**		**0.0573**	**0.0573**	**0.0000**	**201.6699**	**201.6699**	**0.0480**	**0.0000**	**202.8692**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	3.1100e-003	0.1150	0.0462	5.6000e-004	0.0185	5.6000e-004	0.0190	5.3800e-003	5.4000e-004	5.9200e-003	0.0000	56.1361	56.1361	3.3300e-003	8.0600e-003	58.6216
Worker	0.0224	0.0160	0.2303	7.2000e-004	0.0801	4.5000e-004	0.0806	0.0214	4.2000e-004	0.0218	0.0000	66.0819	66.0819	1.5400e-003	1.6000e-003	66.5960
Total	**0.0255**	**0.1310**	**0.2765**	**1.2800e-003**	**0.0986**	**1.0100e-003**	**0.0996**	**0.0268**	**9.6000e-004**	**0.0278**	**0.0000**	**122.2180**	**122.2180**	**4.8700e-003**	**9.6600e-003**	**125.2176**

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565
Paving	1.4300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.6900e-003**	**0.0791**	**0.1097**	**1.7000e-004**		**3.9200e-003**	**3.9200e-003**		**3.6200e-003**	**3.6200e-003**	**0.0000**	**14.7407**	**14.7407**	**4.6300e-003**	**0.0000**	**14.8565**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	5.1000e-004	3.6000e-004	5.2400e-003	2.0000e-005	1.9800e-003	1.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.3000e-004	0.0000	1.5024	1.5024	3.0000e-005	4.0000e-005	1.5141
Total	**5.1000e-004**	**3.6000e-004**	**5.2400e-003**	**2.0000e-005**	**1.9800e-003**	**1.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.3000e-004**	**0.0000**	**1.5024**	**1.5024**	**3.0000e-005**	**4.0000e-005**	**1.5141**

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	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565
Paving	1.4300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.6900e-003**	**0.0791**	**0.1097**	**1.7000e-004**		**3.9200e-003**	**3.9200e-003**		**3.6200e-003**	**3.6200e-003**	**0.0000**	**14.7407**	**14.7407**	**4.6300e-003**	**0.0000**	**14.8565**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

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	5.1000e-004	3.6000e-004	5.2400e-003	2.0000e-005	1.8200e-003	1.0000e-005	1.8300e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.5024	1.5024	3.0000e-005	4.0000e-005	1.5141
Total	**5.1000e-004**	**3.6000e-004**	**5.2400e-003**	**2.0000e-005**	**1.8200e-003**	**1.0000e-005**	**1.8300e-003**	**4.9000e-004**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**1.5024**	**1.5024**	**3.0000e-005**	**4.0000e-005**	**1.5141**

3.8 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1874					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7200e-003	0.0117	0.0163	3.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	2.2979	2.2979	1.4000e-004	0.0000	2.3014
Total	**0.1891**	**0.0117**	**0.0163**	**3.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.4000e-004**	**0.0000**	**2.3014**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	3.3000e-004	4.7100e-003	1.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.3522	1.3522	3.0000e-005	3.0000e-005	1.3627
Total	**4.6000e-004**	**3.3000e-004**	**4.7100e-003**	**1.0000e-005**	**1.7800e-003**	**1.0000e-005**	**1.7900e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.3522**	**1.3522**	**3.0000e-005**	**3.0000e-005**	**1.3627**

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	0.1874					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7200e-003	0.0117	0.0163	3.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	2.2979	2.2979	1.4000e-004	0.0000	2.3014
Total	**0.1891**	**0.0117**	**0.0163**	**3.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.4000e-004**	**0.0000**	**2.3014**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Annual

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	3.3000e-004	4.7100e-003	1.0000e-005	1.6400e-003	1.0000e-005	1.6500e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3522	1.3522	3.0000e-005	3.0000e-005	1.3627
Total	**4.6000e-004**	**3.3000e-004**	**4.7100e-003**	**1.0000e-005**	**1.6400e-003**	**1.0000e-005**	**1.6500e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.3522**	**1.3522**	**3.0000e-005**	**3.0000e-005**	**1.3627**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

Isaac L. Sowers Middle School Redevelopment Project P1

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior High School	39.59	1000sqft	0.99	39,585.00	0
Other Asphalt Surfaces	19.72	1000sqft	0.45	19,715.00	0
Other Non-Asphalt Surfaces	96.61	1000sqft	2.22	96,605.00	0
Parking Lot	27.88	1000sqft	0.64	27,876.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2020 SCE Sustainability Report, see assumptions file

Land Use - Based on District info., see assumptions file

Construction Phase - Based on District info, see assumptions file

Off-road Equipment - No extra equipment required for hauling phase

Trips and VMT - Assume 2 vt/day/water truck, see assumptions file

Demolition -

Architectural Coating - See assumptions file

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

Construction Off-road Equipment Mitigation - SCAQMD rule 403, SCAQMD rule 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	8,652.00	1,673.00
tblAreaCoating	Area_Parking	8652	10692
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	228.00
tblLandUse	LandUseSquareFeet	39,590.00	39,585.00
tblLandUse	LandUseSquareFeet	19,720.00	19,715.00
tblLandUse	LandUseSquareFeet	96,610.00	96,605.00
tblLandUse	LandUseSquareFeet	27,880.00	27,876.00
tblLandUse	LotAcreage	0.91	0.99
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	52.00	53.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	30.00	36.00
tblTripsAndVMT	WorkerTripNumber	77.00	91.00
tblTripsAndVMT	WorkerTripNumber	15.00	18.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

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					
2022	3.2276	33.2096	21.2348	0.0426	19.8710	1.6145	21.4855	10.1595	1.4854	11.6449	0.0000	4,196.9083	4,196.9083	1.1987	0.1271	4,251.6837
2023	24.0581	25.9722	34.7081	0.0675	1.6721	1.2200	2.8921	0.4487	1.1447	1.5934	0.0000	6,582.7427	6,582.7427	1.2613	0.1286	6,652.5854
Maximum	**24.0581**	**33.2096**	**34.7081**	**0.0675**	**19.8710**	**1.6145**	**21.4855**	**10.1595**	**1.4854**	**11.6449**	**0.0000**	**6,582.7427**	**6,582.7427**	**1.2613**	**0.1286**	**6,652.5854**

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					
2022	3.2276	33.2096	21.2348	0.0426	8.6008	1.6145	10.2153	4.3718	1.4854	5.8572	0.0000	4,196.9083	4,196.9083	1.1987	0.1271	4,251.6837
2023	24.0581	25.9722	34.7081	0.0675	1.5445	1.2200	2.7645	0.4173	1.1447	1.5620	0.0000	6,582.7427	6,582.7427	1.2613	0.1286	6,652.5854
Maximum	**24.0581**	**33.2096**	**34.7081**	**0.0675**	**8.6008**	**1.6145**	**10.2153**	**4.3718**	**1.4854**	**5.8572**	**0.0000**	**6,582.7427**	**6,582.7427**	**1.2613**	**0.1286**	**6,652.5854**

	ROG	NOx	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**	**52.91**	**0.00**	**46.76**	**54.85**	**0.00**	**43.96**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Asphalt Demolition	Demolition	9/1/2022	9/28/2022	5	20	a
2	Asphalt Demolition Debris Haul	Demolition	9/1/2022	9/28/2022	5	20	b
3	Site Preparation	Site Preparation	9/29/2022	10/5/2022	5	5	c
4	Grading	Grading	10/6/2022	10/17/2022	5	8	d
5	Building Construction	Building Construction	10/18/2022	8/31/2023	5	228	e
6	Paving	Paving	8/8/2023	8/31/2023	5	18	f
7	Architectural Coating	Architectural Coating	8/8/2023	8/31/2023	5	18	g

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 8

Acres of Paving: 3.31

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 59,378; Non-Residential Outdoor: 19,793; Striped Parking Area: 1,673

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Asphalt Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Asphalt Demolition	Excavators	3	8.00	158	0.38
Asphalt Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
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
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Asphalt Demolition	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Asphalt Demolition Debris Haul	0	0.00	0.00	53.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	91.00	36.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Asphalt Demolition - 2022

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	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3300e-003	0.0897	0.0319	3.8000e-004	0.0128	8.7000e-004	0.0137	3.6800e-003	8.4000e-004	4.5200e-003		41.4715	41.4715	2.3800e-003	5.9400e-003	43.3020
Worker	0.0451	0.0303	0.4930	1.4600e-003	0.1677	9.0000e-004	0.1686	0.0445	8.3000e-004	0.0453		147.7067	147.7067	3.4700e-003	3.3200e-003	148.7828
Total	**0.0485**	**0.1201**	**0.5248**	**1.8400e-003**	**0.1805**	**1.7700e-003**	**0.1822**	**0.0482**	**1.6700e-003**	**0.0498**		**189.1783**	**189.1783**	**5.8500e-003**	**9.2600e-003**	**192.0848**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

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	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3300e-003	0.0897	0.0319	3.8000e-004	0.0120	8.7000e-004	0.0128	3.4800e-003	8.4000e-004	4.3100e-003		41.4715	41.4715	2.3800e-003	5.9400e-003	43.3020
Worker	0.0451	0.0303	0.4930	1.4600e-003	0.1546	9.0000e-004	0.1555	0.0413	8.3000e-004	0.0421		147.7067	147.7067	3.4700e-003	3.3200e-003	148.7828
Total	**0.0485**	**0.1201**	**0.5248**	**1.8400e-003**	**0.1665**	**1.7700e-003**	**0.1683**	**0.0447**	**1.6700e-003**	**0.0464**		**189.1783**	**189.1783**	**5.8500e-003**	**9.2600e-003**	**192.0848**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

3.3 Asphalt Demolition Debris Haul - 2022

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					0.5639	0.0000	0.5639	0.0854	0.0000	0.0854			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.5639**	**0.0000**	**0.5639**	**0.0854**	**0.0000**	**0.0854**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0107	0.4126	0.1159	1.5800e-003	0.0462	3.1200e-003	0.0493	0.0127	2.9900e-003	0.0156		179.1656	179.1656	0.0171	0.0287	188.1438
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0107**	**0.4126**	**0.1159**	**1.5800e-003**	**0.0462**	**3.1200e-003**	**0.0493**	**0.0127**	**2.9900e-003**	**0.0156**		**179.1656**	**179.1656**	**0.0171**	**0.0287**	**188.1438**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

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					0.2411	0.0000	0.2411	0.0365	0.0000	0.0365			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.2411**	**0.0000**	**0.2411**	**0.0365**	**0.0000**	**0.0365**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0107	0.4126	0.1159	1.5800e-003	0.0431	3.1200e-003	0.0462	0.0119	2.9900e-003	0.0149		179.1656	179.1656	0.0171	0.0287	188.1438
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0107**	**0.4126**	**0.1159**	**1.5800e-003**	**0.0431**	**3.1200e-003**	**0.0462**	**0.0119**	**2.9900e-003**	**0.0149**		**179.1656**	**179.1656**	**0.0171**	**0.0287**	**188.1438**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

3.4 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3300e-003	0.0897	0.0319	3.8000e-004	0.0128	8.7000e-004	0.0137	3.6800e-003	8.4000e-004	4.5200e-003		41.4715	41.4715	2.3800e-003	5.9400e-003	43.3020
Worker	0.0541	0.0364	0.5915	1.7500e-003	0.2012	1.0800e-003	0.2023	0.0534	1.0000e-003	0.0544		177.2481	177.2481	4.1700e-003	3.9800e-003	178.5393
Total	**0.0575**	**0.1261**	**0.6234**	**2.1300e-003**	**0.2140**	**1.9500e-003**	**0.2159**	**0.0570**	**1.8400e-003**	**0.0589**		**218.7196**	**218.7196**	**6.5500e-003**	**9.9200e-003**	**221.8413**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

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					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.4034**	**1.6126**	**10.0159**	**4.3188**	**1.4836**	**5.8024**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3300e-003	0.0897	0.0319	3.8000e-004	0.0120	8.7000e-004	0.0128	3.4800e-003	8.4000e-004	4.3100e-003		41.4715	41.4715	2.3800e-003	5.9400e-003	43.3020
Worker	0.0541	0.0364	0.5915	1.7500e-003	0.1855	1.0800e-003	0.1865	0.0495	1.0000e-003	0.0505		177.2481	177.2481	4.1700e-003	3.9800e-003	178.5393
Total	**0.0575**	**0.1261**	**0.6234**	**2.1300e-003**	**0.1974**	**1.9500e-003**	**0.1994**	**0.0530**	**1.8400e-003**	**0.0548**		**218.7196**	**218.7196**	**6.5500e-003**	**9.9200e-003**	**221.8413**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

3.5 Grading - 2022

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					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.9486	20.8551	15.2727	0.0297		0.9409	0.9409		0.8656	0.8656		2,872.0464	2,872.0464	0.9289		2,895.2684
Total	**1.9486**	**20.8551**	**15.2727**	**0.0297**	**7.0826**	**0.9409**	**8.0234**	**3.4247**	**0.8656**	**4.2903**		**2,872.0464**	**2,872.0464**	**0.9289**		**2,895.2684**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3300e-003	0.0897	0.0319	3.8000e-004	0.0128	8.7000e-004	0.0137	3.6800e-003	8.4000e-004	4.5200e-003		41.4715	41.4715	2.3800e-003	5.9400e-003	43.3020
Worker	0.0451	0.0303	0.4930	1.4600e-003	0.1677	9.0000e-004	0.1686	0.0445	8.3000e-004	0.0453		147.7067	147.7067	3.4700e-003	3.3200e-003	148.7828
Total	**0.0485**	**0.1201**	**0.5248**	**1.8400e-003**	**0.1805**	**1.7700e-003**	**0.1822**	**0.0482**	**1.6700e-003**	**0.0498**		**189.1783**	**189.1783**	**5.8500e-003**	**9.2600e-003**	**192.0848**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

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					3.0278	0.0000	3.0278	1.4641	0.0000	1.4641			0.0000			0.0000
Off-Road	1.9486	20.8551	15.2727	0.0297		0.9409	0.9409		0.8656	0.8656	0.0000	2,872.0464	2,872.0464	0.9289		2,895.2684
Total	**1.9486**	**20.8551**	**15.2727**	**0.0297**	**3.0278**	**0.9409**	**3.9687**	**1.4641**	**0.8656**	**2.3297**	**0.0000**	**2,872.0464**	**2,872.0464**	**0.9289**		**2,895.2684**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3300e-003	0.0897	0.0319	3.8000e-004	0.0120	8.7000e-004	0.0128	3.4800e-003	8.4000e-004	4.3100e-003		41.4715	41.4715	2.3800e-003	5.9400e-003	43.3020
Worker	0.0451	0.0303	0.4930	1.4600e-003	0.1546	9.0000e-004	0.1555	0.0413	8.3000e-004	0.0421		147.7067	147.7067	3.4700e-003	3.3200e-003	148.7828
Total	**0.0485**	**0.1201**	**0.5248**	**1.8400e-003**	**0.1665**	**1.7700e-003**	**0.1683**	**0.0447**	**1.6700e-003**	**0.0464**		**189.1783**	**189.1783**	**5.8500e-003**	**9.2600e-003**	**192.0848**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

3.6 Building Construction - 2022

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0599	1.6153	0.5736	6.8200e-003	0.2302	0.0157	0.2459	0.0663	0.0150	0.0813		746.4873	746.4873	0.0428	0.1070	779.4361
Worker	0.2737	0.1839	2.9906	8.8700e-003	1.0172	5.4800e-003	1.0227	0.2698	5.0400e-003	0.2748		896.0875	896.0875	0.0211	0.0201	902.6154
Total	**0.3336**	**1.7992**	**3.5641**	**0.0157**	**1.2474**	**0.0212**	**1.2686**	**0.3360**	**0.0201**	**0.3561**		**1,642.5748**	**1,642.5748**	**0.0639**	**0.1271**	**1,682.0515**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0599	1.6153	0.5736	6.8200e-003	0.2154	0.0157	0.2311	0.0626	0.0150	0.0777		746.4873	746.4873	0.0428	0.1070	779.4361
Worker	0.2737	0.1839	2.9906	8.8700e-003	0.9376	5.4800e-003	0.9431	0.2502	5.0400e-003	0.2553		896.0875	896.0875	0.0211	0.0201	902.6154
Total	**0.3336**	**1.7992**	**3.5641**	**0.0157**	**1.1530**	**0.0212**	**1.1742**	**0.3128**	**0.0201**	**0.3329**		**1,642.5748**	**1,642.5748**	**0.0639**	**0.1271**	**1,682.0515**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

3.6 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0364	1.2617	0.5231	6.4700e-003	0.2302	6.4700e-003	0.2367	0.0663	6.1900e-003	0.0724		710.8178	710.8178	0.0423	0.1020	742.2684
Worker	0.2563	0.1639	2.7790	8.5800e-003	1.0172	5.1900e-003	1.0224	0.2698	4.7700e-003	0.2745		867.5591	867.5591	0.0191	0.0187	873.6210
Total	**0.2926**	**1.4256**	**3.3021**	**0.0151**	**1.2474**	**0.0117**	**1.2590**	**0.3360**	**0.0110**	**0.3470**		**1,578.3769**	**1,578.3769**	**0.0613**	**0.1207**	**1,615.8893**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0364	1.2617	0.5231	6.4700e-003	0.2154	6.4700e-003	0.2219	0.0626	6.1900e-003	0.0688		710.8178	710.8178	0.0423	0.1020	742.2684
Worker	0.2563	0.1639	2.7790	8.5800e-003	0.9376	5.1900e-003	0.9428	0.2502	4.7700e-003	0.2550		867.5591	867.5591	0.0191	0.0187	873.6210
Total	**0.2926**	**1.4256**	**3.3021**	**0.0151**	**1.1530**	**0.0117**	**1.1647**	**0.3128**	**0.0110**	**0.3238**		**1,578.3769**	**1,578.3769**	**0.0613**	**0.1207**	**1,615.8893**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.1587					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0767**	**8.7903**	**12.1905**	**0.0189**		**0.4357**	**0.4357**		**0.4025**	**0.4025**		**1,805.4304**	**1,805.4304**	**0.5673**		**1,819.6122**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0563	0.0360	0.6108	1.8900e-003	0.2236	1.1400e-003	0.2247	0.0593	1.0500e-003	0.0603		190.6723	190.6723	4.1900e-003	4.1200e-003	192.0046
Total	**0.0563**	**0.0360**	**0.6108**	**1.8900e-003**	**0.2236**	**1.1400e-003**	**0.2247**	**0.0593**	**1.0500e-003**	**0.0603**		**190.6723**	**190.6723**	**4.1900e-003**	**4.1200e-003**	**192.0046**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.1587					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0767**	**8.7903**	**12.1905**	**0.0189**		**0.4357**	**0.4357**		**0.4025**	**0.4025**	**0.0000**	**1,805.4304**	**1,805.4304**	**0.5673**		**1,819.6122**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0563	0.0360	0.6108	1.8900e-003	0.2061	1.1400e-003	0.2072	0.0550	1.0500e-003	0.0560		190.6723	190.6723	4.1900e-003	4.1200e-003	192.0046
Total	**0.0563**	**0.0360**	**0.6108**	**1.8900e-003**	**0.2061**	**1.1400e-003**	**0.2072**	**0.0550**	**1.0500e-003**	**0.0560**		**190.6723**	**190.6723**	**4.1900e-003**	**4.1200e-003**	**192.0046**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

3.8 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	20.8173					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**21.0090**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	20.8173					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**21.0090**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0507	0.0324	0.5497	1.7000e-003	0.1855	1.0300e-003	0.1865	0.0495	9.4000e-004	0.0504		171.6051	171.6051	3.7700e-003	3.7100e-003	172.8042
Total	**0.0507**	**0.0324**	**0.5497**	**1.7000e-003**	**0.1855**	**1.0300e-003**	**0.1865**	**0.0495**	**9.4000e-004**	**0.0504**		**171.6051**	**171.6051**	**3.7700e-003**	**3.7100e-003**	**172.8042**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

Isaac L. Sowers Middle School Redevelopment Project P1

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior High School	39.59	1000sqft	0.99	39,585.00	0
Other Asphalt Surfaces	19.72	1000sqft	0.45	19,715.00	0
Other Non-Asphalt Surfaces	96.61	1000sqft	2.22	96,605.00	0
Parking Lot	27.88	1000sqft	0.64	27,876.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2020 SCE Sustainability Report, see assumptions file

Land Use - Based on District info., see assumptions file

Construction Phase - Based on District info, see assumptions file

Off-road Equipment - No extra equipment required for hauling phase

Trips and VMT - Assume 2 vt/day/water truck, see assumptions file

Demolition -

Architectural Coating - See assumptions file

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

Construction Off-road Equipment Mitigation - SCAQMD rule 403, SCAQMD rule 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	8,652.00	1,673.00
tblAreaCoating	Area_Parking	8652	10692
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	228.00
tblLandUse	LandUseSquareFeet	39,590.00	39,585.00
tblLandUse	LandUseSquareFeet	19,720.00	19,715.00
tblLandUse	LandUseSquareFeet	96,610.00	96,605.00
tblLandUse	LandUseSquareFeet	27,880.00	27,876.00
tblLandUse	LotAcreage	0.91	0.99
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	52.00	53.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	30.00	36.00
tblTripsAndVMT	WorkerTripNumber	77.00	91.00
tblTripsAndVMT	WorkerTripNumber	15.00	18.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

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					
2022	3.2324	33.2167	21.2034	0.0422	19.8710	1.6145	21.4855	10.1595	1.4854	11.6449	0.0000	4,154.1809	4,154.1809	1.1988	0.1285	4,209.3843
2023	24.0906	26.0513	34.4552	0.0669	1.6721	1.2201	2.8922	0.4487	1.1448	1.5934	0.0000	6,524.9903	6,524.9903	1.2618	0.1305	6,595.4216
Maximum	**24.0906**	**33.2167**	**34.4552**	**0.0669**	**19.8710**	**1.6145**	**21.4855**	**10.1595**	**1.4854**	**11.6449**	**0.0000**	**6,524.9903**	**6,524.9903**	**1.2618**	**0.1305**	**6,595.4216**

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					
2022	3.2324	33.2167	21.2034	0.0422	8.6008	1.6145	10.2153	4.3718	1.4854	5.8572	0.0000	4,154.1809	4,154.1809	1.1988	0.1285	4,209.3843
2023	24.0906	26.0513	34.4552	0.0669	1.5445	1.2201	2.7646	0.4173	1.1448	1.5621	0.0000	6,524.9903	6,524.9903	1.2618	0.1305	6,595.4216
Maximum	**24.0906**	**33.2167**	**34.4552**	**0.0669**	**8.6008**	**1.6145**	**10.2153**	**4.3718**	**1.4854**	**5.8572**	**0.0000**	**6,524.9903**	**6,524.9903**	**1.2618**	**0.1305**	**6,595.4216**

	ROG	NOx	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

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Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.91**	**0.00**	**46.76**	**54.85**	**0.00**	**43.96**	**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	Asphalt Demolition	Demolition	9/1/2022	9/28/2022	5	20	a
2	Asphalt Demolition Debris Haul	Demolition	9/1/2022	9/28/2022	5	20	b
3	Site Preparation	Site Preparation	9/29/2022	10/5/2022	5	5	c
4	Grading	Grading	10/6/2022	10/17/2022	5	8	d
5	Building Construction	Building Construction	10/18/2022	8/31/2023	5	228	e
6	Paving	Paving	8/8/2023	8/31/2023	5	18	f
7	Architectural Coating	Architectural Coating	8/8/2023	8/31/2023	5	18	g

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 8

Acres of Paving: 3.31

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 59,378; Non-Residential Outdoor: 19,793; Striped Parking Area: 1,673

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Asphalt Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Asphalt Demolition	Excavators	3	8.00	158	0.38
Asphalt Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73

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Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
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
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Asphalt Demolition	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Asphalt Demolition Debris Haul	0	0.00	0.00	53.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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Building Construction	9	91.00	36.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Asphalt Demolition - 2022

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	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2800e-003	0.0933	0.0330	3.8000e-004	0.0128	8.8000e-004	0.0137	3.6800e-003	8.4000e-004	4.5200e-003		41.4845	41.4845	2.3700e-003	5.9500e-003	43.3167
Worker	0.0491	0.0333	0.4587	1.3900e-003	0.1677	9.0000e-004	0.1686	0.0445	8.3000e-004	0.0453		140.6252	140.6252	3.5500e-003	3.5300e-003	141.7667
Total	**0.0524**	**0.1266**	**0.4917**	**1.7700e-003**	**0.1805**	**1.7800e-003**	**0.1822**	**0.0482**	**1.6700e-003**	**0.0498**		**182.1097**	**182.1097**	**5.9200e-003**	**9.4800e-003**	**185.0834**

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	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2800e-003	0.0933	0.0330	3.8000e-004	0.0120	8.8000e-004	0.0128	3.4800e-003	8.4000e-004	4.3200e-003		41.4845	41.4845	2.3700e-003	5.9500e-003	43.3167
Worker	0.0491	0.0333	0.4587	1.3900e-003	0.1546	9.0000e-004	0.1555	0.0413	8.3000e-004	0.0421		140.6252	140.6252	3.5500e-003	3.5300e-003	141.7667
Total	**0.0524**	**0.1266**	**0.4917**	**1.7700e-003**	**0.1665**	**1.7800e-003**	**0.1683**	**0.0447**	**1.6700e-003**	**0.0464**		**182.1097**	**182.1097**	**5.9200e-003**	**9.4800e-003**	**185.0834**

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

3.3 Asphalt Demolition Debris Haul - 2022

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					0.5639	0.0000	0.5639	0.0854	0.0000	0.0854			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.5639**	**0.0000**	**0.5639**	**0.0854**	**0.0000**	**0.0854**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0105	0.4288	0.1176	1.5800e-003	0.0462	3.1300e-003	0.0494	0.0127	2.9900e-003	0.0157		179.2081	179.2081	0.0171	0.0287	188.1883
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0105**	**0.4288**	**0.1176**	**1.5800e-003**	**0.0462**	**3.1300e-003**	**0.0494**	**0.0127**	**2.9900e-003**	**0.0157**		**179.2081**	**179.2081**	**0.0171**	**0.0287**	**188.1883**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

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					0.2411	0.0000	0.2411	0.0365	0.0000	0.0365			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.2411**	**0.0000**	**0.2411**	**0.0365**	**0.0000**	**0.0365**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0105	0.4288	0.1176	1.5800e-003	0.0431	3.1300e-003	0.0462	0.0119	2.9900e-003	0.0149		179.2081	179.2081	0.0171	0.0287	188.1883
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0105**	**0.4288**	**0.1176**	**1.5800e-003**	**0.0431**	**3.1300e-003**	**0.0462**	**0.0119**	**2.9900e-003**	**0.0149**		**179.2081**	**179.2081**	**0.0171**	**0.0287**	**188.1883**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

3.4 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2800e-003	0.0933	0.0330	3.8000e-004	0.0128	8.8000e-004	0.0137	3.6800e-003	8.4000e-004	4.5200e-003		41.4845	41.4845	2.3700e-003	5.9500e-003	43.3167
Worker	0.0590	0.0400	0.5505	1.6700e-003	0.2012	1.0800e-003	0.2023	0.0534	1.0000e-003	0.0544		168.7502	168.7502	4.2600e-003	4.2400e-003	170.1200
Total	**0.0623**	**0.1332**	**0.5835**	**2.0500e-003**	**0.2140**	**1.9600e-003**	**0.2159**	**0.0570**	**1.8400e-003**	**0.0589**		**210.2347**	**210.2347**	**6.6300e-003**	**0.0102**	**213.4367**

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

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					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.4034**	**1.6126**	**10.0159**	**4.3188**	**1.4836**	**5.8024**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2800e-003	0.0933	0.0330	3.8000e-004	0.0120	8.8000e-004	0.0128	3.4800e-003	8.4000e-004	4.3200e-003		41.4845	41.4845	2.3700e-003	5.9500e-003	43.3167
Worker	0.0590	0.0400	0.5505	1.6700e-003	0.1855	1.0800e-003	0.1865	0.0495	1.0000e-003	0.0505		168.7502	168.7502	4.2600e-003	4.2400e-003	170.1200
Total	**0.0623**	**0.1332**	**0.5835**	**2.0500e-003**	**0.1974**	**1.9600e-003**	**0.1994**	**0.0530**	**1.8400e-003**	**0.0548**		**210.2347**	**210.2347**	**6.6300e-003**	**0.0102**	**213.4367**

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

3.5 Grading - 2022

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					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.9486	20.8551	15.2727	0.0297		0.9409	0.9409		0.8656	0.8656		2,872.0464	2,872.0464	0.9289		2,895.2684
Total	**1.9486**	**20.8551**	**15.2727**	**0.0297**	**7.0826**	**0.9409**	**8.0234**	**3.4247**	**0.8656**	**4.2903**		**2,872.0464**	**2,872.0464**	**0.9289**		**2,895.2684**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2800e-003	0.0933	0.0330	3.8000e-004	0.0128	8.8000e-004	0.0137	3.6800e-003	8.4000e-004	4.5200e-003		41.4845	41.4845	2.3700e-003	5.9500e-003	43.3167
Worker	0.0491	0.0333	0.4587	1.3900e-003	0.1677	9.0000e-004	0.1686	0.0445	8.3000e-004	0.0453		140.6252	140.6252	3.5500e-003	3.5300e-003	141.7667
Total	**0.0524**	**0.1266**	**0.4917**	**1.7700e-003**	**0.1805**	**1.7800e-003**	**0.1822**	**0.0482**	**1.6700e-003**	**0.0498**		**182.1097**	**182.1097**	**5.9200e-003**	**9.4800e-003**	**185.0834**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

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					3.0278	0.0000	3.0278	1.4641	0.0000	1.4641			0.0000			0.0000
Off-Road	1.9486	20.8551	15.2727	0.0297		0.9409	0.9409		0.8656	0.8656	0.0000	2,872.0464	2,872.0464	0.9289		2,895.2684
Total	**1.9486**	**20.8551**	**15.2727**	**0.0297**	**3.0278**	**0.9409**	**3.9687**	**1.4641**	**0.8656**	**2.3297**	**0.0000**	**2,872.0464**	**2,872.0464**	**0.9289**		**2,895.2684**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2800e-003	0.0933	0.0330	3.8000e-004	0.0120	8.8000e-004	0.0128	3.4800e-003	8.4000e-004	4.3200e-003		41.4845	41.4845	2.3700e-003	5.9500e-003	43.3167
Worker	0.0491	0.0333	0.4587	1.3900e-003	0.1546	9.0000e-004	0.1555	0.0413	8.3000e-004	0.0421		140.6252	140.6252	3.5500e-003	3.5300e-003	141.7667
Total	**0.0524**	**0.1266**	**0.4917**	**1.7700e-003**	**0.1665**	**1.7800e-003**	**0.1683**	**0.0447**	**1.6700e-003**	**0.0464**		**182.1097**	**182.1097**	**5.9200e-003**	**9.4800e-003**	**185.0834**

3.6 Building Construction - 2022

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0590	1.6786	0.5941	6.8200e-003	0.2302	0.0158	0.2460	0.0663	0.0151	0.0813		746.7215	746.7215	0.0427	0.1071	779.7010
Worker	0.2981	0.2020	2.7829	8.4400e-003	1.0172	5.4800e-003	1.0227	0.2698	5.0400e-003	0.2748		853.1259	853.1259	0.0216	0.0214	860.0512
Total	**0.3572**	**1.8806**	**3.3770**	**0.0153**	**1.2474**	**0.0213**	**1.2686**	**0.3360**	**0.0201**	**0.3561**		**1,599.8474**	**1,599.8474**	**0.0642**	**0.1285**	**1,639.7521**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0590	1.6786	0.5941	6.8200e-003	0.2154	0.0158	0.2312	0.0626	0.0151	0.0777		746.7215	746.7215	0.0427	0.1071	779.7010
Worker	0.2981	0.2020	2.7829	8.4400e-003	0.9376	5.4800e-003	0.9431	0.2502	5.0400e-003	0.2553		853.1259	853.1259	0.0216	0.0214	860.0512
Total	**0.3572**	**1.8806**	**3.3770**	**0.0153**	**1.1530**	**0.0213**	**1.1743**	**0.3128**	**0.0201**	**0.3330**		**1,599.8474**	**1,599.8474**	**0.0642**	**0.1285**	**1,639.7521**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

3.6 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0351	1.3179	0.5398	6.4800e-003	0.2302	6.5100e-003	0.2367	0.0663	6.2300e-003	0.0725		711.8632	711.8632	0.0422	0.1022	743.3801
Worker	0.2801	0.1800	2.5888	8.1700e-003	1.0172	5.1900e-003	1.0224	0.2698	4.7700e-003	0.2745		826.0815	826.0815	0.0195	0.0199	832.5119
Total	**0.3151**	**1.4979**	**3.1286**	**0.0147**	**1.2474**	**0.0117**	**1.2591**	**0.3360**	**0.0110**	**0.3470**		**1,537.9448**	**1,537.9448**	**0.0617**	**0.1222**	**1,575.8920**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0351	1.3179	0.5398	6.4800e-003	0.2154	6.5100e-003	0.2219	0.0626	6.2300e-003	0.0689		711.8632	711.8632	0.0422	0.1022	743.3801
Worker	0.2801	0.1800	2.5888	8.1700e-003	0.9376	5.1900e-003	0.9428	0.2502	4.7700e-003	0.2550		826.0815	826.0815	0.0195	0.0199	832.5119
Total	**0.3151**	**1.4979**	**3.1286**	**0.0147**	**1.1530**	**0.0117**	**1.1647**	**0.3128**	**0.0110**	**0.3238**		**1,537.9448**	**1,537.9448**	**0.0617**	**0.1222**	**1,575.8920**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.1587					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0767**	**8.7903**	**12.1905**	**0.0189**		**0.4357**	**0.4357**		**0.4025**	**0.4025**		**1,805.4304**	**1,805.4304**	**0.5673**		**1,819.6122**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0616	0.0396	0.5690	1.8000e-003	0.2236	1.1400e-003	0.2247	0.0593	1.0500e-003	0.0603		181.5564	181.5564	4.2900e-003	4.3800e-003	182.9697
Total	**0.0616**	**0.0396**	**0.5690**	**1.8000e-003**	**0.2236**	**1.1400e-003**	**0.2247**	**0.0593**	**1.0500e-003**	**0.0603**		**181.5564**	**181.5564**	**4.2900e-003**	**4.3800e-003**	**182.9697**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.1587					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0767**	**8.7903**	**12.1905**	**0.0189**		**0.4357**	**0.4357**		**0.4025**	**0.4025**	**0.0000**	**1,805.4304**	**1,805.4304**	**0.5673**		**1,819.6122**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0616	0.0396	0.5690	1.8000e-003	0.2061	1.1400e-003	0.2072	0.0550	1.0500e-003	0.0560		181.5564	181.5564	4.2900e-003	4.3800e-003	182.9697
Total	**0.0616**	**0.0396**	**0.5690**	**1.8000e-003**	**0.2061**	**1.1400e-003**	**0.2072**	**0.0550**	**1.0500e-003**	**0.0560**		**181.5564**	**181.5564**	**4.2900e-003**	**4.3800e-003**	**182.9697**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

3.8 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	20.8173					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**21.0090**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0554	0.0356	0.5121	1.6200e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		163.4007	163.4007	3.8600e-003	3.9400e-003	164.6727
Total	**0.0554**	**0.0356**	**0.5121**	**1.6200e-003**	**0.2012**	**1.0300e-003**	**0.2022**	**0.0534**	**9.4000e-004**	**0.0543**		**163.4007**	**163.4007**	**3.8600e-003**	**3.9400e-003**	**164.6727**

Isaac L. Sowers Middle School Redevelopment Project P1 - Orange County, Winter

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

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	20.8173					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**21.0090**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0554	0.0356	0.5121	1.6200e-003	0.1855	1.0300e-003	0.1865	0.0495	9.4000e-004	0.0504		163.4007	163.4007	3.8600e-003	3.9400e-003	164.6727
Total	**0.0554**	**0.0356**	**0.5121**	**1.6200e-003**	**0.1855**	**1.0300e-003**	**0.1865**	**0.0495**	**9.4000e-004**	**0.0504**		**163.4007**	**163.4007**	**3.8600e-003**	**3.9400e-003**	**164.6727**

CalEEMod Construction Model

Phase 2

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

Isaac L. Sowers Middle School Redevelopment Project P2

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior High School	17.33	1000sqft	0.40	17,334.00	0
Other Asphalt Surfaces	78.96	1000sqft	1.81	78,960.00	0
Other Non-Asphalt Surfaces	29.76	1000sqft	0.68	29,762.00	0
Parking Lot	79.98	1000sqft	1.84	79,983.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2020 SCE Sustainability Report, see assumptions file

Land Use - Based on District info., see assumptions file

Construction Phase - Based on District info., see assumptions file

Off-road Equipment - No additional equipment required for debris haul

Demolition -

Trips and VMT - Assume 2 vt/day/water truck, see assumptions file

Architectural Coating - Based on District info., see assumptions file

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	11,322.00	4,799.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	228.00
tblLandUse	LandUseSquareFeet	17,330.00	17,334.00
tblLandUse	LandUseSquareFeet	29,760.00	29,762.00
tblLandUse	LandUseSquareFeet	79,980.00	79,983.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	392.00	397.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0864	0.8009	0.8279	1.8300e-003	0.1573	0.0353	0.1925	0.0555	0.0329	0.0884	0.0000	163.8409	163.8409	0.0329	4.7700e-003	166.0834
2024	0.2586	1.3850	1.7997	3.7800e-003	0.1060	0.0588	0.1648	0.0286	0.0553	0.0839	0.0000	336.6212	336.6212	0.0573	9.0700e-003	340.7566
Maximum	**0.2586**	**1.3850**	**1.7997**	**3.7800e-003**	**0.1573**	**0.0588**	**0.1925**	**0.0555**	**0.0553**	**0.0884**	**0.0000**	**336.6212**	**336.6212**	**0.0573**	**9.0700e-003**	**340.7566**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0864	0.8009	0.8279	1.8300e-003	0.0859	0.0353	0.1211	0.0288	0.0329	0.0617	0.0000	163.8408	163.8408	0.0329	4.7700e-003	166.0833
2024	0.2586	1.3850	1.7997	3.7800e-003	0.0980	0.0588	0.1568	0.0266	0.0553	0.0819	0.0000	336.6210	336.6210	0.0573	9.0700e-003	340.7564
Maximum	**0.2586**	**1.3850**	**1.7997**	**3.7800e-003**	**0.0980**	**0.0588**	**0.1568**	**0.0288**	**0.0553**	**0.0819**	**0.0000**	**336.6210**	**336.6210**	**0.0573**	**9.0700e-003**	**340.7564**

	ROG	NOx	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**	**30.17**	**0.00**	**22.23**	**34.06**	**0.00**	**16.62**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-1-2023	11-30-2023	0.7015	0.7015
2	12-1-2023	2-29-2024	0.5513	0.5513
3	3-1-2024	5-31-2024	0.5434	0.5434
4	6-1-2024	8-31-2024	0.7200	0.7200
		Highest	0.7200	0.7200

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building and Asphalt Demolition	Demolition	9/1/2023	9/28/2023	5	20	a
2	Demolition Debris Haul	Demolition	9/1/2023	9/28/2023	5	20	b
3	Site Preparation	Site Preparation	9/29/2023	10/5/2023	5	5	c
4	Grading	Grading	10/6/2023	10/17/2023	5	8	d
5	Building Construction	Building Construction	10/18/2023	8/30/2024	5	228	e
6	Paving	Paving	8/7/2024	8/30/2024	5	18	f
7	Architectural Coating	Architectural Coating	8/7/2024	8/30/2024	5	18	g

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 8

Acres of Paving: 4.33

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 26,001; Non-Residential Outdoor: 8,667; Striped Parking Area: 4,799

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building and Asphalt Demolition	Excavators	3	8.00	158	0.38
Building and Asphalt Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition Debris Haul	Excavators	0	8.00	158	0.38
Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
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
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

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

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
Building and Asphalt Demolition	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition Debris Haul	0	0.00	0.00	397.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	87.00	34.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Building and Asphalt Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0227	0.2148	0.1964	3.9000e-004		9.9800e-003	9.9800e-003		9.2800e-003	9.2800e-003	0.0000	33.9921	33.9921	9.5200e-003	0.0000	34.2301
Total	**0.0227**	**0.2148**	**0.1964**	**3.9000e-004**		**9.9800e-003**	**9.9800e-003**		**9.2800e-003**	**9.2800e-003**	**0.0000**	**33.9921**	**33.9921**	**9.5200e-003**	**0.0000**	**34.2301**

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

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	2.0000e-005	7.3000e-004	2.9000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.3585	0.3585	2.0000e-005	5.0000e-005	0.3743
Worker	4.2000e-004	3.0000e-004	4.3600e-003	1.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.2520	1.2520	3.0000e-005	3.0000e-005	1.2618
Total	**4.4000e-004**	**1.0300e-003**	**4.6500e-003**	**1.0000e-005**	**1.7800e-003**	**1.0000e-005**	**1.7900e-003**	**4.8000e-004**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**1.6105**	**1.6105**	**5.0000e-005**	**8.0000e-005**	**1.6361**

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	0.0227	0.2148	0.1964	3.9000e-004		9.9800e-003	9.9800e-003		9.2800e-003	9.2800e-003	0.0000	33.9920	33.9920	9.5200e-003	0.0000	34.2300
Total	**0.0227**	**0.2148**	**0.1964**	**3.9000e-004**		**9.9800e-003**	**9.9800e-003**		**9.2800e-003**	**9.2800e-003**	**0.0000**	**33.9920**	**33.9920**	**9.5200e-003**	**0.0000**	**34.2300**

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

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	2.0000e-005	7.3000e-004	2.9000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.3585	0.3585	2.0000e-005	5.0000e-005	0.3743
Worker	4.2000e-004	3.0000e-004	4.3600e-003	1.0000e-005	1.5200e-003	1.0000e-005	1.5300e-003	4.1000e-004	1.0000e-005	4.1000e-004	0.0000	1.2520	1.2520	3.0000e-005	3.0000e-005	1.2618
Total	**4.4000e-004**	**1.0300e-003**	**4.6500e-003**	**1.0000e-005**	**1.6400e-003**	**1.0000e-005**	**1.6500e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.6105**	**1.6105**	**5.0000e-005**	**8.0000e-005**	**1.6361**

3.3 Demolition Debris Haul - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0424	0.0000	0.0424	6.4200e-003	0.0000	6.4200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0424**	**0.0000**	**0.0424**	**6.4200e-003**	**0.0000**	**6.4200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

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	4.0000e-004	0.0249	8.1400e-003	1.1000e-004	3.4100e-003	1.5000e-004	3.5600e-003	9.3000e-004	1.5000e-004	1.0800e-003	0.0000	11.5212	11.5212	1.1600e-003	1.8500e-003	12.1010
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.0000e-004**	**0.0249**	**8.1400e-003**	**1.1000e-004**	**3.4100e-003**	**1.5000e-004**	**3.5600e-003**	**9.3000e-004**	**1.5000e-004**	**1.0800e-003**	**0.0000**	**11.5212**	**11.5212**	**1.1600e-003**	**1.8500e-003**	**12.1010**

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					0.0181	0.0000	0.0181	2.7400e-003	0.0000	2.7400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0181**	**0.0000**	**0.0181**	**2.7400e-003**	**0.0000**	**2.7400e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-004	0.0249	8.1400e-003	1.1000e-004	3.1800e-003	1.5000e-004	3.3300e-003	8.8000e-004	1.5000e-004	1.0200e-003	0.0000	11.5212	11.5212	1.1600e-003	1.8500e-003	12.1010
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.0000e-004**	**0.0249**	**8.1400e-003**	**1.1000e-004**	**3.1800e-003**	**1.5000e-004**	**3.3300e-003**	**8.8000e-004**	**1.5000e-004**	**1.0200e-003**	**0.0000**	**11.5212**	**11.5212**	**1.1600e-003**	**1.8500e-003**	**12.1010**

3.4 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0491	0.0000	0.0491	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0688	0.0456	1.0000e-004		3.1700e-003	3.1700e-003		2.9100e-003	2.9100e-003	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303
Total	**6.6500e-003**	**0.0688**	**0.0456**	**1.0000e-004**	**0.0491**	**3.1700e-003**	**0.0523**	**0.0253**	**2.9100e-003**	**0.0282**	**0.0000**	**8.3627**	**8.3627**	**2.7000e-003**	**0.0000**	**8.4303**

Unmitigated Construction Off-Site

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	1.8000e-004	7.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0896	0.0896	1.0000e-005	1.0000e-005	0.0936
Worker	1.3000e-004	9.0000e-005	1.3100e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3756	0.3756	1.0000e-005	1.0000e-005	0.3785
Total	**1.3000e-004**	**2.7000e-004**	**1.3800e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.3000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4652**	**0.4652**	**2.0000e-005**	**2.0000e-005**	**0.4721**

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					0.0210	0.0000	0.0210	0.0108	0.0000	0.0108	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0688	0.0456	1.0000e-004		3.1700e-003	3.1700e-003		2.9100e-003	2.9100e-003	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303
Total	**6.6500e-003**	**0.0688**	**0.0456**	**1.0000e-004**	**0.0210**	**3.1700e-003**	**0.0242**	**0.0108**	**2.9100e-003**	**0.0137**	**0.0000**	**8.3627**	**8.3627**	**2.7000e-003**	**0.0000**	**8.4303**

Mitigated Construction Off-Site

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	1.8000e-004	7.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0896	0.0896	1.0000e-005	1.0000e-005	0.0936
Worker	1.3000e-004	9.0000e-005	1.3100e-003	0.0000	4.6000e-004	0.0000	4.6000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3756	0.3756	1.0000e-005	1.0000e-005	0.3785
Total	**1.3000e-004**	**2.7000e-004**	**1.3800e-003**	**0.0000**	**4.9000e-004**	**0.0000**	**4.9000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4652**	**0.4652**	**2.0000e-005**	**2.0000e-005**	**0.4721**

3.5 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0283	0.0000	0.0283	0.0137	0.0000	0.0137	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0717	0.0590	1.2000e-004		3.1000e-003	3.1000e-003		2.8500e-003	2.8500e-003	0.0000	10.4243	10.4243	3.3700e-003	0.0000	10.5085
Total	**6.8400e-003**	**0.0717**	**0.0590**	**1.2000e-004**	**0.0283**	**3.1000e-003**	**0.0314**	**0.0137**	**2.8500e-003**	**0.0166**	**0.0000**	**10.4243**	**10.4243**	**3.3700e-003**	**0.0000**	**10.5085**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	1.0000e-005	2.9000e-004	1.2000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.1434	0.1434	1.0000e-005	2.0000e-005	0.1497
Worker	1.7000e-004	1.2000e-004	1.7500e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5008	0.5008	1.0000e-005	1.0000e-005	0.5047
Total	**1.8000e-004**	**4.1000e-004**	**1.8700e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.1000e-004**	**1.8000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6442**	**0.6442**	**2.0000e-005**	**3.0000e-005**	**0.6545**

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					0.0121	0.0000	0.0121	5.8600e-003	0.0000	5.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0717	0.0590	1.2000e-004		3.1000e-003	3.1000e-003		2.8500e-003	2.8500e-003	0.0000	10.4242	10.4242	3.3700e-003	0.0000	10.5085
Total	**6.8400e-003**	**0.0717**	**0.0590**	**1.2000e-004**	**0.0121**	**3.1000e-003**	**0.0152**	**5.8600e-003**	**2.8500e-003**	**8.7100e-003**	**0.0000**	**10.4242**	**10.4242**	**3.3700e-003**	**0.0000**	**10.5085**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	1.0000e-005	2.9000e-004	1.2000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.1434	0.1434	1.0000e-005	2.0000e-005	0.1497
Worker	1.7000e-004	1.2000e-004	1.7500e-003	1.0000e-005	6.1000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.7000e-004	0.0000	0.5008	0.5008	1.0000e-005	1.0000e-005	0.5047
Total	**1.8000e-004**	**4.1000e-004**	**1.8700e-003**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**6.6000e-004**	**1.7000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6442**	**0.6442**	**2.0000e-005**	**3.0000e-005**	**0.6545**

3.6 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0417	0.3812	0.4305	7.1000e-004		0.0185	0.0185		0.0175	0.0175	0.0000	61.4283	61.4283	0.0146	0.0000	61.7936
Total	**0.0417**	**0.3812**	**0.4305**	**7.1000e-004**		**0.0185**	**0.0185**		**0.0175**	**0.0175**	**0.0000**	**61.4283**	**61.4283**	**0.0146**	**0.0000**	**61.7936**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	8.9000e-004	0.0331	0.0133	1.6000e-004	5.6800e-003	1.6000e-004	5.8400e-003	1.6400e-003	1.6000e-004	1.7900e-003	0.0000	16.1490	16.1490	9.6000e-004	2.3200e-003	16.8640
Worker	6.5100e-003	4.6500e-003	0.0671	2.1000e-004	0.0253	1.3000e-004	0.0254	6.7200e-003	1.2000e-004	6.8400e-003	0.0000	19.2436	19.2436	4.5000e-004	4.6000e-004	19.3933
Total	**7.4000e-003**	**0.0377**	**0.0804**	**3.7000e-004**	**0.0310**	**2.9000e-004**	**0.0313**	**8.3600e-003**	**2.8000e-004**	**8.6300e-003**	**0.0000**	**35.3926**	**35.3926**	**1.4100e-003**	**2.7800e-003**	**36.2573**

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	0.0417	0.3812	0.4305	7.1000e-004		0.0185	0.0185		0.0175	0.0175	0.0000	61.4282	61.4282	0.0146	0.0000	61.7935
Total	**0.0417**	**0.3812**	**0.4305**	**7.1000e-004**		**0.0185**	**0.0185**		**0.0175**	**0.0175**	**0.0000**	**61.4282**	**61.4282**	**0.0146**	**0.0000**	**61.7935**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	8.9000e-004	0.0331	0.0133	1.6000e-004	5.3100e-003	1.6000e-004	5.4800e-003	1.5500e-003	1.6000e-004	1.7000e-003	0.0000	16.1490	16.1490	9.6000e-004	2.3200e-003	16.8640
Worker	6.5100e-003	4.6500e-003	0.0671	2.1000e-004	0.0233	1.3000e-004	0.0235	6.2400e-003	1.2000e-004	6.3600e-003	0.0000	19.2436	19.2436	4.5000e-004	4.6000e-004	19.3933
Total	**7.4000e-003**	**0.0377**	**0.0804**	**3.7000e-004**	**0.0286**	**2.9000e-004**	**0.0290**	**7.7900e-003**	**2.8000e-004**	**8.0600e-003**	**0.0000**	**35.3926**	**35.3926**	**1.4100e-003**	**2.7800e-003**	**36.2573**

3.6 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1288	1.1763	1.4146	2.3600e-003		0.0537	0.0537		0.0505	0.0505	0.0000	202.8680	202.8680	0.0480	0.0000	204.0673
Total	**0.1288**	**1.1763**	**1.4146**	**2.3600e-003**		**0.0537**	**0.0537**		**0.0505**	**0.0505**	**0.0000**	**202.8680**	**202.8680**	**0.0480**	**0.0000**	**204.0673**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	2.9100e-003	0.1089	0.0435	5.3000e-004	0.0187	5.6000e-004	0.0193	5.4100e-003	5.4000e-004	5.9400e-003	0.0000	52.4958	52.4958	3.2000e-003	7.5700e-003	54.8315
Worker	0.0202	0.0138	0.2063	6.7000e-004	0.0836	4.1000e-004	0.0840	0.0222	3.8000e-004	0.0226	0.0000	61.5259	61.5259	1.3400e-003	1.4300e-003	61.9870
Total	**0.0231**	**0.1227**	**0.2498**	**1.2000e-003**	**0.1023**	**9.7000e-004**	**0.1033**	**0.0276**	**9.2000e-004**	**0.0285**	**0.0000**	**114.0217**	**114.0217**	**4.5400e-003**	**9.0000e-003**	**116.8186**

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	0.1288	1.1763	1.4146	2.3600e-003		0.0537	0.0537		0.0505	0.0505	0.0000	202.8677	202.8677	0.0480	0.0000	204.0670
Total	**0.1288**	**1.1763**	**1.4146**	**2.3600e-003**		**0.0537**	**0.0537**		**0.0505**	**0.0505**	**0.0000**	**202.8677**	**202.8677**	**0.0480**	**0.0000**	**204.0670**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	2.9100e-003	0.1089	0.0435	5.3000e-004	0.0176	5.6000e-004	0.0181	5.1100e-003	5.4000e-004	5.6500e-003	0.0000	52.4958	52.4958	3.2000e-003	7.5700e-003	54.8315
Worker	0.0202	0.0138	0.2063	6.7000e-004	0.0771	4.1000e-004	0.0775	0.0206	3.8000e-004	0.0210	0.0000	61.5259	61.5259	1.3400e-003	1.4300e-003	61.9870
Total	**0.0231**	**0.1227**	**0.2498**	**1.2000e-003**	**0.0946**	**9.7000e-004**	**0.0956**	**0.0257**	**9.2000e-004**	**0.0266**	**0.0000**	**114.0217**	**114.0217**	**4.5400e-003**	**9.0000e-003**	**116.8186**

3.7 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.9300e-003	0.0745	0.1100	1.7000e-004		3.5900e-003	3.5900e-003		3.3200e-003	3.3200e-003	0.0000	14.7423	14.7423	4.6300e-003	0.0000	14.8581
Paving	4.7800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0127**	**0.0745**	**0.1100**	**1.7000e-004**		**3.5900e-003**	**3.5900e-003**		**3.3200e-003**	**3.3200e-003**	**0.0000**	**14.7423**	**14.7423**	**4.6300e-003**	**0.0000**	**14.8581**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.3000e-004	4.8800e-003	2.0000e-005	1.9800e-003	1.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.3000e-004	0.0000	1.4548	1.4548	3.0000e-005	3.0000e-005	1.4657
Total	**4.8000e-004**	**3.3000e-004**	**4.8800e-003**	**2.0000e-005**	**1.9800e-003**	**1.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.3000e-004**	**0.0000**	**1.4548**	**1.4548**	**3.0000e-005**	**3.0000e-005**	**1.4657**

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	7.9300e-003	0.0745	0.1100	1.7000e-004		3.5900e-003	3.5900e-003		3.3200e-003	3.3200e-003	0.0000	14.7423	14.7423	4.6300e-003	0.0000	14.8581
Paving	4.7800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0127**	**0.0745**	**0.1100**	**1.7000e-004**		**3.5900e-003**	**3.5900e-003**		**3.3200e-003**	**3.3200e-003**	**0.0000**	**14.7423**	**14.7423**	**4.6300e-003**	**0.0000**	**14.8581**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.3000e-004	4.8800e-003	2.0000e-005	1.8200e-003	1.0000e-005	1.8300e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.4548	1.4548	3.0000e-005	3.0000e-005	1.4657
Total	**4.8000e-004**	**3.3000e-004**	**4.8800e-003**	**2.0000e-005**	**1.8200e-003**	**1.0000e-005**	**1.8300e-003**	**4.9000e-004**	**1.0000e-005**	**5.0000e-004**	**0.0000**	**1.4548**	**1.4548**	**3.0000e-005**	**3.0000e-005**	**1.4657**

3.8 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0915					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6300e-003	0.0110	0.0163	3.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	2.2979	2.2979	1.3000e-004	0.0000	2.3012
Total	**0.0931**	**0.0110**	**0.0163**	**3.0000e-005**		**5.5000e-004**	**5.5000e-004**		**5.5000e-004**	**5.5000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.3000e-004**	**0.0000**	**2.3012**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	2.8000e-004	4.1500e-003	1.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.5000e-004	0.0000	1.2366	1.2366	3.0000e-005	3.0000e-005	1.2459
Total	**4.1000e-004**	**2.8000e-004**	**4.1500e-003**	**1.0000e-005**	**1.6800e-003**	**1.0000e-005**	**1.6900e-003**	**4.5000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.2366**	**1.2366**	**3.0000e-005**	**3.0000e-005**	**1.2459**

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	0.0915					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6300e-003	0.0110	0.0163	3.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	2.2979	2.2979	1.3000e-004	0.0000	2.3012
Total	**0.0931**	**0.0110**	**0.0163**	**3.0000e-005**		**5.5000e-004**	**5.5000e-004**		**5.5000e-004**	**5.5000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.3000e-004**	**0.0000**	**2.3012**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	2.8000e-004	4.1500e-003	1.0000e-005	1.5500e-003	1.0000e-005	1.5600e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.2366	1.2366	3.0000e-005	3.0000e-005	1.2459
Total	**4.1000e-004**	**2.8000e-004**	**4.1500e-003**	**1.0000e-005**	**1.5500e-003**	**1.0000e-005**	**1.5600e-003**	**4.1000e-004**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**1.2366**	**1.2366**	**3.0000e-005**	**3.0000e-005**	**1.2459**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

Isaac L. Sowers Middle School Redevelopment Project P2

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior High School	17.33	1000sqft	0.40	17,334.00	0
Other Asphalt Surfaces	78.96	1000sqft	1.81	78,960.00	0
Other Non-Asphalt Surfaces	29.76	1000sqft	0.68	29,762.00	0
Parking Lot	79.98	1000sqft	1.84	79,983.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2020 SCE Sustainability Report, see assumptions file

Land Use - Based on District info., see assumptions file

Construction Phase - Based on District info., see assumptions file

Off-road Equipment - No additional equipment required for debris haul

Demolition -

Trips and VMT - Assume 2 vt/day/water truck, see assumptions file

Architectural Coating - Based on District info., see assumptions file

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	11,322.00	4,799.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	228.00
tblLandUse	LandUseSquareFeet	17,330.00	17,334.00
tblLandUse	LandUseSquareFeet	29,760.00	29,762.00
tblLandUse	LandUseSquareFeet	79,980.00	79,983.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	392.00	397.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.7122	27.6267	20.9414	0.0517	19.8710	1.2674	21.1384	10.1595	1.1660	11.3255	0.0000	5,198.9860	5,198.9860	1.1987	0.2124	5,291.8553
2024	13.5897	24.3243	34.2119	0.0662	1.6034	1.0860	2.6894	0.4302	1.0186	1.4487	0.0000	6,448.3064	6,448.3064	1.2514	0.1191	6,515.0896
Maximum	**13.5897**	**27.6267**	**34.2119**	**0.0662**	**19.8710**	**1.2674**	**21.1384**	**10.1595**	**1.1660**	**11.3255**	**0.0000**	**6,448.3064**	**6,448.3064**	**1.2514**	**0.2124**	**6,515.0896**

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					
2023	2.7122	27.6267	20.9414	0.0517	8.6008	1.2674	9.8682	4.3718	1.1660	5.5378	0.0000	5,198.9860	5,198.9860	1.1987	0.2124	5,291.8553
2024	13.5897	24.3243	34.2119	0.0662	1.4810	1.0860	2.5670	0.4001	1.0186	1.4187	0.0000	6,448.3064	6,448.3064	1.2514	0.1191	6,515.0896
Maximum	**13.5897**	**27.6267**	**34.2119**	**0.0662**	**8.6008**	**1.2674**	**9.8682**	**4.3718**	**1.1660**	**5.5378**	**0.0000**	**6,448.3064**	**6,448.3064**	**1.2514**	**0.2124**	**6,515.0896**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	53.05	0.00	47.81	54.94	0.00	45.54	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	Building and Asphalt Demolition	Demolition	9/1/2023	9/28/2023	5	20	a
2	Demolition Debris Haul	Demolition	9/1/2023	9/28/2023	5	20	b
3	Site Preparation	Site Preparation	9/29/2023	10/5/2023	5	5	c
4	Grading	Grading	10/6/2023	10/17/2023	5	8	d
5	Building Construction	Building Construction	10/18/2023	8/30/2024	5	228	e
6	Paving	Paving	8/7/2024	8/30/2024	5	18	f
7	Architectural Coating	Architectural Coating	8/7/2024	8/30/2024	5	18	g

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 8

Acres of Paving: 4.33

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 26,001; Non-Residential Outdoor: 8,667; Striped Parking Area: 4,799

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Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building and Asphalt Demolition	Excavators	3	8.00	158	0.38
Building and Asphalt Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition Debris Haul	Excavators	0	8.00	158	0.38
Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
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
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

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
Building and Asphalt Demolition	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition Debris Haul	0	0.00	0.00	397.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	87.00	34.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Building and Asphalt Demolition - 2023

Unmitigated Construction On-Site

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

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Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0200e-003	0.0701	0.0291	3.6000e-004	0.0128	3.6000e-004	0.0132	3.6800e-003	3.4000e-004	4.0200e-003		39.4899	39.4899	2.3500e-003	5.6700e-003	41.2371
Worker	0.0422	0.0270	0.4581	1.4100e-003	0.1677	8.5000e-004	0.1685	0.0445	7.9000e-004	0.0453		143.0043	143.0043	3.1400e-003	3.0900e-003	144.0035
Total	**0.0443**	**0.0971**	**0.4871**	**1.7700e-003**	**0.1805**	**1.2100e-003**	**0.1817**	**0.0482**	**1.1300e-003**	**0.0493**		**182.4941**	**182.4941**	**5.4900e-003**	**8.7600e-003**	**185.2406**

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	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280	0.0000	3,746.9840	3,746.9840	1.0494		3,773.2183
Total	**2.2691**	**21.4844**	**19.6434**	**0.0388**		**0.9975**	**0.9975**		**0.9280**	**0.9280**	**0.0000**	**3,746.9840**	**3,746.9840**	**1.0494**		**3,773.2183**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0200e-003	0.0701	0.0291	3.6000e-004	0.0120	3.6000e-004	0.0123	3.4800e-003	3.4000e-004	3.8200e-003		39.4899	39.4899	2.3500e-003	5.6700e-003	41.2371
Worker	0.0422	0.0270	0.4581	1.4100e-003	0.1546	8.5000e-004	0.1554	0.0413	7.9000e-004	0.0420		143.0043	143.0043	3.1400e-003	3.0900e-003	144.0035
Total	**0.0443**	**0.0971**	**0.4871**	**1.7700e-003**	**0.1665**	**1.2100e-003**	**0.1677**	**0.0447**	**1.1300e-003**	**0.0459**		**182.4941**	**182.4941**	**5.4900e-003**	**8.7600e-003**	**185.2406**

3.3 Demolition Debris Haul - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.2402	0.0000	4.2402	0.6420	0.0000	0.6420			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.2402**	**0.0000**	**4.2402**	**0.6420**	**0.0000**	**0.6420**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

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	0.0414	2.3656	0.8109	0.0111	0.3462	0.0152	0.3614	0.0948	0.0146	0.1094		1,269.5079	1,269.5079	0.1281	0.2037	1,333.3964
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0414**	**2.3656**	**0.8109**	**0.0111**	**0.3462**	**0.0152**	**0.3614**	**0.0948**	**0.0146**	**0.1094**		**1,269.5079**	**1,269.5079**	**0.1281**	**0.2037**	**1,333.3964**

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					1.8127	0.0000	1.8127	0.2745	0.0000	0.2745			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.8127**	**0.0000**	**1.8127**	**0.2745**	**0.0000**	**0.2745**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

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	0.0414	2.3656	0.8109	0.0111	0.3226	0.0152	0.3378	0.0890	0.0146	0.1036		1,269.5079	1,269.5079	0.1281	0.2037	1,333.3964
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0414**	**2.3656**	**0.8109**	**0.0111**	**0.3226**	**0.0152**	**0.3378**	**0.0890**	**0.0146**	**0.1036**		**1,269.5079**	**1,269.5079**	**0.1281**	**0.2037**	**1,333.3964**

3.4 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0200e-003	0.0701	0.0291	3.6000e-004	0.0128	3.6000e-004	0.0132	3.6800e-003	3.4000e-004	4.0200e-003		39.4899	39.4899	2.3500e-003	5.6700e-003	41.2371
Worker	0.0507	0.0324	0.5497	1.7000e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		171.6051	171.6051	3.7700e-003	3.7100e-003	172.8042
Total	**0.0527**	**0.1025**	**0.5787**	**2.0600e-003**	**0.2140**	**1.3900e-003**	**0.2154**	**0.0570**	**1.2800e-003**	**0.0583**		**211.0950**	**211.0950**	**6.1200e-003**	**9.3800e-003**	**214.0413**

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					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**8.4034**	**1.2660**	**9.6694**	**4.3188**	**1.1647**	**5.4835**	**0.0000**	**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0200e-003	0.0701	0.0291	3.6000e-004	0.0120	3.6000e-004	0.0123	3.4800e-003	3.4000e-004	3.8200e-003		39.4899	39.4899	2.3500e-003	5.6700e-003	41.2371
Worker	0.0507	0.0324	0.5497	1.7000e-003	0.1855	1.0300e-003	0.1865	0.0495	9.4000e-004	0.0504		171.6051	171.6051	3.7700e-003	3.7100e-003	172.8042
Total	**0.0527**	**0.1025**	**0.5787**	**2.0600e-003**	**0.1974**	**1.3900e-003**	**0.1988**	**0.0530**	**1.2800e-003**	**0.0543**		**211.0950**	**211.0950**	**6.1200e-003**	**9.3800e-003**	**214.0413**

3.5 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.0826**	**0.7749**	**7.8575**	**3.4247**	**0.7129**	**4.1377**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0200e-003	0.0701	0.0291	3.6000e-004	0.0128	3.6000e-004	0.0132	3.6800e-003	3.4000e-004	4.0200e-003		39.4899	39.4899	2.3500e-003	5.6700e-003	41.2371
Worker	0.0422	0.0270	0.4581	1.4100e-003	0.1677	8.5000e-004	0.1685	0.0445	7.9000e-004	0.0453		143.0043	143.0043	3.1400e-003	3.0900e-003	144.0035
Total	**0.0443**	**0.0971**	**0.4871**	**1.7700e-003**	**0.1805**	**1.2100e-003**	**0.1817**	**0.0482**	**1.1300e-003**	**0.0493**		**182.4941**	**182.4941**	**5.4900e-003**	**8.7600e-003**	**185.2406**

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					3.0278	0.0000	3.0278	1.4641	0.0000	1.4641			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**3.0278**	**0.7749**	**3.8027**	**1.4641**	**0.7129**	**2.1770**	**0.0000**	**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0200e-003	0.0701	0.0291	3.6000e-004	0.0120	3.6000e-004	0.0123	3.4800e-003	3.4000e-004	3.8200e-003		39.4899	39.4899	2.3500e-003	5.6700e-003	41.2371
Worker	0.0422	0.0270	0.4581	1.4100e-003	0.1546	8.5000e-004	0.1554	0.0413	7.9000e-004	0.0420		143.0043	143.0043	3.1400e-003	3.0900e-003	144.0035
Total	**0.0443**	**0.0971**	**0.4871**	**1.7700e-003**	**0.1665**	**1.2100e-003**	**0.1677**	**0.0447**	**1.1300e-003**	**0.0459**		**182.4941**	**182.4941**	**5.4900e-003**	**8.7600e-003**	**185.2406**

3.6 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0343	1.1916	0.4940	6.1100e-003	0.2174	6.1100e-003	0.2235	0.0626	5.8500e-003	0.0684		671.3279	671.3279	0.0399	0.0963	701.0312
Worker	0.2450	0.1567	2.6568	8.2100e-003	0.9725	4.9600e-003	0.9774	0.2579	4.5600e-003	0.2625		829.4247	829.4247	0.0182	0.0179	835.2201
Total	**0.2793**	**1.3483**	**3.1508**	**0.0143**	**1.1899**	**0.0111**	**1.2009**	**0.3205**	**0.0104**	**0.3309**		**1,500.7526**	**1,500.7526**	**0.0582**	**0.1143**	**1,536.2513**

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0343	1.1916	0.4940	6.1100e-003	0.2035	6.1100e-003	0.2096	0.0591	5.8500e-003	0.0650		671.3279	671.3279	0.0399	0.0963	701.0312
Worker	0.2450	0.1567	2.6568	8.2100e-003	0.8964	4.9600e-003	0.9013	0.2392	4.5600e-003	0.2438		829.4247	829.4247	0.0182	0.0179	835.2201
Total	**0.2793**	**1.3483**	**3.1508**	**0.0143**	**1.0998**	**0.0111**	**1.1109**	**0.2984**	**0.0104**	**0.3088**		**1,500.7526**	**1,500.7526**	**0.0582**	**0.1143**	**1,536.2513**

3.6 Building Construction - 2024

Unmitigated Construction On-Site

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

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0338	1.1881	0.4904	6.0100e-003	0.2174	6.4000e-003	0.2238	0.0626	6.1200e-003	0.0687		660.9136	660.9136	0.0403	0.0952	690.3019
Worker	0.2302	0.1407	2.4722	7.9500e-003	0.9725	4.7100e-003	0.9772	0.2579	4.3300e-003	0.2622		803.0839	803.0839	0.0165	0.0168	808.4909
Total	**0.2640**	**1.3288**	**2.9625**	**0.0140**	**1.1899**	**0.0111**	**1.2010**	**0.3205**	**0.0105**	**0.3309**		**1,463.9975**	**1,463.9975**	**0.0569**	**0.1120**	**1,498.7929**

Mitigated Construction On-Site

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

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0338	1.1881	0.4904	6.0100e-003	0.2034	6.4000e-003	0.2098	0.0591	6.1200e-003	0.0653		660.9136	660.9136	0.0403	0.0952	690.3019
Worker	0.2302	0.1407	2.4722	7.9500e-003	0.8964	4.7100e-003	0.9011	0.2392	4.3300e-003	0.2436		803.0839	803.0839	0.0165	0.0168	808.4909
Total	**0.2640**	**1.3288**	**2.9625**	**0.0140**	**1.0998**	**0.0111**	**1.1109**	**0.2984**	**0.0105**	**0.3088**		**1,463.9975**	**1,463.9975**	**0.0569**	**0.1120**	**1,498.7929**

3.7 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8814	8.2730	12.2210	0.0189		0.3987	0.3987		0.3685	0.3685		1,805.6205	1,805.6205	0.5673		1,819.8039
Paving	0.5313					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4127**	**8.2730**	**12.2210**	**0.0189**		**0.3987**	**0.3987**		**0.3685**	**0.3685**		**1,805.6205**	**1,805.6205**	**0.5673**		**1,819.8039**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0529	0.0324	0.5683	1.8300e-003	0.2236	1.0800e-003	0.2246	0.0593	1.0000e-003	0.0603		184.6170	184.6170	3.8000e-003	3.8500e-003	185.8600
Total	**0.0529**	**0.0324**	**0.5683**	**1.8300e-003**	**0.2236**	**1.0800e-003**	**0.2246**	**0.0593**	**1.0000e-003**	**0.0603**		**184.6170**	**184.6170**	**3.8000e-003**	**3.8500e-003**	**185.8600**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8814	8.2730	12.2210	0.0189		0.3987	0.3987		0.3685	0.3685	0.0000	1,805.6205	1,805.6205	0.5673		1,819.8039
Paving	0.5313					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4127**	**8.2730**	**12.2210**	**0.0189**		**0.3987**	**0.3987**		**0.3685**	**0.3685**	**0.0000**	**1,805.6205**	**1,805.6205**	**0.5673**		**1,819.8039**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0529	0.0324	0.5683	1.8300e-003	0.2061	1.0800e-003	0.2071	0.0550	1.0000e-003	0.0560		184.6170	184.6170	3.8000e-003	3.8500e-003	185.8600
Total	**0.0529**	**0.0324**	**0.5683**	**1.8300e-003**	**0.2061**	**1.0800e-003**	**0.2071**	**0.0550**	**1.0000e-003**	**0.0560**		**184.6170**	**184.6170**	**3.8000e-003**	**3.8500e-003**	**185.8600**

3.8 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.1628					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**10.3435**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0450	0.0275	0.4831	1.5500e-003	0.1900	9.2000e-004	0.1909	0.0504	8.5000e-004	0.0512		156.9244	156.9244	3.2300e-003	3.2700e-003	157.9810
Total	**0.0450**	**0.0275**	**0.4831**	**1.5500e-003**	**0.1900**	**9.2000e-004**	**0.1909**	**0.0504**	**8.5000e-004**	**0.0512**		**156.9244**	**156.9244**	**3.2300e-003**	**3.2700e-003**	**157.9810**

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	10.1628					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**10.3435**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

Mitigated Construction Off-Site

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Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0450	0.0275	0.4831	1.5500e-003	0.1752	9.2000e-004	0.1761	0.0467	8.5000e-004	0.0476		156.9244	156.9244	3.2300e-003	3.2700e-003	157.9810
Total	**0.0450**	**0.0275**	**0.4831**	**1.5500e-003**	**0.1752**	**9.2000e-004**	**0.1761**	**0.0467**	**8.5000e-004**	**0.0476**		**156.9244**	**156.9244**	**3.2300e-003**	**3.2700e-003**	**157.9810**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Isaac L. Sowers Middle School Redevelopment Project P2

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior High School	17.33	1000sqft	0.40	17,334.00	0
Other Asphalt Surfaces	78.96	1000sqft	1.81	78,960.00	0
Other Non-Asphalt Surfaces	29.76	1000sqft	0.68	29,762.00	0
Parking Lot	79.98	1000sqft	1.84	79,983.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2020 SCE Sustainability Report, see assumptions file

Land Use - Based on District info., see assumptions file

Construction Phase - Based on District info., see assumptions file

Off-road Equipment - No additional equipment required for debris haul

Demolition -

Trips and VMT - Assume 2 vt/day/water truck, see assumptions file

Architectural Coating - Based on District info., see assumptions file

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	11,322.00	4,799.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	228.00
tblLandUse	LandUseSquareFeet	17,330.00	17,334.00
tblLandUse	LandUseSquareFeet	29,760.00	29,762.00
tblLandUse	LandUseSquareFeet	79,980.00	79,983.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	392.00	397.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.7168	27.6330	20.9199	0.0517	19.8710	1.2674	21.1384	10.1595	1.1660	11.3255	0.0000	5,193.3547	5,193.3547	1.1988	0.2128	5,286.3405
2024	13.6202	24.3970	33.9898	0.0657	1.6034	1.0860	2.6895	0.4302	1.0186	1.4488	0.0000	6,394.6673	6,394.6673	1.2519	0.1209	6,461.9797
Maximum	**13.6202**	**27.6330**	**33.9898**	**0.0657**	**19.8710**	**1.2674**	**21.1384**	**10.1595**	**1.1660**	**11.3255**	**0.0000**	**6,394.6673**	**6,394.6673**	**1.2519**	**0.2128**	**6,461.9797**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

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					
2023	2.7168	27.6330	20.9199	0.0517	8.6008	1.2674	9.8682	4.3718	1.1660	5.5378	0.0000	5,193.3546	5,193.3546	1.1988	0.2128	5,286.3405
2024	13.6202	24.3970	33.9898	0.0657	1.4810	1.0860	2.5670	0.4001	1.0186	1.4187	0.0000	6,394.6673	6,394.6673	1.2519	0.1209	6,461.9797
Maximum	**13.6202**	**27.6330**	**33.9898**	**0.0657**	**8.6008**	**1.2674**	**9.8682**	**4.3718**	**1.1660**	**5.5378**	**0.0000**	**6,394.6673**	**6,394.6673**	**1.2519**	**0.2128**	**6,461.9797**

	ROG	NOx	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**	**53.05**	**0.00**	**47.81**	**54.94**	**0.00**	**45.54**	**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	Building and Asphalt Demolition	Demolition	9/1/2023	9/28/2023	5	20	a
2	Demolition Debris Haul	Demolition	9/1/2023	9/28/2023	5	20	b
3	Site Preparation	Site Preparation	9/29/2023	10/5/2023	5	5	c
4	Grading	Grading	10/6/2023	10/17/2023	5	8	d
5	Building Construction	Building Construction	10/18/2023	8/30/2024	5	228	e
6	Paving	Paving	8/7/2024	8/30/2024	5	18	f
7	Architectural Coating	Architectural Coating	8/7/2024	8/30/2024	5	18	g

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 8

Acres of Paving: 4.33

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 26,001; Non-Residential Outdoor: 8,667; Striped Parking Area: 4,799

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building and Asphalt Demolition	Excavators	3	8.00	158	0.38
Building and Asphalt Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition Debris Haul	Excavators	0	8.00	158	0.38
Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
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
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Building and Asphalt Demolition	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition Debris Haul	0	0.00	0.00	397.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	87.00	34.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

3.2 Building and Asphalt Demolition - 2023

Unmitigated Construction On-Site

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	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	1.9500e-003	0.0732	0.0300	3.6000e-004	0.0128	3.6000e-004	0.0132	3.6800e-003	3.5000e-004	4.0300e-003		39.5480	39.5480	2.3400e-003	5.6800e-003	41.2989
Worker	0.0462	0.0297	0.4267	1.3500e-003	0.1677	8.5000e-004	0.1685	0.0445	7.9000e-004	0.0453		136.1673	136.1673	3.2200e-003	3.2900e-003	137.2272
Total	**0.0481**	**0.1029**	**0.4567**	**1.7100e-003**	**0.1805**	**1.2100e-003**	**0.1817**	**0.0482**	**1.1400e-003**	**0.0493**		**175.7152**	**175.7152**	**5.5600e-003**	**8.9700e-003**	**178.5261**

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	2.2691	21.4844	19.6434	0.0388		0.9975	0.9975		0.9280	0.9280	0.0000	3,746.9840	3,746.9840	1.0494		3,773.2183
Total	**2.2691**	**21.4844**	**19.6434**	**0.0388**		**0.9975**	**0.9975**		**0.9280**	**0.9280**	**0.0000**	**3,746.9840**	**3,746.9840**	**1.0494**		**3,773.2183**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9500e-003	0.0732	0.0300	3.6000e-004	0.0120	3.6000e-004	0.0123	3.4800e-003	3.5000e-004	3.8300e-003		39.5480	39.5480	2.3400e-003	5.6800e-003	41.2989
Worker	0.0462	0.0297	0.4267	1.3500e-003	0.1546	8.5000e-004	0.1554	0.0413	7.9000e-004	0.0420		136.1673	136.1673	3.2200e-003	3.2900e-003	137.2272
Total	**0.0481**	**0.1029**	**0.4567**	**1.7100e-003**	**0.1665**	**1.2100e-003**	**0.1677**	**0.0447**	**1.1400e-003**	**0.0459**		**175.7152**	**175.7152**	**5.5600e-003**	**8.9700e-003**	**178.5261**

3.3 Demolition Debris Haul - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.2402	0.0000	4.2402	0.6420	0.0000	0.6420			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.2402**	**0.0000**	**4.2402**	**0.6420**	**0.0000**	**0.6420**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

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	0.0389	2.4662	0.8198	0.0112	0.3462	0.0153	0.3615	0.0948	0.0146	0.1094		1,270.6554	1,270.6554	0.1279	0.2038	1,334.5961
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0389**	**2.4662**	**0.8198**	**0.0112**	**0.3462**	**0.0153**	**0.3615**	**0.0948**	**0.0146**	**0.1094**		**1,270.6554**	**1,270.6554**	**0.1279**	**0.2038**	**1,334.5961**

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					1.8127	0.0000	1.8127	0.2745	0.0000	0.2745			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.8127**	**0.0000**	**1.8127**	**0.2745**	**0.0000**	**0.2745**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0389	2.4662	0.8198	0.0112	0.3226	0.0153	0.3378	0.0890	0.0146	0.1036		1,270.6554	1,270.6554	0.1279	0.2038	1,334.5961
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0389**	**2.4662**	**0.8198**	**0.0112**	**0.3226**	**0.0153**	**0.3378**	**0.0890**	**0.0146**	**0.1036**		**1,270.6554**	**1,270.6554**	**0.1279**	**0.2038**	**1,334.5961**

3.4 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Unmitigated Construction Off-Site

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9500e-003	0.0732	0.0300	3.6000e-004	0.0128	3.6000e-004	0.0132	3.6800e-003	3.5000e-004	4.0300e-003		39.5480	39.5480	2.3400e-003	5.6800e-003	41.2989
Worker	0.0554	0.0356	0.5121	1.6200e-003	0.2012	1.0300e-003	0.2022	0.0534	9.4000e-004	0.0543		163.4007	163.4007	3.8600e-003	3.9400e-003	164.6727
Total	**0.0574**	**0.1088**	**0.5421**	**1.9800e-003**	**0.2140**	**1.3900e-003**	**0.2154**	**0.0570**	**1.2900e-003**	**0.0583**		**202.9487**	**202.9487**	**6.2000e-003**	**9.6200e-003**	**205.9716**

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					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**8.4034**	**1.2660**	**9.6694**	**4.3188**	**1.1647**	**5.4835**	**0.0000**	**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9500e-003	0.0732	0.0300	3.6000e-004	0.0120	3.6000e-004	0.0123	3.4800e-003	3.5000e-004	3.8300e-003		39.5480	39.5480	2.3400e-003	5.6800e-003	41.2989
Worker	0.0554	0.0356	0.5121	1.6200e-003	0.1855	1.0300e-003	0.1865	0.0495	9.4000e-004	0.0504		163.4007	163.4007	3.8600e-003	3.9400e-003	164.6727
Total	**0.0574**	**0.1088**	**0.5421**	**1.9800e-003**	**0.1974**	**1.3900e-003**	**0.1988**	**0.0530**	**1.2900e-003**	**0.0543**		**202.9487**	**202.9487**	**6.2000e-003**	**9.6200e-003**	**205.9716**

3.5 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.0826**	**0.7749**	**7.8575**	**3.4247**	**0.7129**	**4.1377**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9500e-003	0.0732	0.0300	3.6000e-004	0.0128	3.6000e-004	0.0132	3.6800e-003	3.5000e-004	4.0300e-003		39.5480	39.5480	2.3400e-003	5.6800e-003	41.2989
Worker	0.0462	0.0297	0.4267	1.3500e-003	0.1677	8.5000e-004	0.1685	0.0445	7.9000e-004	0.0453		136.1673	136.1673	3.2200e-003	3.2900e-003	137.2272
Total	**0.0481**	**0.1029**	**0.4567**	**1.7100e-003**	**0.1805**	**1.2100e-003**	**0.1817**	**0.0482**	**1.1400e-003**	**0.0493**		**175.7152**	**175.7152**	**5.5600e-003**	**8.9700e-003**	**178.5261**

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					3.0278	0.0000	3.0278	1.4641	0.0000	1.4641			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**3.0278**	**0.7749**	**3.8027**	**1.4641**	**0.7129**	**2.1770**	**0.0000**	**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9500e-003	0.0732	0.0300	3.6000e-004	0.0120	3.6000e-004	0.0123	3.4800e-003	3.5000e-004	3.8300e-003		39.5480	39.5480	2.3400e-003	5.6800e-003	41.2989
Worker	0.0462	0.0297	0.4267	1.3500e-003	0.1546	8.5000e-004	0.1554	0.0413	7.9000e-004	0.0420		136.1673	136.1673	3.2200e-003	3.2900e-003	137.2272
Total	**0.0481**	**0.1029**	**0.4567**	**1.7100e-003**	**0.1665**	**1.2100e-003**	**0.1677**	**0.0447**	**1.1400e-003**	**0.0459**		**175.7152**	**175.7152**	**5.5600e-003**	**8.9700e-003**	**178.5261**

3.6 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0331	1.2447	0.5098	6.1200e-003	0.2174	6.1500e-003	0.2236	0.0626	5.8800e-003	0.0685		672.3153	672.3153	0.0398	0.0966	702.0812
Worker	0.2677	0.1721	2.4750	7.8100e-003	0.9725	4.9600e-003	0.9774	0.2579	4.5600e-003	0.2625		789.7703	789.7703	0.0187	0.0191	795.9180
Total	**0.3009**	**1.4168**	**2.9848**	**0.0139**	**1.1899**	**0.0111**	**1.2010**	**0.3205**	**0.0104**	**0.3309**		**1,462.0855**	**1,462.0855**	**0.0585**	**0.1156**	**1,497.9992**

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0331	1.2447	0.5098	6.1200e-003	0.2035	6.1500e-003	0.2096	0.0591	5.8800e-003	0.0650		672.3153	672.3153	0.0398	0.0966	702.0812
Worker	0.2677	0.1721	2.4750	7.8100e-003	0.8964	4.9600e-003	0.9013	0.2392	4.5600e-003	0.2438		789.7703	789.7703	0.0187	0.0191	795.9180
Total	**0.3009**	**1.4168**	**2.9848**	**0.0139**	**1.0998**	**0.0111**	**1.1109**	**0.2984**	**0.0104**	**0.3088**		**1,462.0855**	**1,462.0855**	**0.0585**	**0.1156**	**1,497.9992**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

3.6 Building Construction - 2024

Unmitigated Construction On-Site

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

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0326	1.2412	0.5058	6.0200e-003	0.2174	6.4300e-003	0.2238	0.0626	6.1500e-003	0.0687		661.9097	661.9097	0.0402	0.0955	691.3592
Worker	0.2524	0.1545	2.3056	7.5700e-003	0.9725	4.7100e-003	0.9772	0.2579	4.3300e-003	0.2622		764.7512	764.7512	0.0170	0.0178	770.4865
Total	**0.2851**	**1.3957**	**2.8114**	**0.0136**	**1.1899**	**0.0111**	**1.2010**	**0.3205**	**0.0105**	**0.3310**		**1,426.6609**	**1,426.6609**	**0.0572**	**0.1133**	**1,461.8458**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Mitigated Construction On-Site

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0326	1.2412	0.5058	6.0200e-003	0.2034	6.4300e-003	0.2099	0.0591	6.1500e-003	0.0653		661.9097	661.9097	0.0402	0.0955	691.3592
Worker	0.2524	0.1545	2.3056	7.5700e-003	0.8964	4.7100e-003	0.9011	0.2392	4.3300e-003	0.2436		764.7512	764.7512	0.0170	0.0178	770.4865
Total	**0.2851**	**1.3957**	**2.8114**	**0.0136**	**1.0998**	**0.0111**	**1.1110**	**0.2984**	**0.0105**	**0.3089**		**1,426.6609**	**1,426.6609**	**0.0572**	**0.1133**	**1,461.8458**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

3.7 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8814	8.2730	12.2210	0.0189		0.3987	0.3987		0.3685	0.3685		1,805.6205	1,805.6205	0.5673		1,819.8039
Paving	0.5313					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4127**	**8.2730**	**12.2210**	**0.0189**		**0.3987**	**0.3987**		**0.3685**	**0.3685**		**1,805.6205**	**1,805.6205**	**0.5673**		**1,819.8039**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0580	0.0355	0.5300	1.7400e-003	0.2236	1.0800e-003	0.2246	0.0593	1.0000e-003	0.0603		175.8049	175.8049	3.9000e-003	4.1000e-003	177.1233
Total	**0.0580**	**0.0355**	**0.5300**	**1.7400e-003**	**0.2236**	**1.0800e-003**	**0.2246**	**0.0593**	**1.0000e-003**	**0.0603**		**175.8049**	**175.8049**	**3.9000e-003**	**4.1000e-003**	**177.1233**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8814	8.2730	12.2210	0.0189		0.3987	0.3987		0.3685	0.3685	0.0000	1,805.6205	1,805.6205	0.5673		1,819.8039
Paving	0.5313					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4127**	**8.2730**	**12.2210**	**0.0189**		**0.3987**	**0.3987**		**0.3685**	**0.3685**	**0.0000**	**1,805.6205**	**1,805.6205**	**0.5673**		**1,819.8039**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0580	0.0355	0.5300	1.7400e-003	0.2061	1.0800e-003	0.2071	0.0550	1.0000e-003	0.0560		175.8049	175.8049	3.9000e-003	4.1000e-003	177.1233
Total	**0.0580**	**0.0355**	**0.5300**	**1.7400e-003**	**0.2061**	**1.0800e-003**	**0.2071**	**0.0550**	**1.0000e-003**	**0.0560**		**175.8049**	**175.8049**	**3.9000e-003**	**4.1000e-003**	**177.1233**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

3.8 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	10.1628					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**10.3435**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0493	0.0302	0.4505	1.4800e-003	0.1900	9.2000e-004	0.1909	0.0504	8.5000e-004	0.0512		149.4341	149.4341	3.3100e-003	3.4800e-003	150.5548
Total	**0.0493**	**0.0302**	**0.4505**	**1.4800e-003**	**0.1900**	**9.2000e-004**	**0.1909**	**0.0504**	**8.5000e-004**	**0.0512**		**149.4341**	**149.4341**	**3.3100e-003**	**3.4800e-003**	**150.5548**

Isaac L. Sowers Middle School Redevelopment Project P2 - Orange County, Winter

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

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	10.1628					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**10.3435**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0493	0.0302	0.4505	1.4800e-003	0.1752	9.2000e-004	0.1761	0.0467	8.5000e-004	0.0476		149.4341	149.4341	3.3100e-003	3.4800e-003	150.5548
Total	**0.0493**	**0.0302**	**0.4505**	**1.4800e-003**	**0.1752**	**9.2000e-004**	**0.1761**	**0.0467**	**8.5000e-004**	**0.0476**		**149.4341**	**149.4341**	**3.3100e-003**	**3.4800e-003**	**150.5548**

LST Worksheets

Phase 1

Construction Localized Significance Thresholds: Asphalt Demolition & Demo Debris Haul

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
18	1.00	25	82	25	82	4.30

Source Receptor	**North Coastal Orange Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**92**	Tractors	0.5	0.0625			0
CO	**647**	Graders	0.5	0.0625			0
PM10	**4.00**	Dozers	0.5	0.0625	8	2	1
PM2.5	**3.00**	Scrapers	1	0.125			0
						Acres	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	92	93	108	140	219
	1	92	93	108	140	219
		92	93	108	140	219
CO	1	647	738	1090	2096	6841
	1	647	738	1090	2096	6841
		647	738	1090	2096	6841
PM10	1	4	13	27	54	135
	1	4	13	27	54	135
		4	13	27	54	135
PM2.5	1	3	5	9	22	76
	1	3	5	9	22	76
		3	5	9	22	76

North Coastal Orange County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	92	93	108	140	219
CO	647	738	1090	2096	6841
PM10	4	13	27	54	135
PM2.5	3	5	9	22	76

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
18	1	18	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Site Preparation

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
18	3.50	25	82	25	82	4.30

Source Receptor	**North Coastal Orange Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**164**	Tractors	0.5	0.0625	8	4	2
CO	**1,336**	Graders	0.5	0.0625			0
PM10	**10.49**	Dozers	0.5	0.0625	8	3	1.5
PM2.5	**7.00**	Scrapers	1	0.125			0
						Acres	3.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	3	153	149	160	184	249
	4	175	169	181	204	264
		164	159	171	194	257
CO	3	1212	1347	1822	3039	8086
	4	1461	1606	2139	3464	8679
		1337	1477	1981	3252	8383
PM10	3	9	29	42	70	152
	4	12	36	50	77	159
		11	33	46	74	156
PM2.5	3	6	8	14	29	89
	4	8	10	16	32	95
		7	9	15	31	92

North Coastal Orange County

3.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	164	159	171	194	257
CO	1337	1477	1981	3252	8383
PM10	11	33	46	74	156
PM2.5	7	9	15	31	92

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
18	3	18	4
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Grading

		NOx & CO		PM10 & PM2.5		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
18	2.50	25	82	25	82	4.30

Source Receptor	**North Coastal Orange Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**142**	Tractors	0.5	0.0625	8	3	1.5
CO	**1,087**	Graders	0.5	0.0625	8	1	0.5
PM10	**8.16**	Dozers	0.5	0.0625	8	1	0.5
PM2.5	**5.67**	Scrapers	1	0.125			0
						Acres	2.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	131	128	139	165	235
	3	153	149	160	184	249
		142	138	150	175	242
CO	2	962	1089	1506	2615	7493
	3	1212	1347	1822	3039	8086
		1087	1218	1664	2827	7790
PM10	2	7	21	35	62	144
	3	9	29	42	70	152
		8	25	39	66	148
PM2.5	2	5	7	12	26	83
	3	6	8	14	29	89
		6	8	13	28	86

North Coastal Orange County

2.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	142	138	150	175	242
CO	1087	1218	1664	2827	7790
PM10	8	25	39	66	148
PM2.5	6	8	13	28	86

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
18	2	18	3
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Construction

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
18	1.31	25	82	25	82	4.30

Source Receptor	**North Coastal Orange Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**104**	Tractors	0.5	0.0625	7	3	1.3125
CO	**745**	Graders	0.5	0.0625			0
PM10	**4.93**	Dozers	0.5	0.0625			0
PM2.5	**3.62**	Scrapers	1	0.125			0
						Acres	1.31

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	92	93	108	140	219
	2	131	128	139	165	235
		104	104	118	148	224
CO	1	647	738	1090	2096	6841
	2	962	1089	1506	2615	7493
		745	848	1220	2258	7045
PM10	1	4	13	27	54	135
	2	7	21	35	62	144
		5	16	30	57	138
PM2.5	1	3	5	9	22	76
	2	5	7	12	26	83
		4	6	10	23	78

North Coastal Orange County

1.31 Acres

	25	**50**	**100**	**200**	**500**
NOx	104	104	118	148	224
CO	745	848	1220	2258	7045
PM10	5	16	30	57	138
PM2.5	4	6	10	23	78

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
18	1	18	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Construction, Paving and Architectural Coating

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
18	2.00	25	82	25	82	4.30

Source Receptor	**North Coastal Orange Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**131**	Tractors	0.5	0.0625	8	4	2
CO	**962**	Graders	0.5	0.0625			0
PM10	**7.00**	Dozers	0.5	0.0625			0
PM2.5	**5.00**	Scrapers	1	0.125			0
						Acres	2.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	131	128	139	165	235
	2	131	128	139	165	235
		131	128	139	165	235
CO	2	962	1089	1506	2615	7493
	2	962	1089	1506	2615	7493
		962	1089	1506	2615	7493
PM10	2	7	21	35	62	144
	2	7	21	35	62	144
		7	21	35	62	144
PM2.5	2	5	7	12	26	83
	2	5	7	12	26	83
		5	7	12	26	83

North Coastal Orange County

2.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	131	128	139	165	235
CO	962	1089	1506	2615	7493
PM10	7	21	35	62	144
PM2.5	5	7	12	26	83

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
18	2	18	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

LST Worksheets

Phase 2

Construction Localized Significance Thresholds: Demolition & Demo Debris Haul

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
18	1.00	25	82	25	82	4.73

Source Receptor	**North Coastal Orange Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**92**	Tractors	0.5	0.0625			0
CO	**647**	Graders	0.5	0.0625			0
PM10	**4.00**	Dozers	0.5	0.0625	8	2	1
PM2.5	**3.00**	Scrapers	1	0.125			0
						Acres	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	92	93	108	140	219
	1	92	93	108	140	219
		92	93	108	140	219
CO	1	647	738	1090	2096	6841
	1	647	738	1090	2096	6841
		647	738	1090	2096	6841
PM10	1	4	13	27	54	135
	1	4	13	27	54	135
		4	13	27	54	135
PM2.5	1	3	5	9	22	76
	1	3	5	9	22	76
		3	5	9	22	76

North Coastal Orange County

1.00 Acres	**25**	**50**	**100**	**200**	**500**
NOx	92	93	108	140	219
CO	647	738	1090	2096	6841
PM10	4	13	27	54	135
PM2.5	3	5	9	22	76

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
18	1	18	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Site Preparation

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
18	3.50	25	82	25	82	4.73

Source Receptor	**North Coastal Orange Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**164**	Tractors	0.5	0.0625	8	4	2
CO	**1,336**	Graders	0.5	0.0625			0
PM10	**10.49**	Dozers	0.5	0.0625	8	3	1.5
PM2.5	**7.00**	Scrapers	1	0.125			0
						Acres	3.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	3	153	149	160	184	249
	4	175	169	181	204	264
		164	159	171	194	257
CO	3	1212	1347	1822	3039	8086
	4	1461	1606	2139	3464	8679
		1337	1477	1981	3252	8383
PM10	3	9	29	42	70	152
	4	12	36	50	77	159
		11	33	46	74	156
PM2.5	3	6	8	14	29	89
	4	8	10	16	32	95
		7	9	15	31	92

North Coastal Orange County

3.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	164	159	171	194	257
CO	1337	1477	1981	3252	8383
PM10	11	33	46	74	156
PM2.5	7	9	15	31	92

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
18	3	18	4
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Grading

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
18	2.50	25	82	25	82	4.73

Source Receptor	**North Coastal Orange Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**142**	Tractors	0.5	0.0625	8	3	1.5
CO	**1,087**	Graders	0.5	0.0625	8	1	0.5
PM10	**8.16**	Dozers	0.5	0.0625	8	1	0.5
PM2.5	**5.67**	Scrapers	1	0.125			0
						Acres	2.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	131	128	139	165	235
	3	153	149	160	184	249
		142	138	150	175	242
CO	2	962	1089	1506	2615	7493
	3	1212	1347	1822	3039	8086
		1087	1218	1664	2827	7790
PM10	2	7	21	35	62	144
	3	9	29	42	70	152
		8	25	39	66	148
PM2.5	2	5	7	12	26	83
	3	6	8	14	29	89
		6	8	13	28	86

North Coastal Orange County

2.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	142	138	150	175	242
CO	1087	1218	1664	2827	7790
PM10	8	25	39	66	148
PM2.5	6	8	13	28	86

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
18	2	18	3
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Construction

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
18	1.31	25	82	25	82	4.73

Source Receptor	**North Coastal Orange Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**104**	Tractors	0.5	0.0625	7	3	1.3125
CO	**745**	Graders	0.5	0.0625			0
PM10	**4.93**	Dozers	0.5	0.0625			0
PM2.5	**3.62**	Scrapers	1	0.125			0
						Acres	1.31

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	92	93	108	140	219
	2	131	128	139	165	235
		104	104	118	148	224
CO	1	647	738	1090	2096	6841
	2	962	1089	1506	2615	7493
		745	848	1220	2258	7045
PM10	1	4	13	27	54	135
	2	7	21	35	62	144
		5	16	30	57	138
PM2.5	1	3	5	9	22	76
	2	5	7	12	26	83
		4	6	10	23	78

North Coastal Orange County

1.31 Acres

	25	**50**	**100**	**200**	**500**
NOx	104	104	118	148	224
CO	745	848	1220	2258	7045
PM10	5	16	30	57	138
PM2.5	4	6	10	23	78

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
18	1	18	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Construction, Paving and Architectural Coating

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
18	2.00	25	82	25	82	4.73

Source Receptor	**North Coastal Orange Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**131**	Tractors	0.5	0.0625	8	4	2
CO	**962**	Graders	0.5	0.0625			0
PM10	**7.00**	Dozers	0.5	0.0625			0
PM2.5	**5.00**	Scrapers	1	0.125			0
						Acres	2.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	131	128	139	165	235
	2	131	128	139	165	235
		131	128	139	165	235
CO	2	962	1089	1506	2615	7493
	2	962	1089	1506	2615	7493
		962	1089	1506	2615	7493
PM10	2	7	21	35	62	144
	2	7	21	35	62	144
		7	21	35	62	144
PM2.5	2	5	7	12	26	83
	2	5	7	12	26	83
		5	7	12	26	83

North Coastal Orange County

2.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	131	128	139	165	235
CO	962	1089	1506	2615	7493
PM10	7	21	35	62	144
PM2.5	5	7	12	26	83

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
18	2	18	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Bus Idling Calculations for Operational LST Analysis

calendar_y	season_mo	sub_area	vehicle_class	fuel	temperatu	relative_hu	process	speed_tim	pollutant	emission_rate
2022	Annual	Orange (SC)	SBUS	Dsl			IDLEX		PM10	0.125850705
2022	Annual	Orange (SC)	SBUS	Dsl			IDLEX		PM2_5	0.12040646
2022	Annual	Orange (SC)	SBUS	Gas	12	65	RUNEX	5	HC	0.600333273
2022	Annual	Orange (SC)	SBUS	Gas	12	65	RUNEX	5	PM10	0.006196778
2022	Annual	Orange (SC)	SBUS	Gas	12	65	RUNEX	5	PM2_5	0.005697709
2022	Annual	Orange (SC)	SBUS	Gas			IDLEX		HC	26.9703798
2022	Annual	Orange (SC)	SBUS	NG			IDLEX		PM10	0.045959277
2022	Annual	Orange (SC)	SBUS	NG			IDLEX		PM2_5	0.042257858

For LST Analysis, PM10 and PM2.5
School Bus Idling
Huntington Beach City School District, Transportation Department
9300 Indianapolis Ave, Huntington Beach, CA 92646

Bus Activity: (1)

Diesel School Buses	7	
Gasoline School Buses	3	
CNG School Buses	5	
Idling Duration (startup)	35	min

Idling Emission Rate: (2)	Diesel	Gas	CNG
PM10	0.1259	0.2784	0.0460
PM2.5	0.1204	0.2560	0.0423

Emissions:	g/day	**lbs/day**
PM10	1.14E+00	**0.003**
PM2.5	1.06E+00	**0.002**

(1) Provided by District: school buses operate assumed 180 school days per year (5 days per weeek, approximately 36 weeks per year). Idling approx. 35 minutes for startup between hours of 5:45AM and 7:00AM.

(2) Emission factors from EMFAC2021 for SBUS category for year 2022 in Orange County.

Appendix B Paleontological Records Search for the Bus Yard at Sowers Middle School Project

Appendix

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Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

March 26, 2023

PlaceWorks
Attn: Elizabeth Kim

re: Paleontological resources for the Bus Yard at Sowers Middle School Project

Dear Elizabeth:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the Bus Yard at Sowers Middle School project area as outlined on the portion of the Anaheim USGS topographic quadrangle map that you sent to me via e-mail on March 17, 2023. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

Locality Number	Location	Formation	Taxa	Depth
LACM IP 21488	S of the Santa Ana River near Adams Ave	Unknown formation (Pleistocene; med to coarse limonitic stained sand)	Invertebrates (unspecified)	Unknown
LACM IP 436	Corner of Brookhurst and Hamilton Streets; Huntington Beach	Unknown formation (Holocene; sub-recent)	Invertebrates (unspecified)	35-40 feet bgs
LACM VP 7657-7659	Ellis Avenue & Patterson Lane, Huntington Beach	Unknown Formation (Pleistocene; gray siltstone)	School shark (*Galeorhinus*), eagle ray *(Myliobatus*), goby (*Lepidogobius, Leptocottus*), midshipmen (*Porichthys*), croaker (*Seriphus*), flatfish (*Citharichthys*), cusk-eel (*Otophidium*), skate (*Raja*), angelshark (*Squatina*), sculpin (Cottidae)	150 - 350 feet bgs
LACM VP 7366, 7422-7425, 7679…	The Huntington Beach Urban Center Sand Borrow Area, N of Pacific Coast Hwy and W of Huntington Dr	Unknown formation (Pleistocene, sands)	Legless lizard (*Anniella*), tree frog (*Hyla*), gopher snake (*Pituophis*), garter snake (Thamnophis), kingsnake *(Lampropeltis)*, ring-necked snake *(Diadophis*), garter snake (*Thamnophis*), long-nosed snake (*Rhinocheilus*), coachwhip (*Masticophis*), salamander (*Enatina*),	Unknown

			slender salamander (*Batrachoseps*), skinks (*Plestiodon*), alligator lizard (*Gerrhonotus*), toad (*Bufo*), side-blotched lizard *(Uta*), spiny lizard (*Sceloporus*), climbing salamander (*Aneides*), turtle (*Clemmys*); quail (*Callipepla*), rail (*Rallus*); vole (*Microtus*), pocket gopher (*Thomomys*), shrew *(Sorex*), kangaroo rat (*Dipodomys*), cottontail rabbit (*Sylvilagus*), mole (*Scapanus*), harvest mouse (*Reithrodontomys*), deer mouse (*Peromyscus*), pack rat (*Neotoma*), chipmunk (*Eutamias*), bat (Chiroptera), Mammoth *(Mammuthus*), horse (*Equus*), bison (*Bison*); stickleback (*Gasterosteus*), houndshark (*Triakis*); Land snails (Gastropoda)	
LACM VP 3267	Near intersection of 19th & Anaheim	Unknown Formation (Pleistocene)	Proboscidea	Unknown
LACM VP 4219	SW end of the Newport Fwy between Santa Isabel Ave & 23rd St	Palos Verdes Sand (coarse poorly sorted friable sand)	camel family (Camelidae), sea turtle (Cheloniidae); uncatalogued fish and birds; invertebrates	30 feet bgs

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,



Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

Appendix C Noise Analysis

Appendix

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Fundamentals of Noise

NOISE

Noise is most often defined as unwanted sound; whether it is loud, unpleasant, unexpected, or otherwise undesirable. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

Noise Descriptors

The following are brief definitions of terminology used in this chapter:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- **Decibel (dB).** A unitless measure of sound, expressed on a logarithmic scale and with respect to a defined reference sound pressure. The standard reference pressure is 20 micropascals (20 μPa).

- **Vibration Decibel (VdB).** A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is 1 micro-inch per second ($1x10^{-6}$ in/sec).

- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

- **Equivalent Continuous Noise Level (L_{eq}); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the L_{eq} metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.

- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."

- **Maximum Sound Level (L_{max})**. The highest RMS sound level measured during the measurement period.
- **Root Mean Square Sound Level (RMS).** The square root of the average of the square of the sound pressure over the measurement period.
- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.
- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added from 7:00 PM to 10:00 PM and 10 dB from 10:00 PM to 7:00 AM. NOTE: For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB (with the CNEL being only slightly more restrictive – that is, higher than the L_{dn} value). As a matter of practice, L_{dn} and CNEL values are interchangeable and are treated as equivalent in this assessment.
- **Peak Particle Velocity (PPV).** The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.
- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.

Characteristics of Sound

When an object vibrates, it radiates part of its energy in the form of a pressure wave. Sound is that pressure wave transmitted through the air. Technically, airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure that creates sound waves.

Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). Loudness or amplitude is measured in dB, frequency or pitch is measured in Hertz [Hz] or cycles per second, and duration or time variations is measured in seconds or minutes.

Amplitude

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 1 presents the subjective effect of changes in sound pressure levels. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable under quiet, controlled conditions, and changes of less than 1 dB are usually not discernible (even under ideal conditions). A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dB change is perceived as a doubling (or halving) of the sound.

Table 1 Noise Perceptibility

Change in dB	Noise Level
± 3 dB	Barely perceptible increase
± 5 dB	Readily perceptible increase
± 10 dB	Twice or half as loud
± 20 dB	Four times or one-quarter as loud

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Frequency

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all, but are "felt" more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz.

When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to approximate the response of the human ear. The A-weighted noise level has been found to correlate well with people's judgments of the "noisiness" of different sounds and has been used for many years as a measure of community and industrial noise. Although the A-weighted scale and the energy-equivalent metric are commonly used to quantify the range of human response to individual events or general community sound levels, the degree of annoyance or other response also depends on several other perceptibility factors, including:

- Ambient (background) sound level
- General nature of the existing conditions (e.g., quiet rural or busy urban)
- Difference between the magnitude of the sound event level and the ambient condition
- Duration of the sound event
- Number of event occurrences and their repetitiveness
- Time of day that the event occurs

Duration

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time; half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour, respectively. These "n" values are typically used to demonstrate compliance for stationary noise sources with many cities' noise ordinances. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period, respectively.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment (or "penalty") of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00

PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher). The CNEL or L_{dn} metrics are commonly applied to the assessment of roadway and airport-related noise sources.

Sound Propagation

Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single-point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source (conservatively neglecting ground attenuation effects, air absorption factors, and barrier shielding). For example, if a backhoe at 50 feet generates 84 dBA, at 100 feet the noise level would be 79 dBA, and at 200 feet it would be 73 dBA. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance over a reflective ("hard site") surface such as concrete or asphalt. Line source noise in a relatively flat environment with ground-level absorptive vegetation decreases by an additional 1.5 dB for each doubling of distance.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA results in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. For community environments, the ambient or background noise problem is widespread, through generally worse in urban areas than in outlying, less-developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level number means. To help relate noise level values to common experience, Table 2 shows typical noise levels from familiar sources.

Table 2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. As with noise, vibration can be described by both its amplitude and frequency. Vibration displacement is the distance that a point on a surface moves away from its original static position; velocity is the instantaneous speed that a point on a surface moves; and acceleration is the rate of change of the speed. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the

square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage and RMS is typically more suitable for evaluating human response.

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 3 displays the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

Table 3 Human Reaction to Typical Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2020, April. *Transportation and Construction Vibration Guidance Manual.* Prepared by ICF International.

LOCAL REGULATIONS AND STANDARDS

VI. Noise



Introduction and Purpose

The Noise Element describes how the City considers noise control in the planning process. This element identifies noise-sensitive land uses and noise sources, evaluates existing noise issues, defines potential noise impact areas, and advocates creative methods to protect the community from excessive noise. The element provides proactive solutions to noise problems varying from construction noise and clamoring mechanical equipment to roadway noise and the cacophony of barking dogs, and describes noise control measures designed to avoid noise problems before they occur.

The noise environment relates to a community's quality of life. Noise has been linked directly to numerous human health factors; aside from general annoyances, excessive noise is a source of discomfort, interferes with sleep, and disrupts communication and relaxation.

Recognizing that excessive or unusual noise affects human health and welfare, the state has developed guidelines both for determining community noise levels and for establishing programs to reduce community exposure to adverse noise levels. Policies, plans, and programs outlined in the Noise Element are designed to minimize the effects of human-caused noise in the community, and to improve residents' quality of life by regulating and reducing noise, particularly in residential areas and near such noise-sensitive land uses as residences, hospitals, convalescent and day care facilities, schools, and libraries. The element provides direction regarding practices and strategies to protect city residents and businesses from severe noise levels.

Mixed-use residential and commercial development present unique noise reduction challenges. Although located in predominantly commercial environments, the residential portions of mixed-use projects are nonetheless subject to residential noise standards and guidelines established by the state. Strategies to address these noise concerns focus on incorporating noise-reducing features into project design.

Scope and Content

California Government Code Section 65302(f) establishes the requirement for a noise element to "identify and appraise noise problems in a community" and to "analyze and quantify, to the extent practicable…current and projected noise levels." The noise element must identify the sources of noise and identify both existing and future noise contours—distances at which a predicted noise level will occur. State law requires that the noise element consider the following major noise sources:

- Highways and freeways
- Primary arterials and major local streets
- Railroad operations
- Aircraft and airport operations
- Local industrial facilities
- Other stationary sources

This element consists of this *Introduction and Purpose* summarizing the general purpose of the Noise Element; a *Noise Plan* describing fundamentals of sound and noise, defining noise standards, presenting contour maps, and recommending strategies to achieve goals and implement policies; and *Issues, Goals, and Policies* outlining the most important noise issues affecting the planning area.

Relationship to Other Elements

Noise policies and programs affect implementation of the Land Use Element as it relates to both noise sources and noise-sensitive uses. The noise contours and land use compatibility standards contained in the Noise Element should be used when evaluating planning and development decisions.

The Noise Element also relates directly to the Circulation Element, because Huntington Beach's primary noise sources are transportation-related noise along arterial roadways and highways, and, to a lesser extent, the freeway, railways, and aircraft. Noise policies mitigate excessive noise along transportation routes. Similarly, noise policies relate to the Housing Element by directing new housing development to appropriate sites away from sources of excessive noise and requiring that design features be incorporated to ensure acceptable indoor noise levels.

Noise Plan

The following describes the fundamentals of sound and noise, defines noise standards, and presents contour maps.

Measuring Noise

Noise Fundamentals

Noise sources in Huntington Beach fall into two categories: transportation oriented and non-transportation oriented. Examples of transportation-oriented noise include noise generated by vehicles, airplanes, and rail cars operating within the planning area. Examples of non-transportation noise include noise generated from mechanical or industrial processes, such as oil extraction, lawn equipment, and construction activities.

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perception of noise levels is subjective and the physical response to sound complicates the analysis of its effects on people. People judge the relative magnitude of sound sensation in subjective terms such as noisiness or loudness. Sound pressure magnitude is measured and quantified using a logarithmic ratio of pressures, the scale of which gives the level of sound in decibels (dB). **Table N-1** presents the subjective effect of changes in sound pressure levels.

Table N-1
Changes in Sound Pressure Levels, dB

Decibel Change	Change in Apparent Loudness
+/- 3 dB	Threshold of human perceptibility
+/- 5 dB	Clearly noticeable change in noise level
+/- 10 dB	Twice/half as loud
+/- 20 dB	Louder/much quieter

Source: Engineering Noise Control, Bies and Hansen (1988).

To account for the pitch of sounds and an average human ear's response to such sounds, a unit of measure called an A-weighted sound pressure level (dBA) is used.

Noise Descriptors

Several rating scales have been developed to analyze the adverse effect of community noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise as well as the time of day when the noise occurs. The following common metrics describe the way humans perceive sound:

- L_{eq}, the equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- L_{dn}, the Day-Night Average Level, is a 24-hour average L_{eq} with a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24 hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
- CNEL, the Community Noise Equivalent Level, is a 24-hour average L_{eq} with a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m., and an additional 5 dBA weighting during the hours of 7:00 p.m. to 10:00 p.m. to account for noise sensitivity in the evening and nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
- L_{min}, the minimum instantaneous noise level experienced during a given period of time.
- L_{max}, the maximum instantaneous noise level experienced during a given period of time.

Assigning the proper noise descriptor when evaluating a noise source is essential to determining potential environmental impact on the community. Stationary-source noise (e.g., leaf blowers; heating, ventilation, and air conditioning; and loading docks) is generally analyzed using an hourly standard (L_{eq}). Transportation noise sources (e.g., vehicular traffic, aircraft overflights, and train passbys) occur as variable, individual events throughout the day. Hourly descriptors are not effective at describing transportation noise because it occurs at all hours. Instead, a 24-hour descriptor (L_{dn} or CNEL) is used to analyze transportation noise sources because the evening and nighttime penalties are applied to reflect increased sensitivity to noise during the evening and nighttime hours. CNEL is the noise level descriptor, consistent with state guidelines, applied by the City throughout this Noise Element to describe the current and future noise environment affected by transportation-generated noise.

Noise Sources and Concentration Areas

Land uses in the planning area include a range of residential, commercial, institutional, industrial, recreational, and open space areas. In general, the greatest source of noise throughout Huntington Beach is vehicle roadway noise generated along arterial roadways, as well as minor arterial roads within residential areas, and various stationary sources such as commercial heating, ventilation, and air conditioning (HVAC) units and petroleum extraction activities.

Mobile Sources

Roadways



Traffic noise originates from vehicles traveling on roads, with major roads such as Beach Boulevard, Bolsa Chica Street, Goldenwest Street, Adams Avenue, Brookhurst Street, and Pacific Coast Highway being significant contributors due to the volume and composition of traffic. Roadway noise is a combination of direct noise emissions from vehicles and the sound of tires passing over the road surface. In addition, large volumes of truck traffic can dramatically contribute to roadway noise, as the sounds generated from some vehicle brake technologies, large tires, and diesel engines greatly exceeds noise from passenger cars and light trucks.

Railways

The Union Pacific Railroad right-of-way runs east of Gothard Street, extending from the northern city limits to a terminus just north of Garfield Avenue. It provides freight service for the industrial corridor located along Gothard Street and is generally not located adjacent to noise-sensitive land uses. Current rail service is extremely limited, with approximately three trains per week traveling through the planning area. Although no specific proposal is anticipated at this time, the City intends to preserve options for future passenger rail transit along this corridor throughout the planning horizon of the General Plan.

Aircraft

No airport is located in the planning area, and no major flight corridors overlie Huntington Beach, although aircraft approaching or leaving nearby airports may fly over the community. Long Beach Airport is located approximately 12.5 miles to the northwest of the planning area, and John Wayne Airport is located approximately 3.5 miles to the southeast. The planning area is not located within the noise contours for either airport.

According to a Noise Analysis Report prepared by Veneklasen Associates in 2007, flights approaching Long Beach Airport regularly pass over the area near the intersection Bolsa Chica Street and Edinger Avenue at an altitude ranging between 1,600 feet to 2,100 feet. Individual commercial aircraft flying at these altitudes can result in noise levels of approximately 72 dBA on the ground. The control of aircraft flying over the city and the noise they make are under the jurisdiction of the Federal Aviation Administration (FAA). As such, the City has no authority over their operations.

Stationary Sources

Construction Activities

Construction activities are a regular and ongoing source of noise throughout the planning area. Noise levels generated by construction activities are generally isolated to the immediate vicinity of a construction site and occur during daytime hours in accordance with City regulations for relatively short-term periods ranging from a few weeks to a few months.

Commercial and Industrial Uses



Existing commercial uses are predominantly located in regional shopping centers such as Bella Terra, in Downtown Huntington Beach, and along the blocks adjacent to both sides of Beach Boulevard, Gothard Street, Edinger Avenue, and Warner Avenue. The primary noise sources associated with commercial

uses are commercial HVAC systems. Other noise sources include truck noise associated with the delivery of goods, as well as human activity.

Industrial uses are located primarily in the northwestern portion of the planning area (including and adjacent to the Boeing campus), along the Gothard Street corridor, in the Holly-Seacliff area, and along Pacific Coast Highway (near and including oil production facilities and the AES power plant). Aside from oil extraction, most industrial uses consist of warehousing, including vehicle and equipment storage along the Gothard Street corridor. Similar to commercial uses, the primary exterior noise sources associated with these uses are related to HVAC systems and medium-duty commercial trucks.

Land use changes anticipated in both the northwest industrial area and along the Gothard Street corridor will gradually transition to a mix of lighter industrial and commercial uses characterized by research and development and technology uses. These land use transitions are intended to be more compatible with sensitive receptor uses located in the vicinity of these areas, as these uses would be less noise intensive.

Oil Extraction

Huntington Beach has been an active site for oil extraction since the 1920s, and large-scale oil and gas production continues. Oil wells are scattered throughout much of the planning area, although most are concentrated along the coastal areas and mesas. Noise sources associated with oil extraction activities are related to heavy-duty vehicle use, including noise associated with site preparation, and are considered similar to construction noise levels.



Special Events

Many parks provide facilities for organized sports including baseball, soccer, and basketball. Noise from these activities can have a negative impact on neighboring residential land uses, particularly at parks where lighted fields allow evening activities. Additionally, the City regularly hosts special events on a local, regional, and international level. Local events include farmers markets, Surf City Nights, and evening music events in public parks, drawing crowds from a few dozen to a few thousand people. Regional and international events include the Huntington Beach Association of Volleyball Professionals Finals, the BB Jazz Festival at Central Park, and the Association of Surfing Professionals US Open of Surfing. Special events often use amplification devices, such as public address systems, and feature amplified music.

Noise Standards and Land Use Compatibility

Huntington Beach has developed land use compatibility standards, based on recommended parameters from the California Governor's Office of Planning and Research, that rate compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable. Using these land use compatibility guidelines, the City has established interior and exterior noise standards.

Some types of noise are only short-term irritants, like the banging of a hammer, the whine of a leaf blower, or amplified music and crowd noise from outdoor events. City noise regulations, including the Noise Control Ordinance, can control this type of noise. The City's Noise Ordinance (Chapter 8.40 of the Huntington Beach Municipal Code) identifies exterior and interior noise standards, specific noise restrictions, exemptions, and variances for sources of noise in the city. As such, the Municipal Code provides standards against intrusive noises such as loud gatherings, unauthorized construction-generated noise, and other invasive noises.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day, night, or over a 24-hour period. Environmental noise levels would generally be considered low below 55 dBA CNEL, moderate in the 55 to 70 dBA CNEL range, and high above 70 dBA CNEL.

The City's land use-noise compatibility standards are presented in **Table N-2**. These standards are used in the land planning stage of the development process to identify project opportunities and constraints. In conjunction with the noise contour maps (**Figures N-1** and **N-2**), the standards may be used to determine whether a certain type of land use would be compatible with the existing and future noise environment. Proposed land uses should be compatible with existing and forecasted future noise levels. Projects with incompatible land use-noise exposures should incorporate noise attenuation and/or control measures within the project design that reduce noise to an acceptable interior level of 45 dBA CNEL or lower, as required by state regulations (California Code of Regulations Title 24) for residential uses.

The City's compatibility standards provide only for normally acceptable conditions, and are generally based on state recommendations and City land use designations. These standards, which use the CNEL noise descriptor, are intended to be applicable for land use designations exposed to noise levels generated by transportation-related sources. Land use compatibility noise exposure limits are generally established as 60 dBA CNEL for low-density and medium-density residential uses. However, for medium-high density residential, high-density residential, and mixed-use land use designations, a higher 65 dBA CNEL is permitted. Higher exterior noise levels are more often permitted for multiple-family housing and housing in mixed-use contexts than for single-family houses. This is

because multiple-family complexes are generally located in transitional areas between single-family and commercial districts or near major arterials served by transit, and a more integrated mix of residential and commercial activity (accompanied by higher noise levels) is often desired in such locations. These standards establish maximum interior noise levels for new residential development, requiring that sufficient insulation be provided to reduce interior ambient noise levels to 45 dBA CNEL.

The City's land use compatibility standards are based first on the General Plan land use designation of the property, and secondly on the proposed use of the property. For example, in the mixed-use designation, a multiple-family use exposed to transportation-related noise would have an exterior noise standard of 65 dBA CNEL, and an interior noise standard of 45 dBA CNEL. Noise standards for multiple-family and mixed-use land use designations are higher than those for single-family residential areas, reflecting that these uses are generally located along arterial roadways with higher ambient noise levels than single-family residential neighborhoods. The standards are purposefully general, and not every specific land use is identified. Application of the standards will vary on a case-by-case basis according to location, development type, and associated noise sources.

Table N-2
Land Use-Noise Compatibility Standards

General Plan Land Use Designation	Proposed Uses	Exterior Normally Acceptable[1] (dBA CNEL)	Exterior Conditionally Acceptable[2] (dBA CNEL)	Exterior Normally Unacceptable[3] (dBA CNEL)	Interior Acceptable[4] (dBA CNEL)
Residential					
Low Density	Single-family, mobile home, senior housing	Up to 60	61–65	≥66	45
Medium Density, Medium High Density, High Density	Attached single-family, duplex, townhomes, multi-family, condominiums, apartments	Up to 65	66–70	≥71	45
Mixed-Use					
Mixed-Use	Combination of commercial and residential uses	Up to 70	71–75	≥76	45
Commercial					
Neighborhood Commercial, General Commercial	Retail, professional office, health services, restaurant, government offices, hotel/motel	Up to 70	71–75	≥76	45
Visitor Commercial	Hotel/motel, timeshares, recreational commercial, cultural facilities	Up to 65	66–75	>75	45

General Plan Land Use Designation	Proposed Uses	Exterior Normally Acceptable[1] (dBA CNEL)	Exterior Conditionally Acceptable[2] (dBA CNEL)	Exterior Normally Unacceptable[3] (dBA CNEL)	Interior Acceptable[4] (dBA CNEL)
Office	Office, financial institutions	NA	NA	NA	NA
Public/Semi-public					
Semi-public (School)	Schools	Up to 60	61–65	≥66	45
Semi-public (Other)	Hospitals, churches, cultural facilities	Up to 65	66–70	≥71	45
Public	Public utilities, parking lot	NA	NA	NA	NA
Industrial					
Research and Technology	Research and development, technology, warehousing, business park	NA	NA	NA	NA
Industrial	Manufacturing, construction, transportation, logistics, auto repair	NA	NA	NA	NA
Open Space and Recreational					
Conservation	Environmental resource conservation	NA	NA	NA	NA
Park	Public park	Up to 65	65–75	≥76	NA
Recreation	Golf courses, recreational water bodies	Up to 65	66–75	≥76	NA
Shore	City and state beaches	NA	NA	NA	NA

Notes:

1. *Normally acceptable means that land uses may be established in areas with the stated ambient noise level, absent any unique noise circumstances.*
2. *Conditionally acceptable means that land uses should be established in areas with the stated ambient noise level only when exterior areas are omitted from the project or noise levels in exterior areas can be mitigated to the normally acceptable level. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.*
3. *Normally unacceptable means that land uses should generally not be established in areas with the stated ambient noise level. If the benefits of the project in addressing other General Plan goals and policies outweigh concerns about noise, the use should be established only where exterior areas are omitted from the project or where exterior areas are located and shielded from noise sources to mitigate noise to the maximum extent feasible. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.*
4. *Interior acceptable means that the building must be constructed so that interior noise levels do not exceed the stated maximum, regardless of the exterior noise level. Stated maximums are as determined for a typical worst-case hour during periods of use.*

In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply. To ensure that noise produced by stationary sources does not adversely affect noise-sensitive land uses, the City applies a second set of standards. These hourly and maximum performance standards (expressed in L_{eq}) for stationary noise sources are designed to protect noise-sensitive land uses.

Noise Contours and Impact Areas

The community noise environment can be described using contours derived from monitoring major sources of noise. Noise contours define areas of equal noise exposure. Future noise contours have been estimated using information about both current and projected future land uses and traffic volumes. The contours assist in setting land use policies for distribution and establishing development standards.

The City completed a study of baseline noise sources and levels in June and July 2014. As part of the study, the City collected long-term (24-hour) noise measurements during a typical weekday at seven locations, and short-term (one-hour) noise measurements at eight locations, in the planning area. Long-term monitoring sites included locations characterized by unique noise generators due to high traffic volumes, large numbers of truck trips, or commercial or industrial activities occurring in the vicinity of noise-sensitive land uses. Short-term monitoring sites were generally located in residential areas where ambient noise levels are anticipated to be lower than those along major transportation corridors and commercial areas. The primary purpose of noise monitoring was to establish a noise profile that could be used to estimate current and future noise levels.

Measurements represent motor vehicle noise emanating from highways and freeways, the local roadway network, and industrial land uses. Typical noise sources measured during the short-term survey included vehicular traffic; standard gardening and landscaping equipment such as lawn mowers and leaf-blowers; police, ambulance, and fire sirens; motorcycles; heavy trucks; and typical home maintenance equipment such as handsaws. Of these sources, traffic noise was determined to be the predominant noise source in Huntington Beach. Typical of developed areas, noise levels in commercial and industrial areas were substantially higher than those in residential neighborhoods, particularly along major arterials such as Beach Boulevard, Goldenwest Street, and Bolsa Chica Street. Additionally, the planning area experiences regular aircraft overflight from commercial airlines from Los Angeles International Airport, Long Beach Airport, and John Wayne Airport.

Figure N-1 identifies modeled noise contours for baseline year 2014. A number of locations experience noise levels above 65 dBA CNEL, including areas near Pacific Coast Highway, Beach Boulevard, Goldenwest Street, Warner Avenue, Edinger Avenue, Brookhurst Street, Bushard Street, Springdale Street, Yorktown Avenue, and Heil Avenue.

The Land Use Element anticipates that Huntington Beach will accommodate additional future growth, accompanied by an increase in citywide traffic volumes. Traffic volume increases represent the major anticipated measurable new noise sources in the community over the long term. **Figure N-2** identifies anticipated changes in 2040 noise levels along major roads based upon future traffic levels. Noise levels may be expected to rise in areas located near roadways where traffic volumes will increase over time. Specifically, these areas include Bolsa Avenue, Atlanta Avenue, Adams Avenue, Pacific Coast Highway, Bolsa Chica Street, Goldenwest Street, and Brookhurst Street.

Developments along the following roadway segments should be reviewed for potential future noise impacts:

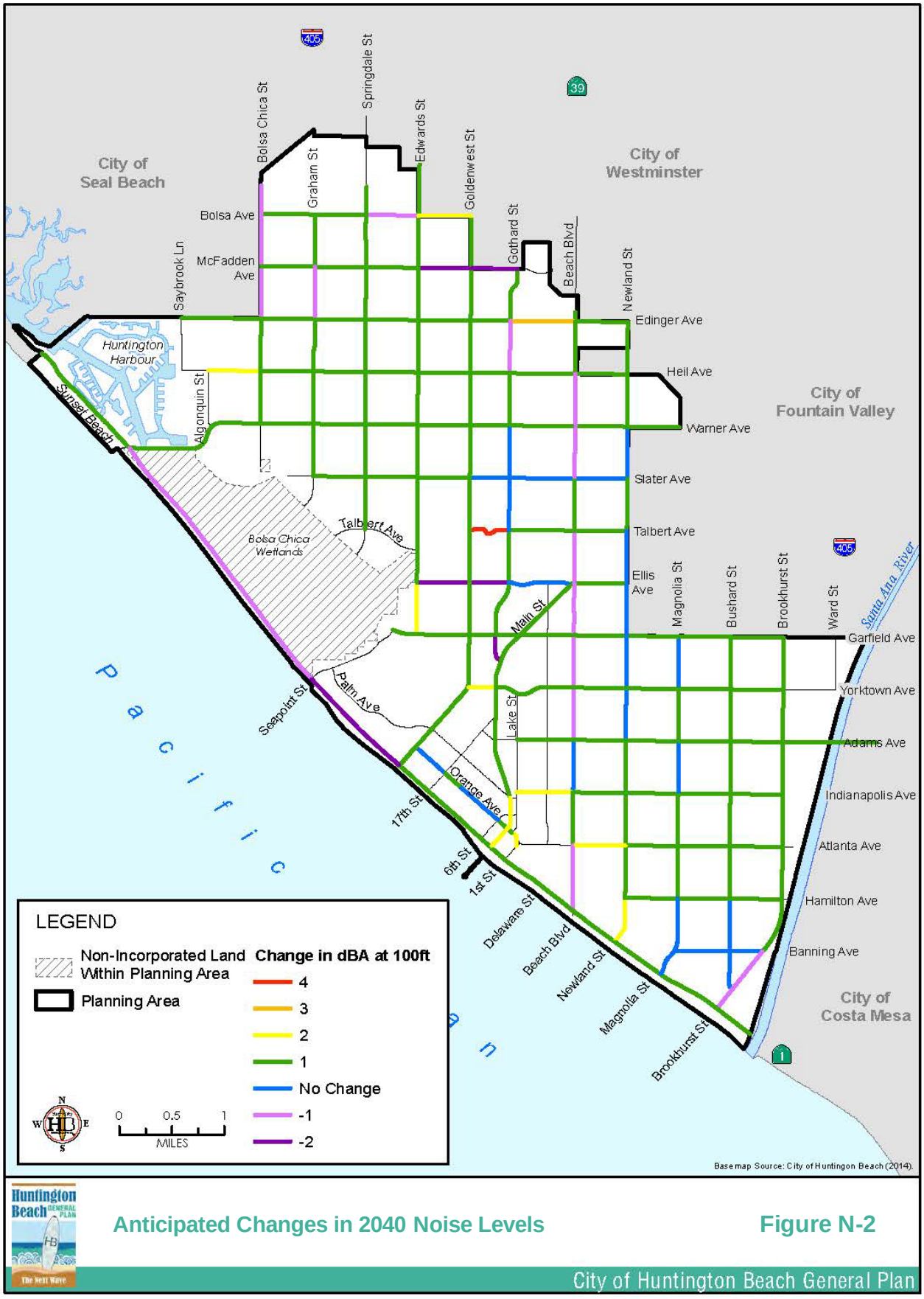
- Talbert Avenue between Goldenwest Street and Gothard Street
- Edinger Avenue between Gothard Street and Beach Boulevard
- Heil Avenue between Algonquin Street and Bolsa Chica Street
- Bolsa Avenue between Edwards Street and Goldenwest Street
- Edwards Street between Ellis Avenue and Garfield Avenue
- Yorktown Avenue between Goldenwest Street and Main Street
- Indianapolis Avenue between Lake Street and Beach Boulevard
- Main Street between Palm Avenue and Pacific Coast Highway
- Orange Avenue between 3rd Street and 1st Street
- Atlanta Avenue between Beach Boulevard and Newland Street
- Newland Street between Hamilton Avenue and Pacific Coast Highway

Many neighborhoods located along busy arterial streets have existing masonry walls between the roadway and the residential uses. Furthermore, topography in the planning area does not vary considerably. As a result, the contours shown in **Figures N-1** and **N-2** are considered reasonably representative of actual traffic noise conditions. Nonetheless, it is not possible to evaluate the localized effects of topography and screening by intervening structures on traffic noise within the framework of the Noise Element. Therefore, the City should consider the contour distances conservative estimates of traffic noise exposure (i.e., assuming noisier conditions than may be the case) to be supplemented by more detailed and project-specific study as needed.



Modeled Noise Contours for Baseline Year 2014 **Figure N-1**

City of Huntington Beach General Plan



Anticipated Changes in 2040 Noise Levels **Figure N-2**

Noise Reduction Strategies

The following strategies are intended to reduce noise impacts within Huntington Beach. These strategies should be employed along the roadway segments identified on page 6-12.

Noise Control Ordinance

The Noise Control Ordinance authorizes the City to regulate noise at its source, protect noise-sensitive land uses, and establish exterior and interior noise standards for residential properties. The City will continue to apply provisions of the Noise Control Ordinance.

State Noise Standards

Title 24 of the California Code of Regulations, also known as the California Building Code, establishes acoustical regulations for both exterior-to-interior sound insulation and sound and impact isolation between adjacent spaces of various occupied units. The Title 24 regulations state that interior noise levels generated by exterior noise sources shall not exceed 45 dB L_{dn}, with windows closed, in any habitable room for general residential uses.

Roadway Noise Barriers

The most efficient and effective means of controlling noise is to reduce noise at the source. However, the City has no direct control over noise produced by trucks, cars, and trains because federal and state noise regulations preempt local laws. Because the City cannot control transportation noise at the source, noise programs and standards use noise reduction methods that interrupt the path of the noise or shield adjacent land uses to reduce transportation noise along freeways, arterial roadways, and rail corridors. Such reduction methods may include building orientation, spatial buffers, landscaping, and noise barriers proposed during site planning and project design.

Using noise barriers, such as sound walls, is an effective way to achieve noise standards, but should be considered only after all other practical design-related noise reduction measures have been integrated into a project. New technologies should be used in place of sound walls as they become widely available, unless no other feasible options exist. Sound walls may not be desirable in some locations, such as intersections in commercial areas where visibility and access are equally important. For some projects, including those implemented by the California Department of Transportation (Caltrans) or the Orange County Transportation Authority (OCTA), using sound walls may be the only feasible option or may be beyond the City's control.

Truck Routes

Truck traffic generates noise that can disturb people in residential and other noise-sensitive land uses. Heavy trucks are not permitted to drive through residential neighborhoods unless they are making a delivery in the neighborhood. Truck routes in Huntington Beach are located mostly on higher capacity roadways to reduce noise on other streets, increase safety, reduce roadway maintenance needs, and improve traffic operations.

Stationary Sources

Noise levels from stationary sources are addressed primarily at the source. In a mixed-use development, acoustical design should be applied to reduce the exposure of residents to noise from both commercial portions of the development and external noise sources. When addressing stationary noise at the source is infeasible, the aforementioned noise reduction methods will be employed to reduce noise exposure to the levels presented in **Table N-3**.

The most common and feasible method to control exterior-to-interior noise levels is to improve the building structure and use wall/façade treatments that reduce noise levels. Buildings constructed consistent with the Title 24 of the California Building Code typically provide approximately 15 dBA of exterior-to-interior noise level reduction with windows open, and 25 dBA of noise level reduction with windows closed. Therefore, special consideration must be given to reducing interior noise levels to the required 45 dBA CNEL at noise-sensitive land uses exposed to noise levels in excess of 60 dBA. The ability to perform these calculations requires detailed floor plans and façade construction details. A qualified acoustical consultant should calculate the required noise level reduction and resulting interior noise levels. **Table N-3** provides an example of varying levels of building façade improvements that may be required to comply with the interior noise level standard of 45 dBA CNEL for land uses exposed to three different noise levels: 60 dBA CNEL, 65 dBA CNEL, and 70 dBA CNEL.

Residential Project Design

To mitigate non-transportation-related noise, the City will require adjustments to site plans, design features, higher insulation performance, spatial buffers, and other measures that absorb and block sound as needed. For example, bedrooms, balconies, and open space areas can be located away from streets and focused toward the interior of a project to reduce noise exposure. The City will develop guidelines to assist developers in designing structures that respond to noise concerns.

Table N-3
Sample Interior Noise Control Measures

Noise Level Exposure	Exterior-to-Interior Noise Level Reduction Required to Achieve 45 dBA CNEL	Noise Control Measures and Façade Upgrades
Less than 60 dBA CNEL	15 dBA	Normal construction practices consistent with the Uniform Building Code are typically sufficient.
60 dBA to 65 dBA CNEL	20 dBA	Normal construction practices consistent with the Uniform Building Code are sufficient with the addition of the following specifications: Air conditioning or mechanical ventilation systems are installed so that windows and doors may remain closed. Windows and sliding glass doors are mounted in low-air infiltration rated frames. Exterior doors are solid core with perimeter weather stripping and threshold seals.
66 dBA to 70 dBA CNEL	25 dBA	Normal construction practices consistent with the Uniform Building Code are sufficient with the addition of the following specifications: Air conditioning or mechanical ventilation systems are installed so that windows and doors may remain closed. Windows and sliding glass doors are mounted in low-air infiltration rated frames. Exterior doors are solid core with perimeter weather stripping and threshold seals. Glass in both windows and exterior doors should have a Sound Transmission Classification rating of at least 30. Roof or attic vents facing the noise source of concern should be boxed or provided with baffling.

Notes:

The information listed in this table represents sample guidance for interior noise control recommendations and is not intended for application to individual development projects, renovations, or retrofits. Noise-sensitive land uses located in areas with noise level exposures exceeding 65 dBA CNEL should perform acoustical analysis on a case-by-case basis.

Issues, Goals, and Policies

The noise issues addressed in this element include:

- Protecting noise-sensitive land uses
- Ensuring land use/noise compatibility
- Reducing noise from mobile sources
- Mitigating noise from construction, maintenance, and other sources

Protecting Noise-Sensitive Land Uses

Sensitive land uses have associated human activities that may be subject to stress or significant interference from noise. Noise-sensitive land uses are located in portions of the planning area that vary from moderately quiet residential areas to noisy major transportation corridors.

Goal N-1. Noise-sensitive land uses are protected in areas with acceptable noise levels.

Policies

A. Maintain acceptable stationary noise levels at existing noise-sensitive land uses such as schools, residential areas, and open spaces.

B. Incorporate design and construction features into residential, mixed-use, commercial, and industrial projects that shield noise-sensitive land uses from excessive noise.

Ensuring Land Use/Noise Compatibility



Some residential, commercial, and institutional land uses, particularly those located along arterial roadways, experience excessive vehicular noise. Commercial and industrial land uses also have the potential to generate noise that can be considered intrusive to noise-sensitive land uses. Mixed-use development projects often include both residential uses located above or in close proximity to commercial uses and stand-alone multi-family residential uses. A unique challenge presented by mixed-use development is that on one hand, such uses desire locations along busy street

corridors, and on the other hand, state-mandated interior noise requirements for residential uses must be met within the residential portions of such uses.

Goal N-2. Land use patterns are compatible with current and future noise levels.

Policies

A. Require an acoustical study for proposed projects in areas where the existing or projected noise level exceeds or would exceed the maximum allowable levels identified in Table N-2. The acoustical study shall be performed in accordance with the requirements set forth in this Noise Element.

B. Allow a higher exterior noise level standard for infill projects in existing residential areas adjacent to major arterials if no feasible mechanisms exist to meet exterior noise standards.

C. Minimize excessive noise from industrial land uses through incorporation of site and building design features that are intended to reduce noise impacts to sensitive land uses.

D. Encourage new mixed-use development projects to site loading areas, parking lots, driveways, trash enclosures, mechanical equipment, and other noise sources away from residential portions of the development, to the extent feasible.

Reducing Noise from Mobile Sources

Roadway noise from vehicle traffic is the most common source of noise in Huntington Beach. New development supporting anticipated population growth will increase traffic levels on arterials, resulting in increased noise levels. Future development of several vacant parcels and parcels that may support infill development or reuse will also have the potential to increase roadway noise levels in surrounding neighborhoods. In addition to roadways, rail and aircraft operations create noise in certain portions of the planning area. The general noise environment also includes occasional noise from private, police, emergency medical, and news/traffic monitoring helicopters.

Goal N-3. The community is not disturbed by excessive noise from mobile sources such as vehicles, rail traffic, and aircraft.

Policies

A. Mitigate noise created by any new transportation noise source so that it does not exceed the exterior or interior sound levels specified in Table N-2.

B. Prioritize use of site planning and project design techniques to mitigate excessive noise. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

C. Employ noise-reducing technologies such as rubberized asphalt, fronting homes to the roadway, or sound walls to reduce the effects of roadway noise on noise-sensitive land uses.

D. Continue to work with local, state, and federal agencies to install, maintain, and renovate highway and arterial right-of-way buffers and sound walls.

E. Continue to work with regional, state, and federal agencies, including officials at John Wayne Airport and Long Beach Airport, to implement noise-reducing measures and to monitor and reduce noise associated with aircraft:

    a. Coordinate with Long Beach Airport to modify the approach of commercial aircraft to an altitude of 2,100 feet or higher when passing over the area near Bolsa Chica Street.

    b. Coordinate with Long Beach Airport so that aircraft delay deployment of landing gear and flaps until they are over the Naval Weapons Station to reduce the noise levels they produce over the community.

F. Continue to coordinate with the Federal Aviation Administration, Caltrans Division of Aeronautics, and the Orange County Airport Land Use Commission regarding the siting and operation of heliports and helistops to minimize excessive helicopter noise.

Mitigating Noise from Construction, Maintenance, and Other Sources



Construction is a necessary part of community development. Construction noise typically occurs intermittently, and the amount of noise depends on the nature or phase of construction. Activities such as site preparation, trucks hauling materials, concrete pouring, and use of power tools can generate noise. Construction equipment also creates noise that reaches high levels for brief periods. Although these types of noise sources tend to be short term, temporary, and limited, they can be a source of annoyance.

Goal N-4. Noise from construction activities associated with discretionary projects, maintenance vehicles, special events, and other nuisances is minimized in residential areas and near noise-sensitive land uses.

Policies

A. Reduce construction, maintenance, and nuisance noise at the source as the first and preferred strategy to reduce noise conflicts.

B. Require that new discretionary uses and special events such as restaurants, bars, entertainment, parking facilities, and other commercial uses or beach events where large numbers of people may be present adjacent to sensitive noise receptors comply with the noise standards in Table N-2 and the City Noise Ordinance.

C. Encourage shielding for construction activities to reduce noise levels and protect adjacent noise-sensitive land uses.

D. Limit allowable hours for construction activities and maintenance operations located adjacent to noise-sensitive land uses.

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Chapter 8.40 NOISE CONTROL

Note

Sections:

8.40.010 Declaration of Policy
8.40.020 Definitions
8.40.030 Noise Level Measurement Criteria
8.40.050 Exterior Noise Standards
8.40.090 Special Provisions
8.40.095 Leaf Blowers
8.40.100 Schools, Hospitals and Churches—Special Provisions
8.40.111 Prohibited Noises
8.40.112 Loud Noises
8.40.113 Vibration
8.40.120 Manner of Enforcement
8.40.130 Permit Process
8.40.150 Appeals

Note

* **Note:** §§ 8.40.140, 8.40.160 and 8.40.170 repealed by Ord. 3940-7/12.

8.40.010 Declaration of Policy

A. In order to control unnecessary, excessive and annoying sounds emanating from incorporated areas of the City, it is hereby declared to be the policy of the City to prohibit such sounds generated from all sources as specified in this chapter.

B. It is determined that certain noise levels are detrimental to the public health, welfare and safety and contrary to public interest; therefore, the City Council does ordain and declare that creating, maintaining, causing or allowing to create, maintain or cause any noise in a manner prohibited by, or not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such. (2379-7/79)

8.40.020 Definitions

The following words, phrases and terms as used in this chapter shall have the meaning as indicated below:

"**Ambient noise level**" means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

"**A-weighted decibel (dBA)**" means the overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear as represented by the A-weighted network. The reference pressure is 20 micropascals.

"**Commercial property**" means a parcel of real property which is developed and used either in part or in whole for commercial purposes including, but not limited to, retail and wholesale businesses and professional offices.

"**Cumulative period**" means an additive period or time composed of individual time segments which may be continuous or interrupted.

"**Decibel (dB)**" means a unit which denotes the ratio between two quantities which are proportional to power; the number of decibels corresponding to the ratio of two amounts of power is 10 times the logarithm to the base 10 of this ratio.

"**Domestic power tool**" means a mechanically-powered saw, sander, drill, grinder, lawn or garden tool, snow blower, leaf blower or similar device that is used in residential areas for work that is typically done by or for residential occupants.

"**Emergency machinery, vehicle or work**" means any machinery, vehicle or work used, employed or performed in an effort to protect, provide or restore safe conditions in the community or for the citizenry, or work by private or public utilities when restoring utility service.

"**Equivalent continuous sound level (Leq)**" means the value of an equivalent, steady sound level which, in a stated time period, has the same sound energy as the time-varying sound. Thus, the Leq metric is a single numerical value that represents the equivalent amount of variable sound energy received at a location over the specified duration.

"**Fixed noise source**" means a stationary device or point source which creates sounds while fixed or motionless, including, but not limited to, industrial and commercial machinery and equipment, pumps, fans, compressors, generators, air conditioners and refrigeration equipment, or an area source such as a special event on a property. That is, all sources that are non-mobile transportation sources (e.g., vehicle traffic on public roads and aircraft).

"**Grading**" means any excavating or filling of earth material, or any combination thereof, conducted to prepare said site for construction or the placement of the improvements thereon.

"**Impact noise**" means the noise produced by the collision of one mass in motion with a second mass which may be either in motion or at rest.

"**Impulsive noise**" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay.

"**Industrial property**" means a parcel of real property which is developed and used in part or in whole for manufacturing purposes including research and development uses.

"**Leaf blower**" means any machine, however powered, used to blow leaves, dirt and other debris off sidewalks, driveways, lawns and other surfaces.

"**Maximum sound level (Lmax)**" means the highest RMS sound level measured during the measurement period.

"**Mobile noise source**" means any noise source other than a fixed noise source.

"**Motorboat**" means any vessel which operates on water and which is propelled by a motor, including, but not limited to, boats, barges, amphibious craft, water ski towing devices and hover craft.

"**Noise level**" means the "A" weighted sound pressure level in decibels obtained by using a sound level meter at slow response with a reference pressure of 20 micropascals (micronewtons per square meter). The unit of measurement shall be designated as dBA.

"**Parcel**" means an area of real property with a separate or distinct number or other designation shown on a plat recorded in the office of the County Recorder. Contiguous parcels owned by the same individual or entity shall be considered one parcel for purposes of this chapter.

"**Person**" means a person, firm, association, co-partnership, joint venture, corporation or any entity, public or private in nature.

"**Predominant tone noise**" means a noise characterized by a predominant frequency or frequencies so that other frequencies cannot be readily distinguished.

"**Residential property**" means a parcel of real property which is developed and used either in part or in whole for residential purposes, other than transient uses such as hotels or motels.

"**Root-mean-square sound level (RMS)**" means the square root of the average of the square of the sound pressure over the measurement period.

"**Simple tone noise**" means a noise characterized by a predominant frequency or frequencies so that other frequencies cannot be readily distinguished. In case of dispute, a simple tone noise shall exist if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by five dB for center frequencies of 500 Hz and above and by eight dB for center frequencies between 160 and 400 Hz and by 15 dB for center frequencies less than or equal to 125 Hz.

"**Sound amplifying equipment**" means any machine or device used for the amplification of the human voice, music, or any other sound, excluding standard automobile stereos when used and heard only by the occupants of the vehicle and, as used in this chapter, warning devices on authorized emergency vehicles or horns or other warning devices on any vehicle used for traffic safety purposes.

"**Sound pressure level**" of a sound, in decibels, means 20 times the logarithm to the base of 10 of the ratio of the pressure of the sound to the reference pressure of 20 micropascals.

"**Vibration decibel (VdB)**" means a measure of vibration expressed on a logarithmic scale with the reference velocity of one micro-inch per second (1x10-6 in/sec).

"**Vibration-sensitive use**" means residential, hotels, motels, schools, hospitals and medical offices with vibration-sensitive equipment, churches, cultural land uses, commercial, office and government uses. Outdoor areas with no buildings and industrial and manufacturing uses are not considered vibration sensitive. (2379-7/79, 4222-9/21)

8.40.030 Noise Level Measurement Criteria

Any noise level measurements made pursuant to the provisions of this chapter shall be performed using a sound level meter which meets at least American National Standards Institute (ANSI) Type 2 standards. While the exterior noise standards in Section 8.40.050 are applied to the property line of the receiving use, the location for measuring noise levels may be at any legally accessible vantage point where a reasonable person would conclude the noise may exceed this chapter's noise standards. All noise level measurements shall be performed in accordance with the procedures established by the City and shall be at a height of at least four feet, at least four feet away from reflective surfaces, and for a duration of at least 15 minutes, where feasible. The measurement shall be made using the A-weighting network (dBA) with "slow" meter response. Impulsive or impact noises shall be measured using "fast" meter response. The purpose of the measurement is to determine if the alleged noise violation exceeds the standards established in Section 8.40.050. If for any reason the alleged offending noise cannot be turned off, shut down or temporarily removed from the area, then the ambient noise shall be estimated by performing a representative measurement in the same general area of the source but at a sufficient distance such that the noise source is inaudible. (2379-7/79, 3940-7/12, 4222-9/21)

8.40.050 Exterior Noise Standards

A. The following exterior noise standards shall apply to the applicable land use. It is unlawful for any person at any location within the incorporated area of the City to create any noise due to a fixed noise source (or any mobile source not pre-empted by State or Federal laws), or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level when measured at the property line of any residential, hotel, motel, public institutional, recreational, or commercial property, either within or outside the City, to exceed the applicable noise standards:

Exterior Noise Standards

Land Use	Leq Noise Level dBA	Lmax Noise Level dBA	Time Period
Low-Density Residential	55	75	7 a.m.–10 p.m.
	50	70	10 p.m.–7 a.m.
Medium-, High-Density Residential, Hotels, Motels	60	80	7 a.m.–10 p.m.
	50	70	10 p.m.–7 a.m.
Schools	55	75	Hours of Operation
Hospitals, Churches, Cultural, Museum, Library,	60	80	Hours of Operation

Public Park, Recreational			
Commercial/Office	65	85	Hours of Operation

B. The above standard does not apply to the establishment of multifamily residence private balconies and patios. Multifamily developments with balconies or patios that do not meet noise standards are required to provide occupancy disclosure notices to all future tenants regarding potential noise impacts.

C. The above daytime (7:00 a.m.–10:00 p.m.) standards for hotels, motels and commercial uses shall apply only to active outdoor use areas such as a pool or outdoor courtyard.

D. In the event the alleged offensive noise consists entirely of impact or impulsive noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dBA.

E. If the alleged offense affects a property outside the City's jurisdiction, the exterior noise standards shall be enforced at the City boundary.

F. In the event the measured ambient noise level exceeds any of the noise limit categories above, the noise limit shall be increased to reflect said ambient noise level.

G. In the event that the noise source and the affected property are within different land use categories, the noise standards of the affected property shall apply. (2379-8/79, 2788-9/85, 3940-7/12, 4222-9/21)

8.40.090 Special Provisions

The following activities shall be exempt from the provisions of this chapter:

A. School bands, school athletics and school entertainment events, provided such events are conducted on school property or authorized by special permit from the City.

B. Activities lawfully permitted in public parks, public playgrounds and public or private school grounds.

C. Any mechanical device, apparatus or equipment used, related to or connected with emergency City work, including City contractors.

D. Noise sources associated with construction, repair, remodeling, or grading of any real property, provided that: (1) the City has issued a building, grading or similar permit for such activities; (2) said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m., Monday through Saturday, or at any time on Sunday or a Federal holiday; and (3) the average construction noise levels do not exceed 80 dBA Leq at nearby noise-sensitive land uses. If outdoor construction activities are permitted by the City after 7:00 p.m. or before 7:00 a.m., the average construction Noise Levels at nearby noise-sensitive land uses shall be limited to 50 dBA Leq.

E. Mobile noise sources associated with pest control through pesticide application, provided that the application is made in accordance with restricted material permits issued by or regulations enforced by the Agricultural Commissioner.

F. Noise sources associated with the maintenance of real property and use of domestic power tools provided said activities take place between the hours of 8:00 a.m. and 7:00 p.m. Monday through Saturday or between the hours of 9:00 a.m. and 6:00 p.m. on Sunday or a Federal holiday. Noise from typical and occasional property maintenance and the use of domestic power tools which does not require a building permit shall not be subject to the noise limits in subsection D of this section.

G. Leaf blower noise shall be governed by Section 8.40.095.

H. Any activity or equipment to the extent that design regulation thereof has been pre-empted by State or Federal laws.

I. Noise sources associated with temporary public or private events located on private or public property, provided that a permit has been obtained from the City.

J. Noise generated outdoors by business operations which are temporarily prohibited from occurring indoors due to City-declared emergency conditions. This applies only to City-approved businesses whose operations would typically occur indoors. Noise generated by sound amplifying equipment such as stereos or megaphones is not exempt. (2379-7/79, 3131-4/92, 3940-7/12, 4222-9/21)

8.40.095 Leaf Blowers

A. **Unlawful to Propel Debris Beyond Parcel Boundary.** It is unlawful for any person to use or operate any leaf blower in such a manner as to blow, dispel or make airborne, dust, leaves, grass cuttings, paper, trash or any other type of unattached debris or material, beyond the parcel boundaries of the parcel being cleaned, unless the consent of the adjoining owner or person in possession is obtained. It is unlawful for any person to use or operate any leaf blower within the City in such a way as to blow leaves, dirt and other debris onto the public rights-of-way or private property and to allow such debris to remain there in excess of 30 minutes.

B. **Special Prohibitions.** It is unlawful for any person to operate a leaf blower within a residential zone or within 100 feet of a residential zone of the City of Huntington Beach, except under the following conditions:

1. **Time Restriction.** Noise sources associated with the maintenance of real property provided said activities take place between the hours of 8:00 a.m. and 7:00 p.m. Monday through Saturday or between the hours of 9:00 a.m. and 6:00 p.m. on Sunday or a Federal holiday.

2. **Distance Restriction.** Leaf blowers shall not be operated within a horizontal distance of 10 feet of any operable window, door, or mechanical air intake opening or duct.

3. **Duration of Use Restriction.** Leaf blowers shall not be operated for more than 15 minutes per hour, per day, on parcels less than one-half acre and no more than 30 minutes per hour on parcels greater than one-half acre up to one acre. Leaf blowers shall not be operated for more than two hours on parcels of one acre or more.

4. **Number Restriction.** No person shall operate more than one leaf blower per parcel on one-half acre, no more than two leaf blowers on parcels greater than one-half acre and no more than three leaf blowers on parcels greater than one acre or more.

5. The maximum decibel level of 70 dBA as measured 10 feet from the leaf blower shall not be exceeded. (3131-4/92, 4222-9/21)

8.40.100 Schools, Hospitals and Churches—Special Provisions

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church while same is in use, to exceed the noise limits specified for exterior noise standards in Section 8.40.050, or which noise level unreasonably interferes with the use of such institutions, including, unreasonably disturbs or annoys persons at a school, hospital or church, provided conspicuous signs are displayed in three separate locations within one-tenth of a mile of the institution indicating the presence of a school, hospital or church. (2379-7/79, 4222-9/21)

8.40.111 Prohibited Noises

A. It is unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary or unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

B. In determining whether a violation of the provisions of this section exists, the City will determine:

1. The level of the noise;
2. The level and intensity of background noise, if any;
3. The proximity of the noise to residences;
4. The zoning where the noise emanates;
5. The density of the area within which the noise emanates;
6. The time the noise occurs;
7. The duration of the noise and its tonal content; and
8. Whether the noise is recurrent, intermittent or constant. (3216-12/93, 4222-9/21)

8.40.112 Loud Noises

It is unlawful for any person to:

A. Use, operate, or permit to be operated any radio, receiving set or device, television set, musical instrument, phonograph, digital music player, CD, DVD, tape player, juke box, or other sound-amplifying device for producing or reproducing sound in such a manner as to disturb the peace, quiet, and comfort of other persons.

B. Make or allow to be made any noise which continues for more than a five-minute period between the hours of 10:00 p.m. and 7:00 a.m. if such noise is audible for 50 feet or more from the source of the noise.

C. Maintain, manage, or control any business or residential property in violation of subsection A or B of this section.

D. When within 200 feet of residences, load, unload, open, close or other handling of boxes, crates, containers, building materials, refuse handling or similar objects, between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a noise disturbance across a noise-sensitive property line. This includes, but is not limited to, noise disturbances related to commercial delivery operations, vehicle idling, vehicle queuing, vehicle backup alarms, and vehicle refrigeration equipment.

E. Repair, rebuild, modify, or test any motor vehicle, motorcycle, or motorboat in such a manner as to cause a noise disturbance across a noise-sensitive property line.

F. Operate, play or permit the operation of any sound amplifying equipment in any place of public entertainment at a sound level greater than 90 dBA as read by the slow response on a sound level meter at any point that is normally occupied by customers, unless a conspicuous and legible sign is located immediately outside or near the public entrance stating, “Warning: Sound Levels Within May Cause Permanent Hearing Impairment.”

G. Sound or permit the sounding of any amplified signal from such as a bell, chime, siren, whistle, vehicle horn or similar device, intended primarily for non-emergency purposes which causes a noise disturbance across a noise-sensitive property line. Devices used in conjunction with school and place of worship shall be exempt from this provision.

H. Operate or permit the operation of any motorboat in such a manner to cause a noise disturbance across a noise-sensitive property line.

I. Operate or cause to be operated any motor vehicle or motorcycle not equipped with a muffler or other sound dissipative device in good working order and in constant operation. No person shall remove or render inoperative, or cause to be removed or rendered inoperative, other than for purposes of maintenance, repair, or replacement, any muffler or sound dissipative device on a motor vehicle or motorcycle.

J. Own, maintain, control, or operate any premises or property where noise continues after being informed, anytime within the preceding 30 days by the Police Department or Community Development Department that a violation of this chapter has been committed on said premises.

K. Violations of this section are hereby declared a nuisance per se. (3514-12/01, 4222-9/21)

8.40.113 Vibration

Notwithstanding other sections of this chapter, it is unlawful for any person to create, maintain or cause any operational ground vibration on any property which exceeds 72 VdB at nearby vibration-sensitive land uses. The vibration limit at vibration-sensitive uses with high sensitivity such as operations conducting medical research and imaging shall be 65 VdB. (4222-9/21)

8.40.120 Manner of Enforcement

A. The Director of Community Development (“Director”) or Police Chief and his or her duly authorized representatives are directed to enforce the provisions of this chapter. The Director or Police Chief and their duly authorized representatives are authorized pursuant to Penal Code Section 836.5 to arrest any person without a warrant when they have reasonable cause to believe that such person has violated a provision of this chapter in their presence.

B. If the Director or Police Chief and their duly authorized representatives conduct noise monitoring tests or other noise measurement readings for purposes of enforcement, and the noise level is found to exceed the noise levels in this chapter, the property owner or the operator of the noise source shall be required to pay the City’s cost of the noise monitoring tests or readings. (2379-7/79, 2533-2/82, 3216-12/93, 3940-7/12, 4222-9/21)

8.40.130 Permit Process

A. An application for a temporary permit to deviate from this chapter ("noise deviation permit") shall be submitted to the Director with all prescribed information and fees. In part, the application shall set forth: (1) all facts regarding the request for deviation; (2) all actions the applicant took to comply with the provisions of this chapter; (3) the reasons why compliance with this chapter cannot be achieved; (4) any proposed methods to minimize noise during the temporary activity; and (5) any such additional information the Director may require.

B. Within 10 days after receipt of a complete application, the City will notify all property owners within 300 feet of the proposed application.

C. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership, or several fixed sources on a single property may be combined into one application.

D. In all cases, the Director shall process the application in compliance with the California Environmental Quality Act.

E. The Director may approve, conditionally approve or deny the noise deviation permit no sooner than 20 days after notification was provided to property owners within 300 feet of the proposed noise source of the application. In acting upon the application, the Director shall weigh the factors set forth at subsection A above, and those set forth in Section 8.40.111 of this chapter.

F. The Director's decision on the permit shall be served by mail upon the applicant and all property owners within 300 feet of the proposed noise source. The Director's decision shall be effective 11 days after the mailing of the decision unless an appeal is filed.

G. An applicant for a permit shall remain subject to this chapter until a permit is granted, and all rights to a hearing and appeal are exhausted. (2379-7/79, 3940-7/12, 4222-9/21)

8.40.150 Appeals

Appeal Process. A person desiring to appeal the Director's decision on a noise deviation permit shall file a written notice of appeal with the director within 10 days after the Director's decision. Notice of appeal shall be accompanied by a fee as set forth in the City's current fee resolution and shall follow the hearing requirements in Chapter 248 of the Huntington Beach Zoning and Subdivision Ordinance. (3940-7/12, 4222-9/21)

View the mobile version.

CONSTRUCTION NOISE MODELING

HBCS-02 - Construction Noise Modeling Attenuation Calculations

Levels in dBA Leq

Phase	RCNM Reference Noise Level	Single-Family Residence at 3682 Fenley Drive (North)	Single-Family Residence at 10211 Humbolt Street (East)	Los Alamitos HS Dance Building (South)	Los Alamitos HS Gymnasium Building G (West)
Distance in feet	*50*	*230*	*415*	*890*	*435*
Asphalt/Building Demolition	84.6	71.3	66.2	59.6	65.8
Site Preparation	83.4	70.1	65.0	58.4	64.6
Rough Grading	84.6	71.3	66.2	59.6	65.8
Distance in feet	*50*	*230*	*415*	*890*	*435*
Paving	85.2	71.9	66.8	60.2	66.4

Attenuation calculated through Inverse Square Law: Lp(R2) = Lp(R1) - 20Log(R2/R1)

HBCS-02 - Vibration Damage Attenuation Calculations

Levels, PPV (in/sec)

	Vibration Reference Level	**Residence to the North**	**Residence to the East**	**Residence to the South**	**Residence to the West**
Distance in feet	**at *25 feet***	*80*	*370*	*745*	*400*
Vibratory Roller	0.21	0.037	0.004	0.001	0.003
Static Roller	0.05	0.009	0.001	0.000	0.001
Hoe Ram	0.089	0.016	0.002	0.001	0.001
Large Bulldozer	0.089	0.016	0.002	0.001	0.001
Caisson Drilling	0.089	0.016	0.002	0.001	0.001
Loaded Trucks	0.076	0.013	0.001	0.000	0.001
Jackhammer	0.035	0.006	0.001	0.000	0.001
Small Bulldozer	0.003	0.001	0.000	0.000	0.000

HBCS-02 - Vibration Annoyance Attenuation Calculations

Levels in VdB

Equipment	Vibration @ 25 ft	Residence to the North	Residence to the East	Residence to the South	Residence to the West
Distance in feet		*80*	*370*	*745*	*400*
Vibratory Roller	94.0	78.8	58.9	49.8	57.9
Static Roller	82.0	66.8	46.9	37.8	45.9
Hoe Ram	87.0	71.8	51.9	42.8	50.9
Large Bulldozer	87.0	71.8	51.9	42.8	50.9
Caisson Drilling	87.0	71.8	51.9	42.8	50.9
Loaded Trucks	86.0	70.8	50.9	41.8	49.9
Jackhammer	79.0	63.8	43.9	34.8	42.9
Small Bulldozer	58.0	42.8	22.9	13.8	21.9

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 02/01/2022
Case Description: Sowers ES

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Asphalt/Building Demolition	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Dozer	No	40		81.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 02/01/2022
Case Description: Sowers ES

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Grading	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Grader	No	40	85.0	50.0		0.0
Dozer	No	40	81.7	50.0		0.0
Tractor	No	40	84.0	50.0		0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 02/01/2022
Case Description: Sowers ES

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Paving	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drum Mixer	No	50	80.0	50.0		0.0
Pavement Scarafier	No	20	89.5	50.0		0.0
Tractor	No	40	84.0	50.0		0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Drum Mixer	80.0	77.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.5	85.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 02/01/2022
Case Description: Sowers ES

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Site Preparation	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

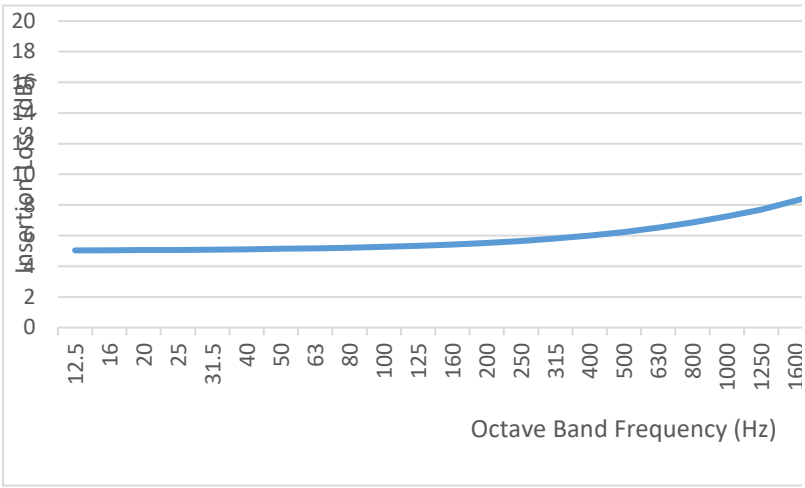
Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	83.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

STATIONARY NOISE MODELING

Barrier Insertion Loss Calculator

Distances	Inputs
From source to barrier	5
From reciever to barrier	75.0
Barrier Height	7.0
Source Height	5.0
Reciever Height	16.0
a	5.4
b	75.5
c	80.8
Path Length Δ = a+b-c	0.2
Speed of Sound (fps)	1140.0



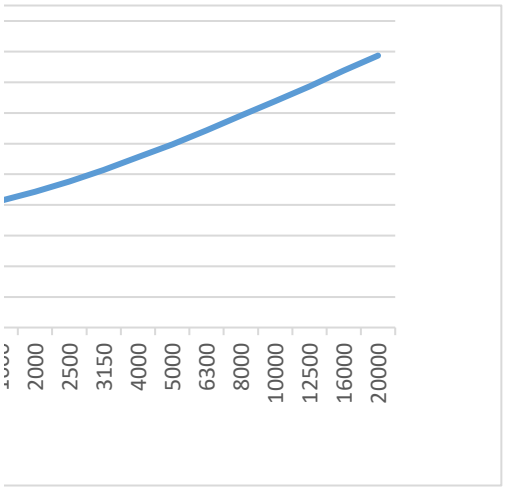
Octave Band (Hz)		16			31.5			63	
1/3 Octave Band (Hz)	12.5	16	20	25	31.5	40	50	63	80
Fresnel Number= N	0.0018698	0.002	0.003	0.004	0.005	0.006	0.007	0.009	0.012
Insertion Loss (IL) [dB]	**5.0339219**	**5.043**	**5.054**	**5.068**	**5.085**	**5.108**	**5.135**	**5.169**	**5.214**

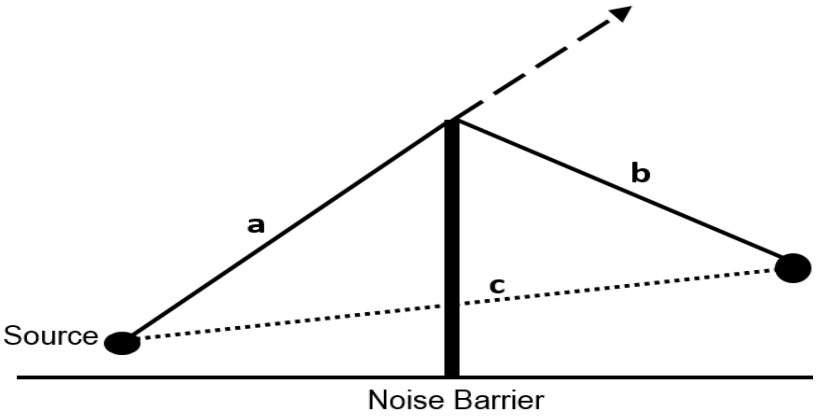
IL= 20 dB if N>12.5

A-weighting Corr

Ldn Source Sp

Formulas and methods from Utexas Design Guide for Highway Noise Barriers





	125			250			500			1k			2k		
100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
0.015	0.019	0.024	0.03	0.037	0.047	0.06	0.075	0.094	0.12	0.15	0.187	0.239	0.299	0.374	0.471
5.266	**5.331**	**5.421**	**5.522**	**5.645**	**5.802**	**6.002**	**6.229**	**6.511**	**6.861**	**7.247**	**7.696**	**8.271**	**8.862**	**9.521**	**10.27**
ections	*-16.1*	*-13.4*	*-10.9*	*-8.6*	*-6.6*	*-4.8*	*-3.2*	*-1.9*	*-0.8*	*0*	*0.6*	*1*	*1.2*	*1.3*	*1.2*
ectrum	*75.15*	*69.75*	*68.75*	*64.95*	*62.85*	*63.65*	*64.45*	*64.55*	*66.95*	*66.65*	*65.15*	*63.35*	*61.05*	*58.05*	*55.95*
	69.8	64.3	63.2	59.3	57.0	57.6	58.2	58.0	60.1	59.4	57.5	55.1	52.2	48.5	45.7

Receiver

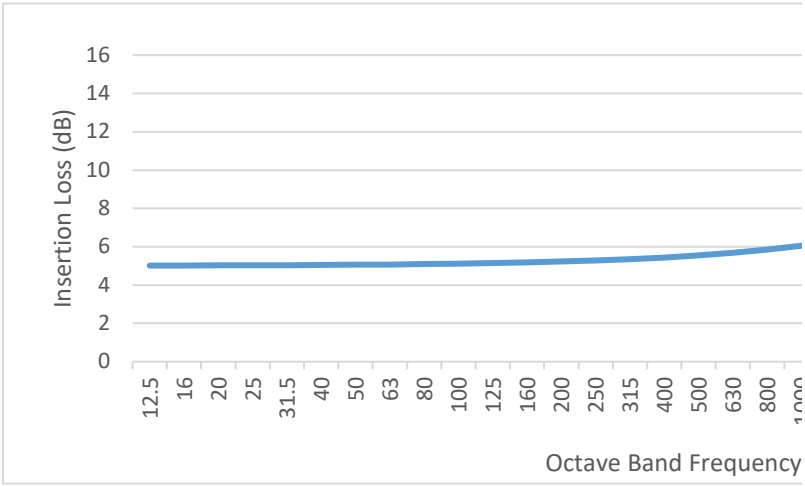
—

4k			8k			16k	
4000	5000	6300	8000	10000	12500	16000	20000
0.598	0.74791994	0.942	1.197	1.496	1.87	2.393	2.992
11.11	**11.94783287**	**12.86**	**13.83**	**14.77**	**15.72**	**16.78**	**17.74**

1	**Flat**	**A-wht**
51.65	**79**	**74.0**
40.5	**73**	**66.8**
	Reduction =	7.2

Barrier Insertion Loss Calculator

Distances	Inputs
From source to barrier	5
From reciever to barrier	350.0
Barrier Height	6.0
Source Height	5.0
Reciever Height	16.0
a	5.1
b	350.1
c	355.2
Path Length Δ = a+b-c	0.1
Speed of Sound (fps)	1140.0



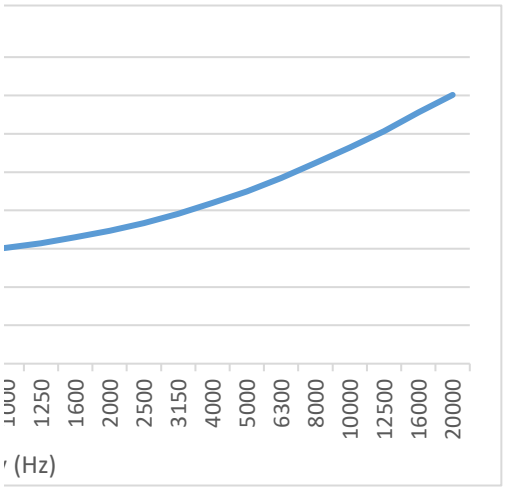
Octave Band (Hz)		16			31.5			63	
1/3 Octave Band (Hz)	12.5	16	20	25	31.5	40	50	63	80
Fresnel Number= N	0.0007836	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.005
Insertion Loss (IL) [dB]	**5.014239**	**5.018**	**5.023**	**5.028**	**5.036**	**5.045**	**5.057**	**5.071**	**5.091**

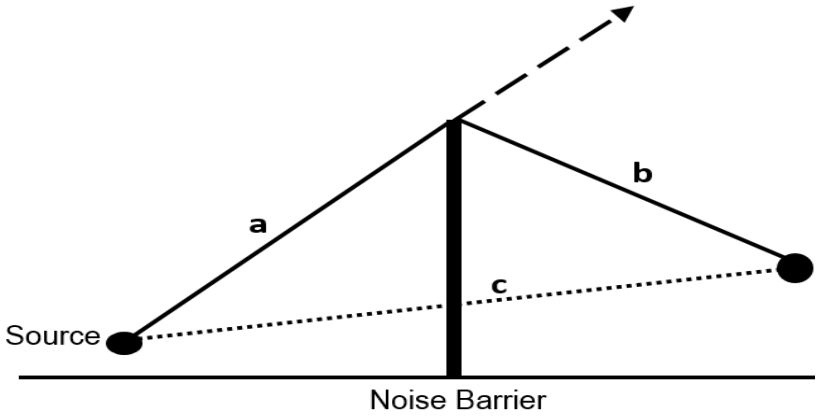
IL= 20 dB if N>12.5

A-weighting Corr

Ldn Source Sp

Formulas and methods from Utexas Design Guide for Highway Noise Barriers





	125			250			500			1k			2k		
100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
0.006	0.008	0.01	0.013	0.016	0.02	0.025	0.031	0.039	0.05	0.063	0.078	0.1	0.125	0.157	0.197
5.113	**5.141**	**5.18**	**5.224**	**5.279**	**5.349**	**5.44**	**5.545**	**5.68**	**5.851**	**6.046**	**6.281**	**6.596**	**6.937**	**7.336**	**7.816**
ections	*-16.1*	*-13.4*	*-10.9*	*-8.6*	*-6.6*	*-4.8*	*-3.2*	*-1.9*	*-0.8*	*0*	*0.6*	*1*	*1.2*	*1.3*	*1.2*
ectrum	*75.15*	*69.75*	*68.75*	*64.95*	*62.85*	*63.65*	*64.45*	*64.55*	*66.95*	*66.65*	*65.15*	*63.35*	*61.05*	*58.05*	*55.95*
	70.0	64.6	63.5	59.7	57.5	58.2	58.9	58.9	61.1	60.6	58.9	56.8	54.1	50.7	48.1

Receiver

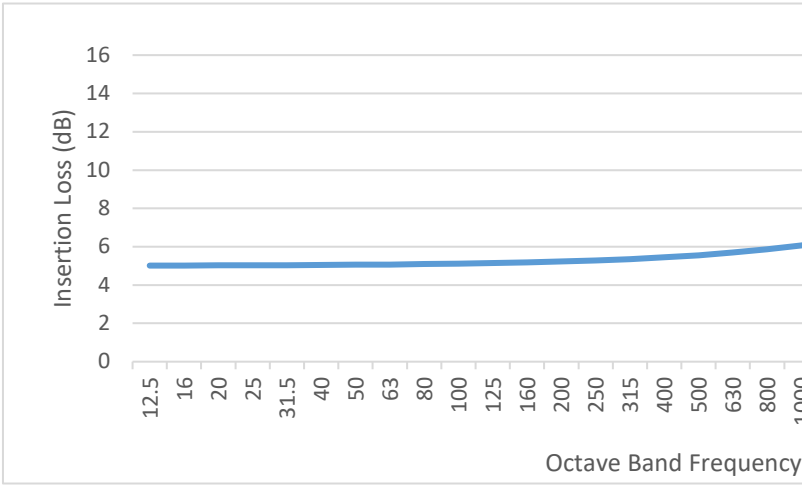
—

4k			8k			16k	
4000	5000	6300	8000	10000	12500	16000	20000
0.251	0.31344678	0.395	0.502	0.627	0.784	1.003	1.254
8.389	**8.99400082**	**9.692**	**10.48**	**11.28**	**12.13**	**13.11**	**14.03**

1	**Flat**	**A-wht**
51.65	**79**	**74.0**
43.3	**74**	**67.9**
	Reduction =	6.1

Barrier Insertion Loss Calculator

Distances	Inputs
From source to barrier	5
From reciever to barrier	370.0
Barrier Height	6.0
Source Height	5.0
Reciever Height	16.0
a	5.1
b	370.1
c	375.2
Path Length Δ = a+b-c	0.1
Speed of Sound (fps)	1140.0



Octave Band (Hz)		16			31.5			63	
1/3 Octave Band (Hz)	12.5	16	20	25	31.5	40	50	63	80
Fresnel Number= N	0.0007986	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.005
Insertion Loss (IL) [dB]	**5.0145107**	**5.019**	**5.023**	**5.029**	**5.037**	**5.046**	**5.058**	**5.073**	**5.092**

IL= 20 dB if N>12.5

A-weighting Corr

Ldn Source Sp

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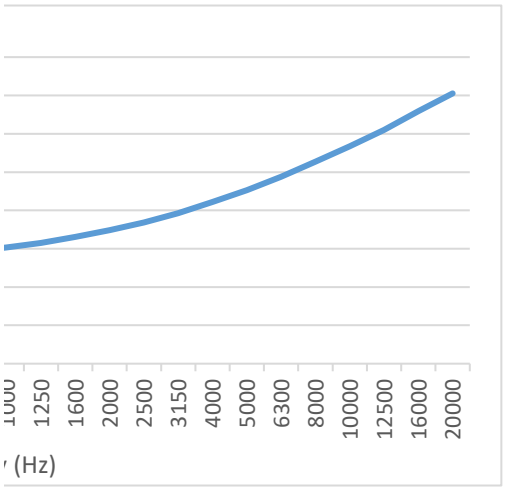

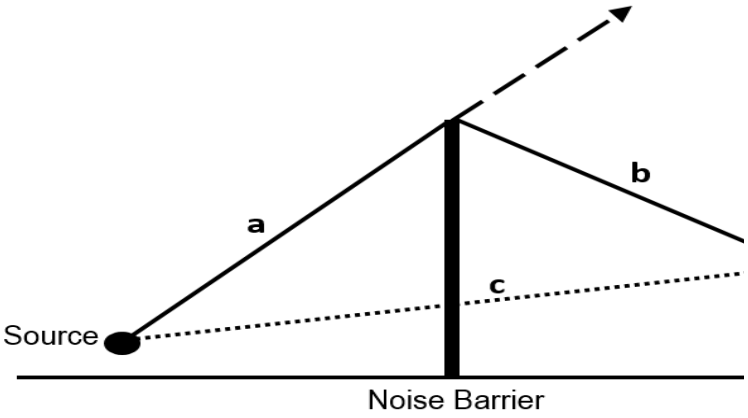

	125			250			500			1k			2k	
100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500
0.006	0.008	0.01	0.013	0.016	0.02	0.026	0.032	0.04	0.051	0.064	0.08	0.102	0.128	0.16
5.115	**5.144**	**5.183**	**5.228**	**5.284**	**5.356**	**5.448**	**5.555**	**5.692**	**5.866**	**6.064**	**6.303**	**6.623**	**6.968**	**7.372**
ections	*-16.1*	*-13.4*	*-10.9*	*-8.6*	*-6.6*	*-4.8*	*-3.2*	*-1.9*	*-0.8*	*0*	*0.6*	*1*	*1.2*	*1.3*
ectrum	*75.15*	*69.75*	*68.75*	*64.95*	*62.85*	*63.65*	*64.45*	*64.55*	*66.95*	*66.65*	*65.15*	*63.35*	*61.05*	*58.05*
	70.0	64.6	63.5	59.7	57.5	58.2	58.9	58.9	61.1	60.6	58.8	56.7	54.1	50.7



		4k			8k			16k	
3150	4000	5000	6300	8000	10000	12500	16000	20000
0.201	0.256	0.319435686	0.402	0.511	0.639	0.799	1.022	1.278
7.859	**8.437**	**9.048466803**	**9.752**	**10.55**	**11.35**	**12.2**	**13.19**	**14.11**

1.2	*1*	**Flat**	**A-wht**
55.95	*51.65*	**79**	**74.0**
48.1	43.2	**74**	**67.9**
		Reduction =	6.1

HBCS-02 Bus Yard Attenuation Calculations

NORTH — Levels in dBA Leq

Worst Case Scenario by Activity *Distance in feet*	City Noise Standard *Property Line*	City Noise Standard with Penalty *Property Line*	Measured Ambient *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the North *75*	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air	50	45	60	64	56	No
Bus Horn	50	45	60	70	63	Yes

NORTH — Levels in dBA Lmax

Worst Case Scenario by *Distance in feet*	City Noise Standard *Property Line*	City Noise Standard with Penalty *Property Line*	Measured Ambient *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the North *75*	Exceed Existing Ambient
Bus Idling, Back-up Ala	70	65	77	83	75	No
Bus Horn	70	65	77	76	68	No

North — Mitigated Levels in dBA Leq

Worst Case Scenario by Activity *Distance in feet*	City Noise Standard *Property Line*	City Noise Standard with Penalty *Property Line*	Measured Ambient *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the North *75*	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air	50	45	60	64	49	No
Bus Horn	50	45	60	70	55	No

North — Mitigated Levels in dBA Lmax

Worst Case Scenario by *Distance in feet*	City Noise Standard *Property Line*	City Noise Standard with Penalty *Property Line*	Measured Ambient *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the North *75*	Exceed Existing Ambient
Bus Idling, Back-up Ala	70	65	77	83	67	No
Bus Horn	70	65	77	76	61	No

East — Levels in dBA Leq

Worst Case Scenario by Activity *Distance in feet*	City Noise Standard *Property Line*	City Noise Standard with Penalty *Property Line*	Measured Ambient *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the East *350*	Exceed Existing Ambient
Bus Idling, Back-up Alarms, Air	50	45	59	64	43	No
Bus Horn	50	45	59	70	49	No

East — Levels in dBA Lmax

Worst Case Scenario by *Distance in feet*	City Noise Standard *Property Line*	Measured Ambient *Property Line*	MC Nighttime Residential Noise Standard with Penalty *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the East *350*	Exceed MC 65 dBA
Bus Idling, Back-up Ala	70	61	65	83	61	No
Bus Horn	70	61	65	76	55	No

East — Mitigated Levels in dBA Leq

Worst Case Scenario by Activity *Distance in feet*	City Noise Standard *Property Line*	City Noise Standard with Penalty *Property Line*	Measured Ambient *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the North *350*	Exceed MC 45 dBA
Bus Idling, Back-up Alarms, Air	50	45	59	64	37	No
Bus Horn	50	45	59	70	43	No

East — Mitigated Levels in dBA Lmax

Worst Case Scenario by *Distance in feet*	City Noise Standard *Property Line*	Measured Ambient *Property Line*	MC Nighttime Residential Noise Standard with Penalty *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the North *350*	Exceed MC 65 dBA
Bus Idling, Back-up Ala	70	61	65	83	55	No
Bus Horn	70	61	65	76	49	No

SOUTH — Levels in dBA Leq

Worst Case Scenario by Activity *Distance in feet*	City Noise Standard *Property Line*	Measured Ambient *Property Line*	MC Nighttime Residential Noise Standard with Penalty *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the South *730*	Exceed MC Nighttime Standard
Bus Idling, Back-up Alarms, Air	50	NA	45	64	36	No
Bus Horn	50	NA	45	70	43	No

SOUTH — Levels in dBA Lmax

Worst Case Scenario by *Distance in feet*	City Noise Standard *Property Line*	Measured Ambient *Property Line*	MC Nighttime Residential Noise Standard with Penalty *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the South *730*	Exceed Existing Ambient
Bus Idling, Back-up Ala	70	NA	65	83	55	No
Bus Horn	70	NA	65	76	48	No

WEST — Levels in dBA Leq

Worst Case Scenario by Activity *Distance in feet*	City Noise Standard *Property Line*	Measured Ambient *Property Line*	MC Nighttime Residential Noise Standard with Penalty *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the West *370*	Exceed MC 45 dBA
Bus Idling, Back-up Alarms, Air	50	NA	45	64	42	No
Bus Horn	50	NA	45	70	49	Yes

WEST — Levels in dBA Lmax

Worst Case Scenario by *Distance in feet*	City Noise Standard *Property Line*	Measured Ambient *Property Line*	MC Nighttime Residential Noise Standard with Penalty *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the West *370*	Exceed MC 65 dBA
Bus Idling, Back-up Ala	70	NA	65	83	61	No
Bus Horn	70	NA	65	76	54	No

WEST — Mitigated Levels in dBA Leq

Worst Case Scenario by Activity *Distance in feet*	City Noise Standard *Property Line*	Measured Ambient *Property Line*	MC Nighttime Residential Noise Standard with Penalty *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the West *370*	Exceed MC 45 dBA
Bus Idling, Back-up Alarms, Air	50	NA	45	64	36	No
Bus Horn	50	NA	45	70	43	No

WEST — Mitigated Levels in dBA Lmax

Worst Case Scenario by *Distance in feet*	City Noise Standard *Property Line*	Measured Ambient *Property Line*	MC Nighttime Residential Noise Standard with Penalty *Property Line*	Reference Bus Yard Levels *30*	Level at Residences to the West *370*	Exceed MC 65 dBA
Bus Idling, Back-up Ala	70	59	65	83	55	No
Bus Horn	70	59	65	76	48	No

Attenuation calculated through Inverse Square Law: Lp(R2) = Lp(R1) - 20Log(R2/R1)