Alameda County Fire Department

Alameda County Fire Station 7 and Fire Station 25 Replacement Project

Draft Initial Study/Mitigated Negative Declaration

July 2024

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PANORAMA ENVIRONMENTAL, INC.

Alameda County Fire Department

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July 2024

Prepared for:

Alameda County Fire Department

6363 Clark Avenue

Dublin CA 94568

Prepared by:

Panorama Environmental, Inc.

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San Francisco, CA 94103

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PANORAMA ENVIRONMENTAL, INC.

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1 Mitigated Negative Declaration

1.1 Project Summary

1. **Project Title**

   Alameda County Fire Station 7 and Fire Station 25 Replacement Project

2. **Lead Agency name and address**

   Alameda County Fire District
   6363 Clark Ave.
   Dublin CA 94568

3. **Contact person and phone number**

   Eric Moore, Fire Chief
   Alameda County Fire Department
   510-693-3402

4. **Location**

   Fire Station 7
   The project site is in the Palomares Hills neighborhood of unincorporated Castro Valley, in central Alameda County, California. The existing fire station is on a 0.43-acre parcel (85A-6405-1-2) at 6901 Villareal Drive. The proposed project would be constructed on the 1.28-acre undeveloped parcel (Assessor's Parcel Number 85A-6405-166) directly west of the existing fire station. The project site is bounded by the existing Fire Station 7 to the east, the Palomares Hills Recreation Center to the southwest, and undeveloped land to the south/southeast.
   Fire Station 25
   The project site is at 202090 San Miguel Avenue in unincorporated Castro Valley in central Alameda County. The site is on a 1.3-acre parcel (Assessor's Parcel Number 84A-112-17-2) and consists of the existing one-story, 10,000-square-foot fire station building and an adjacent parking lot.

5. **Project sponsor's name and address**

   Alameda County Fire District
   6363 Clark Ave, Dublin CA 94568

6. **General Plan designation and zoning**

   Fire Station 7
   The project site is zoned Planned Development. The project site land use is designated as Open Space-Parks (County of Alameda, n.d.).

Fire Station 25
The Project is zoned Public Facilities. The project site land use is designated as Public Facilities (County of Alameda, n.d.).

7. **Description of the proposed project**

   This Initial Study evaluates the potential environmental impacts of three separate and independent projects, as summarized below:

   Fire Station 7
   The Alameda County Fire Station 7 Replacement Project would construct a new fire station on the parcel adjacent to the existing fire station on Villareal Drive.
   Fire Station 25
   The Alameda County Fire Station 25 Replacement Project would construct a new fire station after demolishing the existing fire station and parking lot.

   The proposed fire station replacement projects are described in detail in the Project Description section below.

8. **Surrounding land uses and setting**

   Fire Station 7
   The proposed Fire Station 7 site is surrounded by residential land use. The proposed project site is undeveloped land adjacent to the existing Fire Station.
   Fire Station 25
   The proposed Fire Station 25 site is surrounded by recreational use to the west, residential use to the north, and commercial use to the south and east. The proposed project site is an existing Fire Station that would be demolished.

9. **Other public agencies whose approval is required**

   The projects will each require a building permit from Alameda County. If the project's disturbance area exceeds 1 acre, the project would require a Construction Stormwater General Permit from the State Water Resources Control Board

10. **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.?**

    The Lisjan Nation has requested consultation under AB 52. The Alameda Fire Department has engaged in consultation with Lisjan Nation in compliance with AB 52. Additional information on the results of the consultation with Native Americans is provided in Section 3.2.18: Tribal Cultural Resources

1.2 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by the proposed project, but impacts would be mitigated to a less-than-significant level as indicated in the Initial Study.

Fire Station 7

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

Fire Station 25

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

1.3 Environmental Determination

On the basis of this initial evaluation:

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

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

I find that the Project MAY have a "potentially significant impact" or "potentially significant impact 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 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 project, nothing further is required. ☐

Pursuant to Section 21082.1 of the California Environmental Quality Act, the Alameda County Fire Department (ACFD) has independently reviewed and analyzed the Initial Study and Mitigated Negative Declaration for the proposed project and finds that the Initial Study and Mitigated Negative Declaration reflect the independent judgement of the ACFD. The ACFD further finds that the project mitigation measures shall be implemented as stated in this Mitigated Negative Declaration.

I hereby approve this project:

Signature	Name/Title	Date

2 Project Description

2.1 Overview

The Alameda County Fire Department (ACFD) operates 28 fire stations within Alameda County and serves a population of approximately 394,000 people. In November 2020, voters approved Measure X, authorizing the ACFD to issue up to $90 million in general obligation bonds to repair, upgrade, and replace outdated fire stations in the unincorporated area of the county (Alameda County Fire Department (ACFD), n.d.). Upgrading and repairing outdated and aging fire stations would help ACFD to address its priorities, including reducing 911 emergency fire and medical response times and enhancing wildfire protection and disaster response. ACFD proposes to construct three new fire stations, as described in more detail below.

Fire Station 7
Alameda County Fire Station 7 was constructed in 1986 and currently does not meet ACFD's accessibility, housing, or facility needs. The purpose of the Alameda County Fire Station 7 Replacement Project (proposed project) is to construct a new fire station on the parcel adjacent to the existing fire station on Villareal Drive.

Fire Station 25
Alameda County Fire Station 25 was constructed in 1966 as the headquarters for the Castro Valley Fire Department before it became part of the ACFD. Currently, Fire Station 25 does not meet ACFD's accessibility, housing, or facility needs. The purpose of the Alameda County Fire Station 25 Replacement Project (proposed project) is to construct a new fire station after demolishing the existing fire station and parking lot.

2.2 Project Location and Existing Uses

Fire Station 7
The project site is in the Palomares Hills neighborhood of Castro Valley, in unincorporated central Alameda County, California. The existing fire station is on a 0.43-acre parcel (85A-6405-1-2) at 6901 Villareal Drive. The proposed project would be constructed on the 1.28-acre undeveloped parcel (Assessor's Parcel Number 85A-6405-166), directly west of the existing fire station, as shown in Figure 2.2-1. The project site is bounded by the existing Fire Station 7 to the east, the Palomares Hills Recreation Center to the southwest, and undeveloped land to the south/southeast.

Figure 2.2-1 Fire Station 7 Project Site Location

The existing fire station consists of a 2,790-square-foot building and parking lot. The building contains shops, offices, a kitchen and dining areas, dorm rooms, lockers, exercise rooms, and two apparatus bays. Building features include a 25-kilowatt generator, a 220-volt air compressor, and a 500-gallon above-ground fuel tank. The fire station has three employees.

Fire Station 7 responds to an average of 31 emergency calls per month. Response times for emergency calls average approximately 4 minutes. Access to the project site is provided via a driveway on Villareal Drive. The project is zoned in Planned Development by Alameda County.

Fire Station 25

The project site is at 20290 San Miguel Avenue in Castro Valley in unincorporated Alameda County. The site is on a 1.3-acre parcel (Assessor's Parcel Number 84A-112-17-2) and consists of the existing one-story, 10,000-square-foot fire station and an adjacent parking lot, as shown in Figure 2.2-2. A separate, 2,900-square-foot building used for classrooms and training sessions is located on the eastern side of the parcel. The existing fire station interior contains shops, offices, a kitchen and dining areas, dorm rooms, lockers, exercise rooms, and four apparatus bays. Building features include a 125-kilowatt generator, a 220-volt air compressor, and a 1,000-gallon aboveground fuel tank. The site also includes a 1,000-gallon gasoline *underground storge tank* (UST). The UST was disconnected and filled with concrete in 2003.

The fire station has seven employees. They respond to approximately 238 emergency calls per month. Response times to emergency calls average approximately 4 minutes.

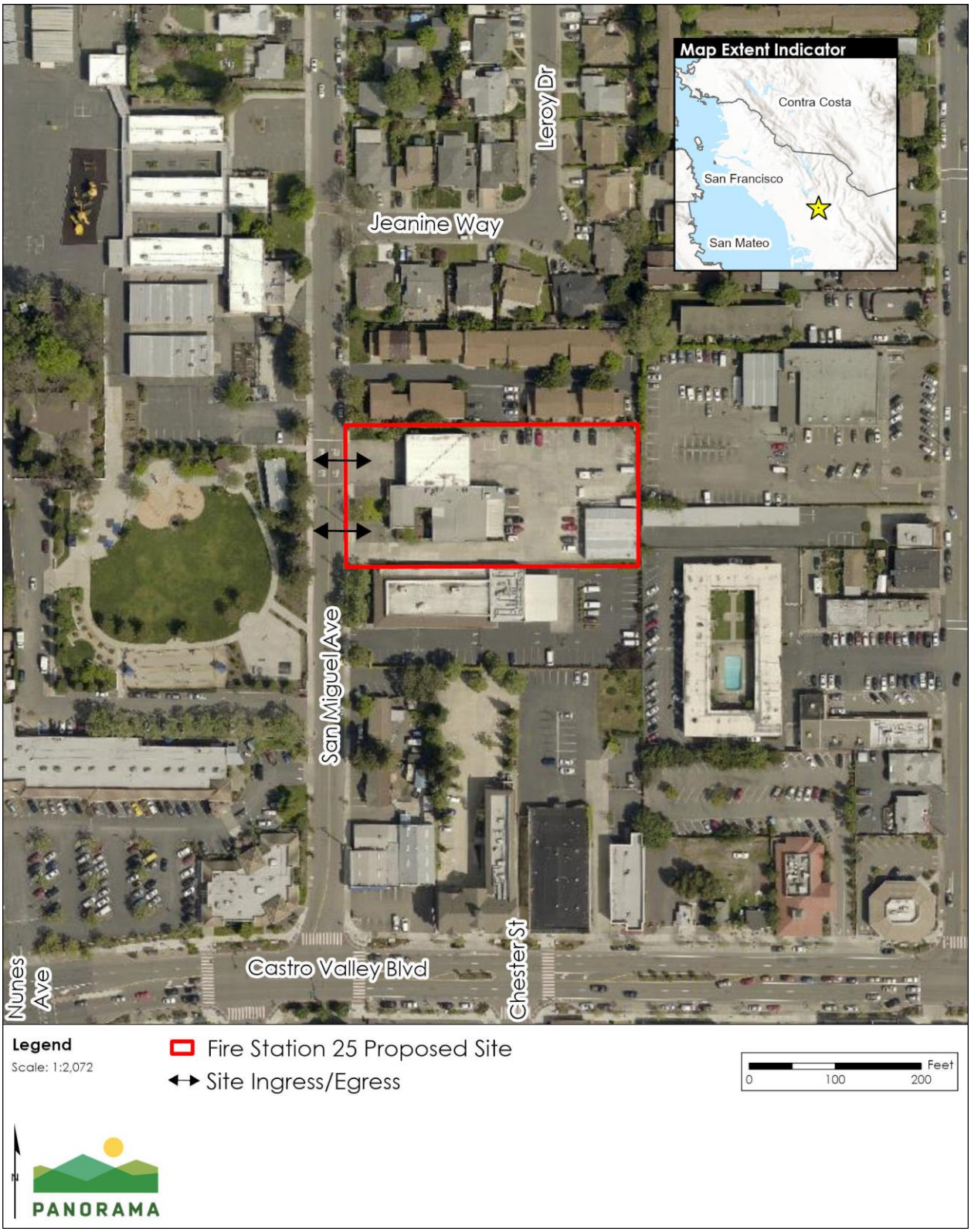
Access to the project site is provided via two driveways on San Miguel Avenue. The northern driveway is approximately 50 feet wide and provides access to the apparatus bays. The southern driveway provides access to the parking lot and classrooms/training building on the eastern side of the property.

Buildings surrounding the project site include residences to the north, a school to the south, and commercial buildings and an apartment complex to the east. Adobe Park, managed by the Hayward Area Recreation and Park District, is west of the project site, across San Miguel Avenue (HARD 2023). The project site is zoned Public Facilities by Alameda County and is within the Castro Valley Central Business District Specific Plan area, which implements the Alameda County General Plan in this location. The Specific Plan guides land use, development, design, and circulation in the District.

Interim Fire Station 25

During construction of the new Fire Station 25, a interim Fire Station 25 would be established at 21040 Marshall Street in Castro Valley in unincorporated Alameda County, approximately 0.8 mile east of the Fire Station 25 site. The site is on an 0.6-acre parcel (Assessor's Parcel Number 84C-661-4-4) and consists of the existing 4,689 square foot Castro Valley administration building and parking lot owned by the Castro Valley Sanitary District, as shown in Figure 2.2-3.

Figure 2.2-2 Fire Station 25 Project Location



Source: (Alameda County 2023)

Figure 2.2-3 Interim Fire Station 25 Project Location

Buildings surrounding the interim Fire Station 25 site include residences to the north, an apartment complex to the east, and commercial buildings to the west and south. The project site is zoned Public Facilities by Alameda County and is within the Castro Valley Central Business District Specific Plan area, which implements the Alameda County General Plan in this location. The Specific Plan guides land use, development, design, and circulation in the District.

2.3 Project Components

2.3.1 New Fire Station 7

The proposed project would construct a 7,883-square-foot, 25-foot-tall, one-story fire station on the undeveloped parcel adjacent the existing fire station. The existing fire station would be turned over to Alameda County for its use. The new fire station would include private offices, workstations, departmental spaces, dorms, and a kitchen. The proposed facility would include additional building space and parking to accommodate ACFD's current and future operational needs.

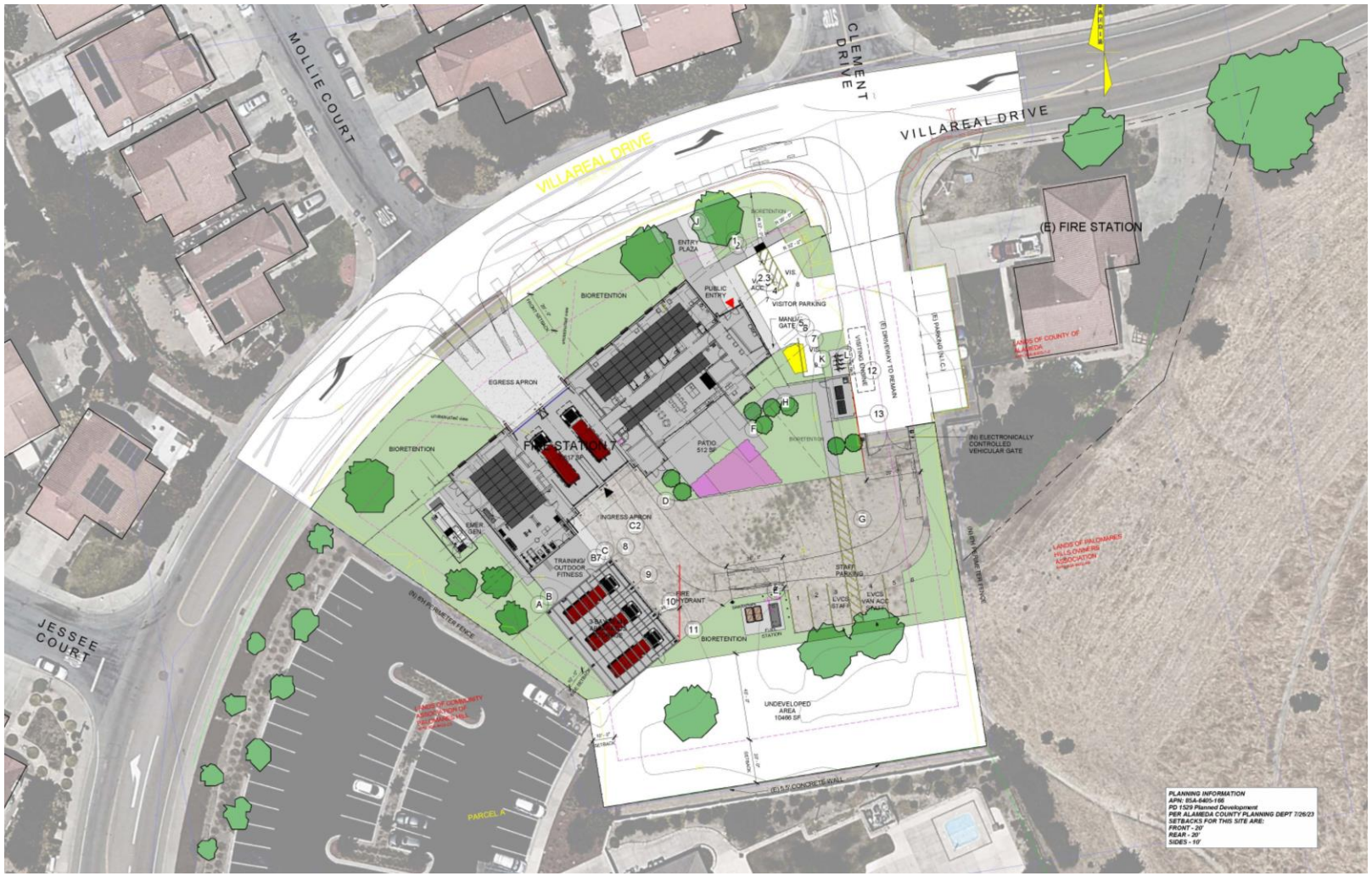
As shown in Figure 2.3-1, the site exterior would include a fire hydrant. In addition, an outdoor patio with a barbeque would be constructed adjacent the kitchen area, and an outdoor fitness area would be constructed adjacent the physical training room. Bicycle storage would be provided on site. A minimum of one bicycle parking space would be provided in accordance with LEED credit and California Green Building Code requirements. The new fueling station would feature a 500-gallon above-ground tank outside the fire station building at the rear of the property, adjacent the staff parking spaces, and would supply ACFD vehicles and equipment. The new 100-kilowatt emergency generator would be placed on a concrete pad outside of the fire station, on the west side of the project site. The emergency generator would be within an enclosure and would be tested weekly.

2.3.2 New Fire Station 25

The proposed project would demolish the existing fire station structure and construct a 14,500-square-foot, 30-foot-tall, two-story fire station on the project site.

The new fire station would have a lobby, personnel offices, workstations, apparatus bays, a kitchen and dining spaces, crew dormitories and lockers, a training room, and storage rooms. Natural gas would be used for the stove in the kitchen. The proposed facility would include additional building space and parking to accommodate ACFD's current and future operational needs.

Figure 2.3-1 Fire Station 7 Site Plan



As shown in Figure 2.3-2, the site exterior would include a fire hydrant. A 232-square-foot trash and recycling enclosure would be constructed on the west side of the new fire station. In addition, an outdoor patio with a barbeque would be constructed adjacent the kitchen area, and an outdoor fitness area would be constructed adjacent the physical training room. A minimum of four bicycle parking spaces would be provided on site in accordance with California LEED credit and Alameda County requirements. The existing generator, air compressor, and vehicle fueling station would be replaced in kind. The new fueling station would include a 1,000-gallon diesel aboveground tank and a 500-gallon gasoline aboveground tank, with pumps that would dispense diesel and gasoline to supply ACFD fleet vehicles and equipment.

The fueling station would be within an enclosure outside the new building. A 220-volt air compressor would be located inside the apparatus bays. A new 125-kilowatt emergency generator would be placed on a concrete pad adjacent the new building.

Interim Fire Station 25

Interim Fire Station 25 would utilize the existing 4,689 square foot Castro Valley administration building and parking lot owned by the Castro Valley Sanitary District. The existing building, carport, gravel bins, shop, and materials shed would remain on site. Minor modifications would be made to the building interior, to include the installation of privacy partitions, the adjustment of several walls, window replacements, and upgraded electrical to accommodate three refrigerators. A new American with Disabilities Act (ADA)-compliant curb ramp would be constructed near the northwest corner of the building. A temporary 3,387-square-foot apparatus bay would be erected on the southern side of the property. The apparatus bay area would contain space for a Tier 1 fire engine, a tiller truck, a BC buggy, and a hazardous materials apparatus. Additionally, a temporary 125-kilowatt emergency generator would be installed at the back of the building near the electrical room. The site plan for interim Fire Station 25 is shown in Figure 2.3-3.

Access to the interim fire station would be provided via two existing driveways, one each being on the western side and the eastern side of the property. The 15-foot-wide western driveway would be expanded to approximately 20 feet. The eastern driveway would be expanded to approximately 30 feet to accommodate the fire department equipment access to the apparatus bay area.

Figure 2.3-2 Fire Station 25 Site Plan

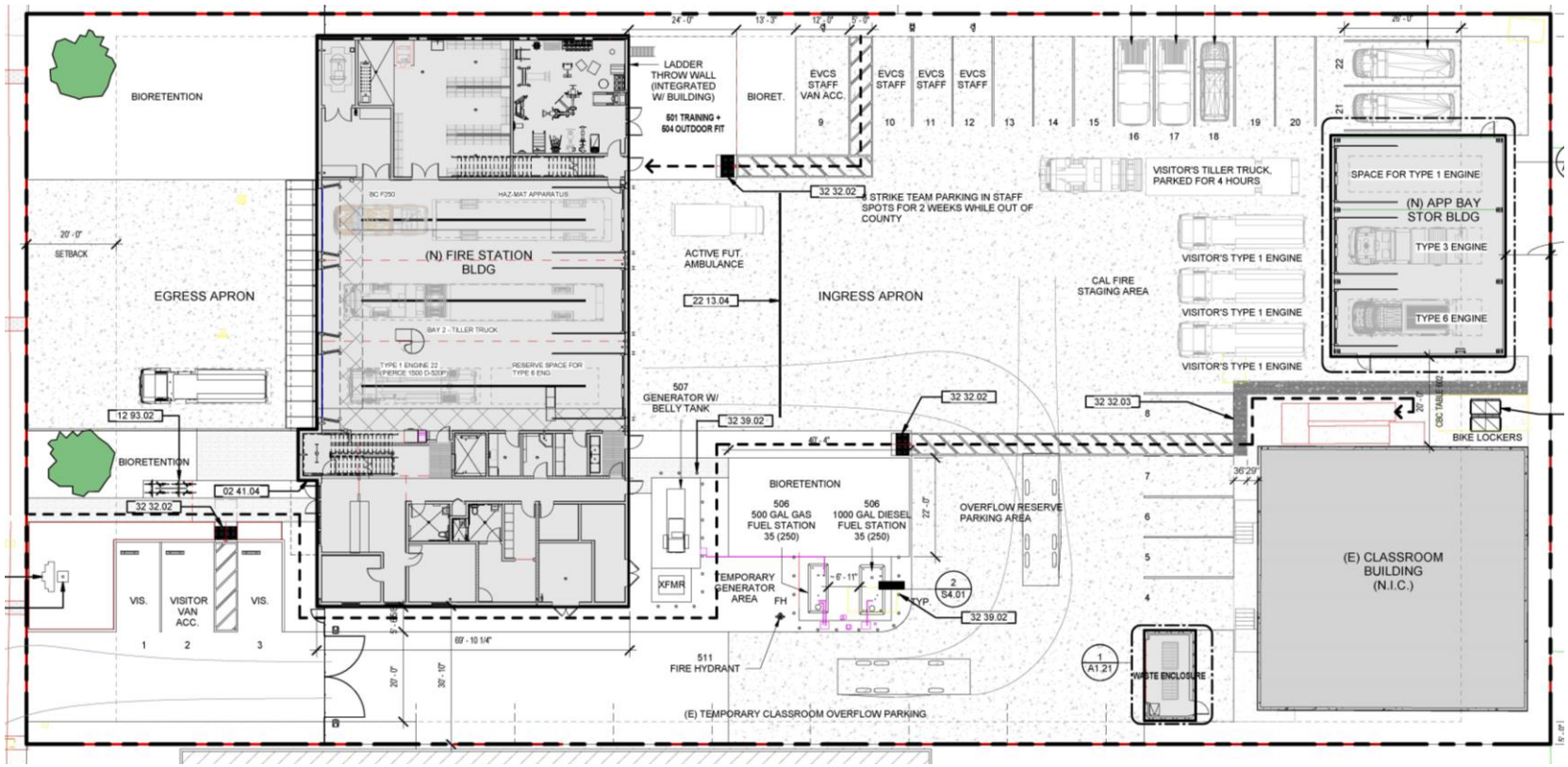
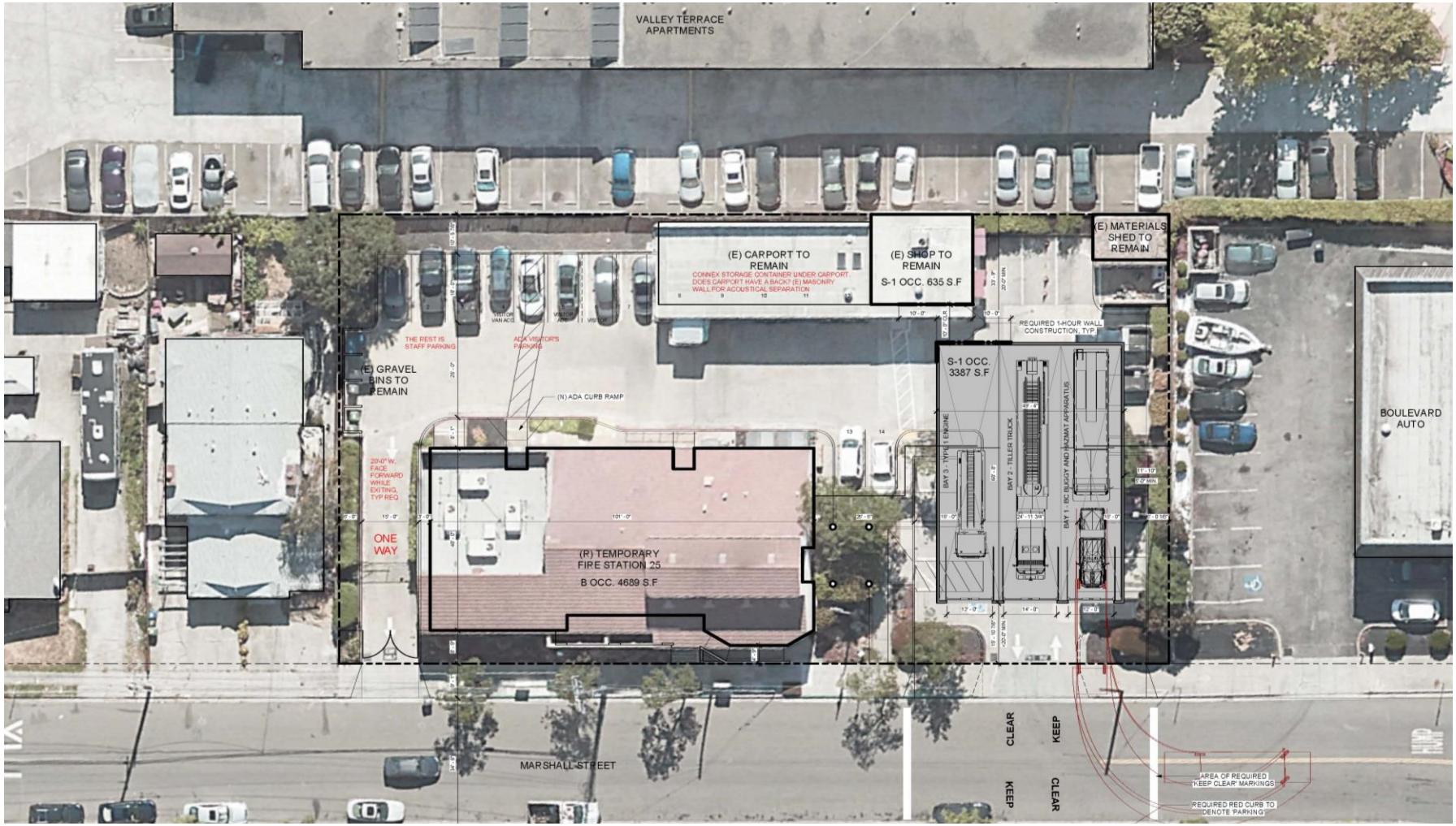


Figure 2.3-3 Interim Fire Station 25 Site Plan



2.3.3 Site Circulation and Parking

Fire Station 7

The 30-foot driveway that currently is used for ingress and egress at the existing fire station also would provide access to the new fire station on the adjacent parcel. An up to 40-foot new driveway apron would be constructed behind the new fire station to provide direct access to the project site via Villareal Drive. This new driveway apron would provide access to the apparatus bays, staff parking, training and fitness areas, and ladder throw area. The new 11,000-square-foot parking lot would have nine parking spaces, six for staff vehicle spaces and three for public visitors. Two of the parking spaces would be ADA compliant. In accordance with the California Green Building Standards Code and the Alameda County Guidelines for Future Electric Vehicle Charging Stations at Alameda County Facilities (Alameda County 2018), two of the parking spaces would be electric vehicle charging stations spaces. The new fire station would contain two 810-square-foot apparatus bays, with spaces for one Type 1 and one Type 3 fire engine and an air compressor.

Fire Station 25

Access to the fire station would be via San Miguel Avenue at the western boundary of the project site. Site ingress/egress generally would remain the same as the existing conditions. The northern egress apron from the apparatus bays would be approximately 56 feet wide, and the southern ingress/egress apron would be approximately 20 feet wide. The 6,800-square-foot parking lot would have 21 parking spaces, made up of 13 staff vehicle spaces, five oversized vehicles spaces, and three public visitor spaces. Two of the parking spaces would be ADA compliant. Up to three surplus vehicles would be parked at the existing storage facility on the eastern side of the property. In accordance with the California Green Building Standards Code and the Alameda County Guidelines for Future Electric Vehicle Charging Stations at Alameda County Facilities (Alameda County 2018), three parking spaces would be electric vehicle charging stations spaces and one parking space would be an electric vehicle capable space.

The new fire station would contain a three-apparatus bay area as part of the main building with a separate three apparatus storage bay at the back of the site. The apparatus bays would house two fire engines in the main apparatus bay and two to three surplus apparatus bay as well as a tiller truck, a fire-fighting pickup truck, and a hazardous materials apparatus vehicle, which would be used as a support unit for the County in responses to emergency calls with potentially hazardous materials.

2.3.4 Lighting, Landscaping and Fencing

Lighting for all three fire stations would be installed on the new buildings' exterior and along pedestrian pathways around the project site. Ground-mounted uplighting would be installed around the flagpole near the new fire station entrance. Lighting would conform with the Alameda County Dark Skies Ordinance, which aims to minimize artificial outdoor light and prevent excessive light and glare on private properties and public roadways (Alameda County, n.d.-c). Lighting and landscape components specific to each fire station are described below.

Fire Station 7
The proposed project would feature landscaping improvements consisting of bioswales, tree plantings, and hardscapes. Approximately 20 trees would be planted around the project site. An approximately 140-foot-long and 6-foot-tall privacy fence would be installed around the project site perimeter.

Fire Station 25
The proposed project would feature landscaping improvements around the project site, consisting of bioswales that would be installed around the project site for stormwater retention. Approximately two trees would be removed and approximately 13 new trees planted around the project site. An approximately 30-foot-long and 6-foot-tall privacy fence would be installed around the project site perimeter.

2.4 Project Construction

2.4.1 Schedule and Workforce

Fire Station 7
Project construction is anticipated to begin in September 2025 and last approximately 18 months. Construction would occur between 7 a.m. and 5 p.m., Monday through Friday, with occasional construction on weekends between 8 a.m. and 5 p.m. An average of 20 construction workers are expected to be on site daily during project construction, with a maximum of 50 workers on site at any one time.

Fire Station 25 and Interim Fire Station 25
Project construction is anticipated to begin in November 2025 and last approximately 20 months. Construction of the interim fire station would begin in June 2025 and end in October 2025. Construction activities would occur between 7 a.m. and 5 p.m., Monday through Friday. Weekend and nighttime work occur on an as needed basis. Weekend work would occur between 8 a.m. and 5 p.m. An average of 30 construction workers are expected to be on site daily during project construction, with a maximum of 60 workers on site at any one time. During construction of the interim fire station, an average of 3 construction workers are expected to be on site daily, with a maximum of 10 workers on site at any one time.

2.4.2 Equipment

The types of construction equipment anticipated to be used for construction of all three fire stations is listed in Table 2.4-1, below. Additionally, construction of interim Fire Station 25 would require the use of a crane, forklift, concrete truck, excavator, and loader.

Table 2.4-1 Proposed Project Construction Equipment

Phase	Equipment
Demolition	Tractors/loader/backhoe
	Rubber tired dozer
	Concrete/industrial saws
Site Preparation	Grader
	Tractor/loader/backhoe
Grading	Grader
	Rubber tired dozer
	Tractor/loader/backhoe
Building Construction	Crane
	Forklift
	Air compressor
	Tractor/loader/backhoe
Paving	Cement and mortar mixers
	Pavers
	Rollers
	Tractors/loader/backhoe

2.4.3 Demolition

The existing Fire Stations 7 would not be demolished as a part of the project. Demolition at the Fire Station 25 project site would include removal of the existing fire station building and parking lot. The separate classrooms and training building on the eastern side of the property would remain. Demolition would generate approximately 1,700 cubic yards of debris.

2.4.4 Excavation and Building Construction

Fire Station 7

Fire Station 7's construction would require excavation to a depth of approximately 3 feet below ground surface, generating approximately 3,400 cubic yards of soil excavation and approximately 1,500 cubic yards of soil off haul. The new fire station would have shallow-spread footings or mat foundation. A summary of soil excavation/disturbance is provided in Table 2.4-2, below.

Table 2.4-2 Soil Excavation and Disturbance

Project component	Soil excavation/disturbance
Fire station	9,300 square feet of disturbance, 1,000 cubic yards of excavation
Parking lot	11,000 square feet of disturbance, 820 cubic yards of excavation,
Generator pad	300 square feet of disturbance, 20 cubic yards of excavation
Site exterior (e.g., landscaping)	21,000 square feet of disturbance, 1,500 cubic yards of excavation

Fire Station 25 and Interim Fire Station 25

Fire Station 25 construction would require excavation to a depth of approximately 2 feet below ground surface. Construction of the interim fire station would require excavation up to 1 foot in depth. Fire Station 25 would require approximately 2,361 cubic yards of soil excavation, approximately 2,000 cubic yards of soil off-haul, and approximately 580 cubic yards of imported fill. Interim Fire Station 25 would require approximately 20 cubic yards of soil excavation and 20 cubic yards of soil off-haul.

The new fire station would have spread/continuous strip footings or a mat foundation. A summary of soil excavation/disturbance is provided in Table 2.4-3, below.

Table 2.4-3 Soil Excavation and Disturbance

Project component	Soil excavation/disturbance
Fire station	13,000 square feet of disturbance, 1,000 cubic yards of excavation, 0 cubic yards of fill
Parking lot	11,000 square feet of disturbance, 400 cubic yards of excavation, 0 cubic yards of fill
Generator pad	300 square feet of disturbance, 11 cubic yards of excavation, 0 cubic yards of fill
Site exterior	25,000 square feet of disturbance, 950 cubic yards of excavation.
Interim fire station	3,387 square feet of disturbance, 20 cubic yards of excavation, 0 cubic yards of fill

2.4.5 Construction Staging and Traffic

Construction vehicle parking and equipment staging would occur on the project site, and no off-site vehicle parking and equipment staging would occur, with the exception of Fire Station 7, which would utilize the adjacent fire station property. Fire station-specific construction traffic information is provided below.

Fire Station 7
Construction-related traffic, including worker, vendor, and haul trips, would occur during the approximately 18-month construction period. Construction is anticipated to require 10 truck trips per day and 30 vehicle trips per day on average.

Fire Station 25 and Interim Fire Station 25
Construction-related traffic, including worker, vendor, and haul trips, would occur during the approximately 20-month construction period. Construction is anticipated to require 10 truck trips per day and 40 vehicle trips per day on average. Approximately 20 truck trips would be required for construction of the interim fire station.

2.4.6 Construction Waste, Electricity, and Water Use

Electricity for fire station project construction would be provided by PG&E or, for Fire Stations 7 and 25, would be pulled from the existing fire station sites. Electricity for interim Fire Station 25 could be pulled from the Castro Valley administration building. Water would be used for dust control, soil compaction, drinking water, and concrete curing.

Any hazardous demolition waste would be hauled to a Class I landfill that is authorized to accept hazardous waste. Excess soil materials and any re-useable elements would be recycled. All other solid waste would be conveyed to a Class III landfill. The nearest landfills to the fire stations are the Hayward Transfer Station and the Vasco Road Sanitary Landfill.

2.5 Project Operations

Existing fire station operation and maintenance would be transferred to the new fire station, including the apparatus bays, offices, sleeping rooms and lockers, workshops, training rooms, and fleet vehicles. Specific information regarding operations at each fire station is provided below.

Fire Station 7
The three employees at the existing fire station would move to the new fire station on its completion. Approximately two vehicles would be parked in the apparatus bays.

Fire Station 25
The fire station would be staffed with eight employees; the seven existing employees would move to the new fire station on its completion, and one new employee would be hired or transferred from another ACFD fire station. Approximately five vehicles would be parked in the apparatus bays.

3 Environmental Checklist

3.1 Approach to Environmental Analysis

This Initial Study/Mitigated Negative Declaration (IS/MND) environmental checklist includes an evaluation of impacts based on the California Environmental Quality Act (CEQA) Guidelines (California Code of Regulations Title 14, division 6, chapter 3) Appendix G Environmental Checklist. This IS/MND includes descriptions of the environmental setting to provide context to understand project impacts (or the absence of impacts). An evaluation of potential impacts and mitigation measures to reduce potentially significant impacts is presented in the analysis.

This IS checklist evaluates the potential environmental impacts of each of the three fire station projects. The level of significance for each resource topic is determined by considering the predicted magnitude of the impact for each of the three projects. Four levels of impact significance are evaluated in this IS checklist:

> **No Impact.** The project would not have the impact described. The project may have a beneficial effect, but there is no potential for the project to create or add increment to the impact described.
>
> **Less-than-Significant Impact.** The project would have the impact described, but the impact would not be significant. Mitigation is not required although the project applicant may choose to modify the project to avoid the impacts.
>
> **Less-than-Significant with Mitigation.** The project would have the impact described, and the impact could be significant. One or more mitigation measures have been identified that will reduce the impact to a less than significant level.
>
> **Significant and Unavoidable Impact.** The project would have the impact described, and the impact could be significant. The impact cannot be reduced to a less-than-significant level by incorporating mitigation measures. An environmental impact report must be prepared for this project.

Each question on the checklist was answered by first evaluating each of the three projects as proposed—that is, without considering the effect of any added mitigation measures. The checklist includes a discussion of the impacts and mitigation measures that have been identified to reduce impacts for each project.

Alameda County Fire District (ACFD) has agreed to accept all mitigation measures listed in this checklist as conditions of approval of each of the projects, and to obtain all necessary permits.

3.2 Environmental Analysis

3.2.1 Aesthetics

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
1. AESTHETICS. Except as provided in Public Resources Code section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☐	☒
c) In non-urbanized 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 points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Environmental Setting

Scenic Vistas and Scenic Resources

Due to the topography of Alameda County, properties in the eastern hillside areas have scenic views of both the City of San Francisco and San Francisco Bay. Castro Valley is characterized by commercial, residential, and industrial development with little undeveloped open space. The proposed fire stations are located in a developed, urbanized area, and no scenic overlooks or scenic vistas are located within the vicinity of the proposed fire stations. The Castro Valley General Plan does not designate any official scenic vistas. However, views of East Bay Regional Park District land including Chabot Park and Cull Canyon to the north and east can be considered scenic vistas.

Visual Character

Fire Station 7

The area surrounding the Fire Station 7 project site is dominated visually by residences to the north, the existing Fire Station 7 to the east, and the Palomares Hills homeowners association (HOA) building to the west. Undeveloped open space is located southeast of Fire Station 7. The undeveloped open space is downslope of the project site and not visible from Villareal Drive.

Fire Station 25
The area surrounding the project site is dominated visually by residences to the north, the Bee Best Learning after school program to the south, a U.S. Postal Service office and apartments to the east, and the Adobe Park to the west across San Miguel Avenue.

Scenic Highways
California Department of Transportation (Caltrans) State Scenic Highways within Alameda County include Interstate 580 (I-580), State Route 13 (SR 13), I-680, SR 84, and SR 24 (Caltrans, n.d.). Within the vicinity of Castro Valley, I-580 is considered an "eligible" scenic highway and designated as a scenic route in the 1966 Scenic Route Element of the Alameda County General Plan (Alameda County 1966). The 1966 Scenic Route Element also identified I-880 (i.e., Nimitz Freeway) as an existing scenic route.

Impact Analysis

A and B) Would the Project have a substantial adverse effect on a scenic vista? Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

Fire Station 7 and Fire Station 25
The proposed project sites are located in developed areas of Castro Valley. No scenic vistas are located in proximity to the project sites. Fire Station 25 is located in a densely developed area with flat topography, and views of eastern hillside areas, including Chabot Park and Cull Canyon, would not be available. Fire Station 7 is located upslope of Castro Valley to the northeast. However, views of Chabot Park, Cull Canyon, and other hillside areas would not be visible due to intervening terrain and structures. The new fire stations would not be visible or perceptible from any scenic vista, including the eastern hillside areas in the County that have views of the city and the San Francisco Bay. No impact would occur.

The nearest State scenic highways to Fire Stations 7 and 25 is I-580. The proposed fire stations would not be visible from I-580 due to the distance between the project sites and the highways and intervening structures, which blocks views of the project sites. Because the proposed project would not be visible from any scenic highway or eligible scenic highway, no impact on scenic resources within a scenic highway would occur.

C) Would the Project in non-urbanized 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 points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Fire Station 7
Fire Station 7 is located in a suburban, residential area abutting open space. The proposed project would result in a significant impact if development would substantially degrade the existing visual character or quality of public views of the site and its surroundings. The proposed fire station would be constructed on the parcel located between the Palomares Hills HOA building and the existing fire station. The height and character of the proposed fire station would be similar to that of the surrounding residential and public facilities within the area and

would appear visually similar to the adjacent existing fire station. The proposed building and landscaping would appear visually consistent with the surrounding neighborhood context, and the resulting impact on visual character and quality would be less than significant.

Fire Station 25
As Fire station 25 is located in an urbanized area, the proposed project would result in a significant impact if development would conflict with applicable zoning and other regulations governing scenic quality. The project site is within the Castro Valley Central Business District Specific Plan area and zoned as Public Facilities (Alameda County Planning Department 1993). Public agency facilities are permitted uses of the Public Facilities zoning district. Therefore, the proposed fire station would be consistent with Castro Valley Central Business District Specific Plan zoning regulations. Because the project would comply with zoning and other regulations governing scenic quality in an urbanized area, the impact would be less than significant.

Interim Fire Station 25
Interim Fire Station 25 is located in an urbanized area, and the proposed project would result in a significant impact if development would conflict with applicable zoning and other regulations governing scenic quality. The interim Fire Station 25 project site is within the Castro Valley Central Business District Specific Plan area and zoned as Public Facilities (Alameda County Planning Department 1993). The building that would be used for interim Fire Station 25 currently exists, and the minor modifications to the building would be consistent with Castro Valley Central Business District Specific Plan zoning regulations. No impact would occur from conflict with zoning or other regulations governing scenic quality.

D) Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Fire Station 7
The project site is within a suburban, residential area with existing nighttime lighting. Primary sources of light adjacent the project site include lighting from the Palomares Hills HOA, residential properties, the existing Fire Station 7, and streetlights. The proposed project would construct a new fire station on the undeveloped lot on Villareal Drive.

The proposed project would have lighting mounted on the building exterior, footpath lighting, and ground-mounted lighting around the flagpole. The proposed light sources would not have a significant impact on nighttime light because all lighting would be shielded and directional and would conform with the Alameda County Dark Skies Ordinance, which aims to minimize artificial outdoor light and prevent excessive light and glare on private properties and public roadways (Alameda County, n.d.-c). The impact from lighting would thus be less than significant.

Fire station windows would reflect sunlight but would not create substantial glare that would be noticeable off site. The glare from windows would be similar to glare generated from adjacent buildings and would not be substantial. The impact from glare would be less than significant.

Fire Station 25 and Interim Fire Station 25

The project site is within a dense, urban environment with substantial daytime and nighttime light levels. Primary sources of light on and adjacent the project site include lighting from existing commercial and residential properties, and vehicle lights from traffic on San Miguel Avenue.

The proposed project would replace the existing Fire Station 25 located on San Miguel Avenue in Castro Valley. The proposed project would have lighting mounted on the building exterior, footpath lighting, and ground-mounted lighting around the flagpole. These light sources would not have a significant impact on nighttime light because all lighting would be shielded and directional and would conform with the Alameda County Dark Skies Ordinance, which aims to minimize artificial outdoor light and prevent excessive light and glare on private properties and public roadways (Alameda County, n.d.-c). The impact from lighting would be less than significant.

Fire station windows would reflect sunlight but would not create substantial glare that would be noticeable off site. The glare from windows would be similar to glare generated from other adjacent buildings and would not be substantial. The impact from glare would be less than significant. The impact would be less than significant.

Interim Fire Station 25 is an existing facility, and no modifications would be made to introduce new sources of light or glare. No impacts from light and glare would occur.

3.2.2 Agriculture and Forestry

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
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:				
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?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
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))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Impact Analysis

A) Would the Project 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?

B) Would the Project Conflict with existing zoning for agricultural use, or a Williamson Act contract?

C) Would the Project 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))?

D) Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

E) Would the Project 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?

Fire Station 7

The Fire Station 7 site is not located on land designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. There is land designated as Grazing Land to the east of the Project site, however the site is designated as Urban and Built-Up Land, which is not an agricultural designation (California Department of Conservation 2018). The site would be located on an undeveloped lot within a planned development area that does not contain any forest land. Therefore, no impact on agriculture or forestry resources would occur.

Fire Station 25 and Interim Fire Station 25

The proposed Fire Station 25 site is not located on land designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The site is designated as Urban and Built-Up Land, which is not an agricultural designation(California Department of Conservation 2018) and no forest land occurs within the site. Therefore, no impact on agriculture or forestry resources would occur.

3.2.3 Air Quality

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
3. 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?	☐	☐	☒	☐
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?	☐	☒	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

Environmental Setting

Air Basin

Alameda County is within the San Francisco Bay Area Air Basin (SFBAAB). The Bay Area Air Quality Management District (BAAQMD) is responsible for air quality management and regulates activities that may affect air quality within the SFBAAB. The San Francisco Bay Area (Bay Area) has a Mediterranean climate characterized by wet winters and dry summers. During the summer, a high-pressure cell centered over the northeastern Pacific Ocean results in stable meteorological conditions and a steady northwesterly wind flow that generally prevents storms from affecting the California coast. During the winter, the Pacific high-pressure cell weakens, resulting in increased precipitation and the occurrence of storms. The highest air pollutant concentrations in the Bay Area generally occur during inversions, when a surface layer of cooler air becomes trapped beneath a layer of warmer air.

Federal and State Regulations

The U.S. Environmental Protection Agency (USEPA) is responsible for setting National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (CAA). National primary standards "provide public health protection, including protecting the health of 'sensitive' populations such as asthmatics, children, and the elderly." National secondary standards "provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings" (USEPA 2024). A State Implementation Plan must integrate federal, State, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. If a state fails to enforce its implementation of approved regulations, or if the EPA determines that a State Implementation

Plan is inadequate, the EPA is required to prepare and enforce a Federal Implementation Plan to promulgate comprehensive control measures for a given State Implementation Plan.

The California Air Resources Board (CARB) is the State agency responsible for regulating mobile-source (vehicle) emissions and overseeing the activities of local air pollution control districts. CARB has established California Ambient Air Quality Standards (CAAQS) for all federally regulated pollutants in addition to sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The State standards generally are more stringent than the federal standards. Areas have been designated as being in attainment, nonattainment, or unclassified with respect to State ambient air quality standards under the California Clean Air Act (CCAA). In accordance with the Federal Clean Air Act and California Clean Air Act, areas in California are classified as either in attainment, maintenance (i.e., former nonattainment), or nonattainment of the NAAQS and CAAQS for each criteria air pollutant. To assess the regional attainment status, the BAAQMD collects ambient air quality data from over 30 monitoring sites within the SFBAAB. Based on current monitoring data, the SFBAAB is designated as a nonattainment area for ozone, PM_{10} (CAAQS only) and $PM_{2.5}$ and is designated an attainment or unclassified area for all other pollutants (see Table 3.2-1).

Table 3.2-1 Air Quality Standards and Attainment Status

Pollutant	Averaging time	CAAQS concentration	CAAQS attainment status	NAAQS concentration	NAAQS attainment status
Ozone	8 Hours	0.070 ppm	N	0.070 ppm	N (marginal)
	1-Hour	0.09 ppm	N	Revoked in 2005	—
Carbon monoxide	8 Hours	9.0 ppm	A	9 ppm	A
	1-Hour	20 ppm	A	35 ppm	A
Nitrogen dioxide	1-Hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	—	0.053 ppm	A
Sulfur dioxide	24 Hours	0.04 ppm	A	0.14 ppm	A
	1-Hour	0.25 ppm	A	0.075 ppm	A
	Annual	—	—	0.030 ppm	A
Coarse particulate matter (PM_{10})	Annual	20 µg/m^3	N	—	—
	24 Hours	50 µg/m^3	N	150 µg/m^3	U
Fine particulate matter ($PM_{2.5}$)	Annual	12 µg/m^3	N	12 µg/m^3	U/A
	24 Hours	—	—	35 µg/m^3	N (moderate)
Lead	30 Days	1.5 µg/m^3	A	---	—
	Calendar Quarter	—	—	1.5 µg/m^3	A

Pollutant	Averaging time	CAAQS concentration	CAAQS attainment status	NAAQS concentration	NAAQS attainment status
	Rolling 3 months	—	—	0.15 µg/m^3	A

Notes: CAAQS = California Ambient Air Quality Standards; NAAQS National Ambient Air Quality Standards; A = Attainment; N = Nonattainment; U = Unclassified; "---" = not applicable; ppm = parts per million; µg/m3 = micrograms per cubic meter; PST = Pacific Standard Time.

Source: (BAAQMD 2017a)

Regional Regulations

The BAAQMD's 2017 Clean Air Plan (CAP) is the applicable air quality plan for projects located in the SFBAAB (Bay Area Air Quality Management District (BAAQMD) 2017b). Consistency may be determined by evaluating whether the project supports the primary goals of the 2017 CAP, including applicable control measures contained within the 2017 CAP, and would not conflict with or obstruct implementation of any 2017 CAP control measures.

The primary goals of the 2017 CAP are the attainment of ambient air quality standards and reduction of population exposure to air pollutants for the protection of public health in the Bay Area.

The BAAQMD adopts rules and regulations that apply for development projects. Specific rules applicable to project construction and operation include, but are not limited to, the following rules (BAAQMD n.d.):

- Regulation 2, Rule 2, New Source Review. This rule applies to new or modified sources and contains requirements for best available control technology (BACT) and emission offsets. Rule 2 implements federal New Source Review and Prevention of Significant Deterioration requirements.
- Regulation 2, Rule 5 (New Source Review of TACs): This regulation outlines guidance for evaluating toxic air contaminant (TAC) emissions and their potential health risks. The Project Risk Requirement (2-5-302.1) states that the Air Pollution Control Officer shall deny an Authority to Construct or Permit to Operate for any new or modified source of TACs if the project cancer risk exceeds 10.0 in one million.
- Regulation 7, Odorous Substances. Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds.
- Regulation 9, Rule 8 (Stationary Internal-Combustion Engines): This regulation limits emissions of NO_x and CO from stationary internal-combustion engines of more than 50 hp.

BAAQMD CEQA Significance Thresholds

BAAQMD has adopted air quality significance thresholds for reactive organic compounds (ROC), oxides of nitrogen (NO_x), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$)

to determine where air emissions generated during project construction and operation would be significant, as shown in Table 3.2-2.

Table 3.2-2 BAAQMD's Thresholds of Significance

Impact analysis	Pollutant	Thresholds of significance
Regional air quality (construction)	ROG	54 pounds/day (average daily emission)
	NO_x	54 pounds/day (average daily emission)
	Exhaust PM_{10}	82 pounds/day (average daily emission)
	Exhaust $PM_{2.5}$	54 pounds/day (average daily emission)
	Fugitive dust (PM_{10} and $PM_{2.5}$)	Best management practices (BMPs)
Regional air quality (operation)	ROG	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
	NOx	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
	Exhaust PM_{10}	82 pounds/day (average daily emission) 15 tons/year (maximum annual emission)
	Exhaust $PM_{2.5}$	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
Local community risks and hazards (operation and/or construction)	$PM_{2.5}$ (project)	0.3 µg/m^3 (annual average)
	TACs (project)	Cancer risk increase > 10 in one million
	Chronic hazard index > 1.0	0.8 µg/m^3 (annual average)
	$PM_{2.5}$ (cumulative)	Cancer risk > 100 in one million Chronic hazard index > 10.0

Notes: µg/m^3 = micrograms per cubic meter

Source: (BAAQMD 2022)

BAAQMD has also developed screening criteria for criteria air pollutants. These screening criteria are not thresholds of significance. Instead, they provide lead agencies with a conservative indication of whether implementing a proposed project could result in potentially significant criteria air pollutant impacts. If all screening criteria for criteria air pollutants are met by a proposed project, then the lead agency would not need to perform a detailed assessment of the project's criteria air pollutant emissions.

According to the BAAQMD *2022 CEQA Guidelines* (BAAQMD 2022), if all of the following screening criteria are met, then construction of the proposed project would result in a less-than-significant impact related to criteria air pollutants and precursors:

1. The project size is at or below the applicable screening level size of 452,000 square feet for commercial and industrial land uses.
2. All best management practices are included in the project design and implemented during construction.
3. Construction-related activities would not overlap with operational activities.
4. Construction-related activities would not include:
    a. demolition,
    b. simultaneous occurrence of two or more construction phases (e.g., paving and building construction would occur simultaneously),
    c. extensive site preparation (e.g., grading, cut and fill, or earth movement),
    d. extensive material transport (e.g., soil import and export requiring a considerable amount of haul truck activity), or
    e. stationary sources (e.g., backup generators) subject to Air District rules and regulations.

If all of the following screening criteria are met, the operation of the proposed project would result in a less-than-significant impact related to criteria air pollutants and precursors:

1. The project size is at or below the applicable most conservative operational screening level size of 89,000 square feet for commercial and industrial land uses.
2. Operational activities would not include stationary engines (e.g., backup generators) and industrial sources subject to Air District rules and regulations.
3. Operational activities would not overlap with construction-related activities.

The BAAQMD's threshold of significance for local carbon monoxide concentrations is equivalent to the 1- and 8-hour California ambient air quality standards of 20.0 and 9.0 parts per million (ppm), respectively, because these represent levels that are protective of public health. The BAAQMD has developed conservative screening criteria that can be used to determine if a project would generate traffic congestion at intersections that could potentially cause or contribute to local carbon monoxide levels above the California ambient air quality standards. According to the BAAQMD, a project would result in a less-than-significant impact related to localized CO concentrations if all of the following screening criteria are met:

- The project is consistent with an applicable Congestion Management Program (CMP) established by the County Congestion Management Agency for designated roads or highways, regional transportation plans, and local congestion management agency plans.
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Sensitive Receptors

Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing, convalescent facilities, and residences in proximity to the projects.

Fire Station 7

The nearest sensitive receptors in the vicinity of the project site include residences to the north and west along Villareal Drive approximately 65 feet from the project site and Jensen Ranch Elementary School approximately 800 feet southwest of the project site.

Fire Station 25

The sensitive receptors in proximity to Fire Station 25 include residences adjacent the fire station, Bee Best Learning Center adjacent to the south, Castro Valley Elementary School approximately 170 feet to the northwest, ABC Preschool and Day Care approximately 485 feet to the north, Growing Years Preschool approximately 540 feet to the west, and Adobe Park approximately 50 feet west.

Interim Fire Station 25

The sensitive receptors in proximity to interim Fire Station 25 include residences approximately 70 feet from the site.

Impact Analysis

A) Would the proposed project conflict with or obstruct implementation of the applicable air quality plan?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

The control measures from the 2017 CAP, which aim to reduce air pollution and GHGs from stationary, area, and mobile sources, are organized into nine categories: stationary sources, transportation, buildings, energy, agriculture, natural and working lands, waste, water, and "super-pollutant" greenhouse gases (GHGs) (e.g., methane, black carbon, fluorinated gases). The proposed project would be consistent with applicable control measures from the 2017 CAP. Therefore, the proposed project would not conflict with or obstruct implementation of the applicable air quality plan, and the impact would be less than significant.

Table 3.2-3 Project Consistency with BAAQMD's 2017 CAP

Control measures	Project consistency
Stationary source	The stationary source measures, which are designed to reduce emissions from stationary sources, are incorporated into rules adopted by the BAAQMD and then enforced by the BAAQMD's Permit and Inspection programs. Operation of an emergency backup generator at Fire Station 7, and Fire Station 25 along with an aboveground fuel tank at Fire Stations 7 and 25 would be subject to the BAAQMD's permitting requirements for stationary sources. Therefore, the proposed projects would be **consistent** with the stationary source control measures of the 2017 CAP.

Control measures	Project consistency
Transportation	The transportation control measures are designed to reduce vehicle trips, use, miles traveled, idling, or traffic congestion for the purpose of reducing vehicle emissions. The proposed project would not change the number of employees, the service area, or the number vehicle trips generated relative to existing conditions. Therefore, the projects would be **consistent** with the transportation control measures in the 2017 CAP.
Energy	The energy control measures are designed to reduce emissions of criteria air pollutants, TACs, and GHGs by decreasing the amount of electricity consumed in the Bay Area as well as decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures primarily apply to electrical utility providers, the energy control measures of the 2017 CAP are **not applicable** to the proposed projects.
Buildings	The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters but has limited authority to regulate buildings themselves. Therefore, the building control measures focus on working with local governments that have authority over local building codes to facilitate adoption of best practices and policies to control GHG emissions. The projects will comply with the current Title 24 Building Energy Efficiency Standards, which include performance standards for energy-efficient appliances and heating and cooling systems. Therefore, the proposed projects would be **consistent** with the buildings control measures of the 2017 CAP.
Agriculture	Agriculture control measures are designed to primarily reduce emissions of methane. Since the proposed project does not include any agricultural activities, the agriculture control measures of the 2017 CAP are **not applicable** to the proposed projects.
Natural and working lands	The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetland as well as encouraging local governments to adopt ordinances that promote urban tree plantings. Since the proposed project does not include the disturbance of any rangelands or wetlands, the natural and working lands control measures of the 2017 CAP are **not applicable** to the proposed projects.
Waste management	The waste management measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The proposed project would comply with local requirements for waste management (e.g., recycling). Therefore, the proposed projects would be **consistent** with the waste management control measures of the 2017 CAP.
Water	The water control measures to reduce emissions from the water sector would reduce emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works, and promoting the use of biogas recovery systems. Since these measures primarily apply to publicly owned treatment works (sewage treatment plant that is owned, and usually operated, by a government agency), the water control measures of the 2017 CAP are **not applicable** to the proposed projects.

Control measures	Project consistency
Super-pollutant GHGs	The super-pollutant GHG control measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. Since these measures do not apply to individual developments, the super-pollutant GHG control measures of the 2017 CAP are **not applicable** to the proposed projects.

Source: (Baseline Environmental Consulting 2024a)

B) Would the proposed project 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?

Fire Station 7

Construction

Construction of the project would generate criteria pollutant emissions that could potentially impact regional air quality. Project excavation, grading, and material hauling activities during construction would generate fugitive dust PM_{10} and $PM_{2.5}$ emissions that could adversely affect regional air quality. The proposed project would construct a 7,883-square-foot fire station, which is below the BAAQMD's construction screening criteria of 452,000 square feet for commercial or industrial land use. Consistent with the BAAQMD's screening criteria, construction and operation of the proposed fire station would not overlap. Construction of the proposed project would not include demolition of the existing fire station or use of stationary sources (i.e., back-up generators) subject to BAAQMD's rules and regulations. Additionally, construction of the proposed project would require excavation to a depth of approximately 3 feet below ground surface, with an anticipated soil excavation volume of approximately 3,400 cubic yards and soil export volumes of approximately 1,500 cubic yards. Therefore, construction of the proposed project would not require extensive site preparation and material transport.

BAAQMD has defined *best management practices* (BMPs) that are required to reduce fugitive dust emissions during project construction. Because the project does not include the use of these measures, the impact from fugitive dust is potentially significant. Mitigation Measure AQ-1 requires implementation of BAAQMD BMPs for fugitive dust control. Through implementation of Mitigation Measure AQ-1, the impact from fugitive dust would be less than significant.

Operation

Project operation would generate criteria air pollutant emissions that could potentially affect regional air quality. The primary pollutant emissions of concern during project operation would be ROG, NO_x, and exhaust PM_{10} and $PM_{2.5}$ from mobile sources, energy use, area sources (e.g., consumer products, architectural coatings, landscape equipment), and stationary sources (i.e., generator). The proposed project would replace the existing 25-kilowatt generator with a new 100-kilowatt emergency diesel generator. Criteria air pollutant emissions during project operations were estimated using the most recent version of the California Emissions Estimator Model (CalEEMod) version 2022.1.

The estimated maximum annual emissions and average daily emissions during the operational phase of the proposed project are compared to the BAAQMD's thresholds of significance in Table 3.2-4 and Table 3.2-5, below. The estimated emissions for ROG, NOx, and exhaust PM_{10} and $PM_{2.5}$ during operation were below the thresholds of significance. Therefore, the impacts would be less than significant.

Table 3.2-4 Estimated Maximum Annual Emissions (Tons)

Emissions scenario	ROG	NO_x	PM_{10}	$PM_{2.5}$
Area sources	0.04	<0.01	<0.01	<0.01
Energy use	<0.01	0.01	<0.01	<0.01
Generator	0.01	0.03	<0.01	<0.01
Total	0.05	0.04	<0.01	<0.01
BAAQMD CEQA thresholds of significance	10	10	15	10
Threshold exceedance?	**No**	**No**	**No**	**No**

Source: (Baseline Environmental Consulting 2024a)

Table 3.2-5 Estimated Average Daily Emissions (Pounds)

Emissions scenario	ROG	NO_x	PM_{10}	$PM_{2.5}$
Area sources	0.22	<0.01	<0.01	<0.01
Energy use	<0.01	0.05	<0.01	<0.01
Generator	0.06	0.17	0.01	0.01
Total	0.29	0.22	0.01	0.01
BAAQMD CEQA Thresholds of Significance	54	54	82	54
Threshold exceedance?	**No**	**No**	**No**	**No**

Source: (Baseline Environmental Consulting 2024a)

Fire Station 25

Construction

Construction of the project would generate criteria pollutant emissions that could potentially impact regional air quality. Construction activities would include demolition, site preparation, grading, building construction, and paving. The impact analysis for criteria air pollutant emissions during construction includes ROG, NO_x, PM_{10}, and $PM_{2.5}$ from the exhaust of off-road construction equipment and on-road vehicles related to worker vehicles, vendor trucks, and haul trucks. In addition, fugitive dust emissions of PM_{10} and $PM_{2.5}$ would be generated by soil disturbance and demolition activities, and fugitive ROG emissions would result from paving.

Emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$ during project construction were estimated using the CalEEMod input parameters including land use type, construction phase, material movement, and demolition activities.

Project construction would last approximately 20 months. To analyze daily emission rates, the total emissions estimated during the construction were averaged over the total working days (450 days) and compared to BAAQMD's thresholds of significance. As shown in Table 3.2-6, the project's estimated emissions for ROG, NO_x, and exhaust PM_{10} and $PM_{2.5}$ are below the applicable thresholds.

Table 3.2-6 Estimated Average Daily Emissions (Pounds)

Emissions scenario	ROG	NO_x	PM_{10}	$PM_{2.5}$
Construction emissions	0.3	2.4	0.1	0.1
Thresholds of Significance	54	54	82	54
Exceed threshold?	**No**	**No**	**No**	**No**

Source: (Baseline Environmental Consulting 2024b)

BAAQMD does not have a quantitative threshold of significance for fugitive dust PM_{10} and $PM_{2.5}$ emissions; however, the BAAQMD considers implementation of the following BMPs to control dust during construction sufficient to reduce potential impacts to a less-than-significant level. Because the proposed project does not include the use of these measures, the impact from fugitive dust is potentially significant. Mitigation Measure AQ-1 requires implementation of BAAQMD BMPs for fugitive dust control. Through implementation of Mitigation Measure AQ-1, the impact from fugitive dust would be less than significant.

Operation

Project operation would generate criteria air pollutant emissions that could potentially affect regional air quality. The primary pollutant emissions of concern during project operation would be ROG, NO_x, and exhaust PM_{10} and $PM_{2.5}$ from mobile sources, energy use, area sources (e.g., consumer products), and stationary sources. Because the proposed project would replace the existing fire station including replacement of the existing generator with a new generator of comparable size, and would not introduce any new stationary sources, project operations are not expected to result in a substantial, if any, net increase in criteria air pollutant emissions. Furthermore, the project size (14,500 square feet) is well below the BAAQMD's most conservative screening criteria for criteria air pollutants related to commercial (49,000 square feet) and industrial (998,000 square feet) land uses. Therefore, operation of the proposed project would have a less-than-significant impact on regional air quality.

Interim Fire Station 25

The interim fire station would be located within an existing building, and construction is below the BAAQMD's construction screening criteria of 452,000 square feet for commercial or industrial land use. Consistent with the BAAQMD's screening criteria, construction and

operation of the interim fire station would not overlap. Construction of the proposed project would not include demolition or use of stationary sources subject to BAAQMD's rules and regulations. Because construction activities would fall below the BAAQMD screening threshold and would not involve very limited earthwork (20 cubic yards) due to use of an existing facility, the impact would be less than significant.

Operation of the interim fire station would also meet all three screening criteria for operational emissions established in the BAAQMD *2022 CEQA Guidelines*. Because operation would meet the screening criteria established by BAAQMD, the impact from operation would be less than significant.

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

Fire Station 7

Local Carbon Monoxide Concentrations

BAAQMD's threshold of significance for local CO concentrations is the same as the 1- and 8-hour CAAQS of 20 and 9 ppm, respectively, because these represent levels that are protective of public health. The proposed project would transfer operations from the existing fire station to the new fire station. The proposed project would comply with BAAQMD's screening criteria for local CO concentrations because the proposed project would not result in a substantial net increase in vehicle trips relative to existing conditions because the new fire station would be adjacent to the existing one that it would replace, and the new fire station would affect the same intersections. Traffic generated from the proposed project would not result in double the amount of traffic on nearby roadways and, therefore, would not result in a net increase in the potential exposure of existing sensitive receptors to carbon monoxide concentrations from project-generated traffic, and the impact from CO concentrations would be less than significant.

Toxic Air Contaminants

Project operations would be transferred from the existing fire station to the adjacent proposed fire station site and would not generate a net increase in diesel particulate matter and $PM_{2.5}$ from emergency vehicles and on-road vehicle tire wear, brake wear, and resuspension of entrained roadway dust.

The proposed project would replace the existing 25-kilowatt emergency diesel generator with a 100-kilowatt emergency diesel generator but is not expected to result in a substantial net increase in TACs because the emergency generator would only operate during power outages and testing. Furthermore, operation of stationary sources is subject to BAAQMD permitting requirements to minimize the potential exposure of nearby sensitive receptors to TACs. Therefore, the project would not result in a substantial net increase in the potential exposure of existing sensitive receptors to TAC concentrations from operation of stationary sources on the project site. The impact would be less than significant.

Fire Station 25

Construction

The proposed project would demolish the existing fire station on site. The demolition of existing fire station and related structures would be subject to BAAQMD's Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing), which limits asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses the national emissions standards for asbestos and contains additional requirements. The rule requires a lead agency and its contractors to notify the BAAQMD of any regulated renovation or demolition activity. The notification must include a description of the affected structures and the methods used to determine the presence of asbestos-containing materials. All asbestos-containing material found on site must be removed prior to demolition or renovation activity in accordance with BAAQMD Regulation 11, Rule 2, which includes specific requirements to ensure that asbestos-containing materials are disposed of appropriately and safely. Because the proposed project would be required to comply with BAAQMD Regulation 11, Rule 2, potential impacts for the exposure of nearby sensitive receptors to asbestos emissions would be less than significant.

Project construction would generate diesel particulate matter and $PM_{2.5}$ emissions from exhaust of off-road diesel construction equipment and fugitive $PM_{2.5}$ emissions from construction activities (e.g., demolition, grading, bulldozing). In accordance with guidance from the BAAQMD (2022) and Office of Environmental Health Hazard Assessment (OEHHA) (2015), a health risk assessment was conducted to estimate the incremental increase in cancer risk and chronic hazard index (HI) to sensitive receptors from diesel particulate matter (DPM) emissions during construction (Baseline Environmental Consulting 2024b). The acute HI for DPM was not calculated because an acute reference exposure level has not been approved by OEHHA and CARB, and the BAAQMD does not recommend analysis of acute non-cancer health hazards from construction activity.

The annual average concentrations of DPM and exhaust $PM_{2.5}$ concentrations during construction were estimated within 1,000 feet of the project using the U.S. Environmental Protection Agency's AERMOD air dispersion model. For this analysis, emissions of exhaust PM_{10} were used as a surrogate for DPM, which is a conservative assumption because more than 90 percent of DPM is less than 1 micron in diameter. The input parameters and assumptions used for estimating the dispersion of DPM and PM_{10} from off-road diesel construction equipment are included in Appendix A.

Daily emissions from construction were assumed to primarily occur between 7 a.m. and 5 p.m., Monday through Friday. The exhaust and fugitive dust from off-road equipment was represented in the AERMOD model as an area source encompassing the project site. Exhaust and fugitive dust emission rates for off-road equipment were based on the actual hours of work and averaged over the entire duration of construction.

The air dispersion model was used to estimate annual average concentrations of PM_{10} from project construction emissions. Based on the results of the air dispersion model (Appendix A), potential off-site health risks were evaluated for the *maximally exposed individual resident* (MEIR)

on the ground floor of a residential building located about 50 feet east of project site boundary, the *maximally exposed individual student* (MEIS) at the Bee Best Learning Center adjacent the project site to the south, the *maximally exposed individual worker* (MEIW) located at the Post Office about 165 feet northeast to the project site boundary, and the Recreational Receptor at the Adobe Park, located about 50 feet to the west of the project site boundary (see Figure 3.2-1 for MEIR, MEIS, MEIW, and Recreational Receptor locations).

Estimates of the health risks at the MEIR, MEIS, MEIW, and Recreational Receptor from exposure to DPM and PM2.5 concentrations during project construction are summarized and compared to the BAAQMD's thresholds of significance in Table 3.2-7. The estimated excess cancer risk and chronic HI for DPM and annual average PM2.5 concentration from construction emissions were below the thresholds of significance. Therefore, construction of the project would not expose existing sensitive receptors to substantial concentrations of TAC and PM2.5 from project construction. Impacts from exposure to pollutant concentrations during construction of Fire Station 25 would be less than significant.

For the MEIR, the incremental increase in cancer risk from on-site DPM emissions during construction was assessed for an infant exposed to DPM starting from birth. This exposure scenario represents the most sensitive individual who could be exposed to adverse air quality conditions in the vicinity of the project site. For the MEIS, it was conservatively assumed that a student between the ages of 2 and 16 years old would attend school at the Bee Best Learning Center during the entire construction duration. For the MEIW, it was conservatively assumed that an adult worker would work in the same location during the entire construction duration. For the Recreational Receptor, it was conservatively assumed that a child between the ages of 2 and 16 years old would play at the Adobe Park for 2 hours every day from 7 a.m. to 5 p.m. during the entire construction duration. It was conservatively assumed that the MEIR, MEIS, MEIW, and Recreational Receptor would be exposed to annual average DPM concentrations over the entire estimated duration of construction, which is about 20 months. The input parameters and results of the health risk assessment are included in Appendix A.

Estimates of the health risks at the MEIR, MEIS, MEIW, and Recreational Receptor from exposure to DPM and $PM_{2.5}$ concentrations during project construction are summarized and compared to the BAAQMD's thresholds of significance in Table 3.2-7. The estimated excess cancer risk and chronic HI for DPM and annual average $PM_{2.5}$ concentration from construction emissions were below the thresholds of significance. Therefore, construction of the project would not expose existing sensitive receptors to substantial concentrations of TACs and $PM_{2.5}$ from project construction. Impacts from exposure to pollutant concentrations during construction of Fire Station 25 would be less than significant.

Figure 3.2-1 MEIR, MEIS, MEIW, and Recreational Receptor Locations

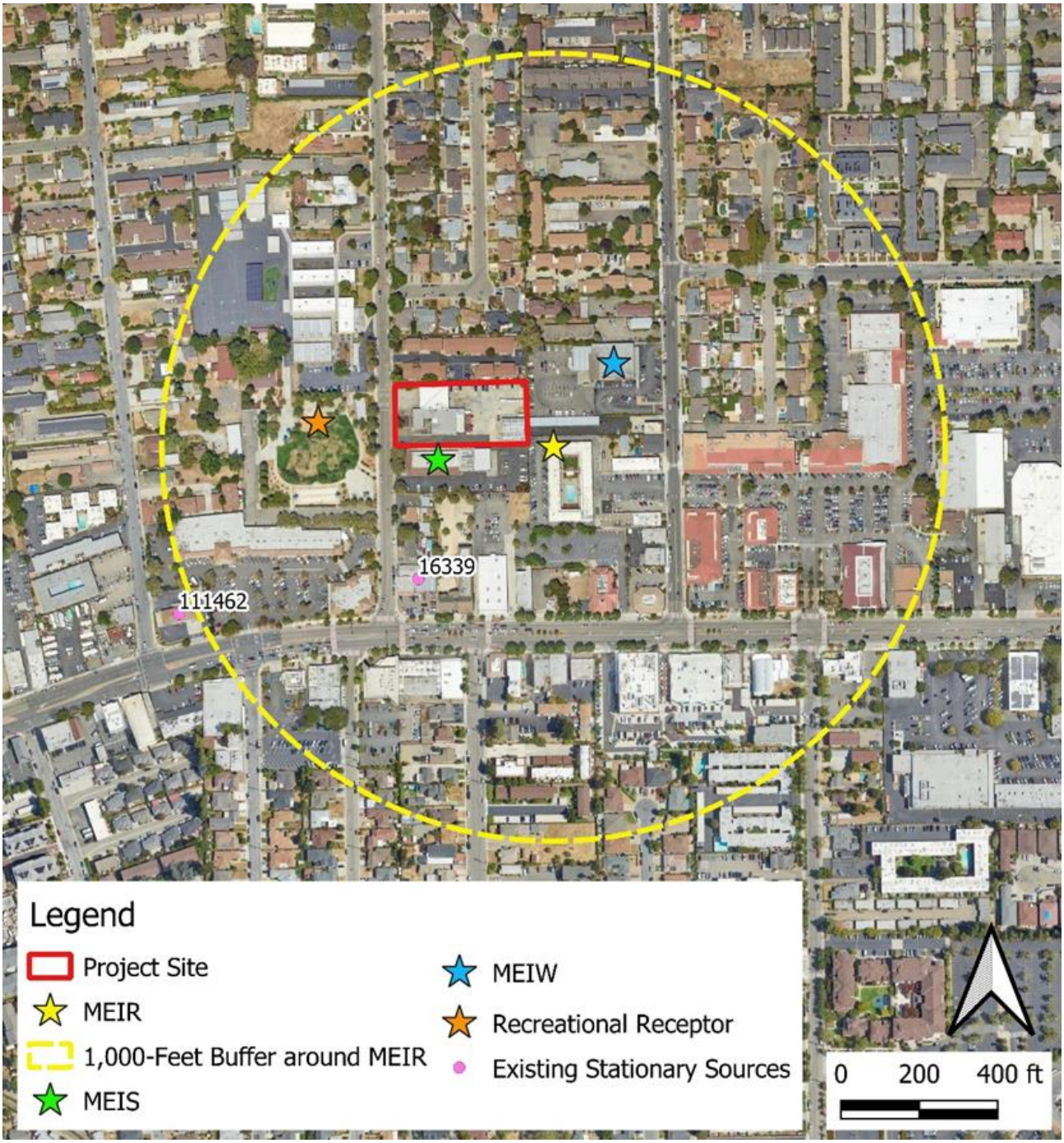


Table 3.2-7 Health Risks during Project Construction

Emissions scenario	Receptor	Diesel particulate matter		$PM_{2.5}$ annual average concentration ($\mu g/m^3$)
		Particulate matter cancer risk (per million)	Chronic hazard index	
Construction exhaust	MEIR	8.6	<0.01	0.13
	MEIS	1.7	<0.01	0.08
	MEIW	0.1	<0.01	0.02
	Recreational receptor	0.18	<0.01	0.02
Threshold of Significance		10	1.0	0.3
Exceed Threshold?		**No**	**No**	**No**

Source: (Baseline Environmental Consulting 2024b)

Operation

Local Carbon Monoxide Concentrations

The source of local CO concentrations is often associated with heavy traffic congestion at nearby intersections. The new fire station would be staffed with eight employees, which is one employee (two one-way commute trips) more than that for the existing fire station. The proposed project would comply with (and would not exceed) BAAQMD's screening criteria for local carbon monoxide concentrations because the proposed project would not result in a substantial net increase in vehicle trips relative to existing conditions. Therefore, the proposed project would not result in a net increase in the potential exposure of existing sensitive receptors to CO concentrations from project-generated traffic. Impacts for exposure to CO would be less than significant.

Toxic Air Contaminants

The proposed project would replace existing stationary sources (emergency generator and fuel tank) in kind and would not result in a net increase in TAC emissions. Furthermore, operation of stationary sources would be subject to BAAQMD permitting requirements to minimize the potential exposure of nearby sensitive receptors to TACs. Therefore, the project would not result in a net increase in the potential exposure of existing sensitive receptors to TAC concentrations from operation of stationary sources on the project site. Impacts would be less than significant.

Interim Fire Station 25

Construction of the interim fire station would generate DPM and $PM_{2.5}$ emissions from the exhaust of off-road diesel construction equipment and fugitive $PM_{2.5}$ emissions from construction activities. The nearest sensitive receptors to the north are single-family residences along Marshall Street as close as 150 feet to the proposed apparatus bay area and a multi-family apartment building to the east of the project site as close as 70 feet to the proposed apparatus

bay area. The predominant wind direction is to the southeast. The MEIR identified for the new fire station is located about 50 feet east of the project site boundary. Therefore, the nearest downwind sensitive receptor of the interim fire station is located further away than the MEIR evaluated for the new fire station. The construction health risk assessment performed for the new fire station represents a more conservative scenario compared to the interim fire station, due to the higher level of effort for construction (e.g. demolition), longer construction duration (20 months compared to five months), and sensitive receptor locations (50 feet compared to 70 feet). The interim fire station 's construction health risk impacts at nearby sensitive receptors would be less severe than what was analyzed for the new fire station, which would be less than significant. The interim fire station would also not introduce any stationary sources of pollution and would not result in increased vehicle travel/activity. The interim fire station would not expose sensitive receptors to substantial pollutant concentrations during construction or operation of the interim fire station. Impacts would be less than significant.

D) Would the proposed project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. Although offensive odors do not cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and the possibility of citizens submitting complaints to local governments and regulatory agencies. BAAQMD has developed a list of recommended odor screening distances for specific odor-generating facilities (BAAQMD 2022), such as wastewater treatment facilities, sanitary landfills, composting facilities, petroleum refineries, chemical manufacturing plants, and food processing facilities. None of the proposed fire stations would involve odor generating land uses. The fire stations would not introduce a new substantial source of odors. No impact from odors would occur.

Mitigation Measures

Mitigation Measure AQ-1: Fugitive Dust Control

The contractor shall implement the following fugitive dust control measures during construction:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.

- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
- All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
- Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.
- A publicly visible sign shall be posted with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD phone number shall also be visible to ensure compliance with applicable regulations.

3.2.4 Biological Resources

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
4. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
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 Game or US Fish and Wildlife Service?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Environmental Setting

Fire Station 7

The Fire Station 7 project site is undeveloped and contains non-native grassland vegetation. The project site is currently disturbed by routine vegetation management activities. No trees occur within the project site. Several redwood trees and one live oak are located within close proximity to the project site. All other trees within the vicinity of the project site are non-native, ornamental trees.

Fire Station 25 and Interim Fire Station 25
The Fire Station 25 project site is developed and does not contain native vegetation communities or habitat. The project site contains two trees. The Interim Fire Station 25 site contains an existing administration building.

Special-Status Species
Fire Station 7
Searches of biological records databases, including U.S. Fish and Wildlife Service's (USFWS's) Critical Habitat Mapper and National Wetlands Inventory, the California Natural Diversity Database (CNDDB), California Native Plant Society (CNPS) Inventory of Rare Plants, and eBird, were conducted to determine if any special status plant or wildlife are known to occur, are expected to occur, or have the potential to occur in the project site vicinity or if the project site and immediate vicinity contains suitable habitat (CDFW 2024a; CNPS, n.d.-a; eBird, n.d.-a; USFWS 2015; 2024).

Special Status Plant Species
Special status plant species with potential to occur within the project site vicinity are detailed in Table 3.2-8. As detailed in Table 3.2-8, 13 special-status plant species were recorded within the U.S. Geological Survey (USGS) 7.5-minute series Hayward and Dublin quadrangles. The existing site is highly disturbed by vegetation management activities including grading and annual vegetation removal. There are no prior records of special-status plant occurrences on the project site and the level of disturbance would preclude establishment of special-status plant populations.

Special Status Wildlife Species
The CNNDB record indicated that 17 special status wildlife species are known to occur within USGS Hayward and Dublin quadrangles (California Department of Fish and Wildlife (CDFW) 2024; California Native Plant Society (CNPS), n.d.; eBird, n.d.; U.S. Fish and Wildlife Service (USFWS) 2015; 2024), as shown in Table 3.2-9. Fourteen of the species that have been documented within the USGS Hayward and Dublin quadrangles lack suitable habitat onsite and are presumed absent from the site. A wildlife survey was conducted on August 3, 2023, for special status wildlife species with potential to occur on the project sites. No special-status wildlife species were observed during the wildlife survey. No trees are present on the project site that would provide nesting habitat for birds. No suitable bird nesting habitat occurs on the project site or adjacent.

Three special-status species have a low potential to occur on the site, including the Alameda whipsnake, Crotch's bumble bee, and western bumble bee. Due to the annual clearing of vegetation on the project site, suitable nesting habitat for bumble bees is highly unlikely. Due to the absence of rock outcrops or cover on the project site, the site lacks habitat elements that provide cover for Alameda whipsnake and Alameda whipsnake would not occupy the open grasslands on site. The project site is surrounded by development, with the exception of an approximately 70-foot-long area that is open to undeveloped open space where Alameda

whipsnake could occur. Due to the connection to open space areas, there is a very low potential that an Alameda whipsnake could disperse onto the site.

Table 3.2-8 Special-Status Plant Species with Potential to Occur in the Project Area

Common Name *(family)*	Scientific name [a]	Regulatory status	Habitat: microhabitat; elevation; blooming period [b]	Potential to occur
Bent-flowered fiddleneck	*Amsinckia lunaris*	CNPS 1B.2	Annual herb; blooms March to June; found in cismontane woodlands, Coastal bluff scrub, Valley and foothill grassland, between 3 and 500 m in elevation	**Low.** Project site is highly disturbed by vegetation management. One CNDDB record of 25 plants approximately 3 miles to the northwest of the project location. No suitable habitat present on site.
Alkali milk vetch	*Astragalus tener* var. *tener*	CNPS 1B.2	Annual herb; blooms March to June; found in playas, valley and foothill grassland (adobe clay), and vernal pools, up to 60 m elevation	**Low.** Project site is highly disturbed by vegetation management. No suitable habitat present and no CNDDB occurrence records.
Big-scale balsamroot	*Balsamorhiza macrolepis*	CNPS 1B.2	Perennial herb; blooms March to June; found in chaparral, cismontane woodland, valley and foothill grassland, between 45 and 1555 m in elevation	**Low.** Project site is highly disturbed by vegetation management. No suitable habitat present on site, and no CNDDB occurrence records.
Congdon's tarplant	*Centromadia parryi* ssp. *congdonii*	CNPS 1B.1	Annual herb; blooms May to Oct/Nov; found in valley and foothill grassland in alkaline soils, up to 230 m elevation	**Low.** Project site is highly disturbed by vegetation management. No suitable habitat present on site, and no CNDDB occurrence records.
Jepson's coyote-thistle	*Eryngium jepsonii*	CNPS 1B.2	Perennial herb; blooms April to Aug; found in valley and foothill grassland, and vernal pools, from 3 to 300 m elevation	**Low.** Project site is highly disturbed by vegetation management. No suitable habitat present on site and no CNDDB occurrence records.

Common Name *(family)*	Scientific name [a]	Regulatory status	Habitat: microhabitat; elevation; blooming period [b]	Potential to occur
Fragrant fritillary	*Fritillaria liliacea*	CNPS 1B.2	Perennial bulbiferous herb; blooms Feb to April; found in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland, from 3 to 410 m elevation	**Low.** Project site is highly disturbed by vegetation management. No suitable habitat present on site and no CNDDB occurrence records.
Diablo helianthella	*Helianthella castanea*	CNPS 1B.2	Perennial herb; blooms Mar to June; found in broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland, from 60 to 1300 m elevation	**Low.** Project site is highly disturbed by vegetation management. One CNDDB record of two colonies approximately 1.5 miles to the northwest of the project region. No suitable habitat present on site
Loma Prieta hoita	*Hoita strobilina*	CNPS 1B.1	Perennial herb; blooms May/June to Jul/Aug; found in chaparral, cismontane woodland, and riparian woodland, from 30 to 860 m elevation	**Low.** Project site is highly disturbed by vegetation management. Possibly extirpated. No suitable habitat present on site. Last CNDDB record in project vicinity is from 1865.
Santa Cruz tarplant	*Holocarpha macradenia*	CNPS 1B.1 FT, SE	Annual herb; blooms June to Oct; found in coastal prairie, coastal scrub, and valley and foothill grassland, from 10 to 220 m elevation	**Low.** Project site is highly disturbed by vegetation management. No suitable habitat present on site, and no CNDDB occurrence records.
Woodland woolythreads	*Monolopia gracilens*	CNPS 1B.2	Annual herb; blooms from Feb/Mar to June; found in serpentine soil in openings in broadleafed upland forest, chaparral, and North Coast coniferous forest, as well as in cismontane woodland, and valley and foothill grassland, from 100 to 1200 m elevation	**Low.** Project site is highly disturbed by vegetation management. No suitable habitat present on site. Last CNDDB record in project vicinity is from 1888.

Common Name *(family)*	Scientific name [a]	Regulatory status	Habitat: microhabitat; elevation; blooming period [b]	Potential to occur
hairless popcornflower	*Plagiobothrys glaber*	CNPS 1A	Annual herb; blooms from Mar to May; found in coastal salt marshes and swamps, and alkaline meadows and seeps, from 15 to 180 m elevation	**Low.** Project site is highly disturbed by vegetation management. No suitable habitat in project area. CNPS rank indicates species is presumed extirpated or extinct.
Oregon polemonium	*Polemonium carneum*	CNPS 2B.2	Perennial herb; blooms from Apr to Sep; found in coastal prairie and scrub, and lower montane coniferous forest, up to 1830 m elevation	**Low.** Project site is highly disturbed by vegetation management. No suitable habitat present on site, and no CNDDB occurrence records.
Most beautiful jewelflower	*Streptanthus albidus* ssp. *peramoenus*	CNPS 1B.2	Annual herb; blooms from Mar/Apr to Sep/Oct; found on serpentine soil in chaparral, cismontane woodland, and valley and foothill grassland, from 95 to 1000 m elevation	**Low.** Project site is highly disturbed by vegetation management. No suitable habitat present on site and no CNDDB occurrence records.

Notes:

[a] S = subnational/state conservation status, critically imperiled (S1) to secure (S5)
CE = listed as endangered by the State of California
CR = listed as rare by the State of California
CRPR = California Rare Plant Rank; CRPR ranges from 1A (presumed extirpated in California and either rare or extinct elsewhere to 4 (plants of limited distribution, watch list). Ranks at each level also include a threat rank from seriously threatened (0.1) to not very threatened (0.3).

[b] Elevation range within the study area is 550 to 975 set.

Source: (CDFW 2024a; CNPS, n.d.-a; eBird, n.d.-a; USFWS 2015; 2024)

Table 3.2-9 Special-Status Wildlife Species with Potential to Occur in the Project Area

Common name	Scientific name	Regulatory status	Habitat	Potential to occur
Crotch's bumblebee	*Bombus cotchii*	SCE	Nests in tall grasslands and open scrub habitats of valley floors and gentle foothills.	**Low**. Project site is highly disturbed by regular vegetation management (e.g., grubbing and scraping); thus, suitable nesting habitat onsite does not occur. Individuals might occasionally forage onsite on flowering herbs, depending on the timing of vegetation management activities, but the chances are considered low given the level of site disturbance.
Western Bumble Bee	*Bombus occidentalis*	SCE	Mostly nests in trees of open landscapes, including grasslands, agricultural fields and coastal marshes.	**Low**. Project site is highly disturbed by regular vegetation management (e.g., grubbing and scraping); thus, suitable nesting habitat onsite is unlikely. Individuals might occasionally forage onsite on flowering herbs, depending on the timing of vegetation management activities, but the chances are considered low given the level of site disturbance.
California Tiger Salamander	*Ambystoma californiense*	FT, ST	Nests in secluded trees in vicinity of lakes, reservoirs and large rivers.	**Absent**. Site lacks breeding habitat. Uplands isolated from potential ponds in the region. NO CNDDB records from the project region.
California Red-legged Frog	*Rana draytoni*	FT, SSC	In winter found in foothill woodlands, valley grasslands and coastal marshes.	**Absent.** CNDDB record of California red-legged frog approximately 0.86 mile to the southeast of the project site. However, project site lacks breeding and upland dispersal habitats.
Foothill Yellow-legged Frog	*Rana boylii*	ST, FPE	A bird of open country, oftentimes near water along the coast. Nests on cliff faces, escarpments and sometimes manmade structures (e.g., bridges).	**Absent.** Historic CNDDB record of foothill yellow-legged frog from the Hayward area but thought to be extirpated from the area. Project site lacks breeding habitat.

Common name	Scientific name	Regulatory status	Habitat	Potential to occur
Alameda Whipsnake	*Masticophis lateralis euryxanthus*	FT, ST	In the project region, nests mostly in dense stands of live oak, with adjacent open fields.	**Low**. Project site is highly disturbed by vegetation management by the use of a tractor and is isolated on three sides by development. CNDDB records from the general project region, including a record from 0.80 mile to the northeast of the project site. Potential habitat to the east. The site lacks rocks or any refugia for Alameda whipsnake. Whipsnake could potentially temporarily disperse onto the site from areas to the east.
Golden Eagle	*Aquila chrysaetos*	FP, ST	Nests in coastal marshes and moist grasslands in the fog belt, less so in interior grasslands.	**Absent**. No CNDDB nesting records from the project site vicinity. Some eBird records from the general project region during the breeding season, but the site lacks nesting and foraging habitat. Transients likely to be seen flying over the project site.
Northern Harrier	*Circus cyaneus*	SSC	Roosts in buildings, large tree hollows, rock outcrops and under bridges. Oftentimes associated with oak woodlands.	**Absent**. No CNDDB nesting records from the project site vicinity. Some eBird records from the general project region during the breeding season, but the site lacks nesting habitat. Transients likely to be seen flying over the project site.
White-tailed Kite	*Elanus leucurus*	SSC	Roosts in crevices of rock outcrops and cracks in large buildings high above the ground.	**Absent**. No CNDDB nesting records from the project site vicinity. Some eBird records from the general project region during the breeding season, but the site lacks nesting habitat. Transients likely to be seen flying over the project site.
Bald Eagle	*Haliaeetus leucocephalus*	SE	Found in sandy and powdery soils of grasslands with scattered shrubs and along arroyos.	**Absent** No CNDDB nesting records from the project site vicinity. Some eBird records from the general project region during the breeding season, including a family group foraging at Chabot Lake. But the site lacks nesting and foraging habitat. Transients likely to be seen flying over the project site.

Common name	Scientific name	Regulatory status	Habitat	Potential to occur
Merlin	*Falco columbarius*	SSC	Nests in tall grasslands and open scrub habitats of valley floors and gentle foothills.	**Absent**. No CNDDB records from the project site vicinity. Some eBird records from the general project region, but the site is small and lacks quality foraging habitat. Transients likely to be seen flying over the project site.
Peregrine Falcon	*Falco peregrinus*	FP	Mostly nests in trees of open landscapes, including grasslands, agricultural fields and coastal marshes.	**Absent**. No CNDDB nesting records from the project site vicinity. Some eBird records from the general project region, mostly during the non-breeding season. The site lacks nesting and quality foraging habitat. Transients likely to be seen flying over the project site.
Long-eared Owl	*Otus asio*	SSC	Nests in secluded trees in vicinity of lakes, reservoirs, and large rivers.	**Absent**. No CNDDB nesting records from the project site vicinity. eBird records are blocked from the general public. The site lacks nesting habitat. Potential nesting habitat is present in the bay-oak woodland along the drainage corridor to the east.
Bryant's Savannah Sparrow	*Passerculus sandwichensis alaudinus*	SSC	In winter found in foothill woodlands, valley grasslands and coastal marshes.	**Absent**. No CNDDB nesting records from the project site vicinity. Some eBird records from the general project region during the breeding season, but the site lacks nesting habitat, due to vegetation management. Transients may occur onsite during migration/dispersal, as potential nesting habitat may be present east of the project site.
Pallid Bat	*Antrozous pallida*	SSC	A bird of open country, oftentimes near water along the coast. Nests on cliff faces, escarpments and sometimes manmade structures (e.g., bridges).	**Absent**. Two CNDDB historical records from Hayward. The site lacks roosting habitat.

Common name	Scientific name	Regulatory status	Habitat	Potential to occur
Western Mastiff Bat	*Eumops perotis californicus*	SSC	In the project region, nests mostly in dense stands of live oak, with adjacent open fields.	**Absent**. One CNDDB historical record from Hayward. The site lacks roosting habitat.
San Francisco Dusky-footed Woodrat	*Neotoma fuscipes annectens*	SSC	Nests in coastal marshes and moist grasslands in the fog belt, less so in interior grasslands.	**Absent**. The CNDDB contains one record from south of I-580. However, potential habitat is absent onsite.

Notes:

S = subnational/state conservation status, critically imperiled (S1) to secure (S5)

FC = candidate for federal listing

FT = federally listed as threatened

FE = federally listed as endangered

FPT - federal proposed threatened

SE - state endangered

SSC = CDFW species of special concern

BCC = USFWS bird of conservation concern

CDFW FP = fully protected by State of California

CDFW WL = State of California watch list

WBWG: Western Bat Working Group High ('H') Priority

Source: (CDFW 2024a; CNPS, n.d.-a; eBird, n.d.-a; USFWS 2015; 2024)

Fire Station 25 and Interim Fire Station 25
The project site is developed and does not contain any suitable habitat for special status plants or wildlife.

Impact Analysis

A) Would the proposed project 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 Game or U.S. Fish and Wildlife Service?

Fire Station 7
Due to the absence of special status plants on the project site, construction and operation of the project would have no impact on special status plants.

Fire Station 7 is within the range of Crotch's bumblebee and western bumblebee d. However, vegetation management activities of the undeveloped site occur approximately twice a year and typically includes discing and grading of the site using a dozer. Therefore, due to the regular vegetation management activities, suitable habitat for foraging plants does not occur and the project construction would thus have no impact on Crotch's bumble bee and western bumble bee.

The proposed project construction would involve grading and earthwork in areas that contain suitable dispersal habitat for Alameda whipsnake due to proximity to Alameda whipsnake habitat east of the project site. While the project site lacks rocks or refugia for Alameda whipsnake, if an Alameda whipsnake entered the site during construction, the impact on the whipsnake could be significant. Mitigation Measure BIO-1 defines procedures to avoid Alameda whipsnake. Workers would receive environmental awareness training for the Alameda whipsnake prior to ground-disturbing activities. If an Alameda whipsnake is observed on the project site during construction, work within 100 feet of the snake would halt and a qualified biologist would be contacted. Construction activities would not resume until the snake has left the work area on its own. Because the project would avoid Alameda whipsnake with implementation of Mitigation Measure BIO-1, the impact would be less than significant with mitigation.

Fire Station 25
The project site is developed and does not contain suitable habitat for special status plants or wildlife. Therefore, no impact on special status plants or wildlife would occur.

Nesting birds are protected under the Migratory Bird Treaty Act and sections 3503, 3503.5, and 3800 of the California Fish and Game Code. Construction of the proposed project would require the removal of two existing trees. Construction activities would comply with the Migratory Bird Treaty Act and associated regulations and avoid removing trees where nests are found. While the project site is developed, the trees on site could provide nesting habitat for protected bird species adapted to urban environments. Equipment use and earth-disturbing activities could result in nest destruction or mortality of young during the nesting season when an active nest is present. Use of heavy equipment could cause nest abandonment if construction occurs near an

active nest during the nesting season. Loss of an active nest, whether directly through vegetation removal or indirectly because of adjacent noise and activity, would be a significant impact. Mitigation Measure BIO-2 would require nesting bird surveys for construction activities that occur during the breeding season (February 15 through August 31). Impacts to nesting birds and special-status species would be less than significant with implementation of Mitigation Measure BIO-2.

Interim Fire Station 25

The existing administration building does not provide any habitat for special-status species or other wildlife. No impact would occur from use of interim Fire Station 25.

B) Would the proposed project 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 Game or U.S. Fish and Wildlife Service?

Fire Station 7

The project site contains non-native grassland and does not contain any sensitive natural communities or riparian habitat. The project would have no impact on riparian habitat and sensitive natural communities due to the absence of riparian habitat and sensitive natural communities on the site.

Fire Station 25, and Interim Fire Station 25

The project sites are located on developed land, surrounded by urban development, and the sites do not contain riparian habitat or other sensitive natural communities. The proposed projects would not impact riparian habitat or sensitive natural communities.

C) Would the proposed project 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?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

No wetlands are present at Fire Station 7, Fire Station 25, or interim Fire Station 25 project sites. No impacts on wetlands would occur.

D) Would the proposed project 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?

Fire Station 7

The proposed project is within a suburban area on an undeveloped site. While the project site is undeveloped, the site does not contain established native resident or migratory wildlife corridors, native wildlife nursery sites, or aquatic habitat. No impacts related to the movement of any native resident or migratory fish or wildlife species would occur.

Fire Station 25, and Interim Fire Station 25

The Fire Station 25 and interim Fire Station 25 project sites are developed sites in urban areas that do not contain established native resident or migratory wildlife corridors, native wildlife nursery sites, or aquatic habitat. No impacts related to the movement of any native resident or

migratory fish or wildlife species would occur as a result of the Fire Station 25 or interim Fire Station 25 proposed projects.

E) Would the proposed project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Fire Station 7

Fire Station 7 would not require the removal of any trees that are protected under the Alameda County Tree Ordinance. No other policies protecting biological resources would apply to the project. Therefore, the proposed project would not conflict with any policies or ordinances protecting biological resources. No impact would occur.

Fire Station 25

The Alameda County Tree Ordinance protects all trees located within the County right-of-way. Tree permits are not required for the removal of trees on private property in Alameda County. The proposed projects would each remove two trees. None of the trees that would be removed during construction meet the criteria to be protected under the City's tree ordinance. Therefore, the proposed project would not conflict with any policies or ordinances protecting biological resources. No impact would occur.

Interim Fire Station 25

The interim Fire Station 25 would use an existing facility and would not require removal of any trees. The proposed project would not conflict with any policies or ordinances protecting biological resources. No impact would occur.

F) Would the proposed project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

There are no adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan applicable to the projects or project sites. No impact would occur.

Mitigation Measures

Mitigation Measure BIO-1: Alameda Whipsnake Avoidance for Fire Station 7

Worker Training

- Before beginning construction at Fire station 7, all contractor personnel involved in ground-disturbing activities are required to attend a worker environmental awareness training that includes information about Alameda whipsnake, including their life history requirements and how to identify Alameda whipsnake.
- The contractor is responsible for ensuring that all workers requiring environmental training receive environmental training prior to work on the project.
- Prior to accessing the Fire Station 7 project site or performing construction work, the identified contractor personnel shall:
  - Sign an attendance sheet verifying that the personnel has attended the worker environmental awareness training; have understood the contents of

the environmental training, and shall comply with all project environmental requirements; and
  - Display an environmental training hard hat decal at all times.

Alameda Whipsnake Avoidance

If an Alameda whipsnake is observed on the project site during construction of Fire Station 7, work within 100 feet of the snake shall immediately halt and a qualified biologist with a Section 10(a)(1)(a) permit for Alameda whipsnake shall be contacted. No activity can commence in the vicinity of the snake until the snake has left the work area on its own. The qualified biologist shall document the Alameda whipsnake and report the occurrence to CDFW and USFWS.

Mitigation Measure BIO-2: Nesting Bird Surveys

A pre-construction survey shall be performed at Fire Station 25 prior to construction. The following measures shall be implemented:

- Use of heavy equipment, grading, demolition, construction, and/or tree removal, shall avoid the nesting season to the greatest extent feasible.
- If use of heavy equipment, grading, demolition, construction, and/or tree removal are scheduled to occur during the nonbreeding season (September 1 through February 15), no measures are required.
- If construction activities occur during the nesting season, a pre-construction survey for active bird nests in the project site shall be conducted on the project site and within 500 feet of the project site by a qualified biologist
  - If no nesting or breeding behavior is observed, construction may proceed.
  - If an active nest is detected, a determination shall be made by a qualified biologist as to whether construction work could affect the active nest. If it is determined that construction would not affect an active nest, work may proceed. If it is determined that construction activities are likely to impair the successful rearing of the young, a "no-disturbance buffer" in the form of orange mesh Environmentally Sensitive Area (ESA) fencing shall be established around occupied nests to prevent destruction of the nest and to prevent disruption of breeding or rearing behavior. The extent of the "no-disturbance buffer" shall be no less than 300 feet (500 feet for raptors), a smaller buffer may be determined by a qualified biologist in consultation with CDFW. "No-disturbance buffers" shall be maintained until the end of the breeding season or until a qualified wildlife biologist has determined that the nestlings have fledged. A qualified wildlife biologist shall inspect the active nest to determine whether construction activities are disturbing to the nesting birds or nestlings. If the qualified wildlife biologist determines that construction activities pose a disturbance to nesting, construction work shall be stopped in the area of the nest and the "no-disturbance buffer" expanded.

3.2.5 Cultural Resources

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
5. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Environmental Setting

A cultural resources investigation was conducted to identify any historic or pre-historic cultural resources within the project areas (AHC 2024). The study included a records search for Fire Stations 7 and 25 at the Northwest Information Center on December 11, 2023 (NWIC 23-0699). The records search was completed for 0.25 mile around each property.

Pre-Contact Resources

Fire Station 7 and Fire Station 25

Since the Fire Station 7 project site is undeveloped, an archaeological sensitivity assessment was also completed for the site (AHC 2024). The assessment found the Fire Station 7 and Fire Station 25 project sites have low sensitivity for buried Native American archaeological deposits and surface deposits and very low sensitivity for buried historic archaeological deposits. No cultural resources were identified at the Fire Station 7 and 25 properties or within a 0.25-mile radius (AHC 2024).

Historic Resources

Fire Station 7

Fire Station 7 was constructed in 1986 and is less than 45 years old Therefore, Fire Stations 7 is not an eligible historic resource.

Fire Station 25

Fire Station 25 was constructed in 1966 and is more than 45 years old. A historic resources study was conducted for Fire Station 25 to assess the fire station's eligibility as a historic resource (JRP Historical Consulting 2023). The study included a field survey which included digital photography and written descriptive notes of Fire Station 25 and its ancillary structures. Additionally, the study included research at the Hayward Area Historical Society and the Castro Valley Library to develop a historic context of development for Fire Station 25 through historic newspapers, aerial photography, and secondary histories (JRP Historical Consulting 2023). The study concluded that Fire Station 25 does not meet the criteria for listing in the

National Register of Historic Places (NRHP) or California Register of Historic Places (CRHR) (JRP Historical Consulting 2023). Furthermore, the study found that Fire Station 25 is not a historical resource under CEQA as defined in CEQA Guidelines section 15064.5(a) (JRP Historical Consulting 2023).

Impact Analysis

A) Would the proposed project cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

Fire Station 7

No listed or eligible historic resources are known to occur within 0.25 mile of the project site (AHC 2024). The existing fire station is not an eligible historic resource, and removal of the fire station would not affect the significance of a historic resource. Excavation and grading would disturb soils on site that could result in the discovery of unknown historical resources. The proposed project's impact on historic resources would be less than significant.

Fire Station 25

No listed or eligible historic resources are known to occur within 0.25 mile of the project site. The existing fire station is not an eligible historic resource, as discussed above, and removal of the fire station would not affect the significance of a historic resource. The project site is developed. Development of the project would occur within areas that were previously disturbed by existing development where significant historic resources would not occur. The proposed project would therefore not affect the significance of a historic resource.

Interim Fire Station 25

Interim fire station 25 would occur at an existing public facility and would not change the facility. No impact on the significance of a historic resource would occur.

B) Would the proposed project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Fire Station 7

The project site is currently undeveloped and is located in a residential area. The cultural records search did not identify any archaeological resources within 0.25 mile of the project site. As discussed above, the proposed project would have low sensitivity for buried Native American archaeological deposits and surface deposits and very low sensitivity for buried historic archaeological deposits. While the area has low sensitivity for archaeological resources, excavation and grading activities may disturb previously unknown archaeological resources, which would be a significant impact. Mitigation Measure CUL-1 requires work to halt within 50 feet of an unanticipated archaeological discovery until the resource is examined by a qualified archaeologist. The potential impact on cultural resources would be less than significant with implementation of Mitigation Measure CUL-1.

Fire Station 25

The project site is located within an urban area that is currently developed with the existing fire station. Subsurface soils were previously disturbed to accommodate the existing fire station

development. The cultural records search did not identify any archaeological resources within 0.25 mile of the project site. Excavation and grading activities may disturb previously unknown archaeological resources. Mitigation Measure CUL-1 requires work to halt within 50 feet of an unanticipated archaeological discovery until the resource is examined by a qualified archaeologist. The potential impact on cultural resources would be less than significant with implementation of Mitigation Measure CUL-1.

Interim Fire Station 25
Interim fire station 25 would occur at an existing public facility and would not change the facility. No impact on the significance of an archaeological resource would occur.

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

Fire Station 7, Fire Station 25, and Interim Fire Station 25
No known human remains have been identified on the proposed project sites or in the project site vicinity. In the unlikely event that human remains are unearthed during ground disturbing activities, State Health and Safety Code section 7050.5 requires that no further disturbance occurs until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code section 5097.98. If the remains are determined to be of Native American descent, the Coroner would have 24 hours to notify the California Native American Heritage Commission (NAHC). The NAHC would identify a Native American Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. CEQA Guidelines section 15064.5 directs a lead agency (or applicant), under certain circumstances, to develop an agreement with the MLDs for the treatment and disposition of the remains and any associated grave goods. Native American human remains and associated grave goods would be treated with culturally appropriate dignity. Impacts to human remains as a result of the proposed project would be less than significant.

Mitigation Measures

Mitigation Measure CUL-1: Inadvertent Discovery of Archaeological Resources

If evidence of any subsurface archaeological features or deposits are discovered during construction-related earth-moving activities, all ground-disturbing activity in the area of the discovery shall be halted within 50 feet of the find, and the finds shall be protected until they are examined by a qualified archaeologist approved by the County. Finds may include but are not limited to the following:

- Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish remains; stone-milling equipment (e.g., mortars, pestles, handstones, milling slabs); and battered stone tools, such as hammerstones and pitted stones

- Historic-era materials might include building or structure footings and walls and deposits of metal, glass, and/or ceramic refuse

A qualified archaeologist who meets the U.S. Secretary of the Interior's professional qualifications in archaeology and is approved by the County shall be retained to assess the significance of the find and make recommendations for further evaluation and treatment as necessary. A Native American representative from a traditionally and culturally affiliated tribe shall be notified and invited to assess the find if the artifacts are of Native American ancestry and determined to be more than an isolated find. If, after evaluation, a resource is considered a historical resource or unique archaeological resource (as defined in CEQA Guidelines section 15064.5) or a tribal cultural resource (as defined in PRC section 21074), all preservation options shall be considered as required by CEQA (see CEQA Guidelines section 15126.4 and PRC 21084.3), including possible capping, data recovery, mapping, or avoidance of the resource. Treatment that preserves or restores the cultural character and integrity of a tribal cultural resource may include tribal monitoring, culturally appropriate recovery of cultural objects, and reburial of cultural objects or cultural soil. Work in the area may resume upon completion of treatment. The results of the identification, evaluation, and/or data recovery program for any unanticipated discoveries shall be presented in a professional-quality report that details all methods and findings, evaluates the nature and significance of the resources, analyzes and interprets the results, and distributes this information to the public except for information deemed confidential and protected under state law.

3.2.6 Energy

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
6. ENERGY. Would the project:				
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Impact Analysis

A) Would the Project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?

Construction

Fire Station 7, Fire Station 25, and Interim Fire Station 25

Construction of the proposed project would consume energy via combustion of petroleum products, including gas, diesel, and motor oil. Energy in the form of electricity may also be consumed by some pieces of construction equipment. Electricity would be pulled from the existing Fire Station and or would be provided by PG&E.

During construction, the proposed project would use both direct and indirect sources of energy. Direct energy use would include the consumption of fuel (typically gasoline and diesel fuel) for the operation of construction equipment and vehicles. Indirect energy use would be required to make the materials and components used in construction. Indirect energy use includes energy used for extraction of raw materials, manufacturing, and transportation associated with manufacturing. Construction activities would last 18 months for Fire Station 7, 20 months for Fire Station 25, and 5 months for Interim Fire Station 25, would be localized, and would require limited amounts of energy. Therefore, energy use for construction would not be wasteful, inefficient, or unnecessary, and impacts from energy use during construction would be less than significant.

Operation

Fire Station 7

Operation and maintenance activities would be transferred from each existing Fire Station to the newly constructed Fire Station. During project operations, energy would be used in the form of employee, visitor, and emergency response vehicle trips, electricity for lighting and heating, and energy for kitchen uses. Additionally, the emergency generator would utilize diesel.

The new fire station would be more energy efficient than the existing station as it would be constructed to the current, more stringent, energy conservation standards. The proposed project would comply with the California Building Standards Code, CALGreen, and policies such as

Policy 12.2-4 within the Castro Valley General Plan that focus on energy efficiency(Alameda County Community Development Agency 2012). Section 4.38.040 of the Alameda County Green Building Ordinance requires all county projects initiated on or after July 1, 2003 to meet a minimum LEED Silver rating (The Board of Supervisors of the County of Alameda 2003). The Project would meet minimum LEED silver ratings during operation. Therefore, the proposed project would not be considered to create inefficient, wasteful, or unnecessary consumption of energy resources, and impacts from energy use during operations would be less than significant.

Fire Station 25

Operation and maintenance activities would be transferred from the existing Fire Station 25 to the newly constructed Fire Station. During project operations, energy would be used in the form of employee, visitor, and emergency response vehicle trips, electricity for lighting and heating, and energy for kitchen uses. Additionally, the emergency generator would utilize diesel.

The new fire station would be more energy efficient than the existing station, as it would be constructed to the current, more stringent, energy conservation standards. The proposed project would comply with the California Building Standards Code, CALGreen, and policies such as Policy 12.2-4 within the Castro Valley General Plan that focus on energy efficiency(Alameda County Community Development Agency 2012). Section 4.38.040 of the Alameda County Green Building Ordinance requires all county projects initiated on or after July 1, 2003 to meet a minimum LEED Silver rating (The Board of Supervisors of the County of Alameda 2003). The proposed project would meet minimum LEED silver ratings during operation. Therefore, the proposed project would not be considered to create inefficient, wasteful, or unnecessary consumption of energy resources, and impacts from energy use during operations would be less than significant.

Interim Fire Station 25

The proposed project would operate through an existing Castro Valley administration building. Fire station operations at this administration building would last approximately 20 months. Once the newly constructed Fire Station 25 is operational, use of the Castro Valley administration building would cease. Therefore, the proposed project would not be considered to create inefficient, wasteful, or unnecessary consumption of energy resources, and impacts from energy use during operations would be less than significant.

B) Would the Project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

Equipment and vehicles used for construction of each fire station would comply with all federal and state efficiency standards. Project construction would be consistent with the California Green Building Standards Code, which promotes strategic planning and building standards that reduce consumption of fossil fuels, increase use of renewable resources, and enhance energy efficiency. The proposed project would follow policies outlined in the Alameda County Green Building Ordinance, which requires recycling of construction and demolition debris (Alameda County 2003).

ACFD has not adopted specific renewable energy or energy efficiency plans. The Alameda County Community Climate Action Plan (CCAP) addresses energy usage through a series of local programs and policy measures (Alameda County Sustainability, n.d.). The project would comply with the policies and provisions in the CCAP that address energy efficiency, which includes energy performance requirements for new construction-such as using building materials that contain recycled content.(Alameda County 2014). The proposed project, including each fire station, would comply with California Building Code (CBC) Title 24 energy efficiency standards, including electrical and lighting requirements.

Electrical power for each of the fire stations would be provided by PG&E from existing electrical lines. PG&E is required to meet requirements for compliance with California's Renewables Portfolio Standard (RPS) and the power for the fire stations would therefore meet the RPS goals.

Therefore, the proposed project would not conflict with or obstruct any state or local plan for renewable energy or energy efficiency, the impact would be less than significant.

3.2.7 Geology and Soils

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
7. 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.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
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 offsite 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?	☐	☐	☒	☐
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 wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

Environmental Setting

The seismic, geologic, and soils information provided below, as well as in the impacts assessment, is based on site-specific geotechnical analyses for the three proposed fire station sites prepared by Rockridge Geotechnical (Rockridge Geotechnical 2023c; 2023a).

Seismicity

None of the project sites are located within a mapped Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no known active or potentially active faults exist on the project sites. The three project sites are located in areas subject to high seismic shaking hazards in the event of a major earthquake on any of the region's major faults. Major active faults in the region include the Hayward, Calaveras, and San Andreas faults. The nearest major fault to the project sites is the Hayward Fault located approximately 1 mile to the west of the Fire Station 25 site, and approximately 4 miles from the Fire Station 7 site. Researchers estimated the probability of at least one Richter Magnitude 6.7 or greater earthquake occurring in the greater San Francisco Bay Area during a 30-year period is 72 percent (USGS, n.d.). The highest probabilities of a magnitude 6.7 or greater earthquake are assigned to sections of the Hayward (South), Calaveras (Central), and San Andreas (Santa Cruz Mountains) faults. The respective probabilities are approximately 25, 21, and 17 percent, respectively.

The seismicity of the project sites are generally governed by the activity of the Hayward Fault, although ground shaking from future earthquakes on other faults will also be felt at the project sites. The intensity of earthquake ground motion at the project sites will depend upon the characteristics of the generating fault, distance to the earthquake epicenter, and magnitude and duration of the earthquake. Strong to very strong ground shaking could occur at the project sites during a large earthquake on one of the nearby faults.

Liquefaction

When saturated, cohesionless soil liquefies, it experiences a temporary loss of shear strength created by a transient rise in excess pore pressure generated by strong ground motion. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits. Flow failure, lateral spreading, differential settlement, loss of bearing strength, ground fissures and sand boils are evidence of liquefaction.

The Fire Station 7 and Fire Station 25 project sites are not within areas of high liquefaction potential as mapped in Earthquake Zones of Required Investigation, Hayward Quadrangle, prepared by the California Geological Survey (CGS), dated July 2, 2003 (Rockridge Geotechnical 2023b; 2023d). In addition, subsurface investigations indicate the Fire Station 7 site is underlain by bedrock at shallow depths, with negligible liquefaction potential (Rockridge Geotechnical 2023d). The Fire Station 25 site has been determined to have a low liquefaction potential (Rockridge Geotechnical 2023b).

Landslides

Landslides are a site-specific hazard, dependent on slope steepness and underlying soils and geology. The California Geological Survey, as part of the Seismic Hazards Mapping Act of 1990, has identified areas within California that are prone to earthquake-induced landslides during earthquake shaking. The Fire Station 7 and Fire Station 25 sites are not within or adjacent to a State-mapped earthquake-induced landslide zone. Further, no landslides were identified within or adjacent to the Fire Station 7 site from a review of historic aerial photographs that pre-dated grading of the site. Therefore, the likelihood of a landslide impacting the Fire Station 7 site is

considered to be low (Rockridge Geotechnical 2023c). Fire Station 25 site is in a fully developed gently sloping urban area with negligible landslide potential.

Soils

The Fire Station 7 site and surrounding area were extensively graded in the 1980s. The property is along the southwest side of a now buried southeast-draining ravine. There are no bedrock exposures within the site or adjacent to the site. A wedge of soil resting on top of claystone and sandstone bedrock cap the site. The soil ranges in thickness from approximately 2 feet near the northwest corner of the site to over 18 feet near the southeast corner of the site. The soil becomes thicker toward the axis of the old buried southeast-draining ravine (Rockridge Geotechnical 2023d).

The overlying soils at the Fire Station 7 site generally consist of medium dense to very dense sand and gravel with varying amounts of clay and silt and hard clay with varying amounts of sand. Rockridge interprets this soil as being artificial fill materials placed during extensive and past grading operations. The fill was likely sourced from and consists of similar materials as the underlying bedrock. Where explored, the bedrock encountered consists of sandstone and claystone that has low to moderate hardness and is friable to weak. The fine-grained beds are typically expansive (Rockridge Geotechnical 2023d).

Fire Station 25 site is underlain by Pleistocene-age alluvium (Qpa). The geotechnical borings and cone penetration tests conducted on the site indicate that the site is blanketed by approximately 8 to 14 feet of stiff to very stiff clay with varying amounts of sand. The clay is then underlain by approximately 4 to 10 feet of medium dense to dense sand with variable amounts of silt and clay. Below the sand is very stiff to hard clay with varying amounts of sand and gravel and dense to very dense sand with varying amounts of clay to a maximum depth explored of 50 feet below ground surface. Tests performed on the Fire Station 25 site indicated that the soils contain clays that are moderately expansive (Rockridge Geotechnical 2023b).

Discussion

A) Would the Project 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.

ii) Strong seismic ground shaking?

iii) Seismic-related ground failure, including liquefaction?

iv) Landslides?

Fire Station 7

i-iv) As described in the Environmental Setting above, the Fire Station 7 site is not subject to substantial liquefaction, landslide, or fault rupture hazards. Therefore, these hazards would be less than significant to the proposed project. The Fire Station 7 site would be subject to strong seismic shaking in a major earthquake. Fire Station 7 would need to obtain a building permit prior to construction. As part of the building permit process, the project design has been

reviewed in the project geotechnical report and would be designed to meet current CBC standards. The geotechnical report and CBC contain requirements for structural and geotechnical engineering and design to address earthquakes, including conformance to geotechnical foundation design. Because project design would meet current CBC standards including design for seismic events and would be designed and constructed as specified in the project geotechnical report, the impact from strong seismic ground shaking would be less than significant.

Fire Station 25

i-iv) As described in the Environmental Setting above, the Fire Station 7 site is not subject to substantial liquefaction, landslide, or fault rupture hazards. Therefore, these hazards would be less than significant to the proposed project. The Fire Station 25 site would be subject to potential strong seismic shaking in a major earthquake.

Fire Station 25 would need to obtain a building permit prior to construction. As part of the building permit process, the project design has been reviewed in the project geotechnical report and would be designed to meet current CBC standards. The geotechnical report and CBC contain requirements for structural and geotechnical engineering and design to address earthquakes, including conformance to geotechnical foundation design. Because project design would meet current CBC standards including design for seismic events and would be designed and constructed as specified in the project geotechnical report, the impact from strong seismic ground shaking would be less than significant.

Interim Fire Station 25

i-iv) Interim Fire Station 25 would be located within an existing building and the short-term use of the facility would not create increased risk related to strong seismic ground shaking. The impact from use of the facility would be less than significant.

B) Would the Project result in substantial soil erosion or the loss of topsoil?

Fire Station 7

The Fire Station 7 project site is located within an undeveloped area. The Fire Station 7 site could be subject to soil erosion from rainfall during site grading and development activities. The Fire Station 7 project is larger than 1 acre, but the area of disturbance may be less than 1 acre. If the area of disturbance is greater than 1 acre in size, the project would need to obtain coverage under the State of California Construction Stormwater General Permit (Order 2022-0057-DWQ), which requires implementation of BMPs to prevent erosion. Alameda County has also adopted Stormwater Management and Discharge Control Ordinance codified in Alameda County Code Chapter 13.08. In addition, the Alameda County Clean Water Program C.3 and C.6 permit defines additional requirements for stormwater management during construction and operation The Fire Station 7 development would comply with Alameda County C.3, C.6, and Stormwater Management and Discharge Control requirements including implementation of erosion control BMPs. Alameda County would review the erosion control BMPs as part of the project's grading permit. With implementation of appropriate erosion control BMPs, the Fire Station 7 project would have a less than significant impact on soil erosion and loss of topsoil.

Fire Station 25
The Fire Station 25 site is developed. Therefore, the Fire Station 25 project would have no impact on loss of topsoil. There is the potential for site development activities to cause soil erosion during grading and excavation. The Fire Station 25 project is greater than 1 acre in size, but the area of disturbance may be less than 1 acre. If the area of disturbance is greater than 1 acre in size, the project would need to obtain coverage under the State of California Construction Stormwater General Permit, which requires BMPs to prevent erosion. Alameda County has also adopted Stormwater Management and Discharge Control Ordinance codified in Alameda County Code Chapter 13.08. In addition, the Alameda County Clean Water Program C.3 and C.6 permit defines additional requirements for stormwater management during construction and operation The Fire Station 25 development would comply with Alameda County C.3, C.6, and Stormwater Management and Discharge Control requirements including implementation of erosion control BMPs. Alameda County would review the erosion control BMPs as part of the project's grading permit.

Interim Fire Station 25
Interim Fire Station 25 would be within an existing administrative building and the use of the facility would not result in loss of topsoil. No impact would occur.

C) Would the Project 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 offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

Fire Station 7
As described in the Environmental Setting above, the Fire Station 7 site is not subject to landslide hazards. The Fire Station 7 site is also not in an area that is prone to lateral spreading or liquefaction. Therefore, the impact from landslide, lateral spreading or liquefaction hazards would be less than significant. The proposed project does not involve groundwater extraction and would not cause or contribute to any conditions that would cause subsidence and no impact from subsidence would occur.

Fire Station 25
As described in the Environmental Setting above, the Fire Station 25 site is not subject to landslide hazards as the site is relatively flat and developed. The Fire Station 25 site is also not in an area that is prone to lateral spreading or liquefaction. Therefore, the impact from landslide, lateral spreading or liquefaction hazards would be less than significant. The proposed project does not involve groundwater extraction and would not cause or contribute to any conditions that would cause subsidence and no impact from subsidence would occur.

Interim Fire Station 25
Interim Fire Station 25 would be located within an existing building and the use of the facility would not cause any geologic unit to become unstable. No impact would occur.

D) Would the Project 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?

Fire Station 7

As discussed in the Environmental Setting above, expansive soils occur within the Fire Station 7 project area (Rockridge Geotechnical 2023d). Expansive soils have the potential to damage hardscaping and foundations, if not properly designed. In compliance with the CBC, the project geotechnical requirements for foundation design including recommendations for expansive soils are incorporated into the project design. Due to adherence to recommendations in the project geotechnical report the impact from expansive soils would be less than significant.

Fire Station 25

As discussed in the Environmental Setting above, moderately expansive soils occur within the Fire Station 25 project area. Expansive soils have the potential to damage hardscaping and foundations, if not properly designed. In compliance with the CBC, the project geotechnical requirements for foundation design including recommendations for expansive soils are incorporated into the project design. Due to adherence to recommendations in the project geotechnical report the impact from expansive soils would be less than significant.

Interim Fire Station 25

Interim Fire Station 25 would be located within an existing building and the use of the facility would not cause any increased risk from location on expansive soils. No impact would occur.

E) Would the Project 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 wastewater?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

None of the projects would use septic tanks or alternative sewage systems. Fire Station 7 and Fire Station 25 would connect to existing wastewater lines leading to wastewater treatment plants. Interim Fire Station 25 is an existing building that currently has wastewater service. Therefore, no impact for a septic tank or wastewater disposal system would occur.

F) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

The Fire Station 7 and Fire Station 25 sites are largely underlain by relatively young Quaternary-age alluvial soils, and there are no known significant paleontological resources in the project areas or unique geologic features on any of the project sites (Alameda County Community Development Agency 2007). In addition, all of the project sites have been previously graded and/or filled. Interim Fire Station 25 has an existing facility and the modifications to the interim fire station would have no potential to encounter paleontological resources. Construction activities at Fire Station 7 and Fire Station 25 would not be expected to result in the discovery of paleontological resources due to the low paleontological sensitivity in the project areas and the prior disturbance of the project sites. The potential impact of the proposed project on paleontological resources would be less than significant.

3.2.8 Greenhouse Gas Emissions

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
8.. GREENHOUSE GAS EMISSIONS Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Environmental Setting

Climate change refers to changes in the Earth's climactic patterns due to an increase in heat-trapping GHGs in the atmosphere. According to the BAAQMD, some of the potential effects of increased GHG emissions and associated climate change may include loss of snowpack (affecting water supply), more frequent extreme weather events, more and larger fires, more drought years, and sea-level rise. In addition, climate change may increase electricity demand for cooling, decrease the availability of hydroelectric power, and affect regional air quality and public health (BAAQMD 2017b).

California's Climate Change Scoping Plan

In December 2008, the California Air Resources Board (CARB) adopted the Climate Change Scoping Plan to identify how the State can achieve its 2020 climate action goal under AB 32. In 2017, CARB updated the Scoping Plan to identify how the State can achieve its 2030 climate action goal under SB 32 and substantially advance toward its 2050 climate action goal under Executive Order S-3-05. The 2017 Scoping Plan includes the regulatory programs, such as the Advanced Clean Cars Program, Low-Carbon Fuel Standard, Renewable Portfolio Standard Program, and energy efficiency standards (CARB 2017).

In December 2022, CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality, which outlines a roadmap to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045 (CARB 2022b). Building on the 2017 Scoping Plan, the 2022 Scoping Plan evaluates the progress made toward meeting the 2030 GHG reduction target established in SB 32 and identifies a technologically feasible, cost-effective, and equity-focused path to achieve carbon neutrality by 2045. The 2022 Scoping Plan presents an approach for an aggressive reduction of fossil fuels and a rapid transition to renewable energy resources and zero-emission vehicles. The 2022 Scoping Plan identifies actions and outcomes such as rapidly moving to zero-emission transportation; electrifying cars, buses, trains, and trucks; phasing out the use of fossil gas used for heating homes and buildings; clamping down on chemicals and refrigerants; providing communities with sustainable options for walking, biking, and public transit; building out clean, renewable energy resources (such as solar arrays and wind turbine capacity) to displace fossil-fuel fired electrical generation; and

scaling up new options such as renewable hydrogen and biomethane. Appendix D of the 2022 Scoping Plan includes recommendations for local government to take actions that align with the state's climate goals, with a focus on local climate action plans and local authority over new residential and mixed-use development. Appendix D of the 2022 Scoping Plan recommends for local jurisdictions to focus on three priority areas when preparing a climate action plan: transportation electrification, vehicle miles travelled (VMT) reduction, and building decarbonization (CARB 2022a).

BAAQMD CEQA Guidelines

The BAAQMD's CEQA Air Quality Guidelines include recommended thresholds of significance for GHG emissions from typical land use projects that are intended to assist public agencies in determining whether proposed projects would make a cumulatively considerable contribution to global climate change, as required by CEQA (BAAQMD 2022). The thresholds identify design elements that an individual project needs to incorporate to do its "fair share" in achieving the State's goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045. The GHG thresholds for typical land use projects include two options, as follows:

Option 1. Projects must include, at a minimum, the following project design elements:

- Buildings
  - The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
  - The project will not result in any wasteful, inefficient, or unnecessary electrical usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
- Transportation
  - Achieve compliance with EV requirements in the most recently adopted version of CALGreen Tier 2.
  - Achieve a reduction in project-generated VMT below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
    - Residential projects: 15 percent below the existing VMT per capita
    - Office projects: 15 percent below the existing VMT per employee
    - Retail projects: no net increase in existing VMT

Option 2. Be consistent with local GHG reduction strategy that meets the criteria under State CEQA Guidelines section 15183.5(b).

Alameda County Climate Action Plan

In May 2010, the Alameda County adopted the Alameda County Climate Action Plan for Government Services and Operations Through 2020 (CAP 2020), including 16 Commitments to Climate Project that aim to reduce GHG emissions associated with providing government services by 15 percent to 30 percent below 2003 levels by 2020 (Alameda County 2010). The CAP 2020 goal was met in 2019. The updated climate action plan, Alameda County Climate Action Plan for Government Services and Operations Through 2026 (CAP 2026), was adopted by Alameda County in May 2023. Aligning with the State's long-term climate action goals, CAP 2026 set a goal to achieve carbon neutrality by 2045 and contains six action areas including building environment, community resilience, green economy and prosperity, sustainable materials management, transportation, and climate leadership and governance. The CAP 2026 focuses on actions that need to be taken between 2023 to 2026.

Impact Analysis

A) Would the proposed project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Fire Station 7

The proposed project would generate temporary GHG emissions through construction activities, such as operation of on-site heavy construction equipment and off-site construction vehicle trips. The BAAQMD does not recommend a threshold of significance for GHG emissions during construction because there is not sufficient evidence to determine a level at which temporary construction emissions are significant (BAAQMD 2022).

Operation of the proposed project would generate GHG emissions from several sources, such as the buildings (i.e., area, energy, water, solid waste disposal), emergency diesel generators, and on-road vehicles. As the existing fire station operations and maintenance would be transferred to the proposed fire station, project operations are not expected to result in a substantial increase in GHG emissions. In addition, the proposed project's consistency with the BAAQMD's recommended design elements (Option 1 thresholds) is evaluated in Table 3.2-10. As presented in Table 3.2-10, the project is designed to incorporate the applicable design elements. Therefore, the project would contribute its "fair share" to achieve the state's long-term climate goals and the impact would be less than significant.

Table 3.2-10 Proposed Project Consistency with BAAQMD Design Elements for GHG Emissions

Design element		Project consistency
Building	No Natural Gas	**Not Applicable**. The proposed project would include natural gas uses. The building decarbonization design element (no natural gas) does not apply to fire stations because it is not considered a typical residential or commercial land use.

Design element		Project consistency
	No Wasteful, Inefficient, or Unnecessary Energy Usage	**Consistent.** The proposed project would be required to comply with state and locally mandated energy efficiency/conservation measures in Title 22 of the CBC. Therefore, operation of the project would not result in inefficient, wasteful, or unnecessary energy usage.
Transportation	CALGreen Tier 2 Electric Vehicle Requirement	**Consistent.** The proposed project would construct 9 new parking spaces. In accordance with the California Green Building Standards Code and the Alameda County Guidelines for Future Electric Vehicle Charging Stations at Alameda County Facilities, the proposed project would include two parking spaces with level-2 EV charging stations. In accordance with CALGreen 2022 Section A5.106.5.3.2 Tier 2, 3 parking spaces out of the proposed 9 parking spaces would need to be EV capable spaces. No Electric Vehicle Supply Equipment (EVSE) required. The proposed project does not meet the CALGreen Tier 2 EV capable requirement, but would meet the Tier 1 EV capable requirement, and exceed the EVSE requirement. Therefore, the proposed project would be generally consistent with CALGreen Tier 2 requirements.
	Project-generated VMT Reduction	**Not applicable**. As discussed above, project-generated VMT reduction targets included in this design element do not apply to fire stations. Therefore, this design element is not applicable to the proposed project. The new fire station would be staffed with the same number of employees as the existing fire station. Project-generated VMT would be the same as the existing condition.

Source: (Baseline Environmental Consulting 2024a)

Fire Station 25 and Interim Fire Station 25

The proposed project would generate temporary GHG emissions through construction activities, such as operation of on-site heavy construction equipment and off-site construction vehicle trips. The BAAQMD does not recommend a threshold of significance for GHG emissions during construction because there is not sufficient evidence to determine a level at which temporary construction emissions are significant (BAAQMD 2022).

Operation of the proposed project would generate GHG emissions from several sources, such as the buildings (i.e., area, energy, water, solid waste disposal), emergency diesel generators, and on-road vehicles. As the existing fire station operations and maintenance would be transferred to the proposed fire station, project operations are not expected to result in a substantial increase in GHG emissions. In addition, the proposed project's consistency with the BAAQMD's recommended design elements (Option 1 thresholds) is evaluated in Table 3.2-10. As presented in Table 3.2-11, the proposed project is designed to incorporate the applicable design elements. Therefore, the proposed project would contribute its "fair share" to achieve the state's long-term climate goals. The impact would be less than significant.

Table 3.2-11 Proposed Project Consistency with BAAQMD Design Elements for GHG Emissions

Design element		Project consistency
Building	No Natural Gas	**Not Applicable.** The proposed project would include natural gas uses for cooking for the new fire station. The proposed project would utilize the existing Castro Valley Administration building for the interim fire station. As discussed above, the building decarbonization design element (i.e., no natural gas) does not apply to fire stations because it is not considered typical residential or commercial land use. It should be noted that the natural gas usage for the new fire station is not considered a new source because the existing fire station uses natural gas.
	No Wasteful, Inefficient, or Unnecessary Energy Usage	**Consistent.** The proposed project would be required to comply with state and locally mandated energy efficiency/conservation measures. Therefore, operation of the project would not result in inefficient, wasteful, or unnecessary energy usage.
Transportation	CALGreen Tier 2 Electric Vehicle Requirement	**Not applicable**. The proposed project includes demolition and re-construction of the existing parking lot, but the overall proposed project would not increase the number of parking spaces at the proposed new fire station. The proposed project would not construct new parking spaces for the interim fire station site. As there is no net change in parking spaces, this design element is not applicable to the proposed project. In accordance with the CALGreen and the Alameda County Guidelines for Future Electric Vehicle Charging Stations at Alameda County Facilities, the proposed project would include three parking spaces with level-2 EV charging stations for the new fire station.
	Project-generated VMT Reduction	**Not applicable**. As discussed above, project-generated VMT reduction targets included in this design element do not apply to fire stations. Therefore, this design element is not applicable to the project. The interim fire station would be staffed with seven employees, which is the same as the existing condition. The new fire station 25 will be staffed with eight employees, which is one employee (two one-way commute trips) more than the existing fire station. The GHG emissions from the increased project-generated VMT due to the staff increase would be negligible.

Source: (Baseline Environmental Consulting 2024b)

B) Would the proposed project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

2022 Scoping Plan Consistency

The proposed project includes the applicable BAAQMD-recommended design elements that an individual project needs to incorporate to do its "fair share" in achieving the State's goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045. The proposed project would be required to comply with state and locally mandated energy efficiency/conservation measures, ensuring building energy efficiency. In addition, the proposed project would construct EV charging infrastructure that meets the CALGreen and the Alameda County Guidelines for Future Electric Vehicle Charging Stations requirements, supporting the transition to zero-emission vehicles. Therefore, the proposed project would not conflict with the 2022 Scoping Plan. The impact would be less than significant.

Alameda County CAP 2026 Consistency

The proposed project would include EV charging infrastructure, which is consistent with the CAP 2026 Transportation Measure T6– Smart Parking Policies. The measure recommends designation of an increasing amount of parking throughout the County for carpools, low-emission vehicles, or zero-emission vehicles only. The proposed project would not conflict with CAP 2026. The impact would be less than significant.

3.2.9 Hazards and Hazardous Materials

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
9. 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?	☐	☐	☒	☐
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?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
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?	☐	☐	☒	☐
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?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☒	☐	☐

Impact Analysis

As used in this section, the term *hazardous material* is defined as any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. As used in this section, the term *hazardous waste* generally refers to a hazardous material that has been used for its original purpose and is about to be discarded or recycled. In California, a hazardous waste is defined as a waste, or combination of wastes, that, due to its quantity, concentration, or physical, chemical, or infectious characteristics, may either:

- Cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or
- Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Federal and state regulations require adherence to specific guidelines regarding the use, transportation, disposal, and accidental release of hazardous materials. The EPA is responsible for administering the federal Toxic Substances Control Act and the Resource Conservation and Recovery Act (RCRA), which regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is a federal database that records the known hazardous contaminated sites and facilitates remediation actions. The management of hazardous materials and waste within California is under the jurisdiction of CalEPA, which coordinates the State's Unified Program for permitting, inspecting, and enforcing regulations related to hazardous materials.

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

Fire Station 7, Fire Station 25, and Interim Fire Station 25

Construction

Construction of the proposed project would involve the use of potentially hazardous materials, including gasoline, diesel fuel, hydraulic oils, equipment coolants, and any generated wastes that may include these materials. The routine transport of hazardous materials could pose a risk to human health and the environment if not managed responsibly. All hazardous materials would be transported, contained, stored, used, and disposed of in accordance with manufacturers' instructions and would be handled in compliance with all applicable standards and regulations. Handling of hazardous materials would need to be conducted in accordance with Code of Federal Regulations title 29 section 1910. Transportation of hazardous materials would need to comply with the RCRA and U.S. Department of Transportation (DOT) regulations. The RCRA also governs hazardous material disposal, ensuring that only facilities permitted to accept a specific waste are used.

The projects would be required to prepare and implement a hazardous materials business plan (HMBP) in compliance with State of California requirements in CCR title 19 division 5 chapter 1, sections 5010.1 through 5040.2. The HMBPs would need to include the following for each site:

- An inventory of hazardous materials
- Emergency response plans and procedures in the event of a release or threatened release of a hazardous material
- Requirements to train employees in safety procedures in the event of a release or threatened release of hazardous material
- Site map including emergency response equipment

The Alameda County Department of Environmental Health (ACDEH) is responsible for the implementation, enforcement, and administration of the HMBP for facilities in Alameda County (Alameda County Department of Environmental Health, n.d.). Due to compliance with federal and state laws for management of hazardous waste, including preparation of an HMBP, the risk to the public and environment from transport and use of hazardous materials during construction would be less than significant.

Operation

Hazardous waste generated by operation of the proposed projects may include gasoline, diesel fuel, and hydraulic oils. Project operations would be similar to operations at the existing fire stations and would require hazardous waste transport associated with vehicle refueling and maintenance. The projects would also contain an aboveground storage tank. The transport and storage of fuels would require preparation of an HMBP and a Spill Prevention Control and Countermeasures Plan in compliance with CFR title 40, part 112. The SPCC Plan would include discharge prevention measures and secondary containment to prevent discharge from the aboveground storage tanks. The proposed projects would comply with all applicable local, state, and federal regulations related to the transport and handling of hazardous waste. Therefore, operation of the proposed project would not post substantial health or safety hazards resulting from routine use, transport, or disposal of hazardous materials. Impacts would be less than significant.

B) Would the proposed project 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?

Fire Station 7

Construction

As discussed under Impact A, construction of the proposed project would involve the use of materials that are defined as hazardous, such as fuels, hydraulic fluids, and coolants for construction equipment. If not properly managed, hazardous materials have the potential to be released or spilled accidentally during maintenance, refueling, or servicing of equipment and vehicles. Improperly disposed of, spilled, or leaking hazardous materials could create a significant hazard to workers, the public, or the environment. Demolition of the existing Fire Station 7 building would not occur. Additionally, the proposed project must comply with federal, state, and local regulations regarding the handling, disposal, and transportation of hazardous materials, including the federal RCRA and DOT regulations. An HMBP would need to be prepared for the project and reviewed by Alameda County. Compliance with regulatory requirements would minimize potential impacts related to the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. As a result, the impact would be less than significant.

Operation

As stated under Impact A, project operations would include use and storage of oils, lubricants, paints, solvents, gasoline, and diesel consistent with the uses at the existing fire station. The projects would have an aboveground storage tank for fuels. The proposed project would

comply with local, state, and federal regulations regarding hazardous materials, including the RCRA, DOT, the DTSC, title 22 of the California Code of Regulations (CCR), and California Health and Safety Code division 20, chapter 6.5 for the handling, transport, and disposal of hazardous materials. In accordance with California Health and Safety Code chapter 6.95, the project would prepare a HMBP and SPCC Plan that would ensure that hazardous materials are stored properly and that employees are trained adequately to handle hazardous materials. The Alameda County Department of Environmental Health (ACDEH) is responsible for the implementation, enforcement, and administration of the HMBP and SPCC Plans for facilities in Alameda County (Alameda County Department of Environmental Health, n.d.). Therefore, impacts related to hazardous materials during project operations would not occur. Implementation of the hazardous materials plan would further minimize the potential for the release of hazardous materials into the environment. The impact would be less than significant.

Fire Station 25

Construction

Hazardous Building Materials

Fire Station 25 was constructed in 1966 and is developed with a fire station, parking lot, and training and classroom building. The existing fire station would be demolished, but the training and classroom facility would remain. A hazardous building materials survey was conducted on July 28, 2023, at Fire Station 25 to assess the presence of *asbestos-containing materials* (ACMs), *lead-containing materials* (LCMs), and *polychlorinated biphenyl-containing materials* (PCBCMs) (Ninyo & Moore 2023a). ACMs and LCMs were found at the project site.

Disturbance of any lead paint would be performed in accordance with applicable laws and regulations, including Cal/OSHA's Construction Lead Standard; CCR title 8 section 1532.1 of the CCR; and sections 35001 through 36100, as may be amended, of Department of Health Services Regulation 17 in the CCR. The disturbance/removal and management of ACMs would be performed in accordance with Cal/OSHA regulations and BAAQMD regulations, under Rule 11-2, to ensure that asbestos would not be released into the environment.

Electrical and lighting equipment that may contain hazardous materials, such as mercury and PCBs, could be readily identified and appropriately managed/disposed in accordance with applicable regulations, including DTSC hazardous waste rules and other federal and State regulations (e.g., universal waste regulations). Building materials that contain less than 50 mg/kg of PCBCMs are considered "excluded PCB products" as defined in 40 CFR 761.3 and 761.61 and may be disposed of as general construction debris. Five suspect PCBCM samples were collected during the hazardous building materials survey (Ninyo & Moore 2023a). All samples were reported at less than 50 mg/kg and may be disposed of as general construction debris (Ninyo & Moore 2023a). Prior to demolition activities, potentially mercury-containing thermostats/switches, PCBCM-containing items (e.g., light ballasts, transformers), fluorescent light tubes, exit signs, air condition units, and Freon-containing refrigeration systems would be removed and properly disposed of according to applicable federal, State, and local laws/regulations. Light fixtures would also be visually inspected for "No PCBs" or "PCB free" stickers prior to disposal to determine if they contain PCBCMs.

Hazardous building materials removed before demolition activities would be transported in accordance with DOT regulations and disposed in accordance with the RCRA, CCR, and/or California Universal Waste Rule at a facility permitted to accept the waste.

Compliance with the regulations described above would avoid potential project construction impacts related to the accidental release of hazardous building materials into the environment. The impact would be less than significant.

Use of Hazardous Materials

As discussed under Impact a, construction of the proposed fire station would involve the use of materials that are defined as hazardous, such as fuels, hydraulic fluids, and coolants for construction equipment. If not properly managed, hazardous materials have the potential to be released or spilled accidentally during maintenance, refueling, or servicing of equipment and vehicles. Improperly disposed of, spilled, or leaking hazardous materials could create a significant hazard to workers, the public, or the environment. The proposed project must comply with federal, State, and local regulations regarding the handling, disposal, and transportation of hazardous materials, including the federal RCRA and DOT regulations. Compliance with regulatory requirements would minimize potential impacts related to the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. As a result, the impact would be less than significant.

Operation

As stated under Impact A, project operations would include use and storage of oils, lubricants, paints, solvents, gasoline, and diesel consistent with the uses at the existing fire station. The proposed project would comply with local, State, and federal regulations regarding hazardous materials, including the RCRA, U.S. DOT, the DTSC, title 22 of the CCR, and California Health and Safety Code division 20, chapter 6.5 for the handling, transport, and disposal of hazardous materials. In accordance with chapter 6.95 of the California Health and Safety Code, the project would prepare a HMBP that would ensure that hazardous materials are stored properly and that employees are trained adequately to handle hazardous materials. The ACDEH is responsible for the implementation, enforcement, and administration of the HMBP for facilities in Alameda County (Alameda County Department of Environmental Health, n.d.). Therefore, impacts related to hazardous building materials and naturally occurring asbestos during project operations would not occur. Implementation of the hazardous materials plan would further minimize the potential for the release of hazardous materials into the environment. The impact would be less than significant.

C) Would the proposed project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Fire Station 7

Equipment and vehicle maintenance and refueling, as well as use of hazardous materials, would occur within 0.25 mile of the Jensen Ranch Elementary School. Workers handling hazardous materials are required to adhere to Occupational Safety and Health Administration (OSHA) and Cal/OSHA health and safety requirements. Hazardous materials are required to be

transported to and from the project area in accordance with RCRA and DOT regulations and disposed of in accordance with RCRA at a facility that is permitted to accept that waste. Impacts would be less than significant.

Fire Station 25
Equipment and vehicle maintenance and refueling, as well as use of hazardous materials, would occur within 0.25 mile of the Castro Valley Elementary School, ABC Pre-school & Daycare, Our Lady of Grace Catholic School, Bee Best Leaning after school program, and the California School of Real Estate. Workers handling hazardous materials are required to adhere to OSHA and Cal/OSHA health and safety requirements. Hazardous materials are required to be transported to and from the project area in accordance with RCRA and DOT regulations and disposed of in accordance with RCRA at a facility that is permitted to accept that waste. In accordance with California Health and Safety Code chapter 6.95, the project would prepare a HMBP and SPCC Plan that would ensure that hazardous materials are stored properly and that employees are trained adequately to handle hazardous materials. The Alameda County Department of Environmental Health (ACDEH) is responsible for the implementation, enforcement, and administration of the HMBP and SPCC Plans for facilities in Alameda County (Alameda County Department of Environmental Health, n.d.). Therefore, impacts related to hazardous materials during project construction and operation would not occur. The impact would be less than significant.

Interim Fire Station 25
No schools are located within 0.25 mile of interim Fire Station 25. The nearest school is approximately 0.3 miles north of the project site. Therefore, no impacts related to hazardous materials during construction and operation of the interim Fire Station 25 would occur.

D) Would the proposed project 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?

Fire Station 7
The following databases compiled pursuant to Government Code section 65962.5 were reviewed for known hazardous materials contaminations within 1,000 feet of the project site:

- California State Water Resources Control Board, GeoTracker search for LUST and other Cleanup Sites
- DTSC, EnviroStor: Cleanup Site and Hazardous Waste Facilities Database

There are no hazardous waste sites within 1,000 feet of the project site. Construction of the proposed project would involve the use of materials that are defined as hazardous, such as fuels, hydraulic fluids, and coolants for construction equipment.

A Phase I environmental assessment was conducted for the undeveloped project site (Ninyo & Moore 2023b). The assessment did not find any evidence of recognized environmental conditions (RECs), historic RECs (HRECs), or controlled RECs (CRECs) on site. As discussed under Impact a and Impact b, project construction would be performed in compliance with

federal, State, and local regulations related to the abatement of hazardous materials in building materials, including the Occupational Health and Safety Administration Asbestos Construction Standard and air district's regulation 11, rule 2, which regulate demolition of facilities containing asbestos and title 8, section 1532.1 (lead) of the CCR, which pertains to lead safety measures. The impact would be less than significant.

Fire Station 25

The following databases compiled pursuant to Government Code section 65962.5 were reviewed for known hazardous materials contaminations within 1,000 feet of the project site:

- California State Water Resources Control Board, GeoTracker search for LUST and other Cleanup Sites
- DTSC, EnviroStor: Cleanup Site and Hazardous Waste Facilities Database

A Phase I environmental assessment was conducted for the project site (Ninyo & Moore 2023c). A review of several regulatory databases determined that a LUST case was opened in February 2023. The Alameda County Environmental Health Services issued a closure letter for the LUST site on September 1, 2005. In preparation for the close-in-place activities, one soil boring was drilled adjacent to the LUST and a soil sample was collected. Total petroleum hydrocarbons as gasoline (TPHg) and TPH as diesel (TPHd) were detected at concentrations of 300 and 90 ppm, respectively. A subsurface investigation was conducted in January 2004, and four soil borings were drilled to a depth of 15 feet below ground surface. Soil and groundwater samples from the borings were analyzed for contaminants. The ACDEH determined that the low levels of residual contamination at the site did not pose a significant threat to water resources, public health and safety, and the environment. However, due to the presence of the UST, the assessment concluded the UST is a REC. Therefore, a Phase II Environmental Site Assessment was conducted for the project site.

A Phase II Environmental Site Assessment was conducted in December 2023 to evaluate the current environmental conditions of soil, groundwater, and soil vapor beneath the project site (Ninyo & Moore 2023b). The assessment found arsenic levels about the Bay Area background levels. Impacted soil vapor was also detected in each soil vapor probe, with the highest concentrations detected near the closed LUST site. Chloroform, benzene, and ethylbenzene were detected in the soil vapor samples above their respective ESL. The elevated soil vapor concentrations suggest potential vapor intrusion at the site. Additional vapor testing would be conducted at the project site in accordance with the recommendations of the Phase II Environmental Site Assessment. If vapor concentrations exceed regulatory thresholds, Mitigation Measure HAZ-1 would require ACFD to design and construct the proposed fire station to be consistent with the San Francisco Bay Regional Water Quality Control Board (RWQCB) *Vapor Intrusion Mitigation Guidance* (San Francisco Bay Regional Water Quality Control Board 2022). The *Vapor Intrusion Mitigation Guidance* includes measures/design approaches to mitigate impacts from vapor intrusion, including potentially implanting subslab depressurization systems, soil vapor extraction, and subslab ventilation systems. With implementation of Mitigation Measure HAZ-1, impacts would be less than significant.

Interim Fire Station 25
Interim Fire Station 25 would be located within a county administration building. The use of the facility would not create any impact from location on a hazardous materials site.

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 proposed project result in a safety hazard or excessive noise for people residing or working in the project area?

Fire Station 7
The project site is not located within an airport land use plan or within two miles of a public airport or public use airport. Therefore, Impact Hazard (E) is not applicable and not discussed further.

Fire Station 25 and Interim Fire Station 25
The interim Fire Station 25 and project site are not located within an airport land use plan or within 2 miles of a public airport or public use airport. Therefore, Impact Hazard g is not applicable and not discussed further.

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

Fire Station 7
The proposed project would construct a new fire station adjacent the existing fire station on Villareal Drive to improve emergency and disaster response within unincorporated Alameda County. Construction vehicles would utilize existing roadways for access to the project site. Project construction would not require any temporary or permanent road closures such that emergency vehicles would be unable to access the site or surrounding areas. Additionally, the existing fire station would remain operational during construction activities. Therefore, the implementation of the proposed project would not interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

Fire Station 25 and Interim Fire Station 25
The proposed project would replace the existing Fire Station 25 to improve emergency and disaster response within the Castro Valley community. The proposed project would be located on an existing site containing the necessary transportation infrastructure and roads for emergency access. Construction vehicles would utilize existing roadways for access to the project site. Project construction would not require any temporary or permanent road closures such that emergency vehicles would be unable to access the site or surrounding areas. Additionally, interim Fire Station 25 would operate on Marshell Street and would provide fire protection services during project construction. Therefore, the implementation of the proposed project would not interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

G) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Fire Station 7

As discussed in Section 3.2.20: Wildfire, the proposed project is located in a State Responsibility Area (SRA) in a High Fire Hazard Severity Zone (CAL FIRE 2023). Construction equipment and vehicles would use diesel and gasoline that could increase the risk of accidental wildfire ignition. Sources of ignition include equipment with internal combustion engines, gasoline-powered tools, smoking by construction workers, and any vehicles or equipment that could produce a spark or fire. Steep vegetated slopes occur to the southeast of the project site. The adjacent Fire Station 7 would remain operational during the construction of the proposed fire station and would provide fire protection services in the event of an ignition. However, in the event of an ignition on the vegetated slopes to the southeast of the project site, a wildfire could occur that would expose nearby people and structures to a significant risk of loss, injury, or death. Therefore, the impact from a wildfire ignition would be potentially significant. Mitigation Measure WIL-1 would require the implementation of wildfire risk reduction measures to prevent sparking a wildfire, including equipping all portable gasoline powered equipment with spark arrestors, removing dry weeds and grass prior to construction, equipping all crew vehicles with fire extinguishers, and prohibiting workers smoking at the project site. Mitigation Measure WIL-1 would reduce the exposure to people or structures from a significant risk of loss, injury, or death involving wildland fires. The impact would be less than significant with mitigation.

Vehicles and equipment used during project operations would also use diesel and gasoline, which would increase fire risk. However, the proposed fire station would contain firefighting equipment and trained personnel that would be able to respond to a wildland fire, if ignited. The proposed fire station would be constructed in accordance with the CBC and the Alameda County Fire Code. Furthermore, the proposed project would upgrade the existing outdated fire station facility in order to reduce emergency response times and enhance wildfire protection and disaster response. The impact would be less than significant.

Fire Station 25 and Interim Fire Station 25

The proposed project is within an urbanized area and not located in an area that would be susceptible to wildland fires. Therefore, no wildfire hazard impacts would occur.

Mitigation Measures

To reduce the potentially significant impacts, the following mitigation measure would be implemented prior to and during construction activities:

Mitigation Measure WIL-1: Wildfire Risk Reduction Measures

The following measures shall be implemented during construction to prevent sparking a wildfire:

- Spark arresters shall be used on all portable gasoline powered equipment.

- Exhaust systems, spark arresters, and mowers shall be kept in proper working order and free of carbon buildup.
- Equipment engines shall be kept free of oil and dust, and mowers will be kept free of flammable materials.
- Dry weeds and grass shall be removed with weed trimmers prior to start of construction.
- Mowers shall not be used when the vegetation is dry.
- Any large rocks in the area of grading or blading shall be removed before clearing and grubbing because a rock hidden in vegetation can start a fire if struck by a metal blade.
- All crew vehicles shall be equipped with a water-type fire extinguisher and crew will be trained in the use of the fire extinguisher in the event that equipment sparks a fire.
- Hot work (e.g., welding) and heavy equipment use over vegetation shall cease during designated red flag warning days.
- Worker smoking shall be prohibited at the site.

Mitigation Measure HAZ-1: Vapor Intrusion

If vapor testing results at Fire Station 25 indicate that chloroform, benzene, and ethylbenzene concentrations exceed regulatory thresholds, ACFD shall design and construct Fire Station 25 consistent to include appropriate vapor mitigation to ensure health and safety of any building occupants. The design approaches shall conform to the San Francisco Bay RWQCB *Vapor Intrusion Mitigation Guidance*. Appropriate mitigation may include, but is not necessarily limited to, the implementation of the following measures:

- Installation engineered vapor intrusion systems such as:
  - Subslab depressurization systems
  - Submembrane depressurization systems
  - Subslab ventilation systems, crawl space ventilation systems
  - Soil vapor extraction and multiphase extraction.
- Design the new fire station building to attenuate vapor intrusion including:
  - Fit sumps with vapor tight lids or seal the lid and any piping and electrical penetrations using a non-permanent caulk.
  - Seal toilets around the based and re-seat toils with new wax rings.
  - Use relatively impermeable materials for utility trench construction.
  - Install sewer venting and check valves, line sewer pipes, or reroute sewer pipelines.

The vapor mitigation design measures shall be subject to the review and approval of Alameda County Department of Environmental Health. The vapor mitigation measures shall be included in the final design plans and specifications.

3.2.10 Hydrology and Water Quality

Environmental Impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
10. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
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 substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
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	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Environmental Setting

The proposed new Fire Station 25 site is in urbanized areas of Castro Valley, respectively, and drain into the Alameda County storm drain system which, in turn, drains into open drainage channels that ultimately discharge to San Francisco Bay. These sites are already mostly covered with impervious surfaces. Water quality in stormwater from these sites is affected by urban stormwater runoff.

The proposed Fire Station 7 site is a graded but unpaved pad at the uppermost reach of Pacheco Creek, which ultimately flows into Alameda Creek between Niles and Sunol. The existing Fire

Station 7 drains westward into the storm drain system under Villareal Drive. Water quality in runoff at this site is not subject to urban stormwater runoff and associated pollution.

None of the sites are in FEMA-mapped flood hazard zones (Alameda County, n.d.-a). In addition, none of the sites are in areas subject to tsunami or seiche hazards (Alameda County, n.d.-b). No groundwater was encountered at the Fire Station 7 site in borings to the maximum depth explored of 30.5 feet below ground surface during the geotechnical field investigation (Rockridge Geotechnical 2023d). Groundwater levels measured at and in the vicinity of the Station 25 site ranged from about 3 feet to 13 feet below ground surface, with the geotechnical report recommending assuming a high groundwater level of 5 feet below ground surface for design purposes (Rockridge Geotechnical 2023b).

Discussion

A) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Construction

Fire Station 7

Grading for construction of Fire Station 7 would disturb the soils on the Fire Station 7 site, which could result in erosion and sedimentation. The project site generally drains both westward toward the County storm drain system and eastward toward Pacheco Creek. Stormwater runoff from the site during construction could contain a variety of contaminants, most notably hydrocarbons from spilled fuels and truck maintenance lubricants if any spills are not properly contained and cleaned up during construction, which could degrade surface water quality. The Fire Station 7 site is larger than 1 acre in size, but the area of disturbance may be less than 1 acre. If the area of disturbance is greater than 1 acre in size, the project would need to obtain coverage under the State of California Construction Stormwater General Permit (Order 2022-0057-DWQ), which defines specific requirements for stormwater management including preparation of a Stormwater Pollution Prevention Plan. Regardless of the total area of disturbance, Alameda County has adopted Stormwater Management and Discharge Control Ordinance codified in Alameda County Code Chapter 13.08. In addition, the Alameda County Clean Water Program C.3 and C.6 permit defines additional requirements for stormwater management during construction and operation The Fire Station 7 development would need to comply with Alameda County C.3, C.6, and Stormwater Management and Discharge Control requirements including implementation of erosion-control BMPs for all ground disturbing projects. Alameda County would review the erosion control BMPs as part of the project's grading permit. Compliance with C.6 permit requirements and the County Stormwater Management and Discharge Control Ordinance, would assure that the Fire Station 7 project would have a less than significant impact on water quality and would not cause violation of any permit.

Fire Station 25

Fire Station 25 is located on a developed site in an urban area. Construction of Fire Station 25 would require soil disturbance and use of heavy equipment that could spill fuels or

hydrocarbons, which have the potential to contribute to stormwater runoff if not properly contained. The Fire Station 25 project site is larger than 1 acre in size, but the area of disturbance may be less than 1 acre. If the area of disturbance is greater than 1 acre in size, the project would need to obtain coverage under the State of California Construction Stormwater General Permit (Order 2022-0057-DWQ) which defines specific requirements for stormwater management including preparation of a Stormwater Pollution Prevention Plan. Regardless of the total area of disturbance, Alameda County has adopted Stormwater Management and Discharge Control Ordinance codified in Alameda County Code Chapter 13.08. In addition, the Alameda County Clean Water Program C.3 and C.6 permit defines additional requirements for stormwater management during construction and operation The Fire Station 25 development would need to comply with Alameda County C.3, C.6, and Stormwater Management and Discharge Control requirements including implementation of erosion control BMPs for all ground disturbing projects. Alameda County would review the erosion control BMPs as part of the project's grading permit. Compliance with C.6 permit requirements and the County Stormwater Management and Discharge Control Ordinance, would assure that Fire Station 25 construction would have a less than significant impact on water quality and would not cause violation of any permit.

Operation

Fire Station 7

Runoff from the proposed Fire Station 7 and associated driveways could be contaminated with gasoline, oil and grease, and residues from truck washing. The proposed development includes installation of bioswales and landscaping around the site. The development would comply with requirements of Alameda County C.3 permit including post-project runoff. The final design for Fire Station 7 would be reviewed for compliance with the C.3 permit requirements to ensure that post-project runoff does not contribute substantially to surface water quality. Compliance with C.3 permit requirements would ensure that operation of Fire Station 7 would have a less than significant impact on water quality.

Fire Station 25

The Fire Station 25 site is located in urbanized/developed areas that contain imperious surfaces. Post-construction runoff at the Fire station 25 site would not be substantially affected by the project. The Fire Station 25 project would need to comply with the requirements of Alameda County C.3 permit including requirements for post-project runoff. The final design for Fire Station 25 would be reviewed for compliance with the C.3 permit requirements to ensure that post-project runoff does not contribute substantially to surface water quality. The Fire Station 25 site design also includes installation of bioswales for stormwater treatment. Because the project would comply with C.3 permit requirements, operation of Fire Station 25 would have a less than significant impact on water quality.

Interim Fire Station 25

Interim Fire Station 25 would be located within an existing building/facility and use of the facility would not create any impacts on water quality.

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

Fire Station 7

Water for Fire Station 7 would be obtained from municipal supplies and the project would not create increased demand for groundwater supplies. Because Fire Station 7 would be constructed on a currently undeveloped site, the increase in impervious surfaces at the project site would decrease infiltration of rainwater at that site. The proposed project would introduce approximately 8,000 square feet of impervious surfaces at the Fire Station 7 site. Fire Station 7 development would need to comply with Alameda County C.3. permit requirements including requirements for management of post-project stormwater runoff. Due to the small area of impervious surfaces that would be introduced at the Fire Station 7 site and required compliance with C.3 stormwater requirements, the impact on groundwater recharge would be less than significant. The proposed project would not interfere with sustainable groundwater management.

Fire Station 25

Water for Fire Station 25 would be obtained from municipal supplies and the project would not create increased demand for groundwater supplies. The proposed replacement Fire Station 25 would be built on a site that is mostly covered by impervious surfaces. Development of Fire Station 25 would thus have a less than significant impact on groundwater recharge and would have no impact on sustainable groundwater management.

Interim Fire Station 25

Water for the interim Fire Station 25 site would be obtained from municipal supplies and the use of the site would not create an increase in demand for groundwater supplies. interim Fire Station 25 would be within an existing facility and would thus have a less than significant impact on groundwater recharge. The proposed project would not interfere with sustainable groundwater management.

C) Would the Project 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 substantial erosion or siltation on- or off-site;

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

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

iv) impede or redirect flood flows?

Fire Station 7

The Fire Station 7 site currently drains towards Pacheco Creek. After construction, the Fire Station 7 site would drain towards the Alameda County storm drain system. Fire Station 7 would re-direct a small amount of flow (less than 1 acre-foot per year) from the Pacheco Creek drainage westward to the Alameda County storm drain system. The limited volume of water redirected to the storm water drainage system would not cause substantial erosion because

flows would be directed to a developed area where no erosion would occur. The small volume of redirected flow would also not cause flooding or exceed the capacity of the stormwater drainage system. The proposed project would also install bioswales and would need to comply with the requirements of the Alameda County C.3. permit, including management of post-project flows. Due to the limited area of development and compliance with C.3 design requirements, the impact on runoff would be less than significant.

No flood flows would be impeded or re-directed because the site is not within a FEMA-mapped flood hazard zone.

Fire Station 25
The proposed new Fire Station 25 would not increase runoff from the site or re-direct any flows because the Fire Station 25 site is located on a fully developed urban site. The runoff from the Fire Station 25 project would continue to flow to the existing storm drain systems. The Fire Station 25 project would not cause substantial erosion because BMPs during construction would limit potential for off-site erosion. In addition, the proposed project would not increase the rate or amount of runoff because no increase in impervious surfaces would occur. Therefore, the impact from the development of Fire Station 25 on erosion and runoff would be less than significant.

No flood flows would be impeded or re-directed because the site is not within a FEMA-mapped flood hazard zone.

Interim Fire Station 25
Interim Fire Station 25 would be located on a fully developed urban site. Runoff from the interim Fire Station 25 project would continue to flow to the existing storm drain systems. In addition, use of the site would not increase the rate or amount of runoff because no increase in impervious surfaces would occur at the site. Therefore, the impact from interim Fire Station 25 on erosion and runoff would be less than significant.

No flood flows would be impeded or re-directed because the site is not within a FEMA-mapped flood hazard zone.

D) Would the Project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? *(No impact)*

Fire Station 7, Fire Station 25, and Interim Fire Station 25
As described in the Environmental Setting above, Fire Station 7, Fire Station 25, and interim Fire Station 25 are located inland. None of the project sites are located within a flood, seiche, or tsunami hazard area. Therefore, the projects would not increase the risk of pollution from flooding, tsunami, or seiche. No impact would occur.

E) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? *(Less than significant)*

Fire Station 7

As discussed in Impact B) above, the new Fire Station 7 would slightly decrease infiltration of rainwater into the groundwater at the Fire Station 7 site. However, this would not significantly affect any plans for groundwater management. In addition, as described above, the project would comply with all State, federal, and local water quality plans by complying with Alameda County C.3. and C.6 permit requirements. Therefore, the impact from conflict with a water quality control plan or sustainable groundwater management plan would be less than significant.

Fire Station 25

As discussed above, Fire Station 25 is located on developed sites that are mostly covered with impervious surfaces. Fire Station 25 would not affect infiltration of rainwater into the groundwater. Therefore, Fire Station 25 would not impede any plans for groundwater management. In addition, as described above, Fire Station 25 would comply with all State, federal, and local water quality plans by complying with Alameda County C.3. and C.6 permit requirements. Therefore, the impact from conflict with a water quality control plan would be less than significant.

Interim Fire Station 25

Interim Fire Station 25 would be located within an existing building/facility and use of the facility would not affect infiltration of rainwater into the groundwater or impede any plans for groundwater management. The short-term use of the facility would not conflict with a water quality control plan. The impact would be less than significant.

3.2.11 Land Use and Planning

Environmental Impacts	Potentially Significant Impact	Less-than-Significant with mitigation incorporated	Less than Significant Impact	No Impact
11. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
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?	☐	☐	☒	☐

Impact Analysis

A) Would the Project physically divide an established community?

Fire Station 7

The Station 7 site is located on an undeveloped lot adjacent to the existing Fire Station 7. The proposed project would replace the existing fire station with a new fire station within an established community in Castro Valley. The proposed project would not include construction of new roads, linear infrastructure, or other development features that would divide an established community or limit movement, travel, or activity between established land uses. No impact would occur.

Fire Station 25

The project would replace the existing fire station with a new fire station in an urbanized area of Castro Valley. The proposed project would not include construction of new roads, linear infrastructure, or other development features that would divide an established community or limit movement, travel, or activity between established land uses. No impact would occur.

Interim Fire Station 25

The interim fire station site is located within an established urbanized area. The proposed project would not construct new roads, linear infrastructure, or other development features that would physically divide any community. No impact would occur.

B) Would the Project 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?

Fire Station 7

The Project is zoned Planned Development and designated as within Open Space-Parks land use. Construction and operation of the fire station would be consistent with the Alameda County General Plan, Planned Development zoning. The proposed project would comply with applicable Alameda County General Plan policies, building codes, and development standards. Therefore, the proposed project would not conflict with any land use plan, policy, or regulation. The impact would be less than significant.

Fire Station 25

The Project is zoned Public Facilities and is within the Public Facilities land use designation. The proposed project is also located within the Castro Valley Central Business District Specific Plan jurisdiction and is designated as within the Intensive Retail Commercial land use category (Alameda County Planning Department 1993). The proposed project would not change the existing use of the project site. Construction and operation of the fire station would be consistent with the permitted use for a Public Facilities land use designation and zoning. The proposed project would comply with applicable Alameda County General Plan (Alameda County Community Development Agency 2022) policies, building codes, and development standards including:

- **Goal 1, P8.** The County shall ensure that new major public facilities, including emergency response facilities (e.g., hospitals and fire stations), and water storage, wastewater treatment and communications facilities, are sited in areas of low geologic risk.

Fire Station 25 is located in an area of low geologic risk consistent with Gola 1, P8, as discussed in Section 3.2.7: Geology and Soils. The proposed project would also contribute to the goals outlined in the Castro Valley General Plan (Alameda County Community Development Agency 2012):

- **Policy 9.2-7 Emergency Response.** Improve the capability of Alameda County public safety agencies, Eden Medical Center Castro Valley, and other public facilities to respond to public emergencies such as earthquakes and major fires.

Therefore, the proposed project would not conflict with any land use plan, policy, or regulation. The impact would be less than significant.

Interim Fire Station 25

Interim Fire Station 25 would use the existing Castro Valley ion building, which is zoned for Public Facilities uses and within a Public Facilities-High Density Residential Mixed Use General Plan land use designation (County of Alameda, n.d.). Operation of the fire station would be consistent with the Alameda County General Plan for permitted use of public facilities.

The proposed project would also contribute to the goals outlined in the Castro Valley General Plan (Alameda County Community Development Agency 2012):

- **Policy 9.2-7 Emergency Response.** Improve the capability of Alameda County public safety agencies, Eden Medical Center Castro Valley, and other public facilities to respond to public emergencies such as earthquakes and major fires.

Minor modifications would be made to the interior and exterior of the building, which would not conflict with any land use plans. The impact would be less than significant.

3.2.12 Mineral Resources

Environmental Impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less than Significant Impact	No Impact
12. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Impact Analysis

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

B) Would the Project 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?

Fire Station 7

The project site is within Mineral Resource Zone-4 (MRZ-4) as designated by the California Department of Conservation (Stinson, Manson, and Plappert 1982). MRZ-4 zones are categorized as areas where information is inadequate for assignment to any other Mineral Resource Zone. There are no known mineral occurrences within the project site. The project site is surrounded by residential uses and open space that are not compatible with mineral resource extraction activities. The site is not located within, adjacent, or near existing mining operations or known mineral resources (Division of Mine Reclamation, California Department of Conservation, n.d.-a). No impact to locally important mineral resource recovery sites would occur.

Fire Station 25

The Fire Station 25 project site is within MRZ-1 as designated by the California Department of Conservation (Stinson, Manson, and Plappert 1982). MRZ-1 zones are categorized as areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. The project site is within an urbanized area, surrounded by commercial and residential uses that are not compatible with mineral resource extraction activities. The site is not located within, adjacent, or near existing mining operations or known mineral resources (Division of Mine Reclamation, California Department of Conservation, n.d.-b). The proposed project would not result in the loss of availability of a known mineral resource or a locally important mineral resource recovery site. No impact to mineral resources would occur.

Interim Fire Station 25

The Project site is within MRZ-1 as designated by the California Department of Conservation (Stinson, Manson, and Plappert 1982). The site is currently developed with an existing administration building which would be temporarily converted to a fire station. The site is not located within, adjacent, or near existing mining operations or known mineral resources (Division of Mine Reclamation, California Department of Conservation, n.d.-c).. The proposed project would not result in the loss of availability of a known mineral resource or a locally important mineral resource recovery site. No impact to mineral resources would occur.

3.2.13 Noise

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less than Significant Impact	No Impact
13. 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?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
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?	☐	☐	☐	☒

Environmental Setting

Existing Noise Environment

The primary sources of noise in the vicinity of the project sites include traffic on nearby roadways and other noise common in residential settings. According to the existing transportation noise contours in the Castro Valley General Plan, ambient Community Noise Equivalent Levels (CNEL) from traffic in the vicinity of Fire Stations 7 and 25 are below 55 dBA (Alameda County Community Development Agency 2012). Ambient CNEL from traffic in the vicinity of interim Fire Station 25 is within the 65 dBA noise contour due to its proximity to I-580 (Alameda County Community Development Agency 2012).

Noise Standards

Federal and State Guidance

Federal Transit Administration

The Federal Transit Administration (FTA) has developed a general construction noise threshold of 90 dBA L_{eq} at the nearest noise-sensitive receptor. According to the FTA, if the combined noise level in 1 hour from the two noisiest pieces of equipment exceeds the 90 dBA threshold at a residential land use (or other noise-sensitive receptors), then there may be a substantial adverse reaction.

In addition, the FTA has developed vibration thresholds to prevent disturbances to (i.e., annoyance of) building occupants based on the frequency of a vibration event (FTA May 20006). Vibrations that are equal to or exceed the vibration thresholds could result in potential disturbance to people or activities. The FTA thresholds of 80 VdB and 83 VdB for infrequent

events[1] are used in this analysis to evaluate disturbance to residences and buildings where people normally sleep and to institutional land uses with primarily daytime use (such as schools), respectively.

California Department of Transportation

The California Department of Transportation (Caltrans) has developed vibration thresholds to prevent damage to nearby buildings based on PPV values to evaluate the potential impact of construction vibration on structures (Caltrans 2020). Construction vibrations that are equal to or exceed the vibration thresholds potentially could result in damage to structures. Construction vibrations could include transient sources (i.e., a single isolated vibration event), such as construction blasting, and continuous or frequent intermittent sources, such as impact pile drivers, vibratory pile drivers, and vibratory compaction equipment. The Caltrans vibration thresholds are shown in Table 3.2-12.

Table 3.2-12 Vibration Thresholds for Structural Impacts

Structure and condition	Maximum peak particle velocity (inches/second)	
	Transient source	Continuous or frequent intermittent source
Extremely fragile historic buildings, ruins	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern commercial buildings	2.0	0.5

Notes:

Transient sources create a single isolated vibration event, such as blasting. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: (Caltrans 2020)

Alameda County Noise Ordinance

Alameda County regulates noise via the County's Noise Ordinance (Code of Ordinance Chapter 6.60). Section 6.60.040 establishes exterior noise level standards based on receiving land use. In accordance with section 6.60.070, the County Noise Ordinance does not apply to noise sources associated with construction if the construction activities occur between 7:00 a.m. and

[1] *Infrequent events* is defined events that occur at a rate of less than 30 per day. The "infrequent events" threshold is appropriate for construction equipment in this analysis based on the nature of proposed construction activities.

7:00 p.m. on weekdays, or between 8:00 a.m. and 5:00 p.m. on weekends. Warning devices for public safety such as fire sirens are exempt from the County Noise Ordinance requirements. Chapter 6.60.050.B. prohibits the generation of vibration levels above the vibration perception threshold at or beyond the property boundary of the source if on private property or at 150 feet from the source if on a public space or public right-of-way.

Table 3.2-13 Alameda County Exterior Noise Level Standards (dBA)

Cumulative number of minutes in any one-hour time period	Daytime	Cumulative number of minutes in any one-hour time period
Single- or multiple-family residential, school, hospital, church, and public library		
30	50	45
15	55	50
5	60	55
1	65	60
0	70	65
Commercial uses		
30	65	60
15	70	65
5	75	70
1	80	75
0	85	80

Source: Alameda County Code of Ordinance Chapter 6.60.040 (Alameda County, n.d.-d).

Sensitive Noise Receptors

Fire Station 7

Noise-sensitive land uses typically include residences, motels and hotels, schools, libraries, houses of worship, hospitals, convalescent homes, and parks and outdoor recreation areas. The noise-sensitive receptors in the vicinity of the project site include residences approximately 65 feet from the project site to the north and to the west along Villareal Drive, the Palomares Hills Recreation Center approximately 60 feet to the southwest, the Palomares Hill Park approximately 650 feet to the east, and Jensen Ranch Elementary School about 880 feet to the southwest of the project site.

Fire Station 25

The noise-sensitive receptors in the vicinity of the project development include residences approximately 15 feet to the north of the project site, the Bee Best Learning Center 30 feet to the south, Castro Valley Elementary School approximately 170 feet to the northwest, ABC Preschool and Day Care approximately 485 feet to the north, Growing Years Preschool approximately 540 feet to the west, and Adobe Park approximately 50 feet west of the project site.

Impact Analysis

A) Would the proposed project result in 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?

Fire Station 7

Construction

Construction of the proposed project is anticipated to begin in May 2025 and last approximately 18 months. The proposed project would include activities such as demolition, site preparation, grading, building construction, and paving. Heavy equipment used for construction activities would include, but not be limited to, dozers, graders, cranes, industrial saws, and paving equipment. No pile driving would occur. Construction of the proposed project would occur between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday, and occasional construction on weekends between 8:00 a.m. and 5:00 p.m. No nighttime construction is expected for the proposed project. Therefore, the proposed project would be exempt from the Alameda County Noise Ordinance.

For construction noise impact, speech interference is used as an indicator for substantial increases in noise levels at nearby noise-sensitive receptors during project construction. In accordance with Caltrans Traffic Noise Analysis Protocol (2020), 67 dBA is the approximate noise level at which the noise begins to interfere with human speech assuming two people are speaking. Standard building structures provide approximately 12 to 17 dBA noise attenuation with windows open (USEPA 1974). With windows closed, the noise attenuation factor is about 20 dBA for older structures and about 25 dBA for newer dwellings. Assuming windows closed and older structure, speech interference could occur when exterior noise levels exceed 87 dBA. The 87 dBA speech interference threshold is more conservative than the FTA 90 dBA threshold and is used in this analysis.

Construction noise levels would vary from day to day, depending on the number and types of equipment being used, the types and duration of activity being performed, the distance between the noise source and the receptor, and the presence or absence of barriers, if any, between the noise source and receptor.

To evaluate noise levels during project construction, the types of construction equipment that would be used on the project site were generated by the most recent version of the California Emissions Estimator Model (CalEEMod, version 2022.1.1), based on the default equipment list. The default construction equipment list is based on a combination of statewide and regional surveys of land use construction projects. In accordance with guidance from FTA, daytime construction noise impacts were evaluated by quantifying the maximum noise levels that would result from the simultaneous operation of the two noisiest pieces of equipment near the perimeter of the project development area closest to a sensitive receptor (FTA 2018). Noise calculations are provided in Appendix B.

Table 3.2-14 shows the proposed project's construction noise levels estimated at the nearest residential, school, and recreational land uses, which were assumed to be 65 feet to the north,

880 feet to the southwest, and 60 feet to the southwest of proposed construction activities, respectively. As shown in Table 3.2-14, project construction would not generate noise levels that could potentially exceed the 87 dBA L_{eq} noise threshold at the nearby residential, school, and recreational receptors. Therefore, construction of the proposed project would not generate excessive noise at nearby sensitive receptors. The impact would be less than significant.

Table 3.2-14 Potential Noise Impacts from Project Construction (dBA Leq[a])

Construction phase	Nearest residential receptor (65 feet distance)	Nearest school receptor (880 feet distance)	Nearest recreational receptor (60 feet distance)
Site preparation	82	59	82
Grading	82	59	82
Building construction	80	58	81
Paving	83	60	83
Exceed the 87 dBA threshold?	**No**	**No**	**No**

Notes:

[a] The average A-weighted noise level during a one-hour period.

Source: (Baseline Environmental Consulting 2024c)

Operation

The primary sources of noise from operation of the existing fire station include on-site vehicle maintenance and movements, fire sirens when responding to emergency calls, and the use of stationary equipment, including an emergency generator. Existing fire station operation and maintenance would be transferred to the new fire station, including sleeping rooms, lockers, bathrooms, and the two drive-through apparatus bays. The existing air compressor and vehicle fueling station would be replaced in kind. The new fueling station would be located behind the new fire station on the southeast portion of the project site, farther away from the nearby residences compared to existing conditions.

The existing 25-kilowatt emergency diesel generator would be replaced with a 100-kilowatt emergency diesel generator. The new generator would be placed on a concrete pad on the west side of the new fire station and enclosed within a privacy fence. Although the new generator would be bigger in size compared to the existing generator, the noise generated by it would be similar to that under existing conditions because the generator would be enclosed and only operate for weekly daytime testing and emergencies. The proposed project would not change the number of employees and the service area of the fire station or the number of emergency calls the employees respond to per month. Therefore, the on-site noise generated by the fire station operations described above would be substantially the same as the existing condition.

In addition, it was conservatively assumed that the proposed project would include a heating, ventilation, and air conditioning (HVAC) system. Although the noise-generating characteristics

and location of the HVAC system for the proposed project was not available at the time of preparation of this analysis, noise from a typical commercial-scale HVAC system can range from approximately 65 to 75 dBA at 50 feet. Operational noise levels of 65 to 75 dBA would exceed the thresholds outlined in Table 3.2-13 at the nearby residential land uses and result in a significant impact. To reduce potential noise impacts related to project operations, Mitigation Measure NOI-1 would be implemented to reduce fixed mechanical equipment noise. Implementation of Mitigation Measure NOI-1 would ensure project operation would not result in excessive noise levels at nearby sensitive receptors. The impact would be less than significant with mitigation.

Fire Station 25

Construction

Construction of the proposed project is anticipated to begin in April 2025 and last approximately 20 months. The proposed project would include activities such as demolition, site preparation, grading, building construction, paving, and interim fire station construction. Heavy equipment used for construction activities would include, but not be limited to, dozers, graders, cranes, industrial saws, and paving equipment. No pile driving would occur. Construction of the proposed project would occur between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday, with occasional construction occurring on weekends between 8:00 a.m. and 5:00 p.m. No nighttime construction is expected for the proposed project. Therefore, the proposed project would be exempt from the Alameda County Noise Ordinance.

For construction noise impact, speech interference is used as an indicator for substantial increases in noise levels at nearby noise-sensitive receptors during project construction. In accordance with Caltrans Traffic Noise Analysis Protocol (2020), 67 dBA is the approximate noise level at which the noise begins to interfere with human speech assuming two people are speaking. Standard building structures provide approximately 12 to 17 dBA noise attenuation with windows open (USEPA 1974). With windows closed, the noise attenuation factor is about 20 dBA for older structures and about 25 dBA for newer dwellings. Assuming windows closed and older structure, speech interference could occur when exterior noise levels exceed 87 dBA. The 87 dBA speech interference threshold is more conservative than the FTA 90 dBA threshold and is used in this analysis.

The project's construction noise levels were estimated at the nearest residential, school, and recreation receptors that were assumed to be approximately 15 feet to the north, 30 feet to the south, and 50 feet to the west of the construction activities, respectively. As shown in Table 3.2-15, project construction would generate noise levels that would exceed the 87 dBA L_{eq} noise threshold by up to 9 dBA L_{eq} at the nearby residential receptors without implementation of noise reduction measures.

Table 3.2-15 Potential Noise Impacts from Project Construction of the Project (dBA Leq[a])

Construction phase	Nearest residential receptor (15 feet distance)	Nearest school [b] receptor (30 feet distance)	Nearest recreation receptor (50 feet distance)
Demolition	96	82	85
Site preparation	93	79	82
Grading	94	80	84
Building construction	92	78	81
Paving	94	82	83
Exceed the 87 dBA threshold?	**Yes**	**No**	**No**
Noise attenuation (dBA) needed?	**Yes**	**No**	**No**

Notes:

[a] The average A-weighted noise level during a one-hour period.

[b] A solid cinder block wall immediately adjacent to the nearest school (i.e., the Bee Best Learning Center), separates the project site from the school. It was assumed that the wall can provide an 8 dBA reduction in noise levels, according to Appendix A of the FHWA's Roadway Construction Noise Model User's Guide.

Source: (Baseline Environmental Consulting 2024d)

According to Appendix A of the Federal Highway Administration's (FHWA's) Roadway Construction Noise Model User's Guide (FHWA 2006), if the noise source is shielded with a solid noise barrier located close to the source, an 8 dBA reduction can be achieved. In addition, reductions of 10 dBA or more can be achieved with optimal muffler systems (FHWA 2017). To reduce potential noise impacts related to project construction at the nearest residential receptors, Mitigation Measure NOI-2 requires the implementation of a Construction Noise Management Plan. The Construction Noise Management Plan would dictate noise-reduction measures to be implemented during construction including, but not limited to, muffling and maintaining all construction equipment, locating all stationary noise-generating construction equipment away from noise-sensitive land uses, and notifying residences and schools adjacent the project site of the project construction schedule prior to commencement of construction activities. Additionally, Mitigation Measure NOI-2 requires the construction or temporary use of noise barriers along the project site's northern perimeter to shield residential receptors from construction and demolition noise. Implementation of Mitigation Measure NOI-2 would ensure project construction would effectively reduce noise levels at the residential receptors so that the project would not result in excessive noise levels at nearby sensitive receptors. With implementation of Mitigation Measure NOI-2, the proposed project would have a less than significant impact.

Operation

The primary sources of noise from operation of the existing fire station include the use of stationary equipment such as HVAC systems and an emergency generator, on-site vehicle maintenance and movements, and fire sirens when responding to emergency calls. Existing fire station operations and maintenance would be transferred to the new fire station, including the apparatus bays, offices, sleeping rooms and lockers, workshops, training rooms, and fleet vehicles. The existing generator and vehicle fueling station would be replaced in kind. The location of the proposed fire station on the project site would be similar to the existing fire station. Additionally, the existing fire station has an HVAC system, as well as noise generated from the new fire station's HVAC system, would be similar to the existing condition. The proposed project would not change the service area of the fire station or the number of emergency calls the employees responded to per month. The Alameda County Noise Ordinance section 6.60.070 exempts fire sirens from noise ordinance requirements. The onsite noise generated by operation of the proposed project would be substantially the same as the existing condition. The new fire station would be staffed with eight employees, which is one employee (two one-way commute trips) more than existing conditions. The increase in off-site traffic noise along the nearby roadways caused by the staff increase would be negligible. The impact would be less than significant.

Interim Fire Station 25

Construction

Construction of the interim fire station would begin in February 2025 and last approximately five months. Heavy equipment used for construction activities would include a small mobile crane, forklift, excavator, loader, and concrete truck. In accordance with guidance from FTA, daytime construction noise impacts were evaluated by quantifying the maximum noise levels that would result from the simultaneous operation of the two noisiest pieces of equipment near the perimeter of the project site closest to a sensitive receptor (FTA 2018). Because construction on the interim fire station site would mainly occur at the proposed apparatus bay location, the distance between the apparatus bay location to the closest sensitive receptor was utilized to estimate construction noise.

The project's construction noise levels were estimated at the nearest residential receptors approximately 70 feet east of the interim fire station. As shown in Table 3.2-16, project construction would not generate noise levels that could potentially exceed the 87 dBA L_{eq} noise threshold at the nearby residential receptors. Therefore, construction of the interim fire station would not generate excessive noise at nearby sensitive receptors. The impact would be less than significant.

Table 3.2-16 Potential Noise Impacts from Construction of the Interim Fire Station (dBA Leq[a])

Construction phase	Nearest residential receptor (70 feet distance)
Interim Fire Station	81
Exceed the 87 dBA Threshold?	**No**

Source: (Baseline Environmental Consulting 2024d)

Operation

The primary sources of noise from operation of the interim fire station would include the use of stationary equipment such as HVAC systems, an emergency generator, on-site vehicle maintenance and movements, and fire sirens when responding to emergency calls. The interim fire station would use the existing Castro Valley Administration building and parking lot; therefore, the noise generated from HVAC system and parking lot activities would be the same as the existing condition. On-site vehicle maintenance would occur in the enclosed apparatus bay, which would shield the noise. Operation of the emergency generator would be limited to periodic daytime testing (i.e., up to 50 hours each over the course of a year) and emergencies. In accordance with Alameda County Noise Ordinance section 6.60.070, fire sirens are exempted from noise ordinance requirements. Upon completion of the new fire station construction, the fire station operations at the interim fire station would be transferred to the new fire station. The impact from fire sirens when responding to emergency calls would be temporary. The interim fire station would be staffed with seven employees. The increase in off-site traffic noise along the nearby roadways caused by the staff increase would be negligible. In summary, operation of the interim fire station would not result in excessive noise levels at nearby sensitive receptors. The impact would be less than significant.

B) Would the proposed project result in generation of excessive groundborne vibration or groundborne noise levels?

Fire Station 7

Construction

Groundborne vibrations would be generated during project construction because of the use of construction equipment and the presence of truck traffic. Construction activities can result in varying degrees of ground vibration depending on the equipment, activity, and soil conditions. The proposed project would utilize bulldozers, rollers, and trucks that could generate groundborne vibration. To evaluate the project's potential vibration effects on nearby sensitive receptors, a buffer distance that would be needed to avoid exceeding the FTA and Caltrans construction vibration thresholds mentioned above was estimated for each type of equipment. It was conservatively assumed that the equipment that could generate substantial ground vibration would be used near the project boundaries. The estimated buffer distances for

potential disturbance and building damage are summarized in Table 3.2-17 and Table 3.2-18, respectively.

The potential vibration levels generated by each type of construction equipment were estimated at 150 feet from the project site to evaluate the potential vibration disturbance impact. The estimated vibration levels at 150 feet are summarized in Table 3.2-17.

Table 3.2-17 Potential Vibration Disturbance during Construction

Construction equipment	Vibration levels at 150 feet (VdB)	Buffer distances to prevent potential human disturbance (feet)	
		School (Threshold: 83 VdB)[a]	Residential (Threshold: 80 VdB)[b]
Vibratory roller	71	58	73
Large bulldozer	64	34	43
Loaded trucks	63	31	40
Small bulldozer	35	4	5
Exceed the 75 VdB at 150 feet Threshold?	**No**	**Not applicable**	**Not applicable**

Notes:

[a] The FTA thresholds of 83 VdB for institutional land uses with primarily daytime use from infrequent construction events was used to calculate the buffer distances from construction equipment.

[b] The FTA thresholds of 80 VdB for residences and buildings where people normally sleep from infrequent construction events was used to calculate the buffer distances from construction equipment.

Source: (Baseline Environmental Consulting 2024c)

Table 3.2-18 Potential Vibration Damage to Buildings during Construction

Construction equipment	Buffer distances to prevent potential structural damage (feet)	
	Modern commercial (threshold: 0.5 inches per second)[a]	Residential (threshold: 0.3 inches per second)[b]
Vibratory roller	14	20
Large bulldozer	8	11
Loaded trucks	7	10
Small bulldozer	1	1

Notes:

[a] The Caltrans vibration threshold of 0.5 in/sec for modern commercial buildings was used to calculate the buffer distances from construction equipment for the Palomares Hills Recreation Center.

[b] To be conservative, the Caltrans vibration threshold of 0.3 in/sec for older residential structures was used to calculate the buffer distances from construction equipment for the nearby residences.

Source: (Baseline Environmental Consulting 2024c)

As shown in Table 3.2-17, vibration levels 150 feet from construction equipment would not exceed the 75 VdB threshold for human disturbance. The construction equipment that would require the largest buffer distance to avoid generating vibration levels that could cause human disturbance is the vibratory roller. Vibration from a vibratory roller could exceed the 83 VdB threshold at institutional land uses located within 58 feet of the project site, as shown in Table 3.2-17. The closest institutional land use, the Jensen Ranch Elementary School, is approximately 880 feet away from the project site and would be outside the required buffer distance. Therefore, construction activities would not generate excessive vibration levels that could potentially disturb normal school operations. Vibration from a vibratory roller could exceed the 80 VdB threshold at residences and buildings where people normally sleep located within 73 feet of the project site. The closest residential land use is about 65 feet away from the project site. Therefore, construction activities could generate excessive vibration levels that would potentially disturb residential activities. As mentioned above, the construction hours of the project would generally be scheduled during the daytime from 7 a.m. to 5 p.m., Monday through Friday, and possibly on weekends between 8 a.m. and 5 p.m. No nighttime construction is expected for this project. Any impact related to noise and vibration would be restricted to normal daytime hours and would reduce the likelihood of disturbance to residents (e.g., sleep disturbance). As vibration annoyance impacts on people within residential buildings due to nighttime construction would not occur, construction activities would not be expected to generate excessive vibration levels that would disturb nearby residents.

Structures in the vicinity of the project site that could potentially be damaged by construction vibration include residences to the north and the Palomares Hills Recreation Center to the southwest of the project site. As shown in Table 3.2-17, the construction equipment that would require the largest buffer distance to avoid generating vibration levels that could potentially damage a nearby building structure is the vibratory roller. A vibratory roller would require a 14-foot buffer to avoid potential damage to the Palomares Hills Recreation Center and a 20-foot buffer to avoid potential damage to the nearby residential buildings. The residences are approximately 65 feet from the project site, and the Palomares Hills Recreation Center is approximately 60 feet from the project site. Therefore, the Palomares Hills Recreation Center and residential structures are outside of the required buffer distances, and project construction would not generate vibration levels above the Caltrans building damage thresholds. Therefore, project construction activities would not generate excessive vibration levels that could potentially cause structural damage. The impact would be less than significant.

Operation

Operation of the proposed project would not involve equipment or activities that would generate excessive groundborne vibration or groundborne noise levels. Therefore, project

operation would not generate excessive groundborne vibration in the project vicinity. The impact would be less than significant.

Fire Station 25

New Fire Station

Groundborne vibrations would be generated during project construction because of the use of construction equipment and the presence of truck traffic. The proposed project would utilize bulldozers, rollers, and trucks that could generate groundborne vibration. The potential vibration levels generated by each type of construction equipment were estimated at 150 feet from the project site to evaluate the potential vibration disturbance impact. In addition, buffer distances that would be needed to avoid exceeding the FTA and Caltrans construction vibration thresholds for structural damage were estimated for each type of construction equipment. The primary types of equipment that would generate ground vibration during project construction and the associated vibration calculations are included in Appendix B. It was conservatively assumed that the equipment that could generate substantial ground vibration would be used near the project boundaries. The estimated vibration levels at 150 feet and the buffer distances that would be required to reduce excessive vibration levels to below the construction thresholds for building structural damage are summarized in Table 3.2-19, below. As shown in Table 3.2-19, vibration levels 150 feet from construction equipment would not exceed the 75 VdB threshold for human disturbance.

Table 3.2-19 Potential Vibration Disturbance during Construction

Construction equipment	Vibration levels at 150 feet (VdB)	Buffer distances to prevent human disturbance (feet)	
		School (Threshold: 83 VdB[a])	Residential (Threshold: 80 VdB)[b]
Vibratory roller	71	58	73
Large bulldozer	64	34	43
Loaded trucks	63	31	40
Small bulldozer	35	4	5
Exceed the 75 VdB at 150 feet Threshold?	**No**	**Not Applicable**	**Not Applicable**

Notes:

[a] The FTA thresholds of 83 VdB for institutional land uses with primarily daytime use from infrequent construction events was used to calculate the buffer distances from construction equipment.

[b] The FTA thresholds of 80 VdB for residences and buildings where people normally sleep from infrequent construction events was used to calculate the buffer distances from construction equipment.

Source: (Baseline Environmental Consulting 2024d)

Table 3.2-20 Potential Vibration Damage to Buildings during Project Construction

Construction equipment	Buffer distances to prevent potential structural damage (feet)	
	Modern commercial (Threshold: 0.5 in/sec)[a]	Residential (Threshold: 0.3 in/sec)[b]
Vibratory roller	14	20
1.5-ton vibratory roller	5	7
Large bulldozer	8	11
Loaded trucks	7	10
Small bulldozer	1	1

Notes:

[a] The Caltrans threshold vibration threshold 0.5 in/sec for modern commercial buildings was used to calculate the buffer distances from construction equipment for the Palomares Hills Recreation Center.

[b] To be conservative, the Caltrans vibration threshold of 0.3 in/sec for older residential structures was used to calculate the buffer distances from construction equipment for the nearby residences.

Source: (Baseline Environmental Consulting 2024d)

As shown in Table 3.2-19, the construction equipment that would require the largest buffer distance to avoid generating vibration levels that could cause human disturbance is the vibratory roller. Vibration from a vibratory roller could exceed the 80 VdB threshold at residences where people normally sleep within 73 feet of the project site. The nearest residence is approximately 15 feet from the project site. Therefore, construction activities could generate excessive vibration levels that potentially disturb residential activities. The use of vibration-generating equipment would primarily occur during the demolition, site preparation, and grading construction phases. These phases are anticipated to last approximately 3 months in total. As mentioned above, the construction hours of the project would generally be scheduled during the daytime from 7 a.m. to 5 p.m., Monday through Friday, and possibly on weekends between 8 a.m. and 5 p.m. No nighttime construction is expected for this project. Any impact related to noise and vibration would be restricted to normal daytime hours and reducing the likelihood of disturbance of residents (e.g., sleep disturbance). As vibration annoyance impacts on people within residential buildings related to nighttime construction would not occur, construction activities would not be expected to generate excessive vibration levels that would disturb nearby residents.

As shown in Table 3.2-19, vibration from a vibratory roller could exceed the 83 VdB threshold at institutional land uses located within 58 feet of the project site. The nearest institutional land use, the Bee Best Learning Center, is approximately 30 feet from the proposed building footprint. Therefore, the Bee Best Learning Center could be exposed to vibration levels that exceed 83 VdB threshold for institutional land uses. The exposure of a given receptor to vibration in excess of these thresholds would be limited in duration because the location of construction equipment would vary throughout the day depending on the location where the

vibration-generating equipment is being used, and the use of vibratory rollers or large bulldozers would be limited to a short period of the overall construction duration. The non-stationary equipment also would not produce prolonged vibration at the receptor. As mentioned above, the use of vibration-generating equipment would be limited to demolition, site preparation, and grading for about 3 months in total. However, significant human disturbance impacts to the Bee Best Learning Center from vibration could occur.

The proposed project would implement Mitigation Measure NOI-3 which requires the preparation of a Construction Vibration Management Plan. Mitigation Measure NOI-3 requires the implementation of vibration reduction measures during construction. These measures include maintaining, to the extent feasible, a minimum distance of 20 feet between vibration-generating construction equipment and the adjacent residential buildings to the north of the project site and a minimum distance of 14 feet between vibration-generating construction equipment the adjacent Bee Best Learning Center to the south of the project site and coordinating daytime construction activities that would produce vibration in excess of the human disturbance threshold for institutional land uses with the Bee Best Learning Center. With implementation of Mitigation Measure NOI-3, the proposed project would have less than significant impact on groundborne vibration levels.

Interim Fire Station 25

As shown in Table 3.2-19, vibration levels at 150 feet from the construction equipment would not exceed the 75 VdB threshold for human disturbance. Therefore, construction activities at the interim fire station site would not generate excessive vibration levels that could potentially cause disturbance.

The nearest commercial building to the proposed apparatus bay area is the Boulevard Auto repair shop, located about 65 feet to the south, and the nearest residential building is the multi-family apartment building located about 70 feet to the east. Because the interim fire station is an existing building that would not require substantial construction activities/equipment, and nearby structures are located outside of the required buffer distances, construction at the interim fire station site would not generate vibration levels above the Caltrans building damage thresholds. Therefore, construction activities at the interim fire station site would not generate excessive vibration levels that could cause structural damage. The impact would be less than significant.

C) For a proposed 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 proposed project expose people residing or working in the project area to excessive noise levels? *(No impact)*

Fire Station 7, Fire Station 25, and Interim Fire Station 25

The projects are not located within 2 miles of a public airport, within an existing or projected airport land use plan, or in the vicinity of a private airstrip. The nearest airport is the Hayward Executive Airport. No impact would occur.

Mitigation Measures

Mitigation Measure NOI-1: Fixed Mechanical Equipment Noise Control for Building Operation

The following noise reduction measures shall be implemented at Fire Station 7 to reduce potential HVAC noise impacts from at the nearby noise-sensitive receptors:

1. Enclosing HVAC equipment within a sound reducing barrier, if feasible;
2. Installing relatively quiet models of air handlers, exhaust fans, and other mechanical equipment;
3. Using mufflers or silencers on equipment exhaust fans, if feasible;
4. Orienting or shielding HVAC equipment to protect noise-sensitive receptors to the extent feasible;
5. Increasing the distance between noise-generating HVAC equipment and noise-sensitive receptors; and/or
6. Placing barriers around the equipment to facilitate the attenuation of noise.

Mitigation Measure NOI-2: Construction Noise Management Plan

The following noise reduction measures shall be implemented during construction at Fire Station 25:

1. The contractor shall properly muffle and maintain all construction equipment powered by internal combustion engines.
2. Idling of combustion engines shall be limited to a maximum of 5 minutes.
3. All stationary noise-generating construction equipment, such as air compressors, shall be located as far as practical from existing nearby residences, schools, and other noise-sensitive land uses. To the extent feasible, such equipment shall also be acoustically shielded with partial enclosures or temporary noise barriers.
4. Select quiet construction equipment, particularly air compressors, whenever possible. Fit motorized equipment with proper mufflers in good working order.
5. Construct or use temporary noise barriers (a minimum of 8 feet in height) along the northern perimeter to shield construction and demolition noise from noise-sensitive receptors to the extent feasible. Examples of barriers include solid plywood construction barrier and/or construction noise barrier blankets on temporary fencing. These noise barriers should be installed without cracks or gaps in the face or large or continuous gaps at the base. The materials used to construct the noise barrier should have a minimum surface weight of 2.5 pounds per square feet, such as ¾-inch plywood panels. Construction noise barrier blankets should have a minimum STC rating of 25. Temporary noise barriers shall be in place during demolition and grading phases of the construction.
6. Residences and the school adjacent to project sites shall be notified 14 days in advance of construction. The notification shall include information regarding construction schedule and contact information for a "noise disturbance

coordinator" responsible for responding to any local complaints about construction noise.

7. The contractor shall designate a "noise disturbance coordinator" responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of any noise complaint (e.g., starting too early, bad muffler) and shall require that reasonable measures be implemented to correct the problem. A telephone number for the noise disturbance coordinator shall be posted at the construction site.

Mitigation Measure NO-3: Construction Vibration Management Plan

The following vibration reduction measures shall be implemented during demolition, site preparation, and grading at Fire Station 25:

1. To the maximum extent practicable, the contractor shall coordinate with Bee Best Learning Center to schedule vibration generating construction activities (e.g., vibratory roller, large bulldozer) within 50 feet of Bee Best Learning Center during periods that will minimize disruption to learning activities.
2. For vibration-generating construction equipment, maintain a minimum distance of 20 feet between the directly adjacent residential buildings to the north of the project site and 14 feet from the Bee Best Learning Center to prevent exceedance of the Caltrans structural damage thresholds. The project applicant shall verify whether the required buffer distances mentioned above can be maintained when using vibration-generating construction equipment. If the buffer distance cannot be maintained, implement the next measure.
3. Any compaction required less than 20 feet from the adjacent residential structures and 14 feet of the Bee Best Learning Center would be accomplished by using non-vibratory compaction rollers or vibratory rollers rated at 1.5 tons or less.
4. If the 20-foot buffer distance from residences and 14-foot buffer distance from Bee Best Learning Center cannot be maintained and low vibration equipment is not available, the contractor shall conduct a pre-construction survey of the residential buildings and the Bee Best Learning Center adjacent the project site to establish the baseline structural conditions including, but not limited to, the location and extent of any visible cracks or spalls on the buildings. The survey should include written descriptions and photographs of the buildings. Upon completion of the project and at the request of the property owner, the buildings will be resurveyed, and any new cracks or other changes in the buildings will be compared to pre-construction conditions, and a determination will be made as to whether the proposed project caused the damage. If it is determined that project construction resulted in damage to a building, the damage will be repaired to pre-existing condition by the project applicant, provided that the property owner approves of the repair.

3.2.14 Population and Housing

Environmental Impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
14. 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)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Impact Analysis

A) The proposed Project would not 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).

B) The proposed Project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

Fire Station 7

The proposed project would construct a new fire station on the parcel adjacent the existing fire station on Villareal Drive. The proposed project would replace the existing fire station, and no new homes or businesses would be constructed. The three employees at the existing fire station would be transferred to the new fire station. No new employees would be hired as a result of the proposed project. Therefore, the proposed project would not directly induce unplanned population growth. Utilities extension for Fire Station would only be for the project site and would not include the extension of roads or other infrastructure that would indirectly induce population growth in the area. No impact from population growth would occur.

The project site is undeveloped, and no housing units are on the project site. The proposed project would not involve the displacement or relocation of any existing people or housing units. The proposed project would include dormitories for firefighters to utilize during their work shift and would not be considered permanent housing. Therefore, the proposed project would have no direct impact related to the displacement of housing units and would not necessitate construction of any replacement housing elsewhere that could result in physical environmental effects. No impact from displacement of housing would occur.

Fire Station 25

The proposed project would replace the existing Fire Station 25 located at 20290 San Miguel Ave Castro Valley, California, 94546. The proposed project would replace the existing fire station, and no new homes or businesses would be constructed. Approximately eight employees would staff the fire station, the seven existing employees would be moved to the new fire station on its

completion, and one new employee would be hired or transferred from a different ACFD fire station. Hiring one additional fire station employee would not induce substantial unplanned population growth in the unincorporated Castro Valley. Therefore, the proposed project would not directly induce unplanned population growth by proposing new homes or businesses. The project site is serviced by existing utilities and would not include the extension of roads or other infrastructure. No impact related to unplanned population growth would occur.

The proposed project would demolish the existing Fire Station 25 and construct a new fire station on the project site. The proposed project would include dormitories for firefighters to utilize during their work shift and would not be considered permanent housing. Therefore, the proposed project would have no direct impact related to the displacement of housing units and would not necessitate construction of any replacement housing elsewhere that could result in physical environmental effects. No impact would occur.

Interim Fire Station 25

The proposed project would utilize an existing building, and no new homes or businesses would be constructed. All employees from the existing Fire Station 25 would be transferred to the interim fire station. Therefore, the proposed project would not directly induce unplanned population growth by proposing new homes or businesses. The project site is serviced by existing utilities and would not include the extension of roads or other infrastructure. No impact related to unplanned population growth would occur from the interim fire station.

The interim fire station would not contain any housing units. The proposed project would include dormitories for firefighters to utilize during their work shift and would not be considered permanent housing. Therefore, the proposed project would have no direct impact related to the displacement of housing units and would not necessitate construction of any replacement housing elsewhere that could result in physical environmental effects. No impact would occur.

3.2.15 Public Services

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
15. PUBLIC SERVICES.				
a) 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:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Impact Analysis

A) 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.

Fire protection

Fire Station 7, Fire Station 25, and Interim Fire Station 25

The ACFD provides fire protection services to unincorporated Alameda County, including Castro Valley(Alameda County Community Development Agency 2012). The proposed project would construct new fire stations (Fire Station 7 and Fire Station 25) to provide fire services to the surrounding community. The proposed project would upgrade and replace outdated facilities in order to reduce emergency response times and enhance disaster response. The proposed project would support future fire protection services and would have no adverse impact to the provision of fire protection services.

Police protection

Fire Station 7, Fire Station 25, and Interim Fire Station 25

The Alameda County Sheriff's Office provides police protection services to unincorporated Alameda County, including Castro Valley. The Alameda County Sheriff's Office consists of 1,700 positions, with approximately 1,000 sworn personnel. The proposed project would replace the existing Fire Station 7 and Fire Station 25 with new fire stations. The new fire stations would

not affect police department response times or require new police facilities. Therefore, the proposed project would have a no adverse impact related to police protection services.

Schools

Fire Station 7, Fire Station 25, and Interim Fire Station 25

The proposed project would not generate population growth that would introduce new children to the area or otherwise affect any schools. No impact would occur.

Parks

Fire Station 7, Fire Station 25, and Interim Fire Station 25

The fire stations would house firefighters who would remain on site during their shifts and would not use or create increased demand for parks. The proposed project would also not induce population growth or otherwise create demand for parks. Therefore, the proposed project would have no impact related to parks.

Other public facilities

Fire Station 7, Fire Station 25, and Interim Fire Station 25

The replacement fire stations would not create any new demand for other public facilities. No impacts to other public facilities from the proposed project would occur.

3.2.16 Recreation

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less than Significant Impact	No Impact
16. 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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Impact Analysis

A and B) 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? 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?

Fire Station 7

The proposed projects would not include the construction of any recreational facilities. The Palomares Hills HOA is located adjacent the project site and includes recreational facilities such as a swimming pool and tennis courts. Palomares Hills Park is located approximately 0.15-mile east of the proposed project. The proposed project would not restrict access to Palomares Hills Park, and fire fighters would not use recreational facilities.

As discussed in Section 3.2.14: Population and Housing, the proposed project would not directly or indirectly support substantial population growth. Therefore, the proposed project would not increase the use of neighborhood and regional parks or other recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. No impact would occur.

Fire Station 25

The proposed project does not include construction or expansion of any recreational facilities. Castro Valley Community Park is located approximately 0.8-mile northwest of the project site. Castro Valley Swim Center is located approximately 0.5-mile northeast of the project site. To the west of the proposed project is Adobe Park, a recreational area for the surrounding community. Adobe Park would not be required to close or suspend access to the public during any phase of the project. No impact on any recreational facilities would occur during construction.

As discussed in Section 3.2.14: Population and Housing, the proposed project would not directly or indirectly support substantial population growth. Therefore, the proposed project would not increase the use of neighborhood and regional parks or other recreational facilities or

require the construction or expansion of recreational facilities such that it might have an adverse physical effect on the environment. No impact would occur.

Interim Fire Station 25

The proposed project does not include construction or expansion of any recreational facilities. Don Castro Park is located approximately 0.7-mile southeast of the project site. Castro Valley Swim Center is located approximately 0.8-miles northwest of the project site. Surrounding recreational facilities would not be required to close or suspend access to the public during any phase of the project. No impact on recreational facilities would occur.

As discussed in Section 3.2.14: Population and Housing, the proposed project would not directly or indirectly support substantial population growth. Therefore, the proposed project would not increase the use of neighborhood and regional parks or other recreational facilities or require the construction or expansion of recreational facilities such that it might have an adverse physical effect on the environment. No impact would occur.

3.2.17 Transportation

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
17. TRANSPORTATION. Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☒	☐	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
d) Result in inadequate emergency access?	☐	☐	☐	☒

Environmental Setting

Fire Station 7

Access to Fire Station 7 is provided along Villareal Drive, a two-lane roadway with sidewalks on both sides. The project site is not served by any existing bikeways or public transit facilities. Class II and Class III bikeways are proposed along Villareal Drive in the vicinity of the project site (Alameda County Public Works Agency 2019).

Fire Station 25

Fire Station 25 is located on San Miguel Avenue, a north–south two-lane roadway. I-580, an east–west Interstate highway is located approximately 0.4 mile south of the project site. AC Transit bus route 28 is located approximately 550 feet south of the project site along Castro Valley Boulevard. The nearest 28 bust stop is located at the corner of Santa Maria Avenue and Castro Valley Boulevard approximately 665 feet southeast of the project site (Alameda-Contra Costa Transit District, n.d.).

An existing Class II bikeway is located along Castro Valley Boulevard and a Class III bikeway is proposed along San Miguel Avenue in the vicinity of the project site (Alameda County Public Works Agency 2019).

Interim Fire Station 25

The interim Fire Station 25 is located on Marshall Street, a two-way north–south street. Major highways near the fire station include I-580, located approximately 620 feet south of interim Fire Station 25. AC Transit bus route 28 runs approximately 1,100 feet east of Marshall Street on Center Street (Alameda-Contra Costa Transit District, n.d.). There are no existing or proposed bikeways within the vicinity of the interim Fire Station 25 project site (Alameda County Public Works Agency 2019).

Impact Analysis

A) Would the proposed project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Fire Station 7

Construction

Project construction would generate additional vehicle travel on area roadways from construction-worker vehicles and truck trips associated with delivery of equipment and materials and removal of excavated material and waste. Construction of the proposed project would require approximately 10 truck trips per day and 30 vehicle trips per day. All vehicle and equipment staging would occur on site. No lane or road closures would be required during construction activities. The existing Fire Station 7 would remain operational during project construction.

There are no bicycle routes or public transit stops within the proposed project vicinity. Sidewalks provide pedestrian access to the project site. No lane or road closures would occur that would interfere with pedestrian, bicycle, and transit access. Temporary sidewalk closures may occur during construction of the proposed project site driveways. While the sidewalk closure would be temporary, the closure would degrade public access and result in a significant impact if safe detours were not provided. Mitigation Measure TRAN-1 requires the preparation and implementation of Transportation Management Plan in accordance with the California Manual on Uniform Traffic Control (MUTCD) which would include measures for protecting pedestrians and bicyclists surrounding the project sites. Additionally, Mitigation Measure TRAN-1 requires the use of flaggers and signage where appropriate to redirect pedestrians around sidewalks closures and prevent conflicts with construction traffic. Therefore, the proposed project would not conflict with plans, programs, and policies regarding bicycle, pedestrian, or transit facilities, or decrease the performance of such facilities with implementation of Mitigation Measure TRAN-1. Impacts would be less than significant with mitigation incorporated.

Operation

During project operations, Fire Station 7 would respond to approximately 31 emergency calls monthly. Operations would be the same as operations for the existing Fire Station 7. Ingress to the project site would be provided by the existing 30-foot driveway. An up to 40-foot new driveway would be constructed to provide egress for apparatus bay vehicles, including fire engines, onto Villareal Drive. The driveways would be able to accommodate the wide turns from the fire engines and other large vehicles. The proposed project would not affect area roadways or increase in daily vehicle traffic. Therefore, implementation of the proposed project would not conflict with plans, programs, and policies regarding transportation facilities or decrease the performance of such facilities. Impacts would be less than significant.

Fire Station 25

Construction

Project construction would generate additional vehicle travel on area roadways from construction-worker vehicles and truck trips associated with delivery of equipment and materials and removal of excavated material and waste. Construction of the proposed project would require approximately 10 truck trips per day and 40 vehicle trips per day. All vehicle and equipment staging would occur on site. No lane or road closures would be required during construction activities. All vehicle and equipment staging would occur on site. No lane or road closures would be required during construction activities. Fire station operations would be transferred to the interim Fire Station 25 facility during project construction.

The BART Castro Valley station is located approximately 0.5 mile southeast of the project site. The AC Transit 28 bus route is located approximately 550 southwest of the project site. The proposed project would not affect public transit access since there is no public transit adjacent to the project site. Therefore, implementation of the proposed project would not conflict with plans, programs, and policies regarding transit facilities or decrease the performance of such facilities. Impacts would be less than significant.

Castro Valley Boulevard and San Miguel Avenue are identified as Class II and Class III bikeways in the Alameda County Bicycle and Pedestrian Master Plan, respectively. Construction activities would not require the temporary or permanent closure of any identified bicycle routes. Sidewalks provide pedestrian access to the project site. As discussed above, no lane or road closures would occur that would interfere with pedestrian or bicycle access. Temporary sidewalk closures may occur during construction of the proposed project driveways. While the sidewalk closure would be temporary, the closure would degrade public access and result in a significant impact if safe detours were not provided. Mitigation Measure TRAN-1 requires the preparation and implementation of Transportation Management Plan in accordance with the California Manual on Uniform Traffic Control (MUTCD), which would include measures for protecting pedestrians and bicyclists surrounding the project sites. Additionally, Mitigation Measure TRAN-1 requires the use of flaggers and signage where appropriate to redirect pedestrians around sidewalks closures and prevent conflicts with construction traffic. Therefore, the proposed project would not conflict with plans, programs, and policies regarding bicycle, pedestrian, or transit facilities or decrease the performance of such facilities with implementation of Mitigation Measure TRAN-1. Impacts would be less than significant with mitigation incorporated.

Operation

During project operations, Fire Station 25 would respond to approximately 238 emergency calls monthly. Operations would be the same as operations for the existing Fire Station 25. The proposed project would not affect area roadways or increase in daily vehicle traffic. Site ingress/egress would generally remain the same as existing conditions and would be able to accommodate large turns from fire engines and other large vehicles. Therefore, implementation of the proposed project would not conflict with plans, programs, and policies regarding

transportation facilities, or decrease the performance of such facilities. Impacts would be less than significant.

Interim Fire Station 25

Project construction would generate additional vehicle travel on area roadways from construction-worker vehicles and truck trips associated with delivery of equipment and materials and removal of excavated material and waste. Construction of the proposed project would require approximately 20 truck trips and vehicle trips per day. All vehicle and equipment staging would occur on site. No lane or road closures would be required during construction activities. All vehicle and equipment staging would occur on site. No lane or road closures would be required during construction activities.

The AC Transit 28 bus route is located approximately 1,100 feet east of the project site. The proposed project would not affect public transit access since there is no public transit adjacent to the project site. Therefore, implementation of the proposed project would not conflict with plans, programs, and policies regarding transit facilities, or decrease the performance of such facilities. Impacts would be less than significant.

There are no bicycle routes within the proposed project vicinity. Sidewalks provide pedestrian access to the project site. No lane or road closures would occur that would interfere with pedestrian, bicycle, and transit access. Temporary sidewalk closures may occur during construction of the proposed project driveways. While the sidewalk closure would be temporary, the closure would degrade public access and result in a significant impact if safe detours were not provided. Mitigation Measure TRAN-1 requires the preparation and implementation of Transportation Management Plan in accordance with the California Manual on Uniform Traffic Control (MUTCD), which would include measures for protecting pedestrians and bicyclists surrounding the project sites. Additionally, Mitigation Measure TRAN-1 requires the use of flaggers and signage where appropriate to redirect pedestrians around sidewalks closures and prevent conflicts with construction traffic. Therefore, the proposed project would not conflict with plans, programs, and policies regarding bicycle, pedestrian, or transit facilities, or decrease the performance of such facilities with implementation of Mitigation Measure TRAN-1. Impacts would be less than significant with mitigation incorporated.

B) Would the proposed project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

In accordance with the *Technical Advisory on Evaluating Transportation Impacts in CEQA*, section 21099 of the Public Resources Code states that the criteria for determining the significance of transportation impacts must promote 1) reduction of GHG emissions; 2) development of multimodal transportation networks; and 3) a diversity of land uses (Governor's Office of Planning and Research [OPR] 2018). The Governor's Office of Planning and Research identifies a screening threshold for identifying small land use projects those that generate or attract fewer than 110 trips per day. Projects that generate fewer than this threshold may be assumed to cause a less-than-significant transportation impact (Governor's Office of Planning and Research [OPR] 2018).s

Fire Station 7
During proposed project construction, vehicle miles traveled (VMTs) would temporarily increase due to construction vehicles and equipment. Construction would require a maximum of 10 truck trips and 30 vehicle trips daily. The daily number of vehicle trips associated with the proposed project construction would not exceed 110 trips per day. Operation of the new Fire Station 7 would not increase VMTs as the existing service calls would be the same as the existing facility. Additionally, Fire Station 7 responds to approximately 31 emergency calls per month and would generate low VMTs. The impact would be less than significant.

Fire Station 25
During proposed project construction, VMT would temporarily increase due to construction vehicles and equipment. Construction would require a maximum of 10 truck trips and 40 vehicle trips daily. The daily number of vehicle trips associated with the proposed project construction would not exceed 110 trips per day. Fire Station 25 responds to approximately 238 emergency calls per month and would generate low VMT. Use of the interim Fire Station would occur for the duration of construction activities and would not generate any permanent VMT. Operation of the new Fire Station 25 would not increase VMT as the existing service calls would be the same as the existing facility. The impact would be less than significant.

Interim Fire Station 25
During construction of the interim fire station, VMT would temporarily increase due to construction vehicles and equipment. Construction would require a maximum of 20 vehicle and haul trips daily. The daily number of vehicle trips associated with the proposed project construction would not exceed 110 trips per day. Interim Fire Station 25 would have similar operations compared to the existing Fire Station 25 and would not generate a net increase in VMT. The impact would be less than significant.

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

Fire Station 7
Construction
As discussed above, the proposed project would not require any lane or road closures during project construction. Temporary sidewalk closures would occur during construction, which would be a potential hazard for pedestrians in the area. The proposed project would implement Mitigation Measure TRAN-1, which includes a Traffic Management Plan that addresses pedestrian safety. In accordance with Mitigation Measure TRAN-1, flaggers and signage would be used where appropriate to redirect pedestrians around sidewalk closures and prevent conflicts with construction traffic. With implementation of Mitigation Measure TRAN-1, hazards to pedestrians would be less than significant.

Operation
The proposed project would not include any design features that would increase circulation hazards. No new roadways or access roads would be constructed for the proposed project. The proposed project would not require any lane or road closures that would increase circulation

hazards. The existing 30-foot driveway used for ingress at the existing fire station would be used for the proposed Fire Station 7. An up to 40-foot egress apron would be constructed along Villareal Drive to allow the fire engines to safely exit the apparatus bays onto Villareal Drive. The proposed driveways would provide vehicular access to and from Villareal Drive. The driveways would be able to accommodate the wide turns generated by the fire engines and would not include any dangerous intersections or sharp curves. No impact would occur.

Fire Station 25

Construction

As discussed above, the proposed project would not require any lane or road closures during project construction. Temporary sidewalk closures would occur during construction, which would be a potential hazard for pedestrians in the area. The proposed project would implement Mitigation Measure TRAN-1, which includes a Traffic Management Plan that addresses pedestrian safety. In accordance with Mitigation Measure TRAN-1, flaggers and signage would be used where appropriate to redirect pedestrians around sidewalk closures and prevent conflicts with construction traffic. With implementation of Mitigation Measure TRAN-1, hazards to pedestrians would be less than significant.

Operation

The proposed project would not include any design features that would increase circulation hazards. No new roadways or access roads would be constructed for the proposed project. The proposed project would not require any lane or road closures. Site ingress/egress would generally be the same as existing conditions. Therefore, the site would be able to accommodate the wide turns of the fire engines. The proposed driveways would provide vehicular access to and from San Miguel Avenue and would not include any dangerous intersections or sharp curves. No impact would occur.

Interim Fire Station 25

Construction

As discussed above, the proposed project would not require any lane or road closures during project construction. Temporary sidewalk closures would occur during construction, which would be a potential hazard for pedestrians in the area. The proposed project would implement Mitigation Measure TRAN-1, which includes a Traffic Management Plan that addresses pedestrian safety. In accordance with Mitigation Measure TRAN-1, flaggers and signage would be used where appropriate to redirect pedestrians around sidewalk closures and prevent conflicts with construction traffic. With implementation of Mitigation Measure TRAN-1, hazards to pedestrians would be less than significant.

Operation

The proposed project would not include any design features that would increase circulation hazards. No new roadways or access roads would be constructed for the proposed project. The proposed project would not require any lane or road closures. Site ingress/egress would be similar to existing conditions. The eastern driveway would be expanded to approximately 30 feet to accommodate the apparatus bay vehicles. Therefore, the site would be able to

accommodate the wide turns of the fire engines. The proposed driveways would provide vehicular access to and from Marshall Street and would not include any dangerous intersections or sharp curves. No impact would occur.

D) Would the proposed project result in inadequate emergency access?

Fire Station 7
The purpose of the proposed project is to reduce emergency response times and improve disaster response by constructing a new Fire Station 7 adjacent the existing fire station. Driveways and access points would be designed for ingress and egress of fire trucks and other emergency vehicles. Therefore, the proposed project would have no impact on emergency access.

Fire Station 25 and Interim Fire Station 25
The purpose of the proposed project is to reduce emergency response times and improve disaster response by replacing the existing Fire Station 25. Driveways and access points would be designed for ingress and egress of fire trucks and other emergency vehicles. Emergency services would be maintained during project construction via the interim Fire Station 25 located on Marshell Street in Castro Valley. Therefore, the proposed project would have no impact on emergency access.

Mitigation Measures

Mitigation Measure TRAN-1: Bicycle and Pedestrian Facilities
The Project shall incorporate the following design features to roads surrounding Fire Station 7, 25, and the Interim Fire Station 25:

- Prepare and implement a Transportation Management Plan in accordance with California Manual on Uniform Traffic Control that protects walking and cycling conditions surrounding the project sites and adheres to the complete streets guidance presented in Caltrans DIB-94 by providing a buffer between truck traffic and other roadway users.
- Use flaggers and signage where appropriate to redirect direct pedestrians around sidewalk closures and prevent conflicts with construction traffic. Use signage and barriers to separate pedestrians from construction activities. Provide advanced notice through posting of signs at least one week prior to sidewalk closures.

3.2.18 Tribal Cultural Resources

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
18. 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 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	☐	☒	☐	☐
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.	☐	☒	☐	☐

Environmental Setting

The Native American Heritage Commission (NAHC) was contacted to provide a Sacred Lands File search and provide a list of Native American tribes affiliated with the project region. The NAHC Sacred Lands File search for the proposed project was negative, indicating there are no known tribal cultural resources in the proposed project site vicinity. The NAHC contact list was used to complete consultation with Native American tribes. Consultation letters were delivered to eight tribal organizations. Response letters were received from Muwekma Ohlone Indian Tribe (one for each fire station site). The response letters from Muwekma Ohlone Indian Tribe for Fire Stations 7 and 25 included a recommendation to contract Muwekma Ohlone Tribal leadership in the event of an unanticipated discovery of ancestral remains or subsurface tribal cultural resources so that the leadership can make appropriate recommendations and conduct monitoring on any field recovery. Lisjan Nation requested consultation under AB 52.

Impact Analysis

A) (i-ii) Would the proposed project result in an impact on a tribal cultural resource pursuant to Section 21074 of the PRC or the contextual setting of such a resource, resulting in a substantial loss of the resource's cultural value?

Fire Station 7

The project site was determined to have low sensitivity for buried Native American archaeological deposits and surface deposits. No known tribal cultural resources are located within 0.25 mile of the project site. Implementation of the proposed project would not impact any known tribal cultural resources as no tribal cultural resources have been identified within the proposed project site vicinity. However, previously unidentified tribal cultural resources may be inadvertently discovered during ground-disturbing activities associated with the proposed project. If tribal cultural resources are inadvertently discovered, damage to those resources during construction would be a significant impact. Consistent with the responses from the Muwekma Ohlone Indian Tribe, Mitigation Measure CUL-1 would be implemented which requires work to halt within 50 feet of a previously undiscovered cultural resources, and a Native American representative from a traditionally and culturally affiliated tribe shall be notified and invited to assess the find if the artifacts are of Native American ancestry and determined to be more than an isolated find. The impact on tribal cultural resources would be less than significant with implementation of the Mitigation Measure CUL-1.

Fire Station 25

No known resources are located within 0.25 mile of the project site. Therefore, the implementation of the proposed project would not impact any known tribal cultural resources as no tribal cultural resources have been identified within the proposed project site vicinity. However, previously unidentified tribal cultural resources may be inadvertently discovered during ground-disturbing activities associated with the proposed project. If tribal cultural resources are inadvertently discovered, damage to those resources during construction would be a significant impact. Consistent with the responses from the Muwekma Ohlone Indian Tribe, Mitigation Measure CUL-1, which requires work to halt within 50 feet of a previously undiscovered cultural resources, would be implemented, and a Native American representative from a traditionally and culturally affiliated tribe would be notified and invited to assess the find if the artifacts are of Native American ancestry and determined to be more than an isolated find. The impact on tribal cultural resources would be less than significant with implementation of the Mitigation Measure CUL-1.

Interim Fire Station 25

Ground disturbance would occur during the construction of the apparatus bay area at the interim Fire Station 25. Due to the limited ground disturbance activities, construction and operation of the interim fire station is not anticipated to impact any tribal cultural resources.

Mitigation Measures

Mitigation Measure CUL-1: Inadvertent Discovery of Archaeological Resources

If evidence of any subsurface archaeological features or deposits are discovered during construction-related earth-moving activities, all ground-disturbing activity in the area of the discovery shall be halted within 50 feet of the find, and the finds shall be protected until they are examined by a qualified archaeologist approved by the County. Finds may include but are not limited to the following:

- Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; stone-milling equipment (e.g., mortars, pestles, handstones, milling slabs); and battered stone tools, such as hammerstones and pitted stones
- Historic-era materials might include building or structure footings and walls and deposits of metal, glass, and/or ceramic refuse

A qualified archaeologist who meets the U.S. Secretary of the Interior's professional qualifications in archaeology and is approved by the County shall be retained to assess the significance of the find and make recommendations for further evaluation and treatment as necessary. A Native American representative from a traditionally and culturally affiliated tribe shall be notified and invited to assess the find if the artifacts are of Native American ancestry and determined to be more than an isolated find. If, after evaluation, a resource is considered a historical resource or unique archaeological resource (as defined in CEQA Guidelines section 15064.5) or a tribal cultural resource (as defined in PRC section 21074), all preservation options shall be considered as required by CEQA (see CEQA Guidelines section 15126.4 and PRC 21084.3), including possible capping, data recovery, mapping, or avoidance of the resource. Treatment that preserves or restores the cultural character and integrity of a tribal cultural resource may include tribal monitoring, culturally appropriate recovery of cultural objects, and reburial of cultural objects or cultural soil. Work in the area may resume upon completion of treatment. The results of the identification, evaluation, and/or data recovery program for any unanticipated discoveries shall be presented in a professional-quality report that details all methods and findings, evaluates the nature and significance of the resources, analyzes and interprets the results, and distributes this information to the public except for information deemed confidential and protected under state law.

3.2.19 Utilities and Service Systems

Environmental impacts	Potentially Significant Impact	Less than Significant with mitigation incorporated	Less-than-Significant Impact	No Impact
19. 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?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
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?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Impact Analysis

A) Would the Project 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?

Fire Station 7

The newly constructed Fire Station 7 would be located on an undeveloped parcel adjacent the existing fire station. The proposed project would require the expansion of utilities to the undeveloped lot. However, the expansions would be minimal. The utility usage from the previous site would cease, and demand would transfer to the newly constructed fire station. No net significant increase in utility demand would occur. The impact would be less than significant.

Fire Station 25 and Interim Fire Station 25

The proposed project would be served by existing utilities and service systems, including water, sewer, electricity, telecommunication, and waste disposal. The proposed project would not

require the relocation or construction of new or expanded utilities and service systems. The impact would be less than significant.

B) Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

Water for the proposed project would be supplied by the East Bay Municipal Utilities District. The proposed project would replace existing Fire Station 7, and Fire Station 25 and would not create increased or new demand for water supplies. The proposed project would have no impact related to water supplies.

C) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

The proposed project is within the Castro Valley Sanitary District service area. The proposed project would replace existing Fire Station 7 and Fire Station 25 and would not create new or increased need for wastewater treatment. Therefore, the Castro Valley/Oro Loma wastewater treatment plant would have adequate capacity to serve the proposed project's project wastewater and no impact on wastewater treatment capacity would occur.

D) Would the Project 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)*

E) Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Fire Station 7, Fire Station 25, and Interim Fire Station 25

All solid waste generated by project construction activities would be hauled from the project site and disposed of at a permitted solid waste facility. As discussed in Section 2: Project Description, the nearest landfills to the project site include Hayward Transfer Station and the Vasco Road Sanitary Landfill. Demolition waste would be managed and recycled in compliance with CALGreen Building Code requirements whereby 65 percent of non-hazardous demolition waste would be recycled. The proposed project would also follow policies outlined in the Alameda County Green Building Ordinance, which requires recycling of construction and demolition debris (Alameda County 2003). Construction of the proposed project, including excavation and demolition activities, may encounter and generate hazardous waste, which would be disposed of at a Class I or Class II landfill, as appropriate.

Once the proposed project is constructed, operation and maintenance activities would not generate more solid waste than the existing fire stations. Accordingly, impacts on waste reduction and waste management would be less than significant.

3.2.20 Wildfire

Environmental impacts	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
20. 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?	☐	☐	☒	☐
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?	☐	☒	☐	☐
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?	☐	☐	☒	☐
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?	☐	☐	☒	☐

Impact Analysis

A-D) Substantially impair an adopted emergency response plan or emergency evacuation plan? 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? 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? 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 patterns.

Fire Station 7

The project site is in an area designated as a State Responsibility Area in a high fire hazard severity zone (CAL FIRE 2023). The proposed project would construct a new fire station on the undeveloped parcel adjacent to the existing fire station. The purpose of the proposed project is to reduce emergency response times and improve wildfire and disaster response. Utilities would be extended underground to the project site and would not exacerbate fire risk or result in temporary or ongoing impacts to the environment. Driveways and access points would be designed for ingress and egress of fire trucks and other emergency vehicles. Therefore, the proposed project would not substantially impair an adopted emergency response plan or emergency evacuation plan.

The topography of the project site is relatively flat and in an area of low landslide susceptibility. Therefore, the project site would not be susceptible to landslides in post-fire conditions. However, project construction could increase potential exposure to wildfire due to increased ignition risks. Project construction would include a construction crew that would use typical construction equipment (i.e., scraper/blade, backhoes, and rollers) powered by gasoline or diesel fuel. Use of construction equipment has the potential to cause sparks.

Sparks originating from construction activities have the potential to ignite vegetation or other materials on or adjacent the project site or to spread to the surrounding vegetated land adjacent the project site. Steep vegetated slopes are present to the southeast of the project site. Therefore, an ignition can quickly turn into a large fire if the ignition occurred within vegetation in proximity to the steep topography. The impact from ignition of a wildfire would be potentially significant. Mitigation Measure WIL-1 identifies specific precautions to be taken prior to and during construction activities that occur in vegetated areas, requires that crew are provided basic fire suppression equipment, and ensures that crew have been trained in the use of the equipment to extinguish small fires. Implementation of Mitigation Measure WIL-1 would minimize the risk of construction-caused ignitions and reduce the potential to expose people living or working within the project vicinity to pollutant concentrations from wildfire or the uncontrolled spread of a wildfire. The impact would be less than significant with mitigation.

Project operation would reduce wildfire hazards as the project would be an improved fire station. No adverse impact would occur during operation.

Fire Station 25 and Interim Fire Station 25

The proposed project is within an urbanized area in Castro Valley in a designated LRA. The topography of the project site is relatively flat. The project site is not located within an identified Very High Fire Hazard Severity Zone in an SRA or a LRA (CAL FIRE 2023; Alameda County Community Development Agency 2016). The project site is not located near wildlands that could present a fire hazard. For these reasons, Impacts Wildfire-a through Wildfire-d are not applicable and not discussed further.

Mitigation Measures

To reduce the potentially significant impacts, the following mitigation measure would be implemented prior to and during construction activities:

Mitigation Measure WIL-1: Wildfire Risk Reduction Measures

The following measures shall be implemented during construction to prevent sparking a wildfire:

- Spark arresters shall be used on all portable gasoline powered equipment.
- Exhaust systems, spark arresters, and mowers shall be kept in proper working order and free of carbon buildup.
- Equipment engines shall be kept free of oil and dust, and mowers will be kept free of flammable materials.

- Dry weeds and grass shall be removed with weed trimmers prior to start of construction.
- Mowers shall not be used when the vegetation is dry.
- Any large rocks in the area of grading or blading shall be removed before clearing and grubbing because a rock hidden in vegetation can start a fire if struck by a metal blade.
- All crew vehicles shall be equipped with a water-type fire extinguisher and crew will be trained in the use of the fire extinguisher in the event that equipment sparks a fire.
- Hot work (e.g., welding) and heavy equipment use over vegetation shall cease during designated red flag warning days.
- Worker smoking shall be prohibited at the site.

3.2.21 Mandatory Findings of Significance

Environmental impacts	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
21. 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?	☐	☒	☐	☐
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)?	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Impact Analysis

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?

As noted under Section 3.2.4: Biological Resources, special status wildlife species, including Alameda whipsnake, have a low potential to occur during dispersal within the Fire Station 7 project area and no potential to occur at the Fire Station 25 project site. No breeding habitat for any sensitive species occurs within any of the project sites. No sensitive plants or fish could occur within any of the project sites. Due to the absence of any sensitive species breeding habitat on any of the project sites, the projects would not 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, or substantially reduce or restrict the range of a rare or endangered plant or animal, and the impact would be less than significant.

Fire Stations 7 and 25 do not contain any known historic, archaeological, or tribal cultural resources. As discussed in Section 3.2.5: Cultural Resources, Mitigation Measure CUL-1 would

be implemented during project construction in case of unanticipated discovery of cultural resources and/or human remains. As a result, the proposed project would not eliminate an important example of major periods of California history or prehistory and the impact would be less than significant with mitigation.

B) Does the project have impacts that are individually limited, but cumulative considerable?

The geographic scope for the analysis of cumulative impacts is within 1 mile or less of each fire station. Ten cumulative projects occur within the vicinity of the fire stations, as shown in Table 3.2-21, below, and Figure 3.2-2 through Figure 3.2-3. Table 3.2-21 describes each cumulative project within 1-mile of the fire stations.

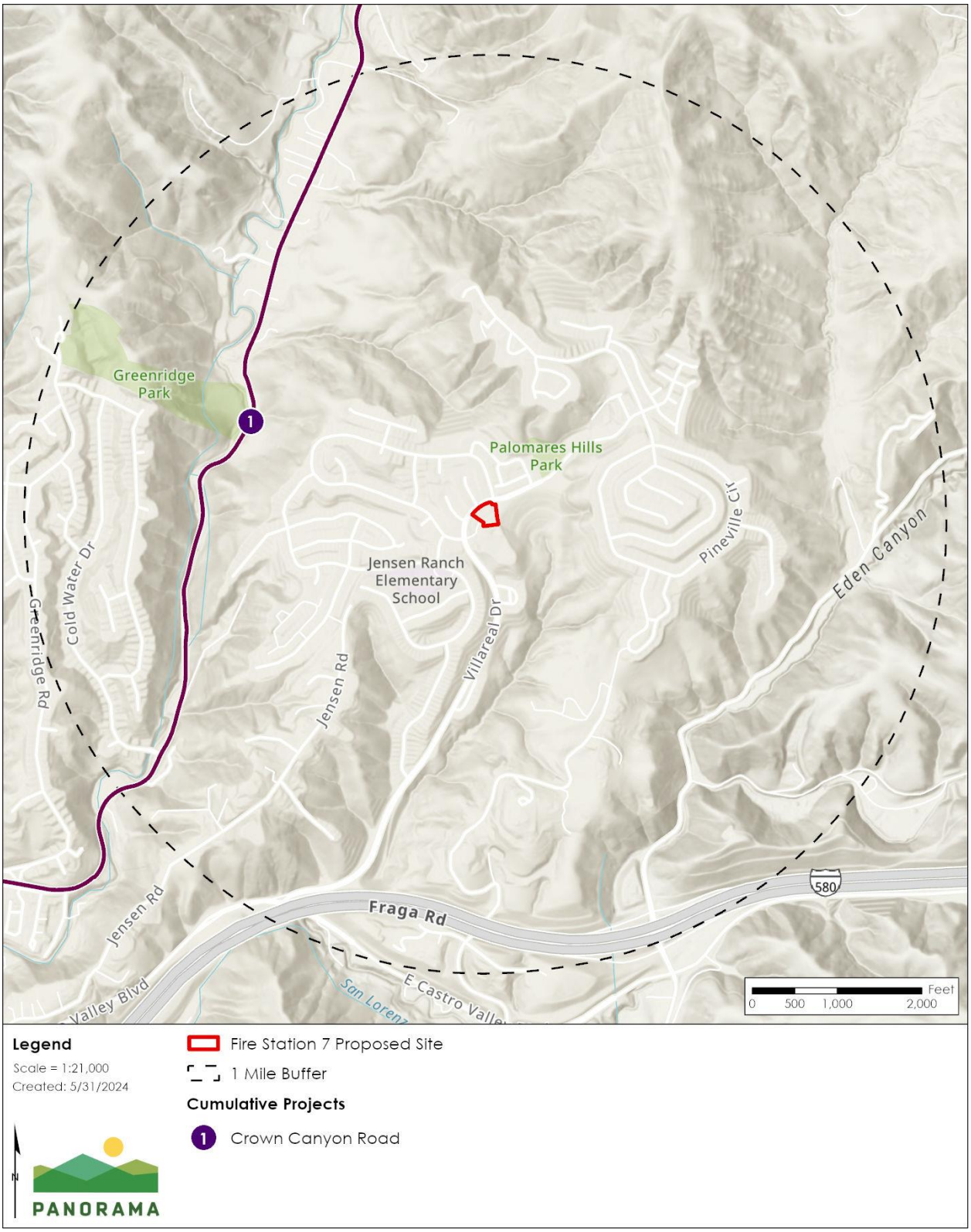
Table 3.2-21 Cumulative Projects

Number	Cumulative project	Description	Schedule
1	Crow Canyon Road	The project features include road resurfacing and safety improvements, storm damage repair, pavement reconstruction, and guardrail replacement along Crow Canyon Road between East Castro Valley Boulevard and the County line.	Under construction
2	Ruby Street Apartment Complex	The project would develop 72 multi-family residential units on a 6.3-acre project site.	Approved by the Alameda County Planning Division
3	Anita Avenue Sidewalk Improvement	The project constructs sidewalks, pedestrian ramps, enhanced crosswalks, bio-retention areas, street trees, and flashing beacons along Anita Avenue between Castro Valley Boulevard and Somerset Avenue.	Under construction
4	Somerset Avenue Sidewalk Improvement	The project would construction sidewalk projects from Stanton Avenue to Redwood Road in Castro Valley. Project features include new sidewalks, pedestrian ramps, bulb-outs, street trees, crosswalks, drainage improvements, and more.	Preliminary design phase
5	Signalized Intersections Improvements	The project replaces existing mast arms, install signal hardware improvements, and construction ADA improvements at five intersections in unincorporated Alameda County	Under construction
6	Unsignalized Intersections Improvements	The project installs new and/or replace existing intersection warnings, add pedestrian crossings, and upgrade curb ramps at 11 non-signalized intersections in unincorporated Alameda County.	Under construction

Number	Cumulative project	Description	Schedule
7	Creston Development	The project would subdivide four parcels into 9 residential lots with access from Center Street	Under review by the Alameda County Planning Division

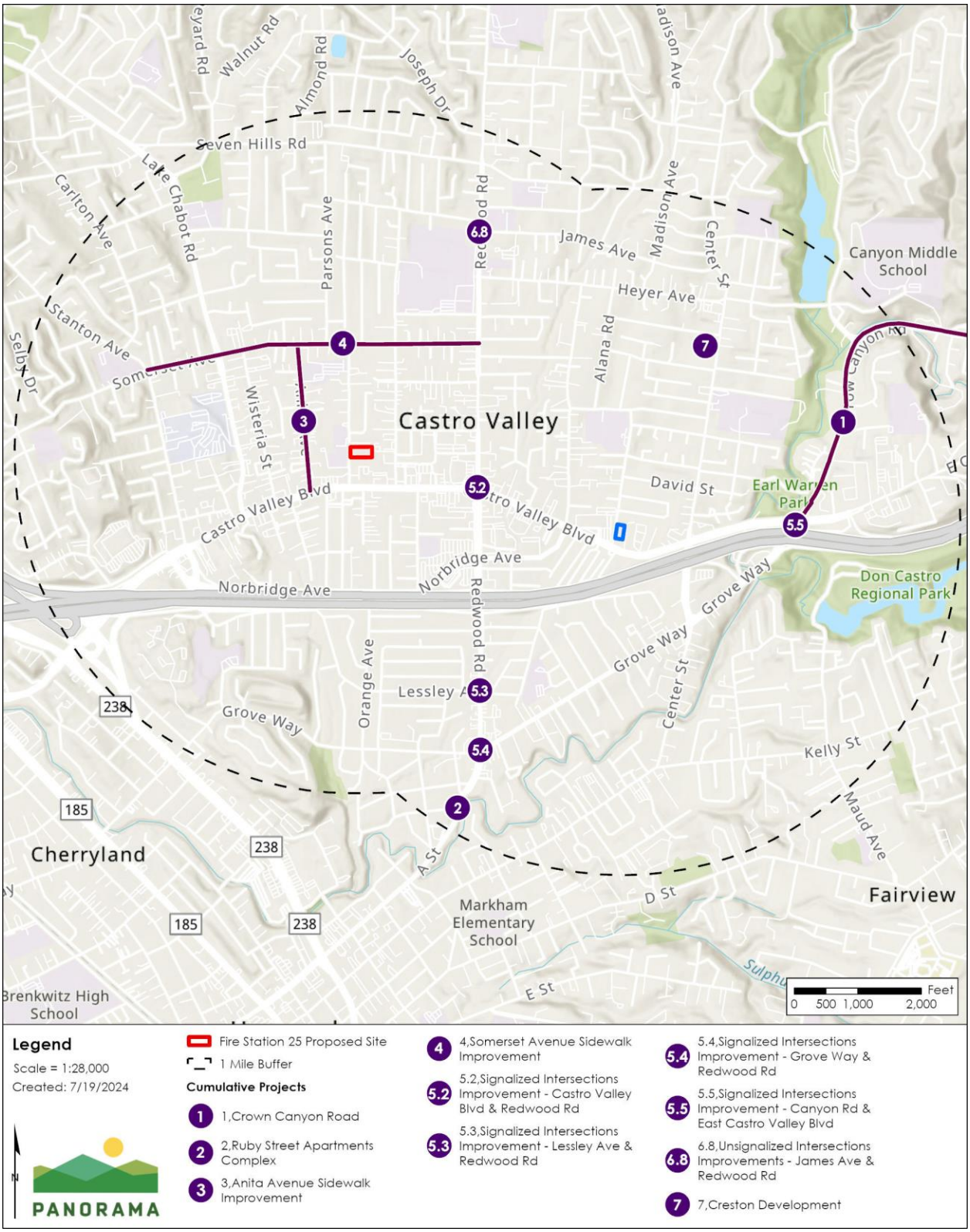
Source: (Alameda County Public Works Agency, n.d.; Alameda County Community Development Agency, n.d.)

Figure 3.2-2 Fire Station 7 Cumulative Projects



Source: (Alameda County Public Works Agency, n.d.; Alameda County Community Development Agency, n.d.)

Figure 3.2-3 Fire Station 25 Cumulative Projects



Source: (Alameda County Public Works Agency, n.d.; Alameda County Community Development Agency, n.d.)

Aesthetics
As discussed in Section 3.2.1: Aesthetics, the proposed fire stations are located in developed areas of Castro Valley and would not be visible from any scenic vista or state scenic highway and, therefore, no cumulative impact on a scenic vista or scenic highway would occur.

The proposed fire stations would have light mounted on the building exterior, footpath lighting, and ground-mounted lighting around the flagpole. The proposed fire stations and cumulative projects would be required to comply with the Alameda County Dark Skies Ordinance to ensure light pollution from the cumulative projects and proposed project would be less than significant. Therefore, the proposed project's impact as a source of light or glare would not be cumulatively considerable.

Agriculture and Forestry
The proposed projects would have no impact on agricultural and forestry resources and, therefore, would have no potential to contribute to cumulative impacts on agriculture and forestry resources.

Air Quality
The SFBAAB is currently designated as a non-attainment area for federal and state ozone standards, the State PM_{10} standard, and the Federal and State $PM_{2.5}$ standards. Past and present projects in the SFBAAB have resulted in the non-attainment statuses. As discussed in Section 3.2.3: Air Quality, past, present, and future development projects contribute to the SFBAAB's adverse air quality impacts on a cumulative basis, and no individual project is sufficient in size to result in nonattainment of ambient air quality standards. If a project's emissions do not exceed the numerical thresholds in the SFBAAB, the project would not considerably contribute to the cumulatively significant air quality impact.

Construction and operation of the proposed project would result in minor criteria pollutant emissions and would not generate emissions in excess of the SFBAAB's significance thresholds. Equipment would emit criteria air pollutants below the thresholds of significance. Therefore, the proposed project's contribution to a significant cumulative impact would not be cumulatively considerable.

Vehicles and equipment used during implementation of the cumulative projects would generate localized diesel and fugitive dust emissions near sensitive receptors. Construction of the cumulative projects could only result in cumulative impacts if the project construction overlapped within 1,000 feet to generate increased pollutant levels at individual receptors. The only cumulative project that overlaps with a proposed project is the Anita Avenue Sidewalk Improvement Project in proximity to Fire Station 25. Because that project will be constructed by the time the Fire Station 25 project starts, a cumulative impact from localized diesel and fugitive dust would not occur. Therefore, the proposed project in combination with the cumulative projects would result in a less than significant cumulative impact on sensitive receptors from toxic air contaminants.

Biological Resources

The cumulative projects are located in urbanized areas that do not contain special status plant or wildlife species or sensitive habitats such as riparian areas or wetlands. As discussed in Section 3.2.4: Biological Resources, Fire Stations 25 is a developed site that does not contain suitable habitat for special-status plants or wildlife. However, Fire Station 7 contains potential dispersal habitat for Alameda whipsnake. The Fire Station 7 site is cleared and disced annually and does not contain sensitive habitats. The project and cumulative projects could result in cumulative impacts on Alameda whipsnake if they resulted in take of whipsnake individuals. Impacts from the construction of Fire Station 7 would be reduced to less than significant with implementation of Mitigation Measure BIO-1, which requires worker training and avoidance of Alameda whipsnake. With implementation of Mitigation Measure BIO-1, the project contribution to cumulative impacts on special-status species would be less than considerable and thus less than significant.

The Fire Station 25 site contains trees that could be used by nesting birds. Nesting birds may occur within the cumulative project areas and would likely be acclimatized to urbanized environments. Cumulative projects would also be subject to the California Fish and Game Code and Migratory Bird Treaty Act regulations. Because cumulative projects would also need to avoid removing any nests of migratory birds, the cumulative impact on migratory birds would be less than significant.

In addition, the proposed projects would not conflict with any local policies or ordinances protecting biological resources and, therefore, would not contribute to any such potential cumulative impact.

Cultural and Tribal Cultural Resources

The geographic scope for cumulative cultural and tribal cultural resource impacts encompasses areas within or immediately adjacent the proposed project sites or areas within a Historic District. The cumulative projects within the vicinity of the San Lorenzo Village Historic District involve sidewalk, intersection, and roadway improvements and would not alter any buildings within the district. While built historic resources, archaeological resources, and human remains are often site-specific, two projects that are adjacent each other can impact the same built historic resource or potential archaeological resource, particularly in regard to Native American archaeological resources, when two adjacent project areas are both modeled as having high or very high Native American archaeological sensitivity. No cumulative projects are adjacent the Fire Stations 7 or 25 project sites. Therefore, the proposed fire stations in combination with the cumulative projects would not combine to result in a cumulatively significant impact. The cumulative impact would be less than significant.

Energy

The geographic scope for potential cumulative impacts on energy resources would consist of the project vicinity as well as the broader region. Cumulative development would increase demand for energy resources. New development would be required to comply with the California Building Energy Efficiency Standards, and CALGreen would require increasingly

more efficient buildings that reduce energy consumption in new development. Therefore, a significant cumulative impact relative to energy resources or conflicts with state or local plans for renewable energy or energy efficiency would not occur.

Greenhouse Gas Emissions

GHG impacts are cumulative in nature because one project by itself cannot significantly contribute to or cause significant environmental effects. Many past, present, and reasonably foreseeable development projects worldwide have or will contribute to the cumulative conditions for GHG emissions. The proposed fire stations would contribute to GHG emissions during construction and operations. While the fire stations would not result in a minor increase in GHG emissions, the proposed project would comply with BAAQMD's recommended design elements to reduce GHG emissions. Therefore, the proposed project's contribution would not be cumulatively considerable. The impact would be less than significant.

Geology and Soils

The geographic scope for impacts related to geology, soils, and paleontological resources is limited to the fire station sites and immediately adjacent properties. None of the cumulative projects are close enough to the Fire Station 7 project site or to interim Fire Station 25 to result in a cumulatively considerable impact. Therefore, no cumulative impacts related to geology and soils would occur.

The nearest cumulative project to the Fire Station 25 project site is the Anita Avenue Sidewalk Improvement project, approximately 670 west of the site. This cumulative project involves the construction of sidewalks, pedestrian ramps, enhanced crosswalks, and other improvements along Anita Avenue between Castro Valley Boulevard and Somerset Avenue. The Anita Avenue Sidewalk Improvement project would not involve significant ground disturbance and, therefore, would not result in impacts related to geology, soils, or paleontological resources that could combine with potential impacts of the project. Therefore, cumulative impacts related to geology, soils, and paleontological resources associated with the project would not occur.

Hazards and Hazardous Materials

Construction, operation, and/or implementation of cumulative projects and implementation of the proposed project would use equipment and vehicles that could leak hazardous materials, including gasoline and diesel fuel, engine oil, coolant, lubricants, and grease. Hazardous materials, particularly fuel, may be transported to and from each site, which would increase the risk of accident and release. The hazard to the public from fuel leaks from the cumulative projects would be highly localized geographically and temporally due to the small amount of hazardous materials that vehicles and equipment typical would use and the quick response time to clean up any spill. The cumulative projects would be required to comply with CalOSHA, DOT, and Caltrans regulations regarding the transportation of hazardous materials. The proposed project in combination with the cumulative projects would therefore not combine to result in a cumulatively significant impact due to accidental releases of hazardous materials or herbicide.

Hydrology

The geographic scope for potential cumulative impacts on hydrology and water quality would encompass the project area and water bodies that could be affected by the identified cumulative projects along with the proposed project. Discharges from construction and operations activities associated with all of the cumulative projects would drain into sewer systems that ultimately drain into the San Francisco Bay. Similar to the proposed project, the existing cumulative project development sites are highly urbanized, developed, and largely covered by existing impervious surfaces. Therefore, development of the cumulative projects would not substantially increase the amount of impervious surface above current existing impervious conditions. Cumulative development that increases impervious surfaces would result in an increase in stormwater discharge. The identified cumulative projects within Alameda County's jurisdiction would be subject to the Clean Water Act and the County's NPDES Permit. The cumulative projects would also be required to comply with the Alameda County Clean Water Program and Grading Ordinance as well as the Alameda County Watercourse Protection Ordinance. Compliance with regulatory requirements and permits would minimize potential impacts on water quality. Therefore, the identified cumulative projects would not combine with the proposed project to result in a significant cumulative impact related to hydrology and water quality.

Land Use and Planning

The cumulative context for land use effects typically is localized within the immediate project vicinity or at the neighborhood level. The nearby cumulative development projects would not physically divide an established community by constructing a physical barrier to neighborhood access or removing a means of access. The nearby cumulative development projects are required to comply with applicable plans, policies, and regulations, including those adopted for avoiding or mitigating an environmental impact, such as the 2017 Clean Air Plan, Alameda County General Plan, and Alameda County Green Building Ordinance. Therefore, the proposed project, in combination with cumulative development projects would not result in a significant cumulative impact related to the physical division of an established community or a conflict with a land use plan, policy, or regulation adopted for avoiding or mitigating an environmental impact. No cumulative impact to land use would occur.

Mineral Resources

The cumulative projects are within or adjacent areas that are urbanized and developed with land uses that are not compatible with mineral resource extraction activities. As discussed in Section 3.2.12: Mineral Resources, there are no known mineral resources within the Fire Station 7, 25, or interim Fire Station 25 project sites and, therefore, no cumulative impact would occur.

Noise

The geographic scope for cumulative noise impacts for on-site sources is within approximately 1,000 feet of the project site. No cumulative projects are close enough to the Fire Stations 7 and interim Fire Station 25 project sites that could compound with noise generated by equipment and vehicles used during construction activities that would result in a cumulatively significant impact with respect to construction noise and vibration. The Anita Avenue Sidewalk Improvement cumulative project is within 1,000 feet of Fire Station 25 and has the potential to

affect the same noise sensitive receptors as the proposed project. Construction of the Anita Avenue Sidewalk Improvement cumulative project would occur along Anita Avenue approximately 670 feet west of the project site. The Anita Avenue Sidewalk project is currently under construction, and the construction schedule would not overlap with construction of the Fire Station 25 project. Therefore, no cumulative noise impact from project construction would occur. The Anita Avenue Sidewalk project would not generate any operational noise and would not combine with noise from the proposed project operation. Therefore, no potential cumulative noise impact would occur.

Population and Housing

The geographic scope for the population and housing cumulative impact analysis encompasses the Castro Valley communities. There are no cumulative projects that contain housing components within 1 mile of Fire Station 7. The Creston Development and Ruby Street Apartment Complex are within 1 mile of Fire Station 25 and contain housing components that would increase the residential population within the geographic scope of the cumulative project area.

As discussed in Section 3.2.14: Population and Housing, the staff at the existing fire stations would be transferred to the proposed fire stations. The proposed project would not displace any housing or result in the need for replacement housing. In addition, the proposed project would not develop new housing that could directly induce population growth. Therefore, the proposed project would not contribute to a cumulative impact related to direct population growth.

Public Services

The cumulative context for public services impacts includes the areas served by police districts, fire stations, schools, and parks within the Castro Valley and communities in unincorporated Alameda County. The proposed projects would have no impact on public services and, therefore, would have no potential to contribute to cumulative impacts on public services.

Recreation

The geographic scope of potential recreational impacts includes the project site and the recreational resources in the Castro Valley and communities in unincorporated Alameda County. The proposed projects would have no impact on recreational resources and, therefore, would have no potential to contribute to cumulative impacts on recreational resources.

Transportation

The cumulative projects would generate vehicle trips to and from project sites on similar roadways as the fire stations. Most of the cumulative projects involve sidewalk or roadway improvements that would require lane or road closures. The cumulative projects may have similar implementation schedules as the proposed project. Therefore, overlapping schedules would increase the potential for conflict between project vehicles, including large trucks and normal traffic along roadways, particularly if lanes or roads are closed. The cumulative projects would be required to comply with the California MUTCD, which would reduce the potential

hazards of lane and road closures. With adherence to applicable regulations, impacts would not be cumulatively significant.

Utilities and Service Systems

As discussed in Section 3.2.19: Utilities and Service Systems, the proposed project would replace the existing fire stations and would be served by the same existing utilities and service systems. The proposed projects would have no impact on water supplies and wastewater treatment capacity and, therefore, would have no potential to contribute to cumulative impacts on water supply and wastewater resources. Most of the cumulative projects involve roadway and sidewalk improvements that would not require any new or expanded utilities. The identified cumulative projects would be constructed and operated in developed urban areas with existing electric power, natural gas, and telecommunication infrastructure. As a result, there would be no substantial increase in the demand for electricity, natural gas, or telecommunications infrastructure from the identified cumulative projects.

The identified cumulative projects would generate construction and household waste, which would be disposed of at off-site disposal facilities. All projects would be required to comply with CALGreen Building Code requirements and the Alameda County Green Building Ordinance. Given that the identified cumulative projects would comply with these ordinances and, given that adequate landfill capacity exists to serve the area in which these projects would be located, no significant cumulative impact relative to solid waste disposal would result.

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

In general, impacts on human beings are associated with air quality, geology and soils, hydrology and water quality, hazards and hazardous materials, and noise impacts. As detailed in the preceding sections, the proposed project could result in adverse noise impacts on human beings, which would be reduced to a less-than-significant level with implementation of Mitigation Measures NOI-1, NOI-2, and NOI-3. Additionally, the proposed project could result in air quality impacts on human beings from fugitive dust emissions. Impacts to human beings from fugitive dust emissions would be reduced to a less-than-significant level with implementation of Mitigation Measure AQ-1. Therefore, the impact of the proposed project on human beings would be less than significant with mitigation.

4 List of Preparers

This section lists those individuals who either prepared or participated in the preparation of this IS/MND.

Panorama Environmental, Inc. prepared this IS/MND under contract to the Alameda County Fire Department. Persons involved in data gathering analysis, project management, and quality control are listed below.

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APPENDIX A

Air Quality and Greenhouse Gas Technical Reports

.

MEMORANDUM

Date: 19 July 2024 **Job No.:** 21215-05

To: Whitney Broeking, Panorama Environmental

From: Yilin Tian, Environmental Engineer, Baseline Environmental Consulting

Subject: **Air Quality and Greenhouse Gas Analysis for Alameda County Fire Station 7**

Baseline Environmental Consulting (Baseline) has prepared this technical memorandum to evaluate potential impacts related to air quality and greenhouse gas (GHG) emissions to support CEQA review of the proposed Alameda County Fire Station 7 Project (project) in Castro Valley, California. The project would construct a new fire station on the undeveloped parcel adjacent to the existing fire station.

1 PROJECT DESCRIPTION

The project site is in the Palomares Hills neighborhood of unincorporated Castro Valley in central Alameda County. The site is on a 1.3-acre undeveloped parcel (Assessor's Parcel Number 85A-6405-1-2) at 6901 Villareal Drive, Castro Valley, California (project site), directly west of the existing fire station, as shown in **Figure 1**. The existing fire station includes a 25-kilowatt generator, a 220-volt air compressor, and a 500-gallon aboveground fuel tank. The building contains shops, offices, kitchen and dining areas, dorm rooms, lockers, exercise rooms, and two apparatus bays. Access to the project site is provided via a driveway on Villareal Drive. The existing fire station has three employees.

The project would construct a 7,883-square-foot, 25-foot-tall, 1-story fire station on the undeveloped parcel adjacent to the existing fire station to the west. The new fire station would include private offices, workstations, departmental spaces, dorms, and a kitchen. The proposed facility would include additional building space and parking to accommodate the Alameda County Fire Department's current and future operational needs. The existing generator, air compressor, and vehicle fueling station would be replaced in-kind. Outside the fire station building, the new fueling station would feature a 500-gallon aboveground tank, with pumps that would dispense diesel and gas to ACFD fleet vehicles and equipment. A new 100-kilowatt emergency generator would be placed on a concrete pad adjacent to the new building.

Project construction is anticipated to begin in September 2025 and last approximately 18 months. Upon completion of construction, the three employees at the existing fire station and the existing fire station operations and maintenance would be transferred to the new fire station. The existing fire station would be turned over to Alameda County for its use.

Figure 1. Project Location

Source: Alameda County 2023

2 AIR QUALITY ANALYSIS

2.1 Environmental Setting

The project site is located within the San Francisco Bay Area Air Basin (SFBAAB). The San Francisco Bay Area (Bay Area) has a Mediterranean climate characterized by wet winters and dry summers. During the summer, a high-pressure cell centered over the northeastern Pacific Ocean results in stable meteorological conditions and a steady northwesterly wind flow that generally keeps storms from affecting the California coast. During the winter, the Pacific high-pressure cell weakens, resulting in increased precipitation and the occurrence of storms. The highest air pollutant concentrations in the Bay Area generally occur during inversions, when a surface layer of cooler air becomes trapped beneath a layer of warmer air. An inversion reduces the amount of vertical mixing and dilution of air pollutants in the cooler air near the surface.

Sensitive receptors are areas where individuals are more susceptible to the adverse effects of poor air quality. Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing, and convalescent facilities. Residential areas are also considered sensitive receptors because people are often at home for extended periods, thereby increasing the duration of exposure to potential air contaminants. The sensitive receptors in the vicinity of the project development area[1] include 1) residences to the north and west along Villareal Drive as close as 65 feet to the project site, and 2) Jensen Ranch Elementary School about 880 feet to the southwest.

2.2 Regulatory Setting

2.2.1 Federal and State Regulations

The federal EPA is responsible for implementing the programs established under the Federal Clean Air Act, such as establishing and reviewing the National Ambient Air Quality Standards (NAAQS) and judging the adequacy of State Implementation Plans to attain the NAAQS. A State Implementation Plan must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. If a state fails to enforce its implementation of approved regulations, or if the EPA determines that a State Implementation Plan is inadequate, the EPA is required to prepare and enforce a Federal Implementation Plan to promulgate comprehensive control measures for a given State Implementation Plan.

The California Air Resources Board (CARB) is responsible for establishing and reviewing the California Ambient Air Quality Standards (CAAQS), developing and managing the California State Implementation Plans, identifying TACs, and overseeing the activities of regional air

[1] Does not include area that will remain undeveloped at the south end of the project site.

quality management districts. In California, mobile emissions sources (e.g., construction equipment, trucks, and automobiles) are regulated by CARB and stationary emissions sources (e.g., industrial facilities) are regulated by the regional air quality management districts. In accordance with the Federal Clean Air Act and California Clean Air Act, areas in California are classified as either in attainment, maintenance (i.e., former nonattainment), or nonattainment of the NAAQS and CAAQS for each criteria air pollutant. To assess the regional attainment status, the BAAQMD collects ambient air quality data from over 30 monitoring sites within the SFBAAB. Based on current monitoring data, the SFBAAB is designated as a nonattainment area for ozone, PM_{10} (CAAQS only), and $PM_{2.5}$, and is designated an attainment or unclassified area for all other pollutants (see **Table 1**).

Table 1. Air Quality Standards and Attainment Status

Pollutant	Averaging Time	CAAQS		NAAQS	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8 Hours	0.070 ppm	N	0.070 ppm	N (marginal)
	1-Hour	0.09 ppm	N	Revoked in 2005	---
Carbon Monoxide	8 Hours	9.0 ppm	A	9 ppm	A
	1-Hour	20 ppm	A	35 ppm	A
Nitrogen Dioxide	1-Hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	---	0.053 ppm	A
Sulfur Dioxide	24 Hours	0.04 ppm	A	0.14 ppm	A
	1-Hour	0.25 ppm	A	0.075 ppm	A
	Annual	---	---	0.030 ppm	A
Coarse Particulate Matter (PM10)	Annual	20 µg/m^3	N	---	---
	24 Hours	50 µg/m^3	N	150 µg/m^3	U
Fine Particulate Matter (PM2.5)	Annual	12 µg/m^3	N	12 µg/m^3	U/A
	24 Hours	---	---	35 µg/m^3	N (moderate)
Lead	30 Days	1.5 µg/m^3	A	---	---
	Calendar Quarter	---	---	1.5 µg/m^3	A
	Rolling 3 Months	---	---	0.15 µg/m^3	A

Notes: CAAQS = California Ambient Air Quality Standards; NAAQS National Ambient Air Quality Standards;
A = Attainment; N = Nonattainment; U = Unclassified; "---" = not applicable; ppm = parts per million;
µg/m^3 = micrograms per cubic meter; PST = Pacific Standard Time.
Source: Bay Area Air Quality Management District (BAAQMD), 2017. Air Quality Standards and Attainment Status. Available at: http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status.

2.2.2 Regional Regulations

The project site is located in the SFBAAB, which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD adopts rules and regulations that apply for development projects. Specific rules applicable to project construction and operation include, but are not limited to, the following rules:

- **Regulation 2, Rule 2, New Source Review**. This rule applies to new or modified sources and contains requirements for best available control technology (BACT) and emission offsets. Rule 2 implements federal New Source Review and Prevention of Significant Deterioration requirements.
- **Regulation 2, Rule 5 (New Source Review of TACs):** This regulation outlines guidance for evaluating TAC emissions and their potential health risks. The Project Risk Requirement (2-5-302.1) states that the Air Pollution Control Officer shall deny an Authority to Construct or Permit to Operate for any new or modified source of TACs if the project cancer risk exceeds 10.0 in one million.
- **Regulation 7, Odorous Substances**. Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds.
- **Regulation 9, Rule 8 (Stationary Internal-Combustion Engines):** This regulation limits emissions of NO_X and CO from stationary internal-combustion engines of more than 50 hp.

The BAAQMD has adopted thresholds of significance to assist lead agencies in the evaluation and mitigation of air quality impacts under CEQA.[2] The BAAQMD's thresholds established levels at which emissions of ozone precursors (i.e., reactive organic gases [ROGs] and nitrogen oxides [NO_x]), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), carbon monoxide, toxic air contaminants (TACs), and odors could cause significant air quality impacts. The BAAQMD's thresholds of significance that are used in this analysis are summarized in **Table 2** below.

[2] Bay Area Air Quality Management District (BAAQMD), 2023. CEQA Air Quality Guidelines, May.

Table 2. BAAQMD'S Thresholds of Significance

Impact Analysis	Pollutant	Threshold of Significance
Regional Air Quality (Construction)	ROG	54 pounds/day (average daily emission)
	NO_x	54 pounds/day (average daily emission)
	Exhaust PM_{10}	82 pounds/day (average daily emission)
	Exhaust $PM_{2.5}$	54 pounds/day (average daily emission)
	Fugitive dust (PM_{10} and $PM_{2.5}$)	Best management practices (BMPs)
Regional Air Quality (Operation)	ROG	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
	NO_x	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
	Exhaust PM_{10}	82 pounds/day (average daily emission) 15 tons/year (maximum annual emission)
	Exhaust $PM_{2.5}$	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
Local Community Risks and Hazards (Operation and/or Construction)	$PM_{2.5}$ (project)	0.3 µg/m^3 (annual average)
	TACs (project)	Cancer risk increase > 10 in one million Chronic hazard index > 1.0
	$PM_{2.5}$ (cumulative)	0.8 µg/m^3 (annual average)
	TACs (cumulative)	Cancer risk > 100 in one million Chronic hazard index > 10.0

Notes: µg/m^3 = micrograms per cubic meter
Source: BAAQMD 2023

BAAQMD has also developed screening criteria for criteria air pollutants. These screening criteria are not thresholds of significance. Instead, they provide lead agencies with a conservative indication of whether implementing a proposed project could result in potentially significant criteria air pollutant impacts. If all screening criteria for criteria air pollutants are met by a proposed project, then the lead agency would not need to perform a detailed assessment of the project's criteria air pollutant emissions.

According to the BAAQMD 2022 CEQA Guidelines,[3] if all of the following screening criteria are met, then construction of the proposed project would result in a less-than-significant impact related to criteria air pollutants and precursors:

1. The project size is at or below the applicable screening level size of 452,000 square feet for commercial and industrial land uses.

[3] Ibid.

2. All best management practices are included in the project design and implemented during construction.
3. Construction-related activities would not overlap with operational activities.
4. Construction-related activities would not include:
    a. demolition,
    b. simultaneous occurrence of two or more construction phases (e.g., paving and building construction would occur simultaneously),
    c. extensive site preparation (e.g., grading, cut and fill, or earth movement),
    d. extensive material transport (e.g., soil import and export requiring a considerable amount of haul truck activity), or
    e. stationary sources (e.g., backup generators) subject to Air District rules and regulations.

If all of the following screening criteria are met, the operation of the proposed project would result in a less-than-significant impact related to criteria air pollutants and precursors:

1. The project size is at or below the most conservative operational screening level size of 89,000 square feet for commercial and industrial land uses.

2. Operational activities would not include stationary engines (e.g., backup generators) and industrial sources subject to Air District rules and regulations.

3. Operational activities would not overlap with construction-related activities.

The BAAQMD's threshold of significance for local carbon monoxide concentrations is equivalent to the 1- and 8-hour California ambient air quality standards of 20.0 and 9.0 parts per million, respectively, because these represent levels that are protective of public health. The BAAQMD has developed conservative screening criteria that can be used to determine if a project would generate traffic congestion at intersections that could potentially cause or contribute to local carbon monoxide levels above the California ambient air quality standards. According to the BAAQMD, a project would result in a less-than-significant impact related to localized CO concentrations if all of the following screening criteria are met:

- The project is consistent with an applicable Congestion Management Program (CMP) established by the County Congestion Management Agency for designated roads or highways, regional transportation plans, and local congestion management agency plans.

- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

2.3 Significance Criteria

According to the CEQA Guidelines Appendix G, implementation of the proposed project would result in a significant air quality impact if it would:

1. Conflict with or obstruct implementation of the applicable air quality plan;

2. 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;

3. Expose sensitive receptors to substantial pollutant concentrations; or

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

2.4 Impact Analysis

2.4.1 Consistency with Air Quality Plan

The BAAQMD's 2017 Clean Air Plan (CAP) is the applicable air quality plan for projects located in the SFBAAB.[4] Consistency may be determined by evaluating whether the project supports the primary goals of the 2017 CAP, including applicable control measures contained within the 2017 CAP, and would not conflict with or obstruct implementation of any 2017 CAP control measures.

The primary goals of the 2017 CAP are the attainment of ambient air quality standards and reduction of population exposure to air pollutants for the protection of public health in the Bay Area. Because the project would not result in any significant and unavoidable air quality impacts related to emissions, ambient concentrations, or public exposures (see discussions below), the project would support the primary goals of the 2017 CAP.

The control measures from the 2017 CAP, which aim to reduce air pollution and GHGs from stationary, area, and mobile sources, are organized into nine categories: stationary sources, transportation, buildings, energy, agriculture, natural and working lands, waste, water, and

[4] Bay Area Air Quality Management District (BAAQMD), 2017. 2017 Clean Air Plan: Spare the Air, Cool the Climate, April

super-GHG pollutants (e.g., methane, black carbon, and fluorinated gases). As described in **Table 3**, the project would be consistent with applicable control measures from the 2017 CAP. Therefore, the project would not conflict with or obstruct implementation of the applicable air quality plan, and the impact would be less than significant.

Table 3: Project Consistency with BAAQMD's 2017 CAP

Control Measures	Project Consistency
Stationary Source	**Consistent**. The stationary source measures, which are designed to reduce emissions from stationary sources, are incorporated into rules adopted by the BAAQMD and then enforced by the BAAQMD's Permit and Inspection programs. Operation of an emergency backup generator and an aboveground fuel tank would be subject to the BAAQMD's permitting requirements for stationary sources. Therefore, the project would be consistent with the stationary source control measures of the 2017 CAP.
Transportation	**Consistent**. The transportation control measures are designed to reduce vehicle trips, use, miles traveled, idling, or traffic congestion for the purpose of reducing vehicle emissions. The project would not change the number of employees, the service area, or the number vehicle trips generated relative to existing conditions. Therefore, the project would be consistent with the transportation control measures in the 2017 CAP.
Energy	**Not applicable**. The energy control measures are designed to reduce emissions of criteria air pollutants, TACs, and GHGs by decreasing the amount of electricity consumed in the Bay Area, as well as decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures primarily apply to electrical utility providers, the energy control measures of the 2017 CAP are not applicable to the project.
Buildings	**Consistent.** The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters but has limited authority to regulate buildings themselves. Therefore, the building control measures focus on working with local governments that have authority over local building codes to facilitate adoption of best practices and policies to control GHG emissions. The project will comply with the current Title 24 Building Energy Efficiency Standards which include performance standards for energy-efficient appliances and heating and cooling systems. Therefore, the project would be consistent with the buildings control measures of the 2017 CAP.
Agriculture	**Not applicable**. The agriculture control measures are designed to primarily reduce emissions of methane. Since the project does not include any agricultural activities, the agriculture control measures of the 2017 CAP are not applicable to the project.

Control Measures	Project Consistency
Natural and Working Lands	**Not applicable**. The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetlands, as well as encouraging local governments to adopt ordinances that promote urban-tree plantings. Since the project does not include the disturbance of any rangelands or wetlands, the natural and working lands control measures of the 2017 CAP are not applicable to the project.
Waste Management	**Consistent.** The waste management measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The project would comply with local requirements for waste management (e.g., recycling). Therefore, the project would be consistent with the waste management control measures of the 2017 CAP.
Water	**Not applicable**. The water control measures to reduce emissions from the water sector will reduce emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works, and promoting the use of biogas recovery systems. Since these measures primarily apply to publicly owned treatment works (sewage treatment plant that is owned, and usually operated, by a government agency), the water control measures of the 2017 CAP are not applicable to the project.
Super GHGs	**Not applicable**. The super-GHG control measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. Since these measures do not apply to individual developments, the super-GHG control measures of the 2017 CAP are not applicable to the project.

Source: Bay Area Air Quality Management District (BAAQMD), 2017. 2017 Clean Air Plan: Spare the Air, Cool the Climate, April.

2.4.2 Criteria Air Pollutant Emissions

Criteria Air Pollutants from Construction

Construction of the project would generate criteria pollutant emissions that could potentially impact regional air quality. As mentioned above under Section 2.2, construction of the project would result in a less-than-significant impact related to criteria air pollutants and precursors if it would meet all four screening criteria established in the BAAQMD 2022 CEQA Guidelines.[5] First, the proposed project would construct approximately 8,000 square feet of new fire station, which is below the applicable BAAQMD construction screening criteria of 452,000 square feet for commercial or industrial land use. Second, construction and operation of the proposed new

[5] Bay Area Air Quality Management District (BAAQMD), 2023. CEQA Air Quality Guidelines, May.

fire station would not overlap, which is consistent with the corresponding screening criterion. Third, construction of the project would not include demolition of the existing fire station or use of stationary sources subject to Air District rules and regulations. In addition, the required excavation depth for the project is approximately 3 feet below ground surface, with an anticipated total soil excavation volume of approximately 3,400 cubic yards and total soil export volume of 1,500 cubic yards (soil import is not anticipated); therefore, construction of the project would not require extensive site preparation and material transport. Fourth, BAAQMD considers implementation of the following best management practices to control dust during construction sufficient to reduce potential impacts to a less-than-significant level.

Best Management Practices for Construction-Related Fugitive Dust Emissions

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

7. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.

8. Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.

9. Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution

Complaints number shall also be visible to ensure compliance with applicable regulations.

With implementation of the BAAQMD's Best Management Practices for Construction-Related Fugitive Dust Emissions as either a condition of approval or mitigation measure, the project would meet all four screening criteria for criteria air pollutants emissions during project construction and the impact would be less than significant.

Criteria Air Pollutants from Operation

Project operation would generate criteria air pollutant emissions that could potentially affect regional air quality. The primary pollutant emissions of concern during project operation would be ROG, NO_x, and exhaust PM_{10} and $PM_{2.5}$ from mobile sources, energy use, area sources (e.g., consumer products, architectural coatings, and landscape equipment) and stationary sources. As mentioned above under Section 2.2, operation of the project would result in a less-than-significant impact related to criteria air pollutants and precursors if it would meet all three screening criteria established in the BAAQMD 2022 CEQA Guidelines.[6] First, the project size (approximately 8,000 square feet) is well below the BAAQMD's most conservative screening criterion (89,000 square feet) for criteria air pollutants related to commercial and industrial land uses. Second, as discussed above, there would be no overlap in construction and operational activities on the project site, which is consistent with the corresponding screening criterion. Third, the project would replace the existing 25-kilowatt emergency diesel generator with a 200-kilowatt emergency diesel generator. Because the replacement emergency diesel generator is bigger in size, the project would not meet the BAAQMD screening criterion of no stationary engines during operation. Therefore, project operational criteria air pollutant emissions were further evaluated below.

The BAAQMD currently recommends using the most recent version of the California Emissions Estimator Model (CalEEMod version 2022.1) to estimate operational emissions of criteria air pollutants and precursors for a proposed project. CalEEMod uses widely accepted models for emission estimates combined with appropriate default data for a variety of land use projects that can be used if site-specific information is not available. Project-specific information and assumptions used to calculate operation emissions are provided in **Table 4** and **Table 5**. A copy of the CalEEMod report for the project, which summarizes the input parameters, assumptions, and findings, is included as **Attachment A**.

[6] Ibid.

Table 4. CalEEMod Land Use Input Parameters for the Project

Land Use Type	CalEEMod Land Use Type	Unit Amount	Units
Fire Station	Government Office Building	8,000	Square Feet
Landscape Area	Landscape Area	30,000	Square Feet
Parking Lot	Parking Lot	11,000	Square Feet

Notes: Default CalEEMod data was used for all other parameters not described. The Landscape Area was conservatively estimated by subtracting the building footprint, parking spaces, and the 10,466 square feet undeveloped area from the 1.28-acre project site area.

Table 5: CalEEMod Operation Assumptions

Input Category	Construction Assumptions and Changes to Default Data
Mobile Sources - Vehicle Data	The project would not change the number of employees and the service area of the fire station, or the number of emergency calls the employees responded to per month. Therefore, the vehicle trips generated by the project would be substantially the same as the existing condition. The net project-generated vehicle trip would be zero.
Emergency Generators	Based on the information provided by the Alameda County Fire Department, a 200-kilowatt emergency diesel generator would be required for the project, and the generator would be used for non-emergency operation up to 50 hours per year for routine testing and maintenance.

Notes: Default CalEEMod data was used for all other parameters not described.

The estimated maximum annual emissions and average daily emissions during the operational phase of the proposed project are compared to the BAAQMD's thresholds of significance in **Table 6**. The estimated emissions for ROG, NOx, and exhaust PM_{10} and $PM_{2.5}$ during operation were below the thresholds of significance. Therefore, the increase in ROG, NOx, and exhaust PM_{10} and $PM_{2.5}$ concentrations from project operation would not result in a cumulatively considerable net increase in criteria air pollutants for which the region is in nonattainment.

Table 6. Estimated Operation Emissions

Emissions Scenario	Maximum Annual Emissions (Tons)				Average Daily Emissions (Pounds)			
	ROG	NOx	PM_{10}	$PM_{2.5}$	ROG	NOx	PM_{10}	$PM_{2.5}$
Area Sources	0.04	<0.01	<0.01	<0.01	0.22	<0.01	<0.01	<0.01
Energy Use	<0.01	0.01	<0.01	<0.01	<0.01	0.05	<0.01	<0.01
Generator	0.01	0.03	<0.01	<0.01	0.06	0.17	0.01	0.01
Total	0.05	0.04	<0.01	<0.01	0.29	0.22	0.01	0.01

BAAQMD CEQA Thresholds of Significance	10	10	15	10	54	54	82	54
Threshold Exceedance?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: See Attachment A

2.4.3 Exposure to Toxic Air Contaminants

Local Health Risks during Construction

Exposure to Diesel Particulate Matter Emissions

Project construction would generate diesel particulate matter (DPM) and $PM_{2.5}$ emissions from the exhaust of off-road diesel construction equipment and fugitive $PM_{2.5}$ emissions from construction activities. The nearest sensitive receptors are residences to the north and west of the project site along Villareal Drive, as close as 65 feet. The predominant wind direction is to the southeast, away from the nearby sensitive receptors. A more conservative analysis of construction health risks was performed recently for a larger ACFD fire station in Castro Valley (Fire Station 25) with sensitive receptors located in the predominant downwind direction about 50 feet to the east, which found that the estimated excess cancer risk and chronic hazard index for DPM and annual average $PM_{2.5}$ concentration from construction emissions were below the BAAQMD's thresholds of significance.[7] Therefore, the project would not expose sensitive receptors to substantial pollutant concentrations during project construction.

Local Health Risks during Operation

Exposure to Carbon Monoxide Emissions

The source of local carbon monoxide concentrations is often associated with heavy traffic congestion at nearby intersections. The new fire station will be staffed with same number of employees as the existing fire station. The project would comply with (and would not exceed) the BAAQMD's screening criteria for local carbon monoxide concentrations because the project would not result in a substantial net increase in vehicle trips relative to existing conditions. Therefore, the project would not result in a net increase in the potential exposure of existing sensitive receptors to carbon monoxide concentrations from project-generated traffic.

Exposure to Toxic Air Contaminant Emissions

The source of local TAC concentrations is often associated with stationary sources. The project would replace existing 25-kilowatt emergency diesel generator with a 200-kilowatt emergency diesel generator but is not expected to result in a substantial net in increase in TAC emissions. Furthermore, operation of stationary sources is subject to BAAQMD permitting requirements to

[7] Baseline Environmental Consulting, 2023. Air Quality and Greenhouse Gas Analysis for Alameda County Fire Station 25. December 10.

minimize the potential exposure of nearby sensitive receptors to TACs. Therefore, the project would not result in a substantial net increase in the potential exposure of existing sensitive receptors to TAC concentrations from operation of stationary sources on the project site.

2.4.4 Odors and other Emissions

The project would not alter the existing land use condition or introduce new sources of odors or other emissions.

3 GREENHOUSE GAS ANALYSIS

3.1 Environmental Setting

Climate change refers to change in the Earth's weather patterns, including the rise in temperature due to an increase in heat trapping GHGs in the atmosphere. According to the BAAQMD, some of the potential effects of increased GHG emissions and associated climate change may include loss of snowpack (affecting water supply), more frequent extreme weather events, more large forest fires, more drought years, and sea level rise. In addition, climate change may increase electricity demand for cooling, decrease the availability of hydroelectric power, and affect regional air quality and public health.[8]

3.2 Regulatory Setting

3.2.1 State Regulations

California Climate Action Goals

California has established the following long-term climate action goals:

- Assembly Bill (AB) 32: Reduce GHG emissions to 1990 levels by 2020.
- Senate Bill (SB) 32: Reduce GHG emissions to 40 percent below 1990 levels by 2030.
- AB 1279: Achieve carbon neutrality as soon as possible, but no later than 2045 and maintain net negative GHG emissions thereafter; and reduce GHG emissions to 85 percent below 1990 levels by 2045.
- Executive Order S-3-05: Reduce GHG emissions to 80 percent below 1990 levels by 2050.

[8] Bay Area Air Quality Management District (BAAQMD), 2017. Final 2017 Clean Air Plan. April 19.

It should be noted that executive orders are legally binding only on State agencies and have no direct effect on local government or the private sector.

California's Climate Change Scoping Plan

In December 2008, CARB adopted the Climate Change Scoping Plan to identify how the State can achieve its 2020 climate action goal under AB 32. In 2017, CARB updated the Scoping Plan to identify how the State can achieve its 2030 climate action goal under SB 32, and substantially advance toward its 2050 climate action goal under Executive Order S-3-05. The 2017 Scoping Plan includes the regulatory programs, such as the Advanced Clean Cars Program, Low-Carbon Fuel Standard, Renewable Portfolio Standard Program, and energy efficiency standards.[9]

In December 2022, CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality, which outlines a roadmap to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045.[10] Building on the 2017 Scoping Plan, the 2022 Scoping Plan evaluates the progress made toward meeting the 2030 GHG reduction target established in SB 32 and identifies a technologically feasible, cost-effective, and equity-focused path to achieve carbon neutrality by 2045. The 2022 Scoping Plan presents an approach for an aggressive reduction of fossil fuels and a rapid transition to renewable energy resources and zero-emission vehicles. The 2022 Scoping Plan identifies actions and outcomes such as rapidly moving to zero-emission transportation; electrifying cars, buses, trains, and trucks; phasing out the use of fossil gas used for heating homes and buildings; clamping down on chemicals and refrigerants; providing communities with sustainable options for walking, biking, and public transit; building out clean, renewable energy resources (such as solar arrays and wind turbine capacity) to displace fossil-fuel fired electrical generation; and scaling up new options such as renewable hydrogen and biomethane. Appendix D of the 2022 Scoping Plan includes recommendations for local government to take actions that align with the state's climate goals, with a focus on local climate action plans and local authority over new residential and mixed-use development. Appendix D of the 2022 Scoping Plan recommends for local jurisdictions to focus on three priority areas when preparing a climate action plan: transportation electrification, vehicle miles travelled (VMT) reduction, and building decarbonization.

3.2.2 Regional Regulations

BAAQMD CEQA Guidelines

Climate change is not caused by any individual emissions source but by a large number of sources around the world emitting GHGs that collectively create a significant cumulative

[9] California Air Resources Board (CARB), 2017. California's 2017 Climate Change Scoping Plan. November.
[10] California Air Resources Board (CARB), 2022. Scoping Plan for Achieving Carbon Neutrality. November.

impact. CEQA requires agencies in California to analyze such impacts by evaluating whether a proposed project would make a "cumulatively considerable" contribution to the significant cumulative impact on climate change. The BAAQMD's CEQA Air Quality Guidelines[11] include recommended thresholds of significance for GHG emissions from typical land use projects that are intended to assist public agencies in determining whether proposed projects would make a cumulatively considerable contribution to global climate change, as required by CEQA. The thresholds identify design elements that an individual project needs to incorporate to do its "fair share" in achieving the State's goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045. The GHG thresholds for typical land use projects include two options, as follows:

> **Option 1.** Projects must include, at a minimum, the following project design elements:
> Buildings
>
> a) The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
> b) The project will not result in any wasteful, inefficient, or unnecessary electrical usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
>
> Transportation
>
> a) Achieve compliance with electric vehicle (EV) requirements in the most recently adopted version of CALGreen Tier 2.
> b) Achieve a reduction in project-generated VMT below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
>
> - Residential projects: 15 percent below the existing VMT per capita
> - Office projects: 15 percent below the existing VMT per employee
> - Retail projects: no net increase in existing VMT
>
> **Option 2.** Be consistent with local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

Alameda County does not have a local GHG Reduction Strategy that meets the Option 2 criterion.

[11] Bay Area Air Quality Management District (BAAQMD), 2023. CEQA Air Quality Guidelines, May.

3.2.3 Local Regulations

Alameda County Climate Action Plan for Government Services and Operations

In May 2010, the Alameda County adopted the Alameda County Climate Action Plan for Government Services and Operations Through 2020 (CAP 2020), including 16 Commitments to Climate Project that aim to reduce GHG emissions associated with providing government services by 15 percent to 30 percent below 2003 levels by 2020. The CAP 2020 goal was met in 2019. The updated climate action plan, Alameda County Climate Action Plan for Government Services and Operations Through 2026 (CAP 2026), was adopted by Alameda County in May 2023. Aligning with the State's long-term climate action goals, CAP 2026 set a goal to achieve carbon neutrality by 2045 and contains six action areas including building environment, community resilience, green economy and prosperity, sustainable materials management, transportation, and climate leadership and governance. The CAP 2026 focuses on actions that need to be taken between 2023 to 2026.

3.3 Significance Criteria

According to the CEQA Guidelines Appendix G, implementation of the project would have a significant impact related to GHG if it would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

2. Fundamentally conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing the emissions of GHGs.

It should be noted that the BAAQMD's GHG thresholds of significance described under Option 1 were developed for typical residential and commercial land use projects, which are consistent with the 2022 Scoping Plan. In this analysis, the project's consistency with the building decarbonization design element (no natural gas) is not evaluated for the proposed new fire station because it is not considered a typical residential or commercial land use. Similarly, the BAAQMD's Option 1 design element for transportation is not applicable to the project because the project-generated VMT reduction targets do not include fire station uses.

3.4 Impact Analysis

3.4.1 GHG Emissions from the Project

The project would generate temporary GHG emissions through construction activities, such as operation of on-site heavy construction equipment and off-site construction vehicle trips. The BAAQMD does not recommend a threshold of significance for GHG emissions during construction because there is not sufficient evidence to determine a level at which temporary

construction emissions are significant.[12] Furthermore, a construction contractor would also have no incentive to waste fuel during construction and, therefore, it is generally assumed that GHG emissions during construction would be minimized to the maximum extent feasible.

Operation of the project would generate GHG emissions from several sources, such as the buildings (area, energy, water, solid waste disposal), emergency diesel generators, and on-road vehicles. As the existing fire station operations and maintenance would be transferred to the proposed new fire station, project operations are not expected to result in a substantial increase in GHG emissions. In addition, the project's consistency with the BAAQMD's recommended design elements (Option 1 thresholds) is evaluated in **Table 7**. As presented in **Table 7**, the project is designed to incorporate the applicable design elements. Therefore, the project would contribute its "fair share" to achieve the state's long-term climate goals.

Table 7: Project Consistency with BAAQMD Design Elements for GHG Emissions

Design Element		Project Consistency
Building	No Natural Gas	**Consistent.** As discussed above, the building decarbonization design element (no natural gas) does not apply to fire stations because it is not considered a typical residential or commercial land use. However, the project would be consistent with this design element and would not include natural gas uses.
	No Wasteful, Inefficient, or Unnecessary Energy Usage	**Consistent**. The project will be required to comply with state and locally mandated energy efficiency/conservation measures. Therefore, operation of the project would not result in inefficient, wasteful, or unnecessary energy usage.
Transportation	California Green Building Standards (CALGreen) Tier 2 EV Requirement	**Consistent**. The project would construct 9 new parking spaces. In accordance with the California Green Building Standards Code and the Alameda County Guidelines for Future Electric Vehicle Charging Stations at Alameda County Facilities, the project would include two parking spaces with level-2 EV charging stations. In accordance with CALGreen 2022 Section A5.106.5.3.2 Tier 2, 3 parking spaces out of the proposed 9 parking spaces would need to be EV capable spaces. No Electric Vehicle Supply Equipment (EVSE) required. The project does not meet the CalGreen Tier 2 EV capable requirement, but would exceed the EVSE requirement. Therefore, the project would be generally consistent with CalGreen Tier 2 requirements.

[12] Bay Area Air Quality Management District (BAAQMD), 2023. CEQA Air Quality Guidelines, May.

Table 7: Project Consistency with BAAQMD Design Elements for GHG Emissions

Design Element		Project Consistency
	Project-Generated Vehicle Miles Traveled (VMT) Reduction	**Not Applicable**. As discussed above, project-generated VMT reduction targets included in this design element do not apply to fire stations. Therefore, this design element is not applicable to the project. The new fire station will be staffed with the same number of employees as the existing fire station. Project-generated VMT would be substantially the same as the existing condition.

Source: BAAQMD, 2023

3.4.2 Consistency with GHG Plans

Consistency with 2022 Scoping Plan

As discussed above, the project includes the applicable BAAQMD-recommended design elements that an individual project needs to incorporate to do its "fair share" in achieving the state's goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045. The project would support building decarbonization by not using natural gas appliances. The project will be required to comply with state and locally mandated energy efficiency/conservation measures, ensuring building energy efficiency. In addition, the project would construct EV charging infrastructure that meets the California Green Building Standards Code and the Alameda County Guidelines for Future Electric Vehicle Charging Stations requirements, supporting the transition to zero-emission vehicles. In summary, the project would not conflict with the 2022 Scoping Plan.

Consistency with Alameda County CAP 2026

As discussed above, the project would include EV charging infrastructure, which is consistent with the CAP 2026 Transportation Measure T6 – Smart Parking Policies. The measure recommends designation of an increasing amount of parking throughout the County for carpools, low-emission vehicles, or zero-emission vehicles only. The project would not conflict with CAP 2026.

4 CONCLUSIONS

With implementation of the BAAQMD's Best Management Practices for Construction-Related Fugitive Dust Emissions as either a condition of approval or mitigation measure, construction and operation of the project would not result in a substantial net increase in criteria air pollutants or health risks associated with TACs emissions. In addition, the project would contribute its "fair share" to achieve the state's long-term climate goals and not conflict with applicable plans, policies, or regulations adopted for the purposes of reducing GHG emissions.

ATTACHMENT A

Supporting Air Quality Calculations

FS 7 Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	FS 7
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.30
Precipitation (days)	42.6
Location	6901 Villareal Dr, Castro Valley, CA 94552, USA
County	Alameda
City	Unincorporated
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1408
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Government Office Building	8.00	1000sqft	1.28	8,000	30,000	—	—	new fire station

Parking Lot	11.0	1000sqft	0.25	0.00	0.00	—	—	11 parking spaces

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.06	0.25	< 0.005	0.35	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.43	1.43	< 0.005	< 0.005	—	1.44
Energy	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	161	161	0.02	< 0.005	—	162
Water	—	—	—	—	—	—	—	—	—	—	—	3.05	6.69	9.74	0.31	0.01	—	19.8
Waste	—	—	—	—	—	—	—	—	—	—	—	4.01	0.00	4.01	0.40	0.00	—	14.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Stationary	0.07	0.06	0.17	0.16	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	31.5	31.5	< 0.005	< 0.005	0.00	31.6
Total	0.14	0.32	0.23	0.55	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	7.06	201	208	0.74	0.01	0.02	229
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	161	161	0.02	< 0.005	—	162
Water	—	—	—	—	—	—	—	—	—	—	—	3.05	6.69	9.74	0.31	0.01	—	19.8
Waste	—	—	—	—	—	—	—	—	—	—	—	4.01	0.00	4.01	0.40	0.00	—	14.0

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Stationary	0.07	0.06	0.17	0.16	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	31.5	31.5	< 0.005	< 0.005	0.00	31.6
Total	0.07	0.26	0.22	0.20	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	7.06	199	206	0.74	0.01	0.02	228
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.03	0.22	< 0.005	0.17	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.71	0.71	< 0.005	< 0.005	—	0.71
Energy	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	161	161	0.02	< 0.005	—	162
Water	—	—	—	—	—	—	—	—	—	—	—	3.05	6.69	9.74	0.31	0.01	—	19.8
Waste	—	—	—	—	—	—	—	—	—	—	—	4.01	0.00	4.01	0.40	0.00	—	14.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Stationary	0.07	0.06	0.17	0.15	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	30.8	30.8	< 0.005	< 0.005	0.00	30.9
Total	0.10	0.29	0.22	0.37	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	7.06	199	206	0.74	0.01	0.02	228
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.01	0.04	< 0.005	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.12	0.12	< 0.005	< 0.005	—	0.12
Energy	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	26.6	26.6	< 0.005	< 0.005	—	26.8
Water	—	—	—	—	—	—	—	—	—	—	—	0.50	1.11	1.61	0.05	< 0.005	—	3.28
Waste	—	—	—	—	—	—	—	—	—	—	—	0.66	0.00	0.66	0.07	0.00	—	2.32
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
Stationary	0.01	0.01	0.03	0.03	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	5.11	5.11	< 0.005	< 0.005	0.00	5.12
Total	0.02	0.05	0.04	0.07	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	1.17	33.0	34.1	0.12	< 0.005	< 0.005	37.7

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	94.6	94.6	0.02	< 0.005	—	95.6
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	5.39	5.39	< 0.005	< 0.005	—	5.44
Total	—	—	—	—	—	—	—	—	—	—	—	—	100	100	0.02	< 0.005	—	101
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	94.6	94.6	0.02	< 0.005	—	95.6
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	5.39	5.39	< 0.005	< 0.005	—	5.44
Total	—	—	—	—	—	—	—	—	—	—	—	—	100	100	0.02	< 0.005	—	101
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	15.7	15.7	< 0.005	< 0.005	—	15.8
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.89	0.89	< 0.005	< 0.005	—	0.90
Total	—	—	—	—	—	—	—	—	—	—	—	—	16.6	16.6	< 0.005	< 0.005	—	16.7

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	60.9	60.9	0.01	< 0.005	—	61.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	60.9	60.9	0.01	< 0.005	—	61.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	60.9	60.9	0.01	< 0.005	—	61.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	60.9	60.9	0.01	< 0.005	—	61.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.1	10.1	< 0.005	< 0.005	—	10.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.1	10.1	< 0.005	< 0.005	—	10.1

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.06	0.06	< 0.005	0.35	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.43	1.43	< 0.005	< 0.005	—	1.44
Total	0.06	0.25	< 0.005	0.35	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.43	1.43	< 0.005	< 0.005	—	1.44
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	0.01	< 0.005	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.12	0.12	< 0.005	< 0.005	—	0.12
Total	0.01	0.04	< 0.005	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.12	0.12	< 0.005	< 0.005	—	0.12

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	3.05	6.69	9.74	0.31	0.01	—	19.8
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	3.05	6.69	9.74	0.31	0.01	—	19.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	3.05	6.69	9.74	0.31	0.01	—	19.8
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	3.05	6.69	9.74	0.31	0.01	—	19.8

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	0.50	1.11	1.61	0.05	< 0.005	—	3.28
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.50	1.11	1.61	0.05	< 0.005	—	3.28

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	4.01	0.00	4.01	0.40	0.00	—	14.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	4.01	0.00	4.01	0.40	0.00	—	14.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	4.01	0.00	4.01	0.40	0.00	—	14.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	4.01	0.00	4.01	0.40	0.00	—	14.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	0.66	0.00	0.66	0.07	0.00	—	2.32
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.66	0.00	0.66	0.07	0.00	—	2.32

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Governm Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.07	0.06	0.17	0.16	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	31.5	31.5	< 0.005	< 0.005	0.00	31.6
Total	0.07	0.06	0.17	0.16	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	31.5	31.5	< 0.005	< 0.005	0.00	31.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.07	0.06	0.17	0.16	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	31.5	31.5	< 0.005	< 0.005	0.00	31.6
Total	0.07	0.06	0.17	0.16	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	31.5	31.5	< 0.005	< 0.005	0.00	31.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.01	0.01	0.03	0.03	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	5.11	5.11	< 0.005	< 0.005	0.00	5.12
Total	0.01	0.01	0.03	0.03	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	5.11	5.11	< 0.005	< 0.005	0.00	5.12

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Remove	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Government Office Building	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	12,000	4,000	660

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Government Office Building	169,349	204	0.0330	0.0040	190,002
Parking Lot	9,636	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Government Office Building	1,589,277	340,839
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Government Office Building	7.44	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Government Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Government Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Emergency Generator	Diesel	1.00	0.14	50.0	268	0.73

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	21.4	annual days of extreme heat

Extreme Precipitation	9.15	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	28.2	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	0	0	0	N/A
Sea Level Rise	0	0	0	N/A
Wildfire	0	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	1	1	1	2
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	15.0
AQ-PM	22.3
AQ-DPM	19.5
Drinking Water	32.8
Lead Risk Housing	5.08
Pesticides	13.7
Toxic Releases	45.2
Traffic	99.6

Effect Indicators	—
CleanUp Sites	0.00
Groundwater	59.6
Haz Waste Facilities/Generators	35.6
Impaired Water Bodies	12.5
Solid Waste	52.9
Sensitive Population	—
Asthma	13.1
Cardio-vascular	25.1
Low Birth Weights	90.7
Socioeconomic Factor Indicators	—
Education	22.8
Housing	10.5
Linguistic	52.0
Poverty	3.54
Unemployment	43.1

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	84.2422687
Employed	71.06377518
Median HI	94.98267676
Education	—
Bachelor's or higher	85.62812781
High school enrollment	100

Preschool enrollment	41.2036443
Transportation	—
Auto Access	95.6242782
Active commuting	82.54844091
Social	—
2-parent households	94.98267676
Voting	74.04080585
Neighborhood	—
Alcohol availability	70.85846272
Park access	45.0019248
Retail density	11.03554472
Supermarket access	30.07827538
Tree canopy	92.99371231
Housing	—
Homeownership	93.09636854
Housing habitability	91.22289234
Low-inc homeowner severe housing cost burden	65.0455537
Low-inc renter severe housing cost burden	72.95008341
Uncrowded housing	83.16437829
Health Outcomes	—
Insured adults	93.45566534
Arthritis	0.0
Asthma ER Admissions	87.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0

Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	75.3
Cognitively Disabled	93.6
Physically Disabled	98.4
Heart Attack ER Admissions	50.3
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	42.1
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	16.3
Elderly	65.5
English Speaking	51.3
Foreign-born	63.4
Outdoor Workers	77.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	86.2
Traffic Density	82.9

Traffic Access	23.0
Other Indices	—
Hardship	16.8
Other Decision Support	—
2016 Voting	71.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	23.0
Healthy Places Index Score for Project Location (b)	94.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Lot acreage provided by the project applicant. The Landscape Area was conservatively estimated by subtracting the building footprint, parking lot, and undeveloped area from the project site area.

Construction: Construction Phases	No demolition is needed.
Operations: Vehicle Data	No net change from the existing condition

MEMORANDUM

Date: 19 July 2024 **Job No.:** 21215-05

To: Whitney Broeking, Panorama Environmental

From: Yilin Tian, Environmental Engineer, Baseline Environmental Consulting

Subject: **Air Quality and Greenhouse Gas Analysis for Alameda County Fire Station 25**

Baseline Environmental Consulting (Baseline) has prepared this technical memorandum to evaluate potential impacts related to air quality and greenhouse gas (GHG) emissions to support CEQA review of the proposed Alameda County Fire Station 25 Project (project) in Castro Valley, California. The project would demolish the existing fire station and parking lot to construct a new fire station.

1 PROJECT DESCRIPTION

The project site is at 20290 San Miguel Avenue in unincorporated Castro Valley in central Alameda County. The site is on a 1.3-acre parcel (Assessor's Parcel Number 84A-112-17-2) and consists of the existing one-story, 10,000-square-foot fire station and an adjacent parking lot, as shown in **Figure 1**. A separate 2,900-square-foot building used for classrooms and training sessions is on the eastern side of the parcel. The existing fire station includes a 125-kilowatt generator and a 1,000-gallon aboveground fuel tank.

New Fire Station

The project would demolish the existing fire station structure and construct a 14,500-square-foot, 30-foot-tall, 2-story fire station on the project site. The new fire station would have a lobby, personnel offices, workstations, apparatus bays, a kitchen and dining spaces, crew dormitories and lockers, a training room, and storage rooms. The existing generator and vehicle fueling station would be replaced in-kind. The new fueling station would feature a 500-gallon aboveground gasoline tank and a 1,000-gallon aboveground diesel tank, with pumps that would dispense diesel and gas to ACFD fleet vehicles and equipment. A new 125-kilowatt emergency generator would be placed on a concrete pad adjacent to the new building.

Project construction is anticipated to begin in November 2025 and last approximately 20 months. Demolition would generate approximately 1,700 cubic yards of debris. Soil excavation activities would result in approximately 2,000 cubic yards of soil export and approximately 580 cubic yards of soil import.

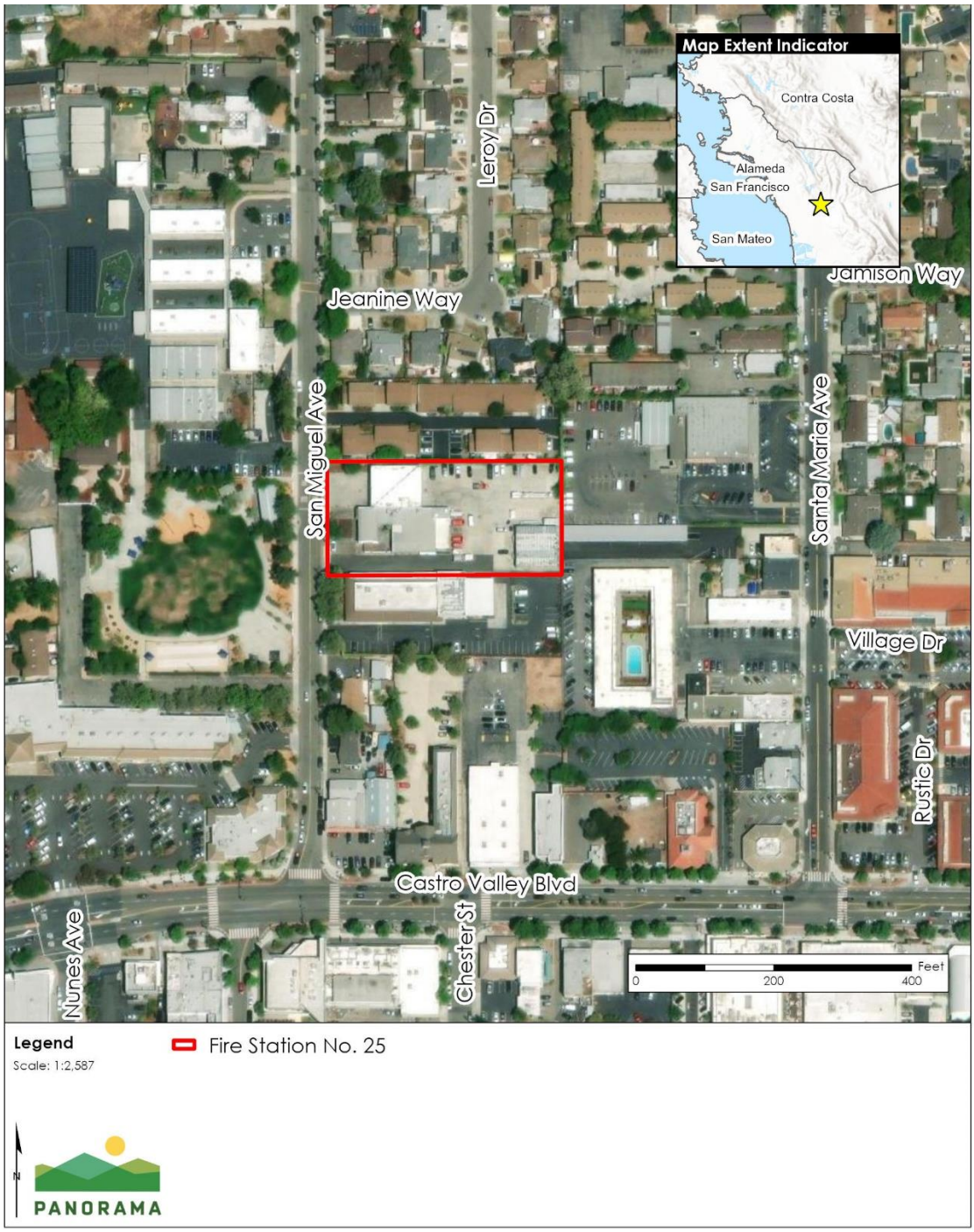
Upon completion of construction, the existing fire station operations and maintenance would be transferred to the new fire station, which would be staffed with eight employees.

Temporary Fire Station

During construction of the new fire station, a temporary fire station would be established at 21040 Marshall Street, approximately 0.8 mile east of the project site. The temporary fire station site would utilize the existing 4,689 square foot Castro Valley Administration building and parking lot owned by the Castro Valley Sanitary District. The existing building, carport, gravel bins, shop, and materials shed would remain onsite. Minor modifications would be made to the existing building interior. A temporary 3,387 square foot apparatus bay would be erected on the southern side of the property. Additionally, a temporary 125-kilowatt emergency generator would be installed at the back of the building near the electrical room.

Construction of the temporary fire station would begin in June 2025 and end in October 2025, lasting for five months.

Figure 1. Project Location



Source: Alameda County 2023

2 AIR QUALITY ANALYSIS

2.1 Environmental Setting

The project site is located within the San Francisco Bay Area Air Basin (SFBAAB). The San Francisco Bay Area (Bay Area) has a Mediterranean climate characterized by wet winters and dry summers. During the summer, a high-pressure cell centered over the northeastern Pacific Ocean results in stable meteorological conditions and a steady northwesterly wind flow that generally keeps storms from affecting the California coast. During the winter, the Pacific high-pressure cell weakens, resulting in increased precipitation and the occurrence of storms. The highest air pollutant concentrations in the Bay Area generally occur during inversions, when a surface layer of cooler air becomes trapped beneath a layer of warmer air. An inversion reduces the amount of vertical mixing and dilution of air pollutants in the cooler air near the surface.

Sensitive receptors are areas where individuals are more susceptible to the adverse effects of poor air quality. Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing, and convalescent facilities. Residential areas are also considered sensitive receptors because people are often at home for extended periods, thereby increasing the duration of exposure to potential air contaminants. The sensitive receptors in the vicinity of the project include 1) residences to the north (as close as 15 feet) and to the east (as close as 50 feet), 2) the Bee Best Learning Center adjacent to the south, 3) Castro Valley Elementary School approximately 170 feet to the northwest, 4) ABC Pre-School and Day Care approximately 485 feet to the north, 5) Growing Years Preschool approximately 540 feet to the west, and 6) the Adobe Park approximately 50 feet to the west of the project site.

2.2 Regulatory Setting

2.2.1 Federal and State Regulations

The federal EPA is responsible for implementing the programs established under the Federal Clean Air Act, such as establishing and reviewing the National Ambient Air Quality Standards (NAAQS) and judging the adequacy of State Implementation Plans to attain the NAAQS. A State Implementation Plan must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. If a state fails to enforce its implementation of approved regulations, or if the EPA determines that a State Implementation Plan is inadequate, the EPA is required to prepare and enforce a Federal Implementation Plan to promulgate comprehensive control measures for a given State Implementation Plan.

The California Air Resources Board (CARB) is responsible for establishing and reviewing the California Ambient Air Quality Standards (CAAQS), developing and managing the California State Implementation Plans, identifying TACs, and overseeing the activities of regional air

quality management districts. In California, mobile emissions sources (e.g., construction equipment, trucks, and automobiles) are regulated by CARB and stationary emissions sources (e.g., industrial facilities) are regulated by the regional air quality management districts. In accordance with the Federal Clean Air Act and California Clean Air Act, areas in California are classified as either in attainment, maintenance (i.e., former nonattainment), or nonattainment of the NAAQS and CAAQS for each criteria air pollutant. To assess the regional attainment status, the BAAQMD collects ambient air quality data from over 30 monitoring sites within the SFBAAB. Based on current monitoring data, the SFBAAB is designated as a nonattainment area for ozone, PM_{10} (CAAQS only), and $PM_{2.5}$, and is designated an attainment or unclassified area for all other pollutants (see **Table 1**).

Table 1. Air Quality Standards and Attainment Status

Pollutant	Averaging Time	CAAQS		NAAQS	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8 Hours	0.070 ppm	N	0.070 ppm	N (marginal)
	1-Hour	0.09 ppm	N	Revoked in 2005	---
Carbon Monoxide	8 Hours	9.0 ppm	A	9 ppm	A
	1-Hour	20 ppm	A	35 ppm	A
Nitrogen Dioxide	1-Hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	---	0.053 ppm	A
Sulfur Dioxide	24 Hours	0.04 ppm	A	0.14 ppm	A
	1-Hour	0.25 ppm	A	0.075 ppm	A
	Annual	---	---	0.030 ppm	A
Coarse Particulate Matter (PM10)	Annual	20 µg/m^3	N	---	---
	24 Hours	50 µg/m^3	N	150 µg/m^3	U
Fine Particulate Matter (PM2.5)	Annual	12 µg/m^3	N	12 µg/m^3	U/A
	24 Hours	---	---	35 µg/m^3	N (moderate)
Lead	30 Days	1.5 µg/m^3	A	---	---
	Calendar Quarter	---	---	1.5 µg/m^3	A
	Rolling 3 Months	---	---	0.15 µg/m^3	A

Notes: CAAQS = California Ambient Air Quality Standards; NAAQS National Ambient Air Quality Standards;
A = Attainment; N = Nonattainment; U = Unclassified; "---" = not applicable; ppm = parts per million;
µg/m^3 = micrograms per cubic meter; PST = Pacific Standard Time.
Source: Bay Area Air Quality Management District (BAAQMD), 2017. Air Quality Standards and Attainment Status. Available at: http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status.

2.2.2 Regional Regulations

The project site is located in the SFBAAB, which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD).

The BAAQMD adopts rules and regulations that apply for development projects. Specific rules applicable to project construction and operation include, but are not limited to, the following rules:

- **Regulation 2, Rule 2, New Source Review**. This rule applies to new or modified sources and contains requirements for best available control technology (BACT) and emission offsets. Rule 2 implements federal New Source Review and Prevention of Significant Deterioration requirements.
- **Regulation 2, Rule 5 (New Source Review of TACs):** This regulation outlines guidance for evaluating TAC emissions and their potential health risks. The Project Risk Requirement (2-5-302.1) states that the Air Pollution Control Officer shall deny an Authority to Construct or Permit to Operate for any new or modified source of TACs if the project cancer risk exceeds 10.0 in one million.
- **Regulation 7, Odorous Substances**. Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds.
- **Regulation 9, Rule 8 (Stationary Internal-Combustion Engines):** This regulation limits emissions of NO_X and CO from stationary internal-combustion engines of more than 50 hp.
- **Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing):** This regulation limits asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos-containing waste material that is generated or handled during these activities.

The BAAQMD has adopted thresholds of significance to assist lead agencies in the evaluation and mitigation of air quality impacts under CEQA.[1] The BAAQMD's thresholds established levels at which emissions of ozone precursors (i.e., reactive organic gases [ROGs] and nitrogen oxides [NO_x]), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), carbon monoxide, toxic air contaminants (TACs), and odors could cause significant air quality impacts. The BAAQMD's thresholds of significance that are used in this analysis are summarized in **Table 2** below.

[1] Bay Area Air Quality Management District (BAAQMD), 2023. CEQA Air Quality Guidelines, May.

Table 2. BAAQMD'S Thresholds of Significance

Impact Analysis	Pollutant	Threshold of Significance
Regional Air Quality (Construction)	ROG	54 pounds/day (average daily emission)
	NO_x	54 pounds/day (average daily emission)
	Exhaust PM_{10}	82 pounds/day (average daily emission)
	Exhaust $PM_{2.5}$	54 pounds/day (average daily emission)
	Fugitive dust (PM_{10} and $PM_{2.5}$)	Best management practices (BMPs)
Regional Air Quality (Operation)	ROG	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
	NO_x	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
	Exhaust PM_{10}	82 pounds/day (average daily emission) 15 tons/year (maximum annual emission)
	Exhaust $PM_{2.5}$	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
Local Community Risks and Hazards (Operation and/or Construction)	$PM_{2.5}$ (project)	0.3 µg/m^3 (annual average)
	TACs (project)	Cancer risk increase > 10 in one million Chronic hazard index > 1.0
	$PM_{2.5}$ (cumulative)	0.8 µg/m^3 (annual average)
	TACs (cumulative)	Cancer risk > 100 in one million Chronic hazard index > 10.0

Notes: µg/m^3 = micrograms per cubic meter
Source: BAAQMD 2023

BAAQMD has also developed screening criteria for criteria air pollutants. These screening criteria are not thresholds of significance. Instead, they provide lead agencies with a conservative indication of whether implementing a proposed project could result in potentially significant criteria air pollutant impacts. If all screening criteria for criteria air pollutants are met by a proposed project, then the lead agency would not need to perform a detailed assessment of the project's criteria air pollutant emissions.

According to the BAAQMD 2022 CEQA Guidelines,[2] if all of the following screening criteria are met, the construction of the proposed project would result in a less-than-significant impact related to criteria air pollutants and precursors:

1. The project size is at or below the applicable screening level size of 452,000 square feet for commercial and industrial land uses.

[2] Ibid.

2. All best management practices are included in the project design and implemented during construction.
3. Construction-related activities would not overlap with operational activities.
4. Construction-related activities would not include:
    a. demolition,
    b. simultaneous occurrence of two or more construction phases (e.g., paving and building construction would occur simultaneously),
    c. extensive site preparation (e.g., grading, cut and fill, or earth movement),
    d. extensive material transport (e.g., soil import and export requiring a considerable amount of haul truck activity), or
    e. stationary sources (e.g., backup generators) subject to Air District rules and regulations.

If all of the following screening criteria are met, the operation of the proposed project would result in a less-than-significant impact related to criteria air pollutants and precursors:

1. The project size is at or below the most conservative operational screening level size of 89,000 square feet for commercial and industrial land uses.

2. Operational activities would not include stationary engines (e.g., backup generators) and industrial sources subject to Air District rules and regulations.

3. Operational activities would not overlap with construction-related activities.

The BAAQMD's threshold of significance for local carbon monoxide concentrations is equivalent to the 1- and 8-hour California ambient air quality standards of 20.0 and 9.0 parts per million, respectively, because these represent levels that are protective of public health. The BAAQMD has developed conservative screening criteria that can be used to determine if a project would generate traffic congestion at intersections that could potentially cause or contribute to local carbon monoxide levels above the California ambient air quality standards. According to the BAAQMD, a project would result in a less-than-significant impact related to localized CO concentrations if all of the following screening criteria are met:

- The project is consistent with an applicable Congestion Management Program (CMP) established by the County Congestion Management Agency for designated roads or highways, regional transportation plans, and local congestion management agency plans.

- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

2.3 Significance Criteria

According to the CEQA Guidelines Appendix G, implementation of the proposed project would result in a significant air quality impact if it would:

1. Conflict with or obstruct implementation of the applicable air quality plan;

2. 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;

3. Expose sensitive receptors to substantial pollutant concentrations; or

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

2.4 Impact Analysis

2.4.1 Consistency with Air Quality Plan

The BAAQMD's 2017 Clean Air Plan (CAP) is the applicable air quality plan for projects located in the SFBAAB.[3] Consistency may be determined by evaluating whether the project supports the primary goals of the 2017 CAP, including applicable control measures contained within the 2017 CAP, and would not conflict with or obstruct implementation of any 2017 CAP control measures.

The primary goals of the 2017 CAP are the attainment of ambient air quality standards and reduction of population exposure to air pollutants for the protection of public health in the Bay Area. Because the project would not result in any significant and unavoidable air quality impacts related to emissions, ambient concentrations, or public exposures (see discussions below), the project would support the primary goals of the 2017 CAP.

The control measures from the 2017 CAP, which aim to reduce air pollution and GHGs from stationary, area, and mobile sources, are organized into nine categories: stationary sources, transportation, buildings, energy, agriculture, natural and working lands, waste, water, and

[3] Bay Area Air Quality Management District (BAAQMD), 2017. 2017 Clean Air Plan: Spare the Air, Cool the Climate, April

super-GHG pollutants (e.g., methane, black carbon, and fluorinated gases). As described in **Table 3**, the project would be consistent with applicable control measures from the 2017 CAP. Therefore, the project would not conflict with or obstruct implementation of the applicable air quality plan, and the impact would be less than significant.

Table 3: Project Consistency with BAAQMD's 2017 CAP

Control Measures	Project Consistency
Stationary Source	**Consistent**. The stationary source measures, which are designed to reduce emissions from stationary sources, are incorporated into rules adopted by the BAAQMD and then enforced by the BAAQMD's Permit and Inspection programs. Operation of an emergency backup generator and an aboveground fuel tank would be subject to the BAAQMD's permitting requirements for stationary sources. Therefore, the project would be consistent with the stationary source control measures of the 2017 CAP.
Transportation	**Consistent**. The transportation control measures are designed to reduce vehicle trips, use, miles traveled, idling, or traffic congestion for the purpose of reducing vehicle emissions. According to the project design, the project would not result in a substantial net increase in vehicle trips. Therefore, the project would be consistent with the transportation control measures in the 2017 CAP.
Energy	**Not applicable**. The energy control measures are designed to reduce emissions of criteria air pollutants, TACs, and GHGs by decreasing the amount of electricity consumed in the Bay Area, as well as decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures primarily apply to electrical utility providers, the energy control measures of the 2017 CAP are not applicable to the project.
Buildings	**Consistent.** The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters but has limited authority to regulate buildings themselves. Therefore, the building control measures focus on working with local governments that have authority over local building codes to facilitate adoption of best practices and policies to control GHG emissions. The project will comply with the current Title 24 Building Energy Efficiency Standards which include performance standards for energy-efficient appliances and heating and cooling systems. Therefore, the project would be consistent with the buildings control measures of the 2017 CAP.
Agriculture	**Not applicable**. The agriculture control measures are designed to primarily reduce emissions of methane. Since the project does not include any agricultural activities, the agriculture control measures of the 2017 CAP are not applicable to the project.

Control Measures	Project Consistency
Natural and Working Lands	**Not applicable**. The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetlands, as well as encouraging local governments to adopt ordinances that promote urban-tree plantings. Since the project does not include the disturbance of any rangelands or wetlands, the natural and working lands control measures of the 2017 CAP are not applicable to the project.
Waste Management	**Consistent.** The waste management measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The project would comply with local requirements for waste management (e.g., recycling). Therefore, the project would be consistent with the waste management control measures of the 2017 CAP.
Water	**Not applicable**. The water control measures to reduce emissions from the water sector will reduce emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works, and promoting the use of biogas recovery systems. Since these measures primarily apply to publicly owned treatment works (sewage treatment plant that is owned, and usually operated, by a government agency), the water control measures of the 2017 CAP are not applicable to the project.
Super GHGs	**Not applicable**. The super-GHG control measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. Since these measures do not apply to individual developments, the super-GHG control measures of the 2017 CAP are not applicable to the project.

Source: Bay Area Air Quality Management District (BAAQMD), 2017. 2017 Clean Air Plan: Spare the Air, Cool the Climate, April

2.4.2 Criteria Air Pollutant Emissions

New Fire Station

Construction and operation of the project would generate criteria pollutant emissions that could potentially impact regional air quality. The BAAQMD currently recommends using the most recent version of the California Emissions Estimator Model (CalEEMod version 2022.1) to estimate construction and operational emissions of criteria air pollutants and precursors for a proposed project. CalEEMod uses widely accepted models for emission estimates combined with appropriate default data for a variety of land use projects that can be used if site-specific information is not available. The primary input data used to estimate emissions associated with construction of the project were provided by the project applicant and contain information on construction duration, and off-road construction equipment inventory and usage. A summary

of the assumptions for estimating construction emissions is provided in **Table 4**. Construction information provided by the project applicant and a copy of the CalEEMod report for the project, which summarizes the input parameters, assumptions, and findings, is included as **Attachment A**.

Table 4. CalEEMod Land Use Input Parameters for the Project

Land Use Type	CalEEMod Land Use Type	Unit Amount	Units
Fire Station	Government Office Building	15,200	Square Feet
Landscape Area	Landscape Area	3,200	Square Feet
Parking Lot	Parking Lot	21	Spaces

Notes: Default CalEEMod data was used for all other parameters not described. The Landscape Area was conservatively estimated based on the bioretention areas according to the concept site plan.

Criteria Air Pollutants from Construction

Project construction activities would generate criteria air pollutant emissions that could potentially adversely affect regional air quality. Construction activities would include demolition, site preparation, grading, building construction, and paving. The impact analysis for criteria air pollutant emissions during construction includes ROG, NO_x, PM_{10}, and $PM_{2.5}$ from the exhaust of off-road construction equipment and on-road vehicles related to worker vehicles, vendor trucks, and haul trucks. In addition, fugitive dust emissions of PM_{10} and $PM_{2.5}$ would be generated by soil disturbance and demolition activities and fugitive ROG emissions would result from paving. Emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$ during project construction were estimated using the CalEEMod input parameters summarized in **Table 4** and **Table 5**.

Table 5: CalEEMod Construction Assumptions

Input Category	Construction Assumptions and Changes to Default Data
Construction Phase	Project construction would begin as early as November 2025 and last for 20 months. The project sponsor provided a project-specific equipment list (**Attachment A**).
Material Movement	2,400 cubic yards of soil export and 600 cubic yards of soil import.
Demolition	1,700 cubic yards (850 tons) of demolition debris.

Notes: Demolition and material movement information provided by the project sponsor. Default CalEEMod data was used for all other parameters not described.

Project construction would last approximately 20 months. To analyze daily emission rates, the total emissions estimated during the construction were averaged over the total working days (450 days) and compared to BAAQMD's thresholds of significance. As shown in **Table 6**, the

project's estimated emissions for ROG, NO_x, and exhaust PM_{10} and $PM_{2.5}$ without mitigation are below the applicable thresholds.

Table 6: Criteria Air Pollutant Emissions during Construction (Pounds per Day)

Emissions Scenario	ROG	NO_x	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Construction Emissions	0.3	2.4	0.1	0.1
Thresholds of Significance	54	54	82	54
Exceed Threshold?	No	No	No	No

Source: See Attachment A.

The BAAQMD does not have a quantitative threshold of significance for fugitive dust PM_{10} and $PM_{2.5}$ emissions; however, the BAAQMD considers implementation of the following best management practices to control dust during construction sufficient to reduce potential impacts to a less-than-significant level.

Best Management Practices for Construction-Related Fugitive Dust Emissions

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

7. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.

8. Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.

9. Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

With implementation of the BAAQMD's Best Management Practices for Construction-Related Fugitive Dust Emissions as either a condition of approval or mitigation measure, the project would comply with the BAAQMD's performance standards for reducing fugitive dust emissions.

Criteria Air Pollutants from Operation

Project operation would generate criteria air pollutant emissions that could potentially affect regional air quality. The primary pollutant emissions of concern during project operation would be ROG, NO_x, and exhaust PM_{10} and $PM_{2.5}$ from mobile sources, energy use, area sources (e.g., consumer products), and stationary sources. Because the project would replace the existing fire station and not introduce any new stationary sources, project operations are not expected to result in a substantial net increase in criteria air pollutant emissions, if any. Furthermore, the project size (15,196 square feet) is well below the BAAQMD's most conservative screening criteria for criteria air pollutants related to commercial (49,000 square feet) and industrial (998,000 square feet) land uses. Therefore, operation of the project would have a less-than-significant impact on regional air quality.

Temporary Fire Station

Criteria Air Pollutants from Construction

Construction of the temporary fire station would generate criteria pollutant emissions that could potentially impact regional air quality. As mentioned above under Section 2.2, construction of the temporary fire station would result in a less-than-significant impact related to criteria air pollutants and precursors if it would meet all four screening criteria established in the BAAQMD 2022 CEQA Guidelines.[4] First, the proposed project would construct approximately 3,387 square feet of apparatus bay for the temporary fire station, which is below the applicable BAAQMD construction screening criteria of 452,000 square feet for commercial or industrial land use. Second, construction and operation of the temporary fire station would not overlap, which is consistent with the corresponding screening criterion. Third, construction

[4] Bay Area Air Quality Management District (BAAQMD), 2023. CEQA Air Quality Guidelines, May.

of the temporary fire station would not include demolition or use of stationary sources subject to Air District rules and regulations. In addition, the required excavation depth for the temporary fire station would be up to one foot below ground surface, with an anticipated total soil export volume of approximately 20 cubic yards (soil import is not anticipated); therefore, construction of the temporary fire station would not require extensive site preparation and material transport. Fourth, BAAQMD considers implementation of the best management practices listed above to control dust during construction sufficient to reduce potential impacts to a less-than-significant level. With implementation of the BAAQMD's Best Management Practices for Construction-Related Fugitive Dust Emissions as either a condition of approval or mitigation measure, the project would meet all four screening criteria for criteria air pollutants emissions during construction of the temporary fire station and the impact would be less than significant.

Criteria Air Pollutants from Operation

Operation of the temporary fire station would generate criteria air pollutant emissions that could potentially affect regional air quality. The primary pollutant emissions of concern during operation of the temporary fire station would be ROG, NOx, and exhaust PM_{10} and $PM_{2.5}$ from mobile sources, energy use, area sources (e.g., consumer products, architectural coatings, and landscape equipment) and stationary sources. As mentioned above under Section 2.2, operation of the project would result in a less-than-significant impact related to criteria air pollutants and precursors if it would meet all three screening criteria established in the BAAQMD 2022 CEQA Guidelines.[5] First, the size of the temporary fire station (4,689 square feet Castro Valley Administration building plus new 3,387 square foot apparatus bay) is well below the BAAQMD's most conservative screening criterion (89,000 square feet) for criteria air pollutants related to commercial and industrial land uses. Second, because the temporary fire station would replace operation of the existing fire station and not result in a substantial net increase in criteria air pollutant emissions, there would be no overlap in new emissions between construction and operation. Third, the temporary fire station would use a similar emergency generator as the existing fire station. Therefore, operation of the temporary fire station would have a less-than-significant impact on regional air quality.

2.4.3 Exposure to Toxic Air Contaminants

Local Health Risks during Construction

Exposure to Asbestos Emissions

The demolition of existing fire station and related structures are subject to BAAQMD's Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing), which limits

[5] Ibid.

asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses the national emissions standards for asbestos and contains additional requirements. The rule requires the lead agency and its contractors to notify the BAAQMD of any regulated renovation or demolition activity. The notification must include a description of the affected structures and the methods used to determine the presence of asbestos-containing materials. All asbestos-containing material found on site must be removed prior to demolition or renovation activity in accordance with BAAQMD Regulation 11, Rule 2, which includes specific requirements to ensure that asbestos-containing materials are disposed of appropriately and safely. Because the project would be required to comply with BAAQMD Regulation 11, Rule 2, potential impacts for the exposure of nearby sensitive receptors to asbestos emissions would be properly addressed.

Exposure to Diesel Particulate Matter Emissions

New Fire Station

Project construction would generate diesel particulate matter (DPM) and $PM_{2.5}$ emissions from the exhaust of off-road diesel construction equipment and fugitive $PM_{2.5}$ emissions from construction activities. In accordance with guidance from the BAAQMD[6] and OEHHA,[7] a health risk assessment was conducted to estimate the incremental increase in cancer risk and chronic hazard index (HI) to sensitive receptors from DPM emissions during construction. The acute HI for DPM was not calculated because an acute reference exposure level has not been approved by OEHHA and CARB, and the BAAQMD does not recommend analysis of acute non-cancer health hazards from construction activity.

The annual average concentrations of DPM and exhaust $PM_{2.5}$ concentrations during construction were estimated within 1,000 feet of the project using the U.S. Environmental Protection Agency's AERMOD air dispersion model. For this analysis, emissions of exhaust PM_{10} were used as a surrogate for DPM, which is a conservative assumption because more than 90 percent of DPM is less than 1 micron in diameter. The input parameters and assumptions used for estimating the dispersion of DPM and PM_{10} from off-road diesel construction equipment are included in **Attachment A**.

Daily emissions from construction were assumed to primarily occur between 7 a.m. and 5 p.m. Monday through Friday. The exhaust and fugitive dust from off-road equipment was represented in the AERMOD model as an area source encompassing the project site. Exhaust

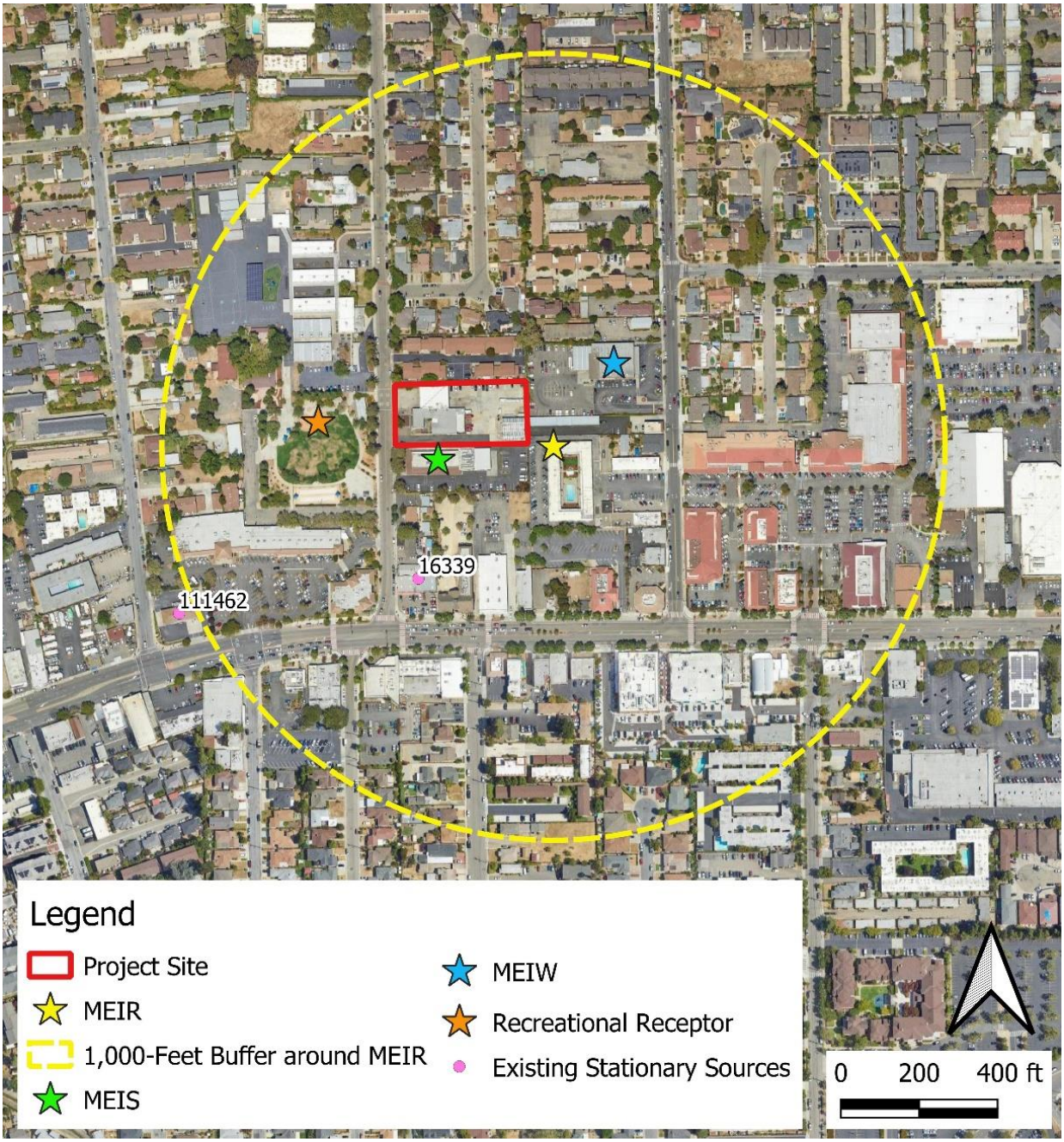
[6] Bay Area Air Quality Management District (BAAQMD), 2023. CEQA Air Quality Guidelines, May.
[7] Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, May.

and fugitive dust emission rates for off-road equipment were based on the actual hours of work and averaged over the entire duration of construction.

A uniform grid of receptors spaced 20 meters apart was created for ground level receptors at heights of 1.5 meters to develop isopleths (i.e., concentration contours) around the project site that illustrate the air dispersion pattern from the emissions sources. In addition, discrete receptors were created for ground level receptors at heights of 1.5 meters to calculate concentrations at the maximally exposed individual resident (MEIR), maximally exposed individual student (MEIS), maximally exposed individual worker (MEIW), and recreational receptor locations. The AERMOD model input parameters included 1 year of BAAQMD meteorological data from the Hayward Executive Airport Automated Surface Observing Systems (ASOS) Met Site (KHWD) located approximately 3.2 miles to the southwest of the project site.

The air dispersion model was used to estimate annual average concentrations of PM_{10} from project construction emissions. Based on the results of the air dispersion model (**Attachment A**), potential off-site health risks were evaluated for the MEIR on the ground floor of a residential building located about 50 feet east of project site boundary, the MEIS at the Bee Best Learning Center adjacent to the project site to the south, the MEIW located at the Post Office about 165 feet northeast to the project site boundary, and the Recreational Receptor at the Adobe Park located about 50 feet to the west of the project site boundary (see **Figure 2** for MEIR, MEIS, MEIW, and Recreational Receptor locations).

Figure 2: Sensitive Receptors and Cumulative Sources of TACs and $PM_{2.5}$ Emissions in Project Vicinity



For the MEIR, the incremental increase in cancer risk from on-site DPM emissions during construction was assessed for an infant exposed to DPM starting from birth. This exposure scenario represents the most sensitive individual who could be exposed to adverse air quality conditions in the vicinity of the project site. For the MEIS, it was conservatively assumed that a student in the age of 2-16 years old would attend school at the Bee Best Learning Center during the entire construction duration. For the MEIW, it was conservatively assumed that an adult worker would work in the same location during the entire construction duration. For the Recreational Receptor, it was conservatively assumed that a child in the age of 2-16 years old would play at the Adobe Park for two hours every day between 7 a.m. to 5 p.m. during the entire construction duration. It was conservatively assumed that the MEIR, MEIS, MEIW, and Recreational Receptor would be exposed to annual average DPM concentrations over the entire estimated duration of construction, which is about 20 months. The input parameters and results of the health risk assessment are included in **Attachment A**.

Estimates of the health risks at the MEIR, MEIS, MEIW, and Recreational Receptor from exposure to DPM and $PM_{2.5}$ concentrations during project construction are summarized and compared to the BAAQMD's thresholds of significance in **Table 7**. The estimated excess cancer risk and chronic hazard index (HI) for DPM and annual average $PM_{2.5}$ concentration from construction emissions were below the thresholds of significance. Therefore, construction of the project would not expose existing sensitive receptors to substantial concentrations of TACs and $PM_{2.5}$ from project construction.

Table 7: Health Risks during Project Construction

Emissions Scenario	Receptor	Diesel Particulate Matter		$PM_{2.5}$ Annual Average Concentration ($\mu g/m^3$)
		Cancer Risk (per million)	Chronic Hazard Index	
Construction Exhaust	MEIR	8.6	<0.01	0.13
	MEIS	1.7	<0.01	0.08
	MEIW	0.1	<0.01	0.02
	Recreational Receptor	0.18	<0.01	0.02
Thresholds of Significance		10	1.0	0.3
Exceed Threshold?		No	No	No

Notes: $\mu g/m^3$ = micrograms per cubic meter
Source: Attachment A

Temporary Fire Station

Construction of the temporary fire station would generate diesel particulate matter (DPM) and $PM_{2.5}$ emissions from the exhaust of off-road diesel construction equipment and fugitive $PM_{2.5}$

emissions from construction activities. The nearest sensitive receptors to the north are single-family residences along Marshall Street as close as 150 feet to the proposed apparatus bay, and multi-family apartment building to the east of the project site as close as 70 feet to the proposed apparatus bay. The predominant wind direction is to the southeast. The MEIR identified for the new fire station is located about 50 feet east of project site boundary. Therefore, the nearest downwind sensitive receptor of the temporary fire station is located further away than the MEIR evaluated for the new fire station. The construction health risk assessment performed for the new fire station represents a more conservative scenario compared to the temporary fire station, due to the higher level of effort for construction (e.g. demolition), longer construction duration (20 months compared to five months), and sensitive receptor locations (50 feet compared to 70 feet). The temporary fire station 's construction health risk impacts at nearby sensitive receptors would be less severe than what was analyzed for the new fire station, which would be less than significant. The project would not expose sensitive receptors to substantial pollutant concentrations during construction of the temporary fire station.

Local Health Risks during Operation

Exposure to Carbon Monoxide Emissions

The source of local carbon monoxide concentrations is often associated with heavy traffic congestion at nearby intersections. The temporary fire station will be staffed with seven employees, which is the same as the existing fire station. The new fire station will be staffed with eight employees, which is one employee (two one-way commute trips) more than the existing fire station. The project would comply with (and would not exceed) the BAAQMD's screening criteria for local carbon monoxide concentrations because the project would not result in a substantial net increase in vehicle trips relative to existing conditions. Therefore, the project would not result in a net increase in the potential exposure of existing sensitive receptors to carbon monoxide concentrations from project-generated traffic.

Exposure to Toxic Air Contaminant Emissions

The source of local TAC concentrations is often associated with stationary sources. The project would replace existing stationary sources (emergency generator and fuel tank) in-kind and would not result in a net in increase in TAC emissions. Furthermore, operation of stationary sources is subject to BAAQMD permitting requirements to minimize the potential exposure of nearby sensitive receptors to TACs. Therefore, the project would not result in a net increase in the potential exposure of existing sensitive receptors to TAC concentrations from operation of stationary sources on the project site.

Cumulative Toxic Air Contaminant Emissions

In addition to a project's individual TAC emissions during construction and operation, the potential cumulative health risks to sensitive receptors from existing TACs were evaluated. As shown in **Table 7**, the new fire station MEIR is associated with the highest cancer risks (8.6 per million) among the four types of receptors analyzed. Cumulative health risks were estimated at the new fire station MEIR for the project to represent the worst-case-exposure scenario for sensitive receptors in the project vicinity.

Based on the BAAQMD's permitted stationary source risk map,[8] there are two existing stationary sources within 1,000 feet of the MEIR: Fix Auto Castro Valley (Plant 16339) and Japmun Services LLC (Plant 111462), as shown in **Figure 2**. Preliminary health risk screening values at the MEIR were determined using the 2021 permitted stationary source inventory data and BAAQMD Health Risk Calculator with Distance Multipliers (Beta Version 5.0). At the time of preparation of this analysis, there are no reasonably foreseeable future projects within 1,000 feet of the project that would introduce a new source of TAC and/or $PM_{2.5}$ emissions.

Preliminary health risk screening values at the MEIR from exposure to mobile sources of TACs were estimated based on the BAAQMD's Mobile Source Screening Map,[9] which provides health risk estimates reflective of 2022 for residents living near roadways, rail lines, and rail yards.

Estimates of the cumulative health risks at the MEIR for the project are summarized and compared to the cumulative thresholds of significance in **Table 8**. As shown in **Table 8,** the cumulative cancer risk, cumulative chronic HI, and annual average $PM_{2.5}$ at the MEIR location were below the BAAQMD's cumulative thresholds. Therefore, the exposure of existing sensitive receptors to substantial concentrations of TACs and $PM_{2.5}$ from implementation of the project would not be cumulatively considerable.

[8] Bay Area Air Quality Management District (BAAQMD), 2023. Stationary Source Screening Map. Available at: https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=845658c19eae4594b9f4b805fb9d89a3.
[9] Bay Area Air Quality Management District (BAAQMD), 2023. Bay Area Air Quality Management District Mobile Source Screening Map, Beta Version. Available at: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools/health-risk-screening-and-modeling.

Table 8: Cumulative Health Risks

Source	Source Type	Ref	MEIR		
			Cancer Risk (10^{-6})	Chronic HI	$PM_{2.5}$ (µg/m^3)
Project					
Off-Road Construction Equipment	Diesel Exhaust		8.6	<0.01	0.13
Existing Stationary Sources (Facility ID)					
Fix Auto Castro Valley (16339)	Repair and Maintenance	1,2	<0.01	<0.01	<0.01
Japmun Services LLC (111462)	Gasoline Stations with Convenience Stores	1,2	6.59	0.03	0.17
Existing Mobile Sources					
Roadway	Mobile	3	7.6	0.02	0.22
Cumulative Health Risks			22.8	<0.1	0.5
Thresholds of Significance			100	10.0	0.8
Exceed Thresholds?			No	No	No

Notes: µg/m^3=micrograms per cubic meter; HI=hazard index; NA=not applicable; Ref=reference
Health risk screening values derived using the following BAAQMD tools and methodologies:
1) BAAQMD's 2021 stationary source emissions data
2) BAAQMD's Generic Distance Multiplier Tool
3) BAAQMD Beta version Mobile Source Screening Map, 2023

2.4.4 Odors and other Emissions

The project would not alter the existing land use condition or introduce new sources of odors or other emissions.

3 GREENHOUSE GAS ANALYSIS

3.1 Environmental Setting

Climate change refers to changes in the Earth's weather patterns, including the rise in temperature due to an increase in heat-trapping GHGs in the atmosphere. According to the BAAQMD, some of the potential effects of increased GHG emissions and associated climate change may include loss of snowpack (affecting water supply), more frequent extreme weather events, more large forest fires, more drought years, and sea level rise. In addition, climate change may increase electricity demand for cooling, decrease the availability of hydroelectric power, and affect regional air quality and public health.[10]

[10] Bay Area Air Quality Management District (BAAQMD), 2017. Final 2017 Clean Air Plan. April 19.

3.2 Regulatory Setting

3.2.1 State Regulations

California Climate Action Goals

California has established the following long-term climate action goals:

- Assembly Bill (AB) 32: Reduce GHG emissions to 1990 levels by 2020.
- Senate Bill (SB) 32: Reduce GHG emissions to 40 percent below 1990 levels by 2030.
- AB 1279: Achieve carbon neutrality as soon as possible, but no later than 2045 and maintain net negative GHG emissions thereafter; and reduce GHG emissions to 85 percent below 1990 levels by 2045.
- Executive Order S-3-05: Reduce GHG emissions to 80 percent below 1990 levels by 2050.

It should be noted that executive orders are legally binding only on State agencies and have no direct effect on local government or the private sector.

California's Climate Change Scoping Plan

In December 2008, CARB adopted the Climate Change Scoping Plan to identify how the State can achieve its 2020 climate action goal under AB 32. In 2017, CARB updated the Scoping Plan to identify how the State can achieve its 2030 climate action goal under SB 32, and substantially advance toward its 2050 climate action goal under Executive Order S-3-05. The 2017 Scoping Plan includes the regulatory programs, such as the Advanced Clean Cars Program, Low-Carbon Fuel Standard, Renewable Portfolio Standard Program, and energy efficiency standards.[11]

In December 2022, CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality, which outlines a roadmap to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045.[12] Building on the 2017 Scoping Plan, the 2022 Scoping Plan evaluates the progress made toward meeting the 2030 GHG reduction target established in SB 32 and identifies a technologically feasible, cost-effective, and equity-focused path to achieve carbon neutrality by 2045. The 2022 Scoping Plan presents an approach for an aggressive reduction of fossil fuels and a rapid transition to renewable energy resources and zero-emission vehicles. The 2022 Scoping Plan identifies actions and outcomes such as rapidly moving to zero-emission transportation; electrifying cars, buses,

[11] California Air Resources Board (CARB), 2017. California's 2017 Climate Change Scoping Plan. November.
[12] California Air Resources Board (CARB), 2022. Scoping Plan for Achieving Carbon Neutrality. November.

trains, and trucks; phasing out the use of fossil gas used for heating homes and buildings; clamping down on chemicals and refrigerants; providing communities with sustainable options for walking, biking, and public transit; building out clean, renewable energy resources (such as solar arrays and wind turbine capacity) to displace fossil-fuel fired electrical generation; and scaling up new options such as renewable hydrogen and biomethane. Appendix D of the 2022 Scoping Plan includes recommendations for local government to take actions that align with the state's climate goals, with a focus on local climate action plans and local authority over new residential and mixed-use development. Appendix D of the 2022 Scoping Plan recommends for local jurisdictions to focus on three priority areas when preparing a climate action plan: transportation electrification, vehicle miles travelled (VMT) reduction, and building decarbonization.

3.2.2 Regional Regulations

BAAQMD CEQA Guidelines

Climate change is not caused by any individual emissions source but by a large number of sources around the world emitting GHGs that collectively create a significant cumulative impact. CEQA requires agencies in California to analyze such impacts by evaluating whether a proposed project would make a "cumulatively considerable" contribution to the significant cumulative impact on climate change. The BAAQMD's CEQA Air Quality Guidelines[13] include recommended thresholds of significance for GHG emissions from typical land use projects that are intended to assist public agencies in determining whether proposed projects would make a cumulatively considerable contribution to global climate change, as required by CEQA. The thresholds identify design elements that an individual project needs to incorporate to do its "fair share" in achieving the State's goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045. The GHG thresholds for typical land use projects include two options, as follows:

> **Option 1.** Projects must include, at a minimum, the following project design elements:
> <u>Buildings</u>
> a) The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
> b) The project will not result in any wasteful, inefficient, or unnecessary electrical usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
>
> <u>Transportation</u>
> a) Achieve compliance with electric vehicle (EV) requirements in the most recently adopted version of CALGreen Tier 2.

[13] Bay Area Air Quality Management District (BAAQMD), 2023. CEQA Air Quality Guidelines, May.

b) Achieve a reduction in project-generated VMT below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
    - Residential projects: 15 percent below the existing VMT per capita
    - Office projects: 15 percent below the existing VMT per employee
    - Retail projects: no net increase in existing VMT

Option 2. Be consistent with local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

Alameda County does not have a local GHG Reduction Strategy that meets the Option 2 criterion.

3.2.3 Local Regulations

Alameda County Climate Action Plan for Government Services and Operations

In May 2010, the Alameda County adopted the Alameda County Climate Action Plan for Government Services and Operations Through 2020 (CAP 2020), including 16 Commitments to Climate Project that aim to reduce GHG emissions associated with providing government services by 15 percent to 30 percent below 2003 levels by 2020. The CAP 2020 goal was met in 2019. The updated climate action plan, Alameda County Climate Action Plan for Government Services and Operations Through 2026 (CAP 2026), was adopted by Alameda County in May 2023. Aligning with the State's long-term climate action goals, CAP 2026 set a goal to achieve carbon neutrality by 2045 and contains six action areas including building environment, community resilience, green economy and prosperity, sustainable materials management, transportation, and climate leadership and governance. The CAP 2026 focuses on actions that need to be taken between 2023 to 2026.

3.3 Significance Criteria

According to the CEQA Guidelines Appendix G, implementation of the project would have a significant impact related to GHG if it would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

2. Fundamentally conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing the emissions of GHGs.

It should be noted that the BAAQMD's GHG thresholds of significance described under Option 1 were developed for typical residential and commercial land use projects, which are consistent with the 2022 Scoping Plan. In this analysis, the project's consistency with the building decarbonization design element is not evaluated for the proposed new fire station because it is not considered a typical residential or commercial land use. Similarly, the BAAQMD's Option 1 design element for transportation is not applicable to the project because the project-generated VMT reduction targets do not include fire station uses.

3.4 Impact Analysis

3.4.1 GHG Emissions from the Project

The project would generate temporary GHG emissions through construction activities, such as operation of on-site heavy construction equipment and off-site construction vehicle trips. The BAAQMD does not recommend a threshold of significance for GHG emissions during construction because there is not sufficient evidence to determine a level at which temporary construction emissions are significant.[14] Furthermore, a construction contractor would also have no incentive to waste fuel during construction and, therefore, it is generally assumed that GHG emissions during construction would be minimized to the maximum extent feasible.

Operation of the project would generate GHG emissions from several sources, such as the buildings (area, energy, water, solid waste disposal), emergency diesel generators, and on-road vehicles. As the existing fire station operations and maintenance would be transferred to the proposed new fire station, project operations are not expected to result in a substantial increase in GHG emissions. In addition, the project's consistency with the BAAQMD's recommended design elements (Option 1 thresholds) is evaluated in **Table 8**. As presented in **Table 8**, the project is designed to incorporate the applicable design elements. Therefore, the project would contribute its "fair share" to achieve the state's long-term climate goals.

Table 8: Project Consistency with BAAQMD Design Elements for GHG Emissions

Design Element		Project Consistency
Building	No Natural Gas	**Not Applicable**. The project would include natural gas uses for cooking for the new fire station. The project would utilize the existing Castro Valley Administration building for the temporary fire station. As discussed above, the building decarbonization design element (no natural gas) does not apply to fire stations because it is not considered typical residential or commercial land use. It should be noted that the natural gas usage for the new fire station is not considered a new source because the existing fire station also used natural gas.

[14] Bay Area Air Quality Management District (BAAQMD), 2023. CEQA Air Quality Guidelines, May.

Table 8: Project Consistency with BAAQMD Design Elements for GHG Emissions

Design Element		Project Consistency
	No Wasteful, Inefficient, or Unnecessary Energy Usage	**Consistent**. The project will be required to comply with state and locally mandated energy efficiency/conservation measures. Therefore, operation of the project would not result in inefficient, wasteful, or unnecessary energy usage.
Transportation	California Green Building Standards (CALGreen) Tier 2 EV Requirement	**Not Applicable**. The project includes demolition and re-construction of the existing parking lot at the project site, but the overall project would not increase the number of parking spaces at the proposed new fire station. In addition, the project would not construct new parking spaces for the temporary fire station. As there is no net increase in parking spaces, this design element is not applicable to the project. In accordance with the California Green Building Standards Code and the Alameda County Guidelines for Future Electric Vehicle Charging Stations at Alameda County Facilities, the project would include three parking spaces with level-2 EV charging stations and one EV capable space for the new fire station.
	Project-Generated Vehicle Miles Traveled (VMT) Reduction	**Not Applicable**. As discussed above, project-generated VMT reduction targets included in this design element do not apply to fire stations. Therefore, this design element is not applicable to the project. The temporary fire station will be staffed with seven employees, which is the same as the existing fire station. The new fire station 25 will be staffed with eight employees, which is one employee (two one-way commute trips) more than the existing fire station. The GHG emissions from the increased project-generated VMT due to the staff increase would be negligible.

Source: BAAQMD, 2023

3.4.2 Consistency with GHG Plans

Consistency with 2022 Scoping Plan

As discussed above, the project includes the applicable BAAQMD-recommended design elements that an individual project needs to incorporate to do its "fair share" in achieving the state's goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045. The project will replace the existing Alameda County fire station that was constructed in 1966, with a new fire station that would comply with state and locally mandated energy efficiency and conservation measures, improving building energy efficiency. In addition, the project would construct EV charging infrastructure that meets the California Green Building Standards Code and the Alameda County Guidelines for Future Electric Vehicle Charging Stations requirements, supporting the transition to zero-emission vehicles. In summary, the project would not conflict with the 2022 Scoping Plan.

Consistency with Alameda County CAP 2026

As discussed above, the project would include EV charging infrastructure for the new fire station, which is consistent with the CAP 2026 Transportation Measure T6 – Smart Parking Policies. The measure recommends designation of an increasing amount of parking throughout the County for carpools, low-emission vehicles, or zero-emission vehicles only. The project would not conflict with CAP 2026.

4 CONCLUSIONS

With implementation of the BAAQMD's Best Management Practices for Construction-Related Fugitive Dust Emissions as either a condition of approval or mitigation measure, the project would comply with the BAAQMD's performance standards for reducing fugitive dust emissions. Emissions of criteria air pollutants and TACs from construction and operation of the project would not exceed the BAAQMD thresholds of significance. In addition, the project would contribute its "fair share" to achieve the state's long-term climate goals and not conflict with applicable plans, policies, or regulations adopted for the purposes of reducing GHG emissions.

ATTACHMENT A

Supporting Air Quality Calculations

FS 25 Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	FS 25
Construction Start Date	4/1/2025
Operational Year	2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.30
Precipitation (days)	15.6
Location	20290 San Miguel Ave, Castro Valley, CA 94546, USA
County	Alameda
City	Unincorporated
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1414
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.25

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Government Office Building	15.2	1000sqft	1.30	15,200	3,200	0.00	—	Proposed new fire station FS 25
Parking Lot	21.0	Space	0.19	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.47	1.23	10.9	11.7	0.02	0.47	5.83	6.30	0.44	2.70	3.13	—	2,725	2,725	0.11	0.14	3.11	2,773
2026	0.29	0.22	1.70	2.84	0.01	0.04	0.53	0.58	0.03	0.13	0.17	—	1,241	1,241	0.05	0.13	2.90	1,284
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.30	0.24	1.87	2.78	0.01	0.05	0.53	0.58	0.04	0.13	0.18	—	1,237	1,237	0.05	0.14	0.08	1,280
2026	0.29	0.22	1.78	2.67	0.01	0.04	0.53	0.58	0.03	0.13	0.17	—	1,217	1,217	0.05	0.13	0.08	1,258
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.26	0.21	1.76	2.25	< 0.005	0.06	0.64	0.70	0.06	0.22	0.28	—	792	792	0.03	0.07	0.71	816
2026	0.20	0.15	1.18	1.78	< 0.005	0.03	0.37	0.39	0.02	0.09	0.11	—	834	834	0.04	0.09	0.86	863
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.05	0.04	0.32	0.41	< 0.005	0.01	0.12	0.13	0.01	0.04	0.05	—	131	131	0.01	0.01	0.12	135
2026	0.04	0.03	0.22	0.33	< 0.005	0.01	0.07	0.07	< 0.005	0.02	0.02	—	138	138	0.01	0.02	0.14	143

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.60	0.57	0.25	1.28	< 0.005	0.01	0.10	0.11	0.01	0.02	0.04	13.4	439	452	1.40	0.02	0.37	495
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.48	0.46	0.25	0.60	< 0.005	0.01	0.10	0.11	0.01	0.02	0.04	13.4	430	444	1.40	0.02	0.05	486
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.52	0.50	0.24	0.81	< 0.005	0.01	0.07	0.08	0.01	0.02	0.03	13.4	403	416	1.40	0.02	0.14	458
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.09	0.09	0.04	0.15	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.01	2.22	66.7	68.9	0.23	< 0.005	0.02	75.8

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.05	0.05	0.04	0.40	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.02	—	106	106	< 0.005	< 0.005	0.34	108
Area	0.49	0.48	0.01	0.66	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.72	2.72	< 0.005	< 0.005	—	2.73
Energy	0.01	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	300	300	0.04	< 0.005	—	302
Water	—	—	—	—	—	—	—	—	—	—	—	5.79	11.0	16.8	0.60	0.01	—	36.0
Waste	—	—	—	—	—	—	—	—	—	—	—	7.62	0.00	7.62	0.76	0.00	—	26.7

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Stationary	0.04	0.04	0.11	0.14	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	19.7	19.7	< 0.005	< 0.005	0.00	19.8
Total	0.60	0.57	0.25	1.28	< 0.005	0.01	0.10	0.11	0.01	0.02	0.04	13.4	439	452	1.40	0.02	0.37	495
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.05	0.05	0.05	0.38	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.02	—	99.9	99.9	< 0.005	< 0.005	0.01	102
Area	0.37	0.37	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.01	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	300	300	0.04	< 0.005	—	302
Water	—	—	—	—	—	—	—	—	—	—	—	5.79	11.0	16.8	0.60	0.01	—	36.0
Waste	—	—	—	—	—	—	—	—	—	—	—	7.62	0.00	7.62	0.76	0.00	—	26.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Stationary	0.04	0.04	0.11	0.14	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	19.7	19.7	< 0.005	< 0.005	0.00	19.8
Total	0.48	0.46	0.25	0.60	< 0.005	0.01	0.10	0.11	0.01	0.02	0.04	13.4	430	444	1.40	0.02	0.05	486
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.04	0.03	0.03	0.26	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	71.7	71.7	< 0.005	< 0.005	0.10	73.0
Area	0.43	0.42	< 0.005	0.33	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.34	1.34	< 0.005	< 0.005	—	1.35
Energy	0.01	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	300	300	0.04	< 0.005	—	302
Water	—	—	—	—	—	—	—	—	—	—	—	5.79	11.0	16.8	0.60	0.01	—	36.0
Waste	—	—	—	—	—	—	—	—	—	—	—	7.62	0.00	7.62	0.76	0.00	—	26.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Stationary	0.04	0.04	0.11	0.14	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	19.3	19.3	< 0.005	< 0.005	0.00	19.4
Total	0.52	0.50	0.24	0.81	< 0.005	0.01	0.07	0.08	0.01	0.02	0.03	13.4	403	416	1.40	0.02	0.14	458
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.01	0.01	0.01	0.05	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	11.9	11.9	< 0.005	< 0.005	0.02	12.1
Area	0.08	0.08	< 0.005	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.22	0.22	< 0.005	< 0.005	—	0.22

Energy	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	49.6	49.6	0.01	< 0.005	—	49.9
Water	—	—	—	—	—	—	—	—	—	—	—	0.96	1.83	2.78	0.10	< 0.005	—	5.95
Waste	—	—	—	—	—	—	—	—	—	—	—	1.26	0.00	1.26	0.13	0.00	—	4.41
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01
Stationary	0.01	0.01	0.02	0.03	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	3.20	3.20	< 0.005	< 0.005	0.00	3.21
Total	0.09	0.09	0.04	0.15	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.01	2.22	66.7	68.9	0.23	< 0.005	0.02	75.8

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	0.37	3.48	3.77	0.01	0.14	—	0.14	0.13	—	0.13	—	623	623	0.03	0.01	—	626
Demolition	—	—	—	—	—	—	0.63	0.63	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.29	0.31	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.2	51.2	< 0.005	< 0.005	—	51.4

Demolition	—	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.48	8.48	< 0.005	< 0.005	—	8.51
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.14	0.09	1.54	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	346	346	0.01	0.01	1.38	352
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.05	0.02	0.85	0.34	< 0.005	0.01	0.19	0.20	0.01	0.05	0.06	—	701	701	0.04	0.11	1.56	738
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	26.6	26.6	< 0.005	< 0.005	0.05	27.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.07	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	57.7	57.7	< 0.005	0.01	0.06	60.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.40	4.40	< 0.005	< 0.005	0.01	4.47
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.55	9.55	< 0.005	< 0.005	0.01	10.0

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	0.35	3.12	4.18	0.01	0.16	—	0.16	0.15	—	0.15	—	644	644	0.03	0.01	—	646
Dust From Material Movement	—	—	—	—	—	—	0.42	0.42	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.09	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	17.6	17.6	< 0.005	< 0.005	—	17.7
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.92	2.92	< 0.005	< 0.005	—	2.93

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.14	0.09	1.54	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	346	346	0.01	0.01	1.38	352
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.05	0.02	0.85	0.34	< 0.005	0.01	0.19	0.20	0.01	0.05	0.06	—	701	701	0.04	0.11	1.56	738
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.86	8.86	< 0.005	< 0.005	0.02	9.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	19.2	19.2	< 0.005	< 0.005	0.02	20.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.47	1.47	< 0.005	< 0.005	< 0.005	1.49
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.18	3.18	< 0.005	< 0.005	< 0.005	3.34

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.93	9.81	0.02	0.46	—	0.46	0.42	—	0.42	—	1,678	1,678	0.07	0.01	—	1,683
Dust From Material Movement	—	—	—	—	—	—	5.31	5.31	—	2.57	2.57	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.54	0.54	< 0.005	0.03	—	0.03	0.02	—	0.02	—	91.9	91.9	< 0.005	< 0.005	—	92.2
Dust From Material Movement	—	—	—	—	—	—	0.29	0.29	—	0.14	0.14	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.10	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.2	15.2	< 0.005	< 0.005	—	15.3
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.14	0.09	1.54	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	346	346	0.01	0.01	1.38	352
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.05	0.02	0.85	0.34	< 0.005	0.01	0.19	0.20	0.01	0.05	0.06	—	701	701	0.04	0.11	1.56	738
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17.7	17.7	< 0.005	< 0.005	0.03	18.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	38.4	38.4	< 0.005	0.01	0.04	40.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.93	2.93	< 0.005	< 0.005	0.01	2.98
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.36	6.36	< 0.005	< 0.005	0.01	6.68

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.76	1.03	< 0.005	0.03	—	0.03	0.03	—	0.03	—	148	148	0.01	< 0.005	—	148
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.76	1.03	< 0.005	0.03	—	0.03	0.03	—	0.03	—	148	148	0.01	< 0.005	—	148
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.29	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	55.2	55.2	< 0.005	< 0.005	—	55.4
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.14	9.14	< 0.005	< 0.005	—	9.17
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.14	0.09	1.54	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	346	346	0.01	0.01	1.38	352
Vendor	0.01	< 0.005	0.08	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	66.4	66.4	< 0.005	0.01	0.18	69.5
Hauling	0.05	0.02	0.85	0.34	< 0.005	0.01	0.19	0.20	0.01	0.05	0.06	—	701	701	0.04	0.11	1.56	738
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.13	0.12	1.36	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	321	321	0.01	0.01	0.04	326
Vendor	< 0.005	< 0.005	0.09	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	66.4	66.4	< 0.005	0.01	< 0.005	69.4
Hauling	0.05	0.01	0.90	0.34	< 0.005	0.01	0.19	0.20	0.01	0.05	0.06	—	702	702	0.04	0.11	0.04	736
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.05	0.05	0.04	0.49	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	121	121	< 0.005	0.01	0.22	123
Vendor	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	24.8	24.8	< 0.005	< 0.005	0.03	25.9
Hauling	0.02	0.01	0.33	0.13	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	262	262	0.01	0.04	0.25	275
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	20.0	20.0	< 0.005	< 0.005	0.04	20.3
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.11	4.11	< 0.005	< 0.005	< 0.005	4.29
Hauling	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	43.4	43.4	< 0.005	0.01	0.04	45.6

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.72	1.03	< 0.005	0.03	—	0.03	0.03	—	0.03	—	148	148	0.01	< 0.005	—	148
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.72	1.03	< 0.005	0.03	—	0.03	0.03	—	0.03	—	148	148	0.01	< 0.005	—	148
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.42	0.60	< 0.005	0.02	—	0.02	0.01	—	0.01	—	86.4	86.4	< 0.005	< 0.005	—	86.7

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.3	14.3	< 0.005	< 0.005	—	14.4
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.09	1.45	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	340	340	0.01	0.01	1.25	345
Vendor	< 0.005	< 0.005	0.08	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	65.2	65.2	< 0.005	0.01	0.17	68.3
Hauling	0.05	0.02	0.82	0.33	< 0.005	0.01	0.19	0.20	0.01	0.05	0.06	—	688	688	0.04	0.11	1.48	723
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.11	1.27	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	315	315	0.01	0.01	0.03	320
Vendor	< 0.005	< 0.005	0.08	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	65.3	65.3	< 0.005	0.01	< 0.005	68.2
Hauling	0.05	0.01	0.87	0.33	< 0.005	0.01	0.19	0.20	0.01	0.05	0.06	—	689	689	0.04	0.11	0.04	722
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.06	0.72	0.00	0.00	0.19	0.19	0.00	0.04	0.04	—	186	186	< 0.005	0.01	0.32	188
Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	38.2	38.2	< 0.005	0.01	0.04	39.9
Hauling	0.03	0.01	0.50	0.19	< 0.005	0.01	0.11	0.12	0.01	0.03	0.03	—	403	403	0.02	0.06	0.37	423
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.7	30.7	< 0.005	< 0.005	0.05	31.2
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.32	6.32	< 0.005	< 0.005	0.01	6.61
Hauling	0.01	< 0.005	0.09	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	66.7	66.7	< 0.005	0.01	0.06	70.0

3.11. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.48	0.66	< 0.005	0.02	—	0.02	0.02	—	0.02	—	100	100	< 0.005	< 0.005	—	101
Paving	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.0	11.0	< 0.005	< 0.005	—	11.0
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.82	1.82	< 0.005	< 0.005	—	1.83
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.11	1.27	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	315	315	0.01	0.01	0.03	320
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.05	0.01	0.87	0.33	< 0.005	0.01	0.19	0.20	0.01	0.05	0.06	—	689	689	0.04	0.11	0.04	722
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.14	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	34.8	34.8	< 0.005	< 0.005	0.06	35.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.09	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	75.4	75.4	< 0.005	0.01	0.07	79.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.76	5.76	< 0.005	< 0.005	0.01	5.84
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.5	12.5	< 0.005	< 0.005	0.01	13.1

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	0.05	0.05	0.04	0.40	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.02	—	106	106	< 0.005	< 0.005	0.34	108

Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.05	0.05	0.04	0.40	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.02	—	106	106	< 0.005	< 0.005	0.34	108
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	0.05	0.05	0.05	0.38	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.02	—	99.9	99.9	< 0.005	< 0.005	0.01	102
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.05	0.05	0.05	0.38	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.02	—	99.9	99.9	< 0.005	< 0.005	0.01	102
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	0.01	0.01	0.01	0.05	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	11.9	11.9	< 0.005	< 0.005	0.02	12.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.01	0.01	0.01	0.05	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	11.9	11.9	< 0.005	< 0.005	0.02	12.1

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	180	180	0.03	< 0.005	—	182
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	4.03	4.03	< 0.005	< 0.005	—	4.07
Total	—	—	—	—	—	—	—	—	—	—	—	—	184	184	0.03	< 0.005	—	186
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	180	180	0.03	< 0.005	—	182
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	4.03	4.03	< 0.005	< 0.005	—	4.07
Total	—	—	—	—	—	—	—	—	—	—	—	—	184	184	0.03	< 0.005	—	186
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	29.8	29.8	< 0.005	< 0.005	—	30.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.67	0.67	< 0.005	< 0.005	—	0.67
Total	—	—	—	—	—	—	—	—	—	—	—	—	30.4	30.4	< 0.005	< 0.005	—	30.7

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Government	0.01	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	116	116	0.01	< 0.005	—	116
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.01	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	116	116	0.01	< 0.005	—	116
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	0.01	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	116	116	0.01	< 0.005	—	116
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.01	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	116	116	0.01	< 0.005	—	116
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	19.2	19.2	< 0.005	< 0.005	—	19.2
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	19.2	19.2	< 0.005	< 0.005	—	19.2

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer	0.33	0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.04	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.12	0.11	0.01	0.66	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.72	2.72	< 0.005	< 0.005	—	2.73
Total	0.49	0.48	0.01	0.66	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.72	2.72	< 0.005	< 0.005	—	2.73
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.33	0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.04	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.37	0.37	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.06	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.01	0.01	< 0.005	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.22	0.22	< 0.005	< 0.005	—	0.22
Total	0.08	0.08	< 0.005	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.22	0.22	< 0.005	< 0.005	—	0.22

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	5.79	11.0	16.8	0.60	0.01	—	36.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	5.79	11.0	16.8	0.60	0.01	—	36.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	5.79	11.0	16.8	0.60	0.01	—	36.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	5.79	11.0	16.8	0.60	0.01	—	36.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	0.96	1.83	2.78	0.10	< 0.005	—	5.95
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.96	1.83	2.78	0.10	< 0.005	—	5.95

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	7.62	0.00	7.62	0.76	0.00	—	26.7
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	7.62	0.00	7.62	0.76	0.00	—	26.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	7.62	0.00	7.62	0.76	0.00	—	26.7
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	7.62	0.00	7.62	0.76	0.00	—	26.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	1.26	0.00	1.26	0.13	0.00	—	4.41
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	1.26	0.00	1.26	0.13	0.00	—	4.41

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Government Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.04	0.04	0.11	0.14	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	19.7	19.7	< 0.005	< 0.005	0.00	19.8
Total	0.04	0.04	0.11	0.14	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	19.7	19.7	< 0.005	< 0.005	0.00	19.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Emergency Generato	0.04	0.04	0.11	0.14	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	19.7	19.7	< 0.005	< 0.005	0.00	19.8
Total	0.04	0.04	0.11	0.14	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	19.7	19.7	< 0.005	< 0.005	0.00	19.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.01	0.01	0.02	0.03	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	3.20	3.20	< 0.005	< 0.005	0.00	3.21
Total	0.01	0.01	0.02	0.03	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.00	3.20	3.20	< 0.005	< 0.005	0.00	3.21

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	4/1/2025	5/12/2025	5.00	30.0	—
Site Preparation	Site Preparation	5/13/2025	5/26/2025	5.00	10.0	—
Grading	Grading	5/27/2025	6/23/2025	5.00	20.0	—
Building Construction	Building Construction	6/24/2025	10/26/2026	5.00	350	—
Paving	Paving	10/27/2026	12/21/2026	5.00	40.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	2.00	3.00	84.0	0.37
Demolition	Rubber Tired Dozers	Diesel	Average	1.00	2.00	367	0.40
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	2.00	33.0	0.73
Site Preparation	Graders	Diesel	Average	1.00	6.00	148	0.41
Site Preparation	Rubber Tired Dozers	Diesel	Average	0.00	1.00	367	0.40

Site Preparation	Tractors/Loaders/Backh	Diesel	Average	1.00	6.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	6.00	148	0.41
Grading	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	1.00	6.00	367	0.40
Building Construction	Cranes	Diesel	Average	1.00	0.10	367	0.29
Building Construction	Forklifts	Diesel	Average	2.00	2.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	0.00	1.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	0.20	84.0	0.37
Building Construction	Welders	Diesel	Average	0.00	8.00	46.0	0.45
Building Construction	Air Compressors	Diesel	Average	1.00	2.00	37.0	0.48
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	1.00	84.0	0.37
Paving	Pavers	Diesel	Average	1.00	1.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	0.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	1.00	36.0	0.38
Paving	Cement and Mortar Mixers	Diesel	Average	1.00	1.00	10.0	0.56

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	40.0	11.7	LDA,LDT1,LDT2
Demolition	Vendor	—	8.40	HHDT,MHDT
Demolition	Hauling	10.0	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT

Site Preparation	—	—	—	—
Site Preparation	Worker	40.0	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	10.0	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	40.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	10.0	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	40.0	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	2.49	8.40	HHDT,MHDT
Building Construction	Hauling	10.0	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	40.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	10.0	20.0	HHDT
Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	850	—
Site Preparation	—	2,400	3.75	0.00	—
Grading	600	—	15.0	0.00	—
Paving	0.00	0.00	0.00	0.00	0.19

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Government Office Building	0.00	0%
Parking Lot	0.19	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Government Office Building	16.0	0.00	0.00	4,161	136	0.00	0.00	35,397
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	22,800	7,600	494

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Government Office Building	321,763	204	0.0330	0.0040	361,004
Parking Lot	7,212	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Government Office Building	3,019,627	36,356
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Government Office Building	14.1	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Government Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Government Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Emergency Generator	Diesel	1.00	0.14	50.0	168	0.73

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Lot acreage, building square footage, and the number of parking spaces are obtained from the project description. The landscape area was estimated based on the bioretention areas in the concept site plan.
Construction: Construction Phases	The duration of each construction phase was provided by the applicant.
Construction: Off-Road Equipment	CalEEMod defaults are adjusted based on construction off-road equipment activity information provided by the applicant.
Construction: Trips and VMT	Construction trip rates adjusted based on information provided in the project description: 10 truck trips per day and 40 vehicle trips per day. It is conservatively assumed the truck trips are haul truck trips.
Operations: Vehicle Data	Weekday trip rate was conservatively estimated based on 8 employees x 2 commute trips per employee per day /15.2 (ksf) = 1.05 trips per ksf/ day

Construction Off-Road Equipment Activity based on CalEEMod Default

Fire Station No.25

CalEEMod Land Use Assumptions: conservatively assumed 15,000 sq ft building per station (about 0.4 acre site).

CalEEMod default hours per day and number of work days per phase adjusted based on the 21-month construction duration.

Phase Name	Equipment Type	Fuel Type	Engine Tier	Horsepower	Load Factor	Number per Day	Hours Per Day	Work Days per Phase	Total hour per Phase
Demolition	Tractors/Loaders/Backhoes	Diesel	Default	84	0.37	2	3.0	30	180
	Rubber Tired Dozers	Diesel	Default	367	0.4	1	2.0		60
	Concrete/Industrial Saws	Diesel	Default	33	0.73	1	2.0		60
Site Preparation	Graders	Diesel	Default	148	0.41	1	6.0	10	60
	Tractors/Loaders/Backhoes	Diesel	Default	84	0.37	1	6.0		60
Grading	Graders	Diesel	Default	148	0.41	1	6.0	20	120
	Rubber Tired Dozers	Diesel	Default	367	0.4	1	6.0		120
	Tractors/Loaders/Backhoes	Diesel	Default	84	0.37	1	6.0		120
Building Construction	Cranes	Diesel	Default	367	0.29	1	0.1	350	35
	Forklifts	Diesel	Default	82	0.2	2	2.0		1400
	Air Compressors	Diesel	Default	37	0.48	1	2.0		700
	Tractors/Loaders/Backhoes	Diesel	Default	84	0.37	2	0.2		140
Paving	Tractors/Loaders/Backhoes	Diesel	Default	84	0.37	1	1.0	40	40
	Cement and Mortar Mixers	Diesel	Default	10	0.56	1	1.0		40
	Pavers	Diesel	Default	81	0.42	1	1.0		40
	Rollers	Diesel	Default	36	0.38	1	1.0		40

Summary of AERMOD Model Parameters, Assumptions, and Results for DPM and PM2.5 Emissions from Construction

AERMOD Model Parameters and Assumptions			
Source Type	**Units**	**Value**	**Notes**
Area Source: Off-Road Equipment Exhaust (DPM)			
Average Hours/Work Day	hours/day	10.0	Monday to Friday: 7 am to 5 pm
DPM Emission Rate	gram/second	0.00073	Exhaust PM10 from off-road construction equipment
Release Height	meters	5.0	SMAQMD, 2015
Initial Vertical Dimension	meters	1.4	USEPA, 2022
Area Source: On-Site Fugitive PM2.5			
Fugitive PM2.5 Emission Rate	gram/second	0.0015	Fugitive PM2.5 from on-site construction activities.
Release Height	meters	0.0	SMAQMD, 2015
Initial Vertical Dimension	meters	1.0	SMAQMD, 2015

AERMOD Model Results			
Sensitive Receptor	**Pollutant**	**Annual Average Concentration**	**Notes**
MEIR	DPM ($\mu g/m^3$)	0.0371	Nearest residential receptor
	PM2.5 ($\mu g/m^3$)	0.1309	
MEIS	DPM ($\mu g/m^3$)	0.0186	Nearest student receptor
	PM2.5 ($\mu g/m^3$)	0.0825	
MEIW	DPM ($\mu g/m^3$)	0.0077	Nearest offsite worker
	PM2.5 ($\mu g/m^3$)	0.0220	
Recreational Receptor	DPM ($\mu g/m^3$)	0.0051	A child using the Adobe Park
	PM2.5 ($\mu g/m^3$)	0.0171	

Notes:

DPM = diesel particulate matter

PM_{10} = particulate matter with aerodynamic resistance diameters equal to or less than 10 microns

$PM_{2.5}$ = particulate matter with aerodynamic resistance diameters equal to or less than 2.5 microns

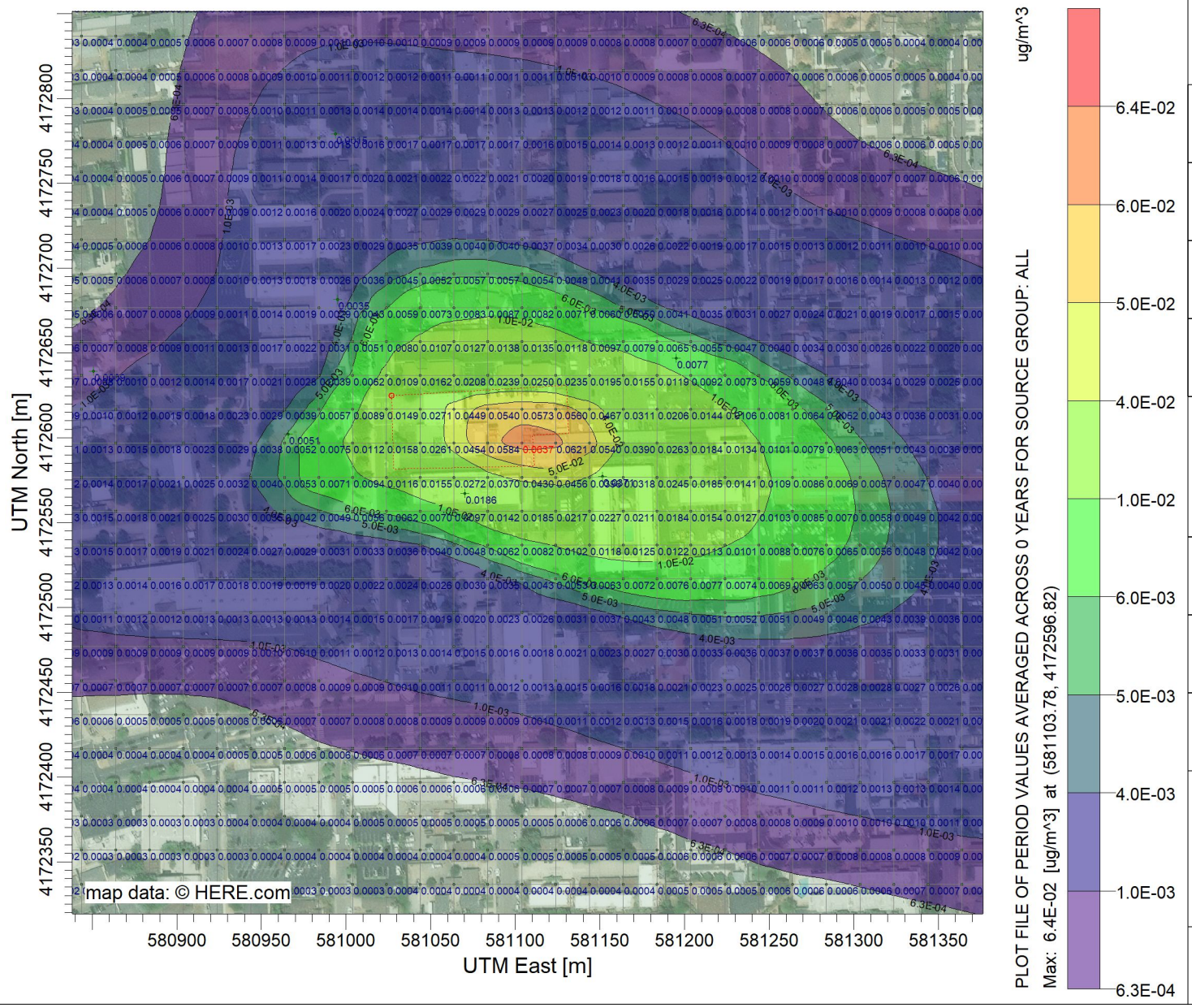
$\mu g/m^3$ = micrograms per cubic meter

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2015. *Guide to Air Quality Assessment in Sacramento County* . June.

U.S. Environmental Protection Agency (USEPA), 2022. User's Guide for the AMS/EPA Regulatory Model (AERMOD).

PROJECT TITLE: Alameda Fire Station 25

Alameda Fire Station 25
Construction Off-Road Equipment Exhaust



COMMENTS:

SOURCES:
1

RECEPTORS:
1607

OUTPUT TYPE:
Concentration

MAX:
6.4E-02 ug/m^3

COMPANY NAME: Baseline Env
Baseline Environmental Consulting

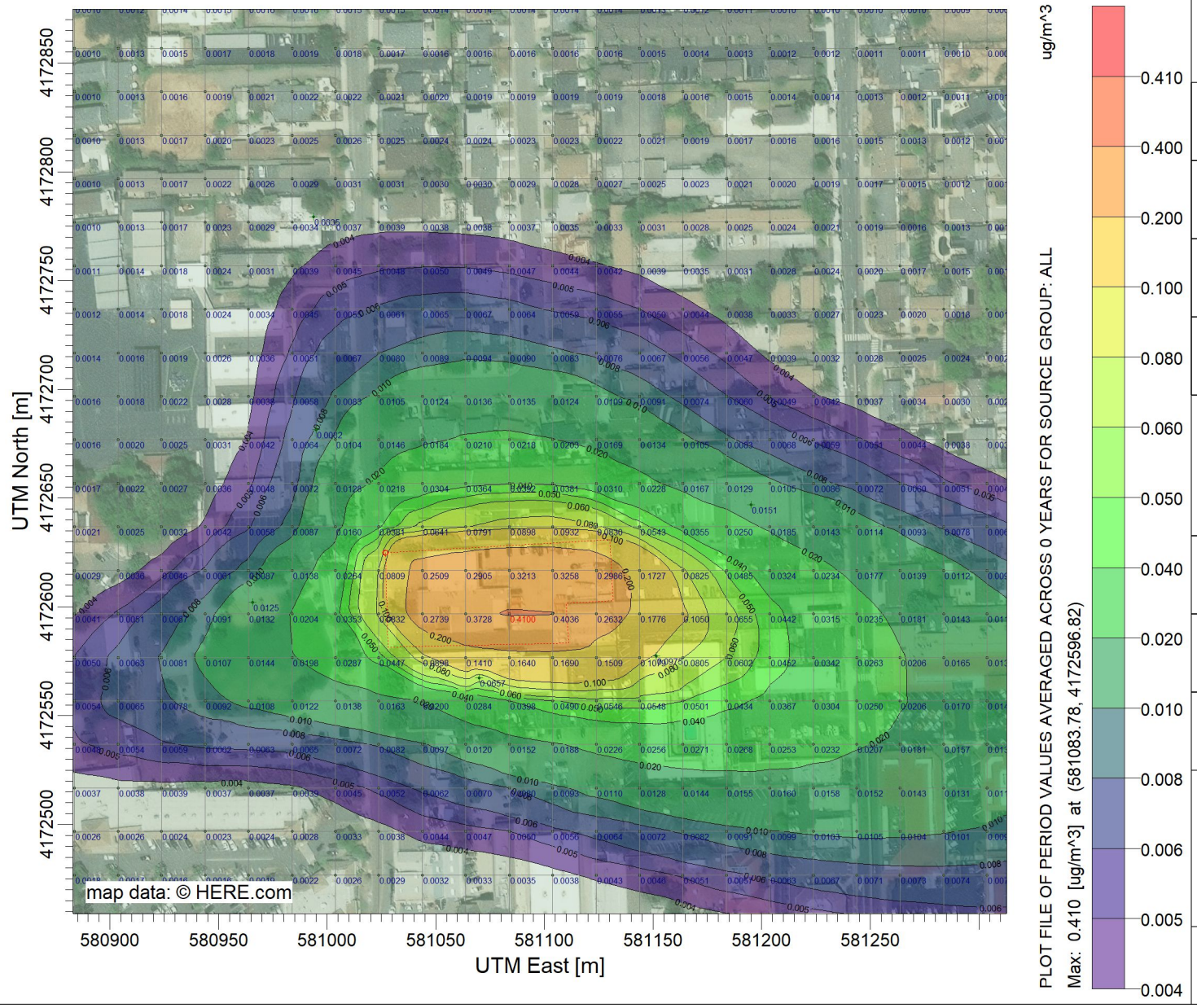
SCALE: 1:3,623
0 0.1 km

PROJECT NO.:21215-05
21215-05

AERMOD View - Lakes Environmental Software

PROJECT TITLE: Alameda Fire Station 25

Alameda Fire Station 25
Construction Off-Road Equipment Fugitive PM2.5



COMMENTS:

SOURCES:

1

RECEPTORS:

1607

OUTPUT TYPE:

Concentration

MAX:

0.410 ug/m^3

COMPANY NAME: Baseline Env

Baseline Environmental Consulting

SCALE: 1:2,830

0 0.05 km

PROJECT NO.:21215-05

21215-05

Summary of Health Risk Assessment for DPM Emissions during Construction

Health Risk Assessment Parameters and Results						
Inhalation Cancer Risk Assessment for DPM	**Units**	**0-2 Years Old Infant (MEIR)**	**2-16 Years Old Student (MEIS)**	**16-70 Years Old Off-site Worker (MEIW)**	**2-16 Years Old Recreational Receptor**	**Notes**
DPM Concentration (C)	$\mu g/m^3$	0.037	0.019	0.008	0.005	AERMOD Annual Average
Daily Breathing Rate (DBR)	L/kg-day	1090	520	230	520	MEIR, MEIS, and MEIW: BAAQMD, 2023; Recreational Receptor: 95th percentile age 2 to 16 for moderate intensity activities (OEHHA, 2015)
Inhalation absorption factor (A)	unitless	1.0	1.0	1.0	1.0	OEHHA, 2015
Exposure Frequency (EF)	unitless	0.96	0.68	0.68	1.00	MEIR: 350 days/365 days, MEIS and MEIW: 250 days/365 days in a year (OEHHA, 2015); Recreational Receptor:assumed the child plays everyday during construction
Dose Conversion Factor (CF_D)	$mg\text{-}m^3/\mu g\text{-}L$	0.000001	0.000001	0.000001	0.000001	Conversion of µg to mg and L to m^3
Dose (D)	mg/kg/day	0.000039	0.000007	0.000001	0.000003	$C*DBR*A*EF*CF_D$ (OEHHA, 2015)
Cancer Potency Factor (CPF)	$(mg/kg/day)^{-1}$	1.1	1.1	1.1	1.1	Inhalation CPF for Diesel exhaust, OEHHA, 2015
Age Sensitivity Factor (ASF)	unitless	10	3	1	3	OEHHA, 2015
Annual Exposure Duration (ED)	years	1.7	1.7	1.7	1.7	Based on total construction period of 20 months
Averaging Time (AT)	years	70	70	70	70	70 years for residents (OEHHA, 2015)
Fraction of time at home (FAH)	unitless	0.85	--	--	--	OEHHA, 2015
Worker Adjustment Factor (WAF)	unitless	--	3.36	3.36	0.84	Assumes the average emissions occur 10 hours/day, 5 days per week
Cancer Risk Conversion Factor (CF)	m^3/L	1000000	1000000	1000000	1000000	Chances per million (OEHHA, 2015)
Cancer Risk	per million	8.6	1.7	0.1	0.2	MEIR: D*CPF*ASF*ED/AT*FAH*CF*IF MEIS, MEIW, Recreational Receptor: D*CPF*ASF*ED/AT*WAF*CF*IF
Hazard Index for DPM	**Units**	**MEIR**	**MEIS**	**MEIW**	**Recreational Receptor**	**Notes**
Chronic REL	$\mu g/m^3$	5.0	5.0	5.0	5.0	OEHHA, 2015
Chronic Hazard Index for DPM	unitless	0.01	0.004	0.002	0.001	HI=C/REL (OEHHA, 2015)

Notes:

DPM = diesel particulate matter

REL = reference exposure level

$\mu g/m^3$ = micrograms per cubic meter

L/kg-day = liters per kilogram-day

m^3/L = cubic meters per liter

$(mg/kg/day)^{-1}$ = 1/milligrams per kilograms per day

MEIR = maximum exposed individual resident

MEIW = maximum exposed individual worker

Office of Environmental Health Hazard Assessment (OEHHA), 2015. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February.*

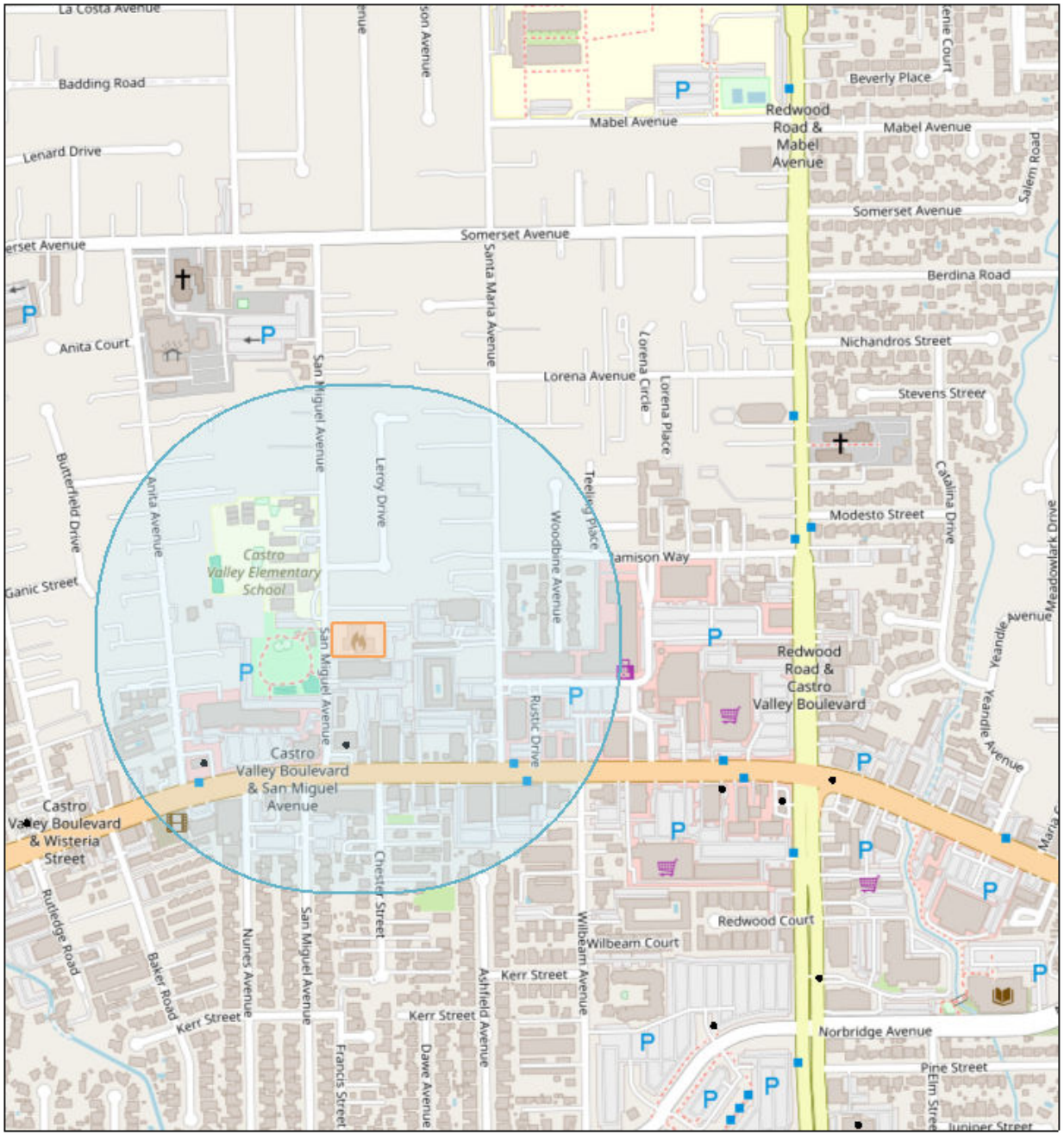
Cohn,K., Lau, V., and Sinder, B., 2022. *Measurement Study to Evaluate Controls for Reducing In-Home Pollutant Exposures at Homes Near High Trafficked Roadways* .

Screening Report

Area of Interest (AOI) Information

Area : 3,891,039.21 ft²

Dec 2 2023 15:41:45 Pacific Standard Time


La Costa Avenue
Badding Road
Lenard Drive
Mabel Avenue
Redwood Road & Mabel Avenue
Beverly Place
Somerset Avenue
Berdina Road
Nichandros Street
Stevens Street
Modesto Street
Lorena Avenue
Lorena Circle
Lorena Place
Santa Maria Avenue
San Miguel Avenue
Leroy Drive
Teeley Place
Woodbine Avenue
Anita Avenue
Anita Court
Butterfield Drive
Castro Valley Elementary School
Jamison Way
Redwood Road & Castro Valley Boulevard
Castro Valley Boulevard & San Miguel Avenue
Castro Valley Boulevard & Wisteria Street
Rustic Drive
Chester Street
Ashfield Avenue
Wilbeam Avenue
Wilbeam Court
Redwood Court
Kerr Street
Norbridge Avenue
Pine Street
Juniper Street
Rutledge Road
Baker Road
Nunes Avenue
Francis Street
Dawe Avenue
Catalina Drive
Meadowlark Drive
Yeandle Avenue
Salem Road
Elm Street

1:9,028

Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Stationary Sources	2	N/A	N/A

Permitted Stationary Sources

#	Facility_I	Facility_N	Address	City	State
1	16339	Fix Auto Castro Valley	3142 Castro Valley Blvd	Castro Valley	CA
2	111462	Japmun Services LLC	2920 CASTRO VALLEY BLVD	Castro Valley	CA

#	Zip	County	Latitude	Longitude	Details
1	94546	Alameda	37.695884	-122.080649	*No Data*
2	94546	Alameda	37.695672	-122.082722	Gas Dispensing Facility

#	NAICS	NAICS_Sect	NAICS_Subs	NAICS_Indu	Cancer_Ris
1	811121	Other Services (except Public Administration)	Repair and Maintenance	Automotive Body, Paint, and Interior Repair and Maintenance	0.000000
2	447110	Retail Trade	Gasoline Stations	Gasoline Stations with Convenience Stores	25.959000

#	Chronic_Ha	PM25	Count
1	0.002000	0.000000	1
2	0.113000	0.000000	1

NOTE: A larger buffer than 1000 feet may be warranted depending on proximity to significant sources.

Generic Distance Multiplier Tool: This distance multiplier tool refines the screening values to represent adjusted risk and hazard impacts that can be expected with farther distances from the source of emissions.

Generic Case

Distance (meters)	Distance (feet)	Multiplier	**Enter Risk or Hazard**	**Adjusted Risk or Hazard**	**Enter PM2.5 Concentration**	**Adjusted PM2.5 Concentration**
0	0.0	1.000		0		0
5	16.4	1.000		0		0
10	32.8	0.883		0		0
15	49.2	0.855		0		0
20	65.6	0.827		0		0
25	82.0	0.801		0		0
30	98.4	0.775		0		0
35	114.8	0.750		0		0
40	131.2	0.726		0		0
45	147.6	0.702		0		0
50	164.0	0.679		0		0
55	180.4	0.658		0		0
60	196.9	0.636		0		0
65	213.3	0.616		0		0
70	229.7	0.596		0		0
75	246.1	0.577		0		0
80	262.5	0.558		0		0
85	278.9	0.540		0		0
90	295.3	0.523	0	0	0	0
95	311.7	0.506		0		0
100	328.1	0.489		0		0
105	344.5	0.474		0		0
110	360.9	0.458		0		0
115	377.3	0.444		0		0
120	393.7	0.429		0		0
125	410.1	0.415		0		0
130	426.5	0.402		0		0
135	442.9	0.389		0		0
140	459.3	0.376		0		0
145	475.7	0.364		0		0
150	492.1	0.353		0		0
155	508.5	0.341		0		0
160	524.9	0.330		0		0
165	541.3	0.319		0		0
170	557.7	0.309		0		0
175	574.1	0.299		0		0

180	590.6	0.290		0		0
185	607.0	0.280		0		0
190	623.4	0.271		0		0
195	639.8	0.262		0		0
200	656.2	0.254	25.959	6.591701154	0	0
205	672.6	0.246		0		0
210	689.0	0.238		0		0
215	705.4	0.230		0		0
220	721.8	0.223		0		0
225	738.2	0.216		0		0
230	754.6	0.209		0		0
235	771.0	0.202		0		0
240	787.4	0.195		0		0
245	803.8	0.189		0		0
250	820.2	0.183		0		0
255	836.6	0.177		0		0
260	853.0	0.171		0		0
265	869.4	0.166		0		0
270	885.8	0.160		0		0
275	902.2	0.155		0		0
280	918.6	0.150		0		0
285	935.0	0.145		0		0
290	951.4	0.141		0		0
295	967.8	0.136		0		0
300	984.3	0.132		0		0

Generic Distance Multiplier Tool: This distance multiplier tool refines the screening values to represent adjusted risk and hazard impacts that can be expected with farther distances from the source of emissions.

Generic Case

Distance (meters)	Distance (feet)	Multiplier	**Hazard**	**Adjusted Hazard**	**Enter PM2.5 Concentration**	**Adjusted PM2.5 Concentration**
0	0.0	1.000		0		0
5	16.4	1.000		0		0
10	32.8	0.883		0		0
15	49.2	0.855		0		0
20	65.6	0.827		0		0
25	82.0	0.801		0		0
30	98.4	0.775		0		0
35	114.8	0.750		0		0
40	131.2	0.726		0		0
45	147.6	0.702		0		0
50	164.0	0.679		0		0
55	180.4	0.658		0		0
60	196.9	0.636		0		0
65	213.3	0.616		0		0
70	229.7	0.596		0		0
75	246.1	0.577		0		0
80	262.5	0.558		0		0
85	278.9	0.540		0		0
90	295.3	0.523	0.002	0.001045218		0
95	311.7	0.506		0		0
100	328.1	0.489		0		0
105	344.5	0.474		0		0
110	360.9	0.458		0		0
115	377.3	0.444		0		0
120	393.7	0.429		0		0
125	410.1	0.415		0		0
130	426.5	0.402		0		0
135	442.9	0.389		0		0
140	459.3	0.376		0		0
145	475.7	0.364		0		0
150	492.1	0.353		0		0
155	508.5	0.341		0		0
160	524.9	0.330		0		0
165	541.3	0.319		0		0
170	557.7	0.309		0		0
175	574.1	0.299		0		0
180	590.6	0.290		0		0

185	607.0	0.280		0		0
190	623.4	0.271		0		0
195	639.8	0.262		0		0
200	656.2	0.254	0.113	0.028693795		0
205	672.6	0.246		0		0
210	689.0	0.238		0		0
215	705.4	0.230		0		0
220	721.8	0.223		0		0
225	738.2	0.216		0		0
230	754.6	0.209		0		0
235	771.0	0.202		0		0
240	787.4	0.195		0		0
245	803.8	0.189		0		0
250	820.2	0.183		0		0
255	836.6	0.177		0		0
260	853.0	0.171		0		0
265	869.4	0.166		0		0
270	885.8	0.160		0		0
275	902.2	0.155		0		0
280	918.6	0.150		0		0
285	935.0	0.145		0		0
290	951.4	0.141		0		0
295	967.8	0.136		0		0
300	984.3	0.132		0		0

APPENDIX B

Noise Technical Reports

MEMORANDUM

Date: 19 July 2024 **Job No.:** 21215-05

To: Whitney Broeking, Panorama Environmental

From: Yilin Tian, Environmental Engineer, Baseline Environmental Consulting

Subject: **Noise and Vibration Analysis for Alameda County Fire Station 7**

Baseline Environmental Consulting (Baseline) has prepared this technical memorandum to evaluate potential impacts related to noise and vibration to support CEQA review of the proposed Alameda County Fire Station 7 Project (project) located in Castro Valley, California. The project would construct a new fire station on the undeveloped parcel adjacent to the existing fire station.

1 PROJECT DESCRIPTION

The project site is in the Palomares Hills neighborhood of unincorporated Castro Valley in central Alameda County. The site is on a 1.3-acre undeveloped parcel (Assessor's Parcel Number 85A-6405-1-2) at 6901 Villareal Drive, Castro Valley, California (project site), directly west of the existing fire station, as shown in **Figure 1**. The existing fire station includes a 25-kilowatt generator, a 220-volt air compressor, and a 500-gallon aboveground fuel tank. The building contains shops, offices, kitchen and dining areas, dorm rooms, lockers, exercise rooms, and two apparatus bays. Access to the project site is provided via a driveway on Villareal Drive. The existing fire station has three employees.

The project would construct a 7,883-square-foot, 25-foot-tall, 1-story fire station on the undeveloped parcel adjacent to the existing fire station to the west. The new fire station would include private offices, workstations, departmental spaces, dorms, and a kitchen. The proposed facility would include additional building space and parking to accommodate the Alameda County Fire Department's current and future operational needs. The existing generator, air compressor, and vehicle fueling station would be replaced in-kind. Outside the fire station building, the new fueling station would feature a 1,000-gallon aboveground tank, with pumps that would dispense diesel and gas to ACFD fleet vehicles and equipment. A new 100-kilowatt emergency generator would be placed on a concrete pad adjacent to the new building.

Project construction is anticipated to begin in September 2025 and last approximately 18 months. Upon completion of construction, the three employees at the existing fire station and the existing fire station operations and maintenance would be transferred to the new fire station. The existing fire station would be turned over to Alameda County for its use.

Figure 1. Project Location

Source: Alameda County 2023

2 ENVIRONMENTAL SETTING

Noise and Vibration Concepts

Noise is commonly defined as unwanted sound that annoys or disturbs people and can have an adverse psychological or physiological effect on human health. Sound is measured in decibels (dB), which is a logarithmic scale. Decibels describe the purely physical intensity of sound based on changes in air pressure, but they cannot accurately describe sound as perceived by the human ear since the human ear is only capable of hearing sound within a limited frequency range. For this reason, a frequency-dependent weighting system is used, and monitoring results are reported in A-weighted decibels (dBA).

A typical method for determining a person's subjective reaction to a new noise is by comparing it to existing conditions. The following describes the general effects of noise on people: 1) a change of 1 dBA cannot typically be perceived except in carefully controlled laboratory experiments; 2) a 3-dBA change is considered a just-perceivable difference; 3) a minimum of 5-dBA change is required before any noticeable change in community response is expected; and 4) a 10-dBA change is subjectively perceived as approximately a doubling or halving in loudness.[1]

Traffic noise levels are often expressed in terms of the hourly dBA. The noise levels generated by vehicular sources mainly depend on traffic volume, the speed, and the percent of trucks within the fleet. Increases in these three factors will lead to higher noise levels. Doubling the number of sources, such as traffic volume, increases the noise level by approximately 3 dBA due to the logarithmic nature of noise levels.[2]

In an unconfined space, such as outdoors, noise attenuates with distance. Noise levels at a known distance from point sources are reduced by 6 dBA for every doubling of that distance for hard surfaces (e.g., asphalt) and by 7.5 dBA for every doubling of distance for soft surfaces (e.g., vegetative areas).

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. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal. PPV is appropriate for evaluating potential damage to buildings,

[1] Charles M. Salter Associates, Inc., 1998. Acoustics – Architecture, Engineering, the Environment, William Stout Publishers.
[2] Federal Highway Administration (FHWA), 2018. Techniques for Reviewing Noise Analyses and Associated Noise Reports.

but it is not suitable for evaluating human response to vibration because it takes the human body time to respond to vibration signals.

The response of the human body to vibration is dependent on the average amplitude of a vibration. The RMS of a signal is the average of the squared amplitude of the signal and is more appropriate for evaluating human response to vibration. PPV is normally described in units of inches per second (in/sec) and RMS is often described in vibration decibels (VdB). Vibration can be felt or heard by humans well below a level that would result in damage to a structure. Except for long-term occupational exposure, vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that can affect concentration or disturb sleep. According to the Federal Transit Administration (FTA), a vibration level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible.[3]

Existing Ambient Noise Environment

The primary sources of noise in the vicinity of the project site are traffic on nearby roadways, such as Villareal Drive and Clement Drive. According to the existing transportation noise contours in the Castro Valley General Plan,[4] ambient Community Noise Equivalent Levels (CNEL) from traffic in the vicinity of the project are below 55 dBA.

Sensitive Receptors

Noise-sensitive land uses typically include residences, motels and hotels, schools, libraries, houses of worship, hospitals, convalescent homes, and parks and outdoor recreation areas. The noise-sensitive receptors in the vicinity of the project area[5] include 1) residences to the north and to the west along Villareal Drive as close as 65 feet to the project site, 2) the Palomares Hills Recreation Center about 60 feet to the southwest, 3) The Palomares Hill Park about 650 feet to the east, and 4) Jensen Ranch Elementary School about 880 feet to the southwest.

Regulatory Regulations and Guidance

Federal Transit Administration

The FTA has developed a general construction noise threshold of 90 dBA Leq at the nearest noise-sensitive receptor.[6] According to the FTA, if the combined noise level in 1 hour from the

[3] Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment Manual, FTA Report No.0123, September.
[4] Alameda County, 2012. Castro Valley General Plan. March.
[5] Does not include area that will remain undeveloped at the south end of the project site.
[6] Federal Transit Administration (FTA), Office of Planning and Environment. 2006. Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06.

two noisiest pieces of equipment exceeds the 90 dBA threshold at a residential land use (or other noise-sensitive receptors), then there may be a substantial adverse reaction.

In addition, the FTA has developed vibration thresholds to prevent disturbances to (i.e., annoyance of) building occupants based on the frequency of a vibration event.[7] Vibrations that are equal to or exceed the vibration thresholds could result in potential disturbance to people or activities. The FTA thresholds of 80 VdB and 83 VdB for infrequent events[8] are used in this analysis to evaluate disturbance to residences and buildings where people normally sleep and to institutional land uses with primarily daytime use (such as schools), respectively.

California Department of Transportation

The California Department of Transportation (Caltrans) has developed vibration thresholds based on PPV values to evaluate the potential impact of construction vibration on structures.[9] Construction vibrations that are equal to or exceed the vibration thresholds could result in potential damage to structures. For frequent intermittent vibratory sources during construction (e.g., vibratory compaction equipment), Caltrans recommends a threshold of 0.5 in/sec to prevent potential damage to modern industrial/commercial buildings and new residential structures and 0.3 in/sec for older residential structures.

Alameda County Noise Ordinance

Alameda County regulates noise via the County's Noise Ordinance (Code of Ordinance Chapter 6.60). Chapter 6.60.040 establishes exterior noise level standards based on receiving land use, as shown in **Table 1**. In accordance with Chapter 6.60.070, the County Noise Ordinance does not apply to noise sources associated with construction if the construction activities occur between 7 a.m. and 7 p.m. on weekdays, or between 8 a.m. and 5 p.m. on weekends. Warning devices for public safety such as fire sirens are exempt from the County Noise Ordinance requirements. Chapter 6.60.050.B. prohibits the generation of vibration levels above the vibration perception threshold at or beyond the property boundary of the source if on private property or at 150 feet from the source if on a public space or public right-of-way.

Table 1. Alameda County Exterior Noise Level Standards (dBA)

[7] Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment Manual, FTA Report No.0123, September.
[8] Infrequent events = less than 30 events per day. The "infrequent events" threshold is appropriate for construction equipment in this analysis based on the nature of proposed construction activities.
[9] California Department of Transportation (Caltrans), 2020. Transportation and Construction Vibration Guidance Manual.

Cumulative Number of Minutes in any One Hour Time Period	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Single- or multiple-family residential, school, hospital, church, and public library		
30	50	45
15	55	50
5	60	55
1	65	60
0	70	65
Commercial Uses		
30	65	60
15	70	65
5	75	70
1	80	75
0	85	80

Source: Alameda County Code of Ordinance Chapter 6.60.040.

3 SIGNIFICANCE CRITERIA

Implementation of the project would result in a significant impact related to noise and vibration if it would:

1. Generate 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;
2. Generate excessive groundborne vibration or groundborne noise levels; or
3. 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, expose people residing or working in the project area to excessive noise levels.

The construction hours of the project would generally be scheduled during the daytime from 7 a.m. to 5 p.m., Monday through Friday, and possibly on weekends between 8 a.m. and 5 p.m.; therefore, the project's daytime construction activities would be exempt from the County Noise Ordinance. No nighttime construction is expected for this project. For construction noise impact, speech interference is used as an indicator for substantial increases in noise levels at nearby noise-sensitive receptors during project construction. In accordance with Caltrans Traffic Noise Analysis Protocol,[10] 67 dBA is the approximate noise level at which the noise begins to interfere with human speech assuming two people are speaking. Standard building

[10] California Department of Transportation, 2020. Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects, April

structures provide approximately 12 to 17 dBA noise attenuation with windows open.[11] With windows closed, the noise attenuation factor is about 20 dBA for older structures and about 25 dBA for newer dwellings. Assuming windows closed and older structure, speech interference could occur when exterior noise levels exceed 87 dBA. The 87 dBA speech interference threshold is more conservative than the FTA 90 dBA threshold.

For construction vibration, the Caltrans thresholds of 0.5 in/sec for modern commercial buildings is used to evaluate potential structural impacts at the Palomares Hills Recreation Center and the Jensen Ranch Elementary School, and the 0.3 in/sec threshold for older residential buildings is used for nearby residences to be conservative. Because the proposed fire station is public property, the generation of vibration levels above the vibration perception threshold at 150 feet from the source is used to evaluate potential disturbance impacts in accordance with the Alameda County Code of Ordinance Chapter 6.60.050.B. Because Chapter 6.60.050.B. does not provide a numerical threshold for vibration perception, the FTA's vibration perception threshold of 75 VdB is used to evaluate the vibration disturbance impact at 150 feet from the source. In addition, the FTA thresholds of 80 VdB and 83 VdB are used to evaluate vibration disturbance to residences where people normally sleep and to institutional land uses with primarily daytime use, respectively.

4 IMPACT ANALYSIS

Noise from Project Construction

The primary source of noise during construction would be off-road equipment activities on the project site. Construction noise levels would vary from day-to-day, depending on the number and type of equipment being used, the types and duration of activity being performed, the distance between the noise source and the receptor, and the presence or absence of barriers, if any, between the noise source and receptor. Pile driving, which can generate extreme levels of noise, is not proposed as part of the project.

The construction of the project is anticipated to begin in September 2025 and last approximately 18 months. To evaluate noise levels during project construction, the types of construction equipment that would be used on the project site were generated by the most recent version of the California Emissions Estimator Model (CalEEMod, version 2022.1.1), based on the default equipment list. The default construction equipment list is based on a combination of statewide and regional surveys of land use construction projects. In accordance with guidance from FTA, daytime construction noise impacts were evaluated by quantifying the maximum noise levels that would result from the simultaneous operation of the two noisiest

[11] US EPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Available at: https://www.nonoise.org/library/levels74/levels74.htm

pieces of equipment near the perimeter of the project development area closest to a sensitive receptor.[12] A copy of the CalEEMod report for the project, and noise calculations are provided in **Attachment A**.

As shown in **Table 2,** the project's construction noise levels were estimated at the nearest residential, school, and recreational land uses, which were assumed to be 65 feet to the north, 880 feet to the southwest, and 60 feet to the southwest of proposed construction activities, respectively. As shown in **Table 2**, project construction would not generate noise levels that could potentially exceed the 87 dBA Leq noise threshold at the nearby residential, school, and recreational receptors. Therefore, construction of the project would not generate excessive noise at nearby sensitive receptors.

Table 2. Potential Noise Impacts from Project Construction (dBA Leq[1])

Construction Phase	Nearest Residence (65 feet distance)	Nearest School (880 feet distance)	Nearest Recreational (60 feet distance)
Site Preparation	82	59	82
Grading	82	59	82
Building Construction	80	58	81
Paving	83	60	83
Exceed the 87 dBA Threshold?	No	No	No

Notes:
[1] The average A-weighted noise level during a one-hour period.
Source: Detailed calculations are provided in **Attachment A**.

Noise from Project Operation

The primary sources of noise from operation of the existing fire station include on-site vehicle maintenance and movements, fire sirens when responding to emergency calls, and the use of stationary equipment such as an emergency generator. Existing fire station operations and maintenance would be transferred to the new fire station, including sleeping rooms, lockers, bathrooms, and the two drive-through apparatus bays. The existing air compressor and vehicle fueling station would be replaced in-kind. The new fueling station would be located behind the new fire station on the southeast portion of the project site, further away from the nearby residences comparing to the existing condition. The existing 25-kilowatt emergency diesel generator would be replaced with a 100-kilowatt emergency diesel generator. The new generator would be placed on a concrete pad on the side of the new fire station and enclosed with a privacy fence. Although the new generator would be bigger in size compared to the

[12] Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment Manual, FTA Report No.0123, September.

existing generator, the noise generated by it would be similar to the existing condition because the generator would be enclosed and only operate for daytime periodic testing and emergencies. The project would not change the number of employees and the service area of the fire station, or the number of emergency calls the employees respond to per month. Therefore, the onsite noise generated by the fire station operations described above would be substantially the same as the existing condition.

In addition, it was conservatively assumed that the project would include a heating, ventilation, and air conditioning (HVAC) system. Although the noise-generating characteristics and location of the HVAC system for the project was not available at the time of preparation of this analysis, noise from a typical commercial-scale HVAC system can range from approximately 65 to 75 dBA at 50 feet, having the potential to exceed the thresholds outlined in **Table 1** at the nearby residential land uses. To reduce potential noise impacts related to project operation, Baseline recommends implementing the following noise reduction measure. Implementation of control measures for fixed mechanical equipment would ensure project operation would not result in excessive noise levels at nearby sensitive receptors.

Fixed Mechanical Equipment Noise Control for Building Operations

During operation, the project applicant shall implement noise reduction measures to reduce potential noise impacts at the nearby noise-sensitive receptors, such as the following:

1. Enclosing noise-generating mechanical equipment, if feasible;
2. Installing relatively quiet models of air handlers, exhaust fans, and other mechanical equipment;
3. Using mufflers or silencers on equipment exhaust fans, if feasible;
4. Orienting or shielding equipment to protect noise-sensitive receptors to the extent feasible;
5. Increasing the distance between noise-generating equipment and noise-sensitive receptors; and/or
6. Placing barriers around the equipment to facilitate the attenuation of noise.

Vibration from Project Construction

Construction activities can result in varying degrees of ground vibration, depending on the equipment, activity, and soil conditions. The primary types of equipment that would generate ground vibration during project construction and the associated vibration calculations are included in **Attachment A**. To evaluate the project's potential vibration effects on nearby sensitive receptors, a buffer distance that would be needed to avoid exceeding the FTA and Caltrans construction vibration thresholds mentioned above was estimated for each type of equipment. It was conservatively assumed that the equipment that could generate substantial

ground vibration would be used near the project boundaries. The estimated buffer distances for potential disturbance and building damage are summarized in **Table 3 and Table 4, respectively.** In addition, the potential vibration levels generated by each type of construction equipment were estimated at 150 feet from the project site to evaluate the potential vibration disturbance impact. The estimated vibration levels at 150 feet are also summarized in **Table 3**.

Table 3. Potential Vibration Disturbance during Construction

Construction Equipment	Vibration Levels at 150 feet (VdB)	Buffer Distances to Prevent Potential Human Disturbance (feet)	
		School (Threshold: 83 VdB)[1]	Residential (Threshold: 80 VdB) [2]
Vibratory Roller	71	58	73
Large Bulldozer	64	34	43
Loaded Trucks	63	31	40
Small Bulldozer	35	4	5
Exceed the 75 VdB at 150 feet Threshold?	No	Not Applicable	

Note: Vibration calculations are included in **Appendix A**.

[1] The FTA thresholds of 83 VdB for institutional land uses with primarily daytime use from infrequent construction events was used to calculate the buffer distances from construction equipment.

[2] The FTA thresholds of 80 VdB for residences and buildings where people normally sleep from infrequent construction events was used to calculate the buffer distances from construction equipment.

Table 4. Potential Vibration Damage to Buildings during Construction

Construction Equipment	Buffer Distances to Prevent Potential Structural Damage (feet)	
	Modern Commercial (Threshold: 0.5 in/sec)[1]	Residential (Threshold: 0.3 in/sec) [2]
Vibratory Roller	14	20
Large Bulldozer	8	11
Loaded Trucks	7	10
Small Bulldozer	1	1

Note: Vibration calculations are included in **Appendix A**.

[1] The Caltrans vibration threshold of 0.5 in/sec for modern commercial buildings was used to calculate the buffer distances from construction equipment for the Palomares Hills Recreation Center.

[2] To be conservative, the Caltrans vibration threshold of 0.3 in/sec for older residential structures was used to calculate the buffer distances from construction equipment for the nearby residences.

As shown in **Table 3**, vibration levels at 150 feet from the construction equipment would not exceed the 75 VdB threshold for human disturbance. Therefore, project construction activities would not generate excessive vibration levels that could potentially cause disturbance. As

shown in **Table 3**, the construction equipment that would require the largest buffer distance to avoid generating vibration levels that could cause human disturbance is the vibratory roller. Vibration from a vibratory roller could exceed the 83 VdB threshold at institutional land uses located within 58 feet. The closest institutional land use, Jensen Ranch Elementary School, is approximately 880 feet away from the project site, outside the required buffer distance. Therefore, construction activities would not generate excessive vibration levels that could potentially disturb the normal school operations. Vibration from a vibratory roller could exceed the 80 VdB threshold at residences and buildings where people normally sleep located within 73 feet. The closest residential land use is about 65 feet away from the project site. Therefore, construction activities could generate excessive vibration levels that potentially disturb residential activities, such as sleeping. As mentioned above, the construction hours of the project would generally be scheduled during the daytime from 7 a.m. to 5 p.m., Monday through Friday, and possibly on weekends between 8 a.m. and 5 p.m. No nighttime construction is expected for this project. Any impact related to noise and vibration would be restricted to normal daytime hours and reducing the likelihood of disturbance of residents (e.g., sleep disturbance). As vibration annoyance impacts on people within residential buildings related to nighttime construction would not occur, construction activities would not be expected to generate excessive vibration levels that would disturb nearby residents.

There are two types of structures near the project site that could potentially be damaged by construction vibration: residences to the north and the Palomares Hills Recreation Center to the southwest of the project site. As shown in **Table 4**, the construction equipment that would require the largest buffer distance to avoid generating vibration levels that could potentially damage a nearby building structure is the vibratory roller. A vibratory roller would require a 14-foot buffer to avoid potential damage to the Palomares Hills Recreation Center and a 20-foot buffer to avoid potential damage to the nearby residential buildings. Because the Palomares Hills Recreation Center and all of the residential structures nearby are located outside of the required buffer distances, project construction would not generate vibration levels above the Caltrans building damage thresholds. Therefore, project construction activities would not generate excessive vibration levels that could potentially cause structure damages.

Airport Noise

The project site is not located within the vicinity of a private airstrip or an airport land use plan, or within 2 miles of a public airport or public-use airport. The nearest airport is the Hayward Executive Airport located about 6.2 miles to the southwest of the project site. The project site in not located within the Hayward Executive Airport Influence Area. Therefore, the project would have no impact related to the exposure of people to excess noise levels from aircraft noise.

5 CONCLUSIONS

Project construction would not result in excessive noise and vibration levels at nearby receptors. Project operation could potentially generate excessive noise levels at nearby sensitive receptors due to the use of fixed mechanical equipment. Implementation of control measures for fixed mechanical equipment would ensure project operation would not result in excessive noise levels at nearby sensitive receptors.

ATTACHMENT A

Supporting Noise and Vibration Calculations

Construction Noise Calculations - Fire Station 7 - Nearest Residence

Construction Phase	Equipment Type[1]	USDOT Equipment Type[2]	No. Equipment[1]	Acoustical Usage Factor[2]	Maximum Noise Level @ 50 feet (Lmax)[3]	Typical Noise Level @ 50 feet (dBA_1)	Reference Distance (D_1)	Distance to Receptor (D_2)	Ground Absorption Constant (G)	Noise Level at Receptor (dBA_2)	Two Noisiest Equipment
			Unit:	%	dBA Lmax	dBA Leq	feet	feet	unitless	dBA Leq	dBA Leq
Site Preparation	Graders	Grader	1	40	85	81	50	65	0	79	82
	Rubber Tired Dozers	Dozer	1	40	85	81	50	65	0	79	
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	65	0	74	
Grading	Graders	Grader	1	40	85	81	50	65	0	79	82
	Rubber Tired Dozers	Dozer	1	40	85	81	50	65	0	79	
	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	65	0	74	
Building Construction	Cranes	Crane	1	16	88	80	50	65	0	78	80
	Generator Sets	Generator (<25 KVA, VMS Signs)	1	50	82	79	50	65	0	77	
	Welders	Welder/Torch	3	40	73	69	50	65	0	67	
	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	65	0	74	
Paving	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	65	0	74	83
	Cement and Mortar Mixers	Vibratory Concrete Mixer	1	20	76	69	50	65	0	67	
	Pavers	Paver	1	50	85	82	50	65	0	80	
	Paving Equipment	Paver	1	50	85	82	50	65	0	80	
	Rollers	Roller	1	20	85	78	50	65	0	76	
Architectural Coating	Air Compressors	Compressor (air)	1	40	80	76	50	65	0	74	74

Notes:

Noise level at the receptor calculated based on the following equation:[4]

$dBA_2 = dBA_1 + 10 * \log_{10}(D_1/D_2)^{2+G}$

Where:

dBA_2 = Noise level at receptor

dBA_1 = Noise level at reference distance

D_1 = Reference distance

D_2 = Receptor distance

G = Ground absorption constant (0 for hard surface, 0.5 for soft surface)

Combined noise levels at receptor calculated for two noisiest equipment using decibel addition:

$L = 10 * \log_{10}(10^{(L_1/10)}+10^{(L_2/10)})$

L = Combined noise level

L_1 = Noise level for first noisiest piece of equipment

L_2 = Noise level for second noisiest piece of equipment

[1] The type of construction equipment is based on construction equipment list provided by the applicant.

[2] U.S. Department of Transportation, 2006. FHWA Highway Construction Noise Handbook, Table 9.1. August.

[3] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-1. September.

[4] California Department of Transportation, 1998. Technical Noise Supplement (TeNS). Equation N-2141.2. October.

Construction Noise Calculations - Fire Station 7 - Nearest School

Construction Phase	Equipment Type[1]	USDOT Equipment Type[2]	No. Equipment[1]	Acoustical Usage Factor[2]	Maximum Noise Level @ 50 feet (Lmax)[3]	Typical Noise Level @ 50 feet (dBA_1)	Reference Distance (D_1)	Distance to Receptor (D_2)	Ground Absorption Constant (G)	Noise Level at Receptor (dBA_2)	Two Noisiest Equipment
			Unit:	%	dBA Lmax	dBA Leq	feet	feet	unitless	dBA Leq	dBA Leq
Site Preparation	Graders	Grader	1	40	85	81	50	880	0	56	59
	Rubber Tired Dozers	Dozer	1	40	85	81	50	880	0	56	
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	880	0	51	
Grading	Graders	Grader	1	40	85	81	50	880	0	56	59
	Rubber Tired Dozers	Dozer	1	40	85	81	50	880	0	56	
	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	880	0	51	
Building Construction	Cranes	Crane	1	16	88	80	50	880	0	55	58
	Generator Sets	Generator (<25 KVA, VMS Signs)	1	50	82	79	50	880	0	54	
	Welders	Welder/Torch	3	40	73	69	50	880	0	44	
	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	880	0	51	
Paving	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	880	0	51	60
	Cement and Mortar Mixers	Vibratory Concrete Mixer	1	20	76	69	50	880	0	44	
	Pavers	Paver	1	50	85	82	50	880	0	57	
	Paving Equipment	Paver	1	50	85	82	50	880	0	57	
	Rollers	Roller	1	20	85	78	50	880	0	53	
Architectural Coating	Air Compressors	Compressor (air)	1	40	80	76	50	880	0	51	51

Notes:

Noise level at the receptor calculated based on the following equation:[4]

$dBA_2 = dBA_1 + 10 * \log_{10}(D_1/D_2)^{2+G}$

Where:

dBA_2 = Noise level at receptor

dBA_1 = Noise level at reference distance

D_1 = Reference distance

D_2 = Receptor distance

G = Ground absorption constant (0 for hard surface, 0.5 for soft surface)

Combined noise levels at receptor calculated for two noisiest equipment using decibel addition:

$L = 10 * \log_{10}(10^{(L_1/10)}+10^{(L_2/10)})$

L = Combined noise level

L_1 = Noise level for first noisiest piece of equipment

L_2 = Noise level for second noisiest piece of equipment

[1] The type of construction equipment is based on construction equipment list provided by the applicant.

[2] U.S. Department of Transportation, 2006. FHWA Highway Construction Noise Handbook, Table 9.1. August.

[3] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-1. September.

[4] California Department of Transportation, 1998. Technical Noise Supplement (TeNS). Equation N-2141.2. October.

Construction Noise Calculations - Fire Station 7 - Nearest Recreational

Construction Phase	Equipment Type[1]	USDOT Equipment Type[2]	No. Equipment[1]	Acoustical Usage Factor[2]	Maximum Noise Level @ 50 feet (Lmax)[3]	Typical Noise Level @ 50 feet (dBA_1)	Reference Distance (D_1)	Distance to Receptor (D_2)	Ground Absorption Constant (G)	Noise Level at Receptor (dBA_2)	Two Noisiest Equipment
			Unit:	%	dBA Lmax	dBA Leq	feet	feet	unitless	dBA Leq	dBA Leq
Site Preparation	Graders	Grader	1	40	85	81	50	60	0	79	82
	Rubber Tired Dozers	Dozer	1	40	85	81	50	60	0	79	
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	60	0	74	
Grading	Graders	Grader	1	40	85	81	50	60	0	79	82
	Rubber Tired Dozers	Dozer	1	40	85	81	50	60	0	79	
	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	60	0	74	
Building Construction	Cranes	Crane	1	16	88	80	50	60	0	78	81
	Generator Sets	Generator (<25 KVA, VMS Signs)	1	50	82	79	50	60	0	77	
	Welders	Welder/Torch	3	40	73	69	50	60	0	67	
	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	60	0	74	
Paving	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	60	0	74	83
	Cement and Mortar Mixers	Vibratory Concrete Mixer	1	20	76	69	50	60	0	67	
	Pavers	Paver	1	50	85	82	50	60	0	80	
	Paving Equipment	Paver	1	50	85	82	50	60	0	80	
	Rollers	Roller	1	20	85	78	50	60	0	76	
Architectural Coating	Air Compressors	Compressor (air)	1	40	80	76	50	60	0	74	74

Notes:

Noise level at the receptor calculated based on the following equation:[4]

$dBA_2 = dBA_1 + 10 * \log_{10}(D_1/D_2)^{2+G}$

Where:

dBA_2 = Noise level at receptor

dBA_1 = Noise level at reference distance

D_1 = Reference distance

D_2 = Receptor distance

G = Ground absorption constant (0 for hard surface, 0.5 for soft surface)

Combined noise levels at receptor calculated for two noisiest equipment using decibel addition:

$L = 10 * \log_{10}(10^{(L_1/10)}+10^{(L_2/10)})$

L = Combined noise level

L_1 = Noise level for first noisiest piece of equipment

L_2 = Noise level for second noisiest piece of equipment

[1] The type of construction equipment is based on construction equipment list provided by the applicant.

[2] U.S. Department of Transportation, 2006. FHWA Highway Construction Noise Handbook, Table 9.1. August.

[3] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-1. September.

[4] California Department of Transportation, 1998. Technical Noise Supplement (TeNS). Equation N-2141.2. October.

Construction Vibration Calculations for Potential Disturbance

Equipment[1]	Typical Vibration Level @ 25 Feet[2] (RMS_1)	Reference Distance (D_1)	Receptor Distance (D2)	Vibration Level @ 150 Feet (RMS_2)
Unit	VdB	feet	feet	VdB
Vibratory Roller	94	25	150	71
Large bulldozer	87	25	150	64
Loaded trucks	86	25	150	63
Small bulldozer	58	25	150	35

Notes:

Vibration levels at a distance was calculated based on the following equation:

$RMS_2=RMS_1-30*\log_{10}(D_2/D_1)$

where

RMS_1 is the reference vibration level at a specified distance

RMS_2 is the calculated vibration level

D_1 is the reference distance

D_2 is the distance from the equipment to the receiver

Construction Vibration Calculations for Potential Building Damage

Equipment[1]	Typical Vibration Level @ 25 Feet[2] (PPV_1)	Building Damage Vibration Threshold (PPV_2)		Reference Distance (D_1)	Buffer Distance to Damage Threshold (D_2)	
		Modern commercial buildings	Old Residential		Modern commercial buildings	Old Residential
Unit	in/sec	in/sec	in/sec	feet	feet	feet
Vibratory Roller	0.210	0.5	0.3	25	14	20
Large bulldozer	0.089	0.5	0.3	25	8	11
Loaded trucks	0.076	0.5	0.3	25	7	10
Small bulldozer	0.003	0.5	0.3	25	1	1

Notes:

Buffer distance to vibration threshold for building damage calculated based on the following equation:[3]

$D_2 = (PPV_1 / PPV_2)^{\wedge} (1 / 1.5) * D_1$

Where:

PPV_1 = Vibration level at reference distance

PPV_2 = Vibration threshold for building damage

D_1 = Reference distance

D_2 = Buffer distance to vibration threshold for building damage

[1] Demolition equipment provided by project applicant, and other equipment based on the CalEEMod default generated for the project. Only equipment that generates substantial vibration is shown.

[2] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-4. September.

[3] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Equations 7-2 and 7-3. September.

[1] Project-specific construction list provided by the project applicant. Only equipment that generates substantial vibration is shown.

Construction Vibration Calculations for Potential Disturbance (Residential)

Equipment[1]	Typical Vibration Level @ 25 Feet[2] (RMS_1)	Annoyance Vibration Threshold (RMS_2)	Reference Distance (D_1)	Buffer Distance to Annoyance Threshold (D_2)
Unit	VdB	VdB	feet	feet
Vibratory Roller	94	80	25	73
Large bulldozer	87	80	25	43
Loaded trucks	86	80	25	40
Small bulldozer	58	80	25	5

Construction Vibration Calculations for Potential Disturbance (School)

Equipment[1]	Typical Vibration Level @ 25 Feet[2] (RMS_1)	Annoyance Vibration Threshold (RMS_2)	Reference Distance (D_1)	Buffer Distance to Annoyance Threshold (D_2)
Unit	VdB	VdB	feet	feet
Vibratory Roller	94	83	25	58
Large bulldozer	87	83	25	34
Loaded trucks	86	83	25	31
Small bulldozer	58	83	25	4

Notes:

Buffer distance to vibration threshold for human annoyance calculated based on the following equation:[3]

$D_2 = D_1 * 10^{((RMS_1 - RMS_2) / 30)}$

Where:

RMS_1 = Vibration level at reference distance

RMS_2 = Vibration threshold for human disturbance

D_1 = Reference distance

D_2 = Buffer distance to vibration threshold for human annoyance

MEMORANDUM

Date: 19 July 2024 **Job No.:** 21215-05

To: Whitney Broeking, Panorama Environmental

From: Yilin Tian, Environmental Engineer, Baseline Environmental Consulting

Subject: **Noise and Vibration Analysis for Alameda County Fire Station 25**

Baseline Environmental Consulting (Baseline) has prepared this technical memorandum to evaluate potential impacts related to noise and vibration to support CEQA review of the proposed Alameda County Fire Station 25 Project (project) located in Castro Valley, California. The project would demolish the existing fire station and parking lot to construct a new fire station.

1 PROJECT DESCRIPTION

The project site is at 20290 San Miguel Avenue in unincorporated Castro Valley in central Alameda County. The site is on a 1.3-acre parcel (Assessor's Parcel Number 84A-112-17-2) and consists of the existing one-story, 10,000-square-foot fire station and an adjacent parking lot, as shown in **Figure 1**. A separate 2,900-square-foot building used for classrooms and training sessions is on the eastern side of the parcel. The existing fire station includes a 125-kilowatt generator and a 1,000-gallon aboveground fuel tank. Access to the project site is provided via two driveways on San Miguel Avenue. The northern driveway provides access to the apparatus bays. The southern driveway is approximately 30 feet wide and provides access to the parking lot and classrooms/training building on the eastern side of the property. The existing fire station has seven employees.

New Fire Station

The project would demolish the existing fire station structure and construct a 14,500-square-foot, 30-foot-tall, 2-story fire station on the project site. The new fire station would have a lobby, personnel offices, workstations, apparatus bays, a kitchen and dining spaces, crew dormitories and lockers, a training room, and storage rooms. The existing generator and vehicle fueling station would be replaced in-kind. The new fueling station would feature a 1,000-gallon aboveground diesel tank and a 500-gallon aboveground gasoline tank, with pumps that would dispense diesel and gas to ACFD fleet vehicles and equipment. The fueling station would be within an enclosure outside the new building. A new 125-kilowatt emergency generator would be placed on a concrete pad adjacent to the new building.

Construction of the new fire station is anticipated to begin in November 2025 and last approximately 20 months. Upon completion of construction, the existing fire station operations and maintenance would be transferred to the new fire station, which would be staffed with eight employees.

Temporary Fire Station

During construction of the new fire station, a temporary fire station would be established at 21040 Marshall Street, approximately 0.8 mile east of the project site. The temporary fire station site would utilize the existing 4,689 square foot Castro Valley Administration building and parking lot owned by the Castro Valley Sanitary District. The existing building, carport, gravel bins, shop, and materials shed would remain onsite. Minor modifications would be made to the existing building interior. A temporary 3,387 square foot apparatus bay would be erected on the southern side of the property. Additionally, a temporary 125-kilowatt emergency generator would be installed at the back of the building near the electrical room.

Construction of the temporary fire station would begin in June 2025 and end in October 2025, lasting for five months.

Figure 1. Project Location

Source: Alameda County 2023

2 ENVIRONMENTAL SETTING

Noise and Vibration Concepts

Noise is commonly defined as unwanted sound that annoys or disturbs people and can have an adverse psychological or physiological effect on human health. Sound is measured in decibels (dB), which is a logarithmic scale. Decibels describe the purely physical intensity of sound based on changes in air pressure, but they cannot accurately describe sound as perceived by the human ear since the human ear is only capable of hearing sound within a limited frequency range. For this reason, a frequency-dependent weighting system is used, and monitoring results are reported in A-weighted decibels (dBA).

A typical method for determining a person's subjective reaction to a new noise is by comparing it to existing conditions. The following describes the general effects of noise on people: 1) a change of 1 dBA cannot typically be perceived except in carefully controlled laboratory experiments; 2) a 3-dBA change is considered a just-perceivable difference; 3) a minimum of 5-dBA change is required before any noticeable change in community response is expected; and 4) a 10-dBA change is subjectively perceived as approximately a doubling or halving in loudness.[1]

Traffic noise levels are often expressed in terms of the hourly dBA. The noise levels generated by vehicular sources mainly depend on traffic volume, the speed, and the percent of trucks within the fleet. Increases in these three factors will lead to higher noise levels. Doubling the number of sources, such as traffic volume, increases the noise level by approximately 3 dBA due to the logarithmic nature of noise levels.[2]

In an unconfined space, such as outdoors, noise attenuates with distance. Noise levels at a known distance from point sources are reduced by 6 dBA for every doubling of that distance for hard surfaces (e.g., asphalt) and by 7.5 dBA for every doubling of distance for soft surfaces (e.g., vegetative areas).

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. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal. PPV is appropriate for evaluating potential damage to buildings,

[1] Charles M. Salter Associates, Inc., 1998. Acoustics – Architecture, Engineering, the Environment, William Stout Publishers.
[2] Federal Highway Administration (FHWA), 2018. Techniques for Reviewing Noise Analyses and Associated Noise Reports.

but it is not suitable for evaluating human response to vibration because it takes the human body time to respond to vibration signals. The response of the human body to vibration is dependent on the average amplitude of a vibration. The RMS of a signal is the average of the squared amplitude of the signal and is more appropriate for evaluating human response to vibration. PPV is normally described in units of inches per second (in/sec) and RMS is often described in vibration decibels (VdB). Vibration can be felt or heard by humans well below a level that would result in damage to a structure. Except for long-term occupational exposure, vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that can affect concentration or disturb sleep. According to the Federal Transit Administration (FTA), a vibration level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible.[3]

Existing Ambient Noise Environment

The primary sources of noise in the vicinity of the project site are traffic on major roadways, such as Interstate 580, Lake Chabot Road, and Redwood Road. According to the existing transportation noise contours in the Castro Valley General Plan,[4] ambient Community Noise Equivalent Levels (CNEL) from traffic in the vicinity of the project range from about 55 to 60 dBA.

Sensitive Receptors

Noise-sensitive land uses typically include residences, motels and hotels, schools, libraries, houses of worship, hospitals, convalescent homes, and parks and outdoor recreation areas. The noise-sensitive receptors in the vicinity of the project include 1) residences to the north (as close as 15 feet) and to the east (as close as 50 feet), 2) the Bee Best Learning Center about 30 feet to the south, 3) Castro Valley Elementary School about 170 feet to the northwest, 4) ABC Pre-School and Day Care about 485 feet to the north, 5) Growing Years Preschool about 540 feet to the west, and 6) the Adobe Park about 50 feet to the west of the project site.

Regulatory Regulations and Guidance

Federal Transit Administration

The Federal Transit Administration (FTA) has developed a general construction noise threshold of 90 dBA Leq at the nearest noise-sensitive receptor.[5] According to the FTA, if the combined noise level in 1 hour from the two noisiest pieces of equipment exceeds the 90 dBA threshold

[3] Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment Manual, FTA Report No.0123, September.
[4] Alameda County, 2012. Castro Valley General Plan. March.
[5] Federal Transit Administration (FTA), Office of Planning and Environment. 2006. Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06.

at a residential land use (or other noise-sensitive receptors), then there may be a substantial adverse reaction.

In addition, the FTA has developed vibration thresholds to prevent disturbances to (i.e., annoyance of) building occupants based on the frequency of a vibration event.[6] Vibrations that are equal to or exceed the vibration thresholds could result in potential disturbance to people or activities. The FTA thresholds of 80 VdB and 83 VdB for infrequent events[7] are used in this analysis to evaluate disturbance to residences and buildings where people normally sleep and to institutional land uses with primarily daytime use (such as schools), respectively.

California Department of Transportation

The California Department of Transportation (Caltrans) has developed vibration thresholds based on PPV values to evaluate the potential impact of construction vibration on structures.[8] Construction vibrations that are equal to or exceed the vibration thresholds could result in potential damage to structures. For frequent intermittent vibratory sources during construction (e.g., vibratory compaction equipment), Caltrans recommends a threshold of 0.5 in/sec to prevent potential damage to modern industrial/commercial buildings and new residential structures and 0.3 in/sec for older residential structures.

Alameda County Noise Ordinance

Alameda County regulates noise via the County's Noise Ordinance (Code of Ordinance Chapter 6.60). Chapter 6.60.040 establishes exterior noise level standards based on receiving land use, as shown in **Table 1**. In accordance with Chapter 6.60.070, the County Noise Ordinance does not apply to noise sources associated with construction if the construction activities occur between 7 a.m. and 7 p.m. on weekdays, or between 8 a.m. and 5 p.m. on weekends. In addition, Chapter 6.60.050.B. prohibits the generation of vibration levels above the vibration perception threshold at or beyond the property boundary of the source if on private property or at 150 feet from the source if on a public space or public right-of-way. According to chapter 6.60.070, warning devices, necessary for the protection of public safety as, for example, police, fire and ambulance sirens and train horns are exempted from noise ordinance requirements.

[6] Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment Manual, FTA Report No.0123, September.
[7] Infrequent events = less than 30 events per day. The "infrequent events" threshold is appropriate for construction equipment in this analysis based on the nature of proposed construction activities.
[8] California Department of Transportation (Caltrans), 2020. Transportation and Construction Vibration Guidance Manual.

Table 1. Alameda County Exterior Noise Level Standards (dBA)

Cumulative Number of Minutes in any One Hour Time Period	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Single- or multiple-family residential, school, hospital, church, and public library		
30	50	45
15	55	50
5	60	55
1	65	60
0	70	65
Commercial Uses		
30	65	60
15	70	65
5	75	70
1	80	75
0	85	80

Source: Alameda County Code of Ordinance Chapter 6.60.040.

3 SIGNIFICANCE CRITERIA

Implementation of the project would result in a significant impact related to noise and vibration if it would:

1. Generate 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;
2. Generate excessive groundborne vibration or groundborne noise levels; or
3. 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, expose people residing or working in the project area to excessive noise levels.

The construction hours of the project would generally be scheduled during the daytime from 7 a.m. to 5 p.m., Monday through Friday, and possibly on weekends between 8 a.m. and 5 p.m.; therefore, the project's daytime construction activities would be exempt from the County Noise Ordinance. No nighttime construction is expected for this project. For construction noise impact, speech interference is used as an indicator for substantial increases in noise levels at nearby noise-sensitive receptors during project construction. In accordance with Caltrans Traffic Noise Analysis Protocol,[9] 67 dBA is the approximate noise level at which the noise begins

[9] California Department of Transportation, 2020. Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects, April

to interfere with human speech assuming two people are speaking. Standard building structures provide approximately 12 to 17 dBA noise attenuation with windows open.[10] With windows closed, the noise attenuation factor is about 20 dBA for older structures and about 25 dBA for newer dwellings. Assuming windows closed and older structure, speech interference could occur when exterior noise levels exceed 87 dBA. The 87 dBA speech interference threshold is more conservative than the FTA 90 dBA threshold.

For construction vibration, the Caltrans thresholds of 0.5 in/sec for modern commercial buildings and 0.3 in/sec for older residential buildings are used to evaluate potential structural impacts at the Bee Best Learning Center and nearby residences, respectively. Because the proposed fire station is public property, the generation of vibration levels above the vibration perception threshold at 150 feet from the source is used to evaluate potential disturbance impacts in accordance with the Alameda County Code of Ordinance Chapter 6.60.050.B. Because Chapter 6.60.050.B. does not provide a numerical threshold for vibration perception, the FTA's vibration perception threshold of 75 VdB is used to evaluate the vibration disturbance impact. In addition, the FTA thresholds of 80 VdB and 83 VdB are used to evaluate vibration disturbance to residences where people normally sleep and to institutional land uses with primarily daytime use, respectively.

4 IMPACT ANALYSIS

Noise from Project Construction

The primary source of noise during construction would be off-road equipment activities on the project site. Construction noise levels would vary from day-to-day, depending on the number and type of equipment being used, the types and duration of activity being performed, the distance between the noise source and the receptor, and the presence or absence of barriers, if any, between the noise source and receptor. Pile driving, which can generate extreme levels of noise, is not proposed as part of the project.

New Fire Station

The construction of the new fire station is anticipated to begin in November 2025 and last approximately 20 months. The types of construction equipment that would be used on the project site (e.g., backhoe, dozer and grader) were provided by the project applicant (**Attachment A**). In accordance with guidance from FTA, daytime construction noise impacts were evaluated by quantifying the maximum noise levels that would result from the

[10] US EPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Available at: https://www.nonoise.org/library/levels74/levels74.htm

simultaneous operation of the two noisiest pieces of equipment near the perimeter of the project site closest to a sensitive receptor.[11]

As shown in **Table 2,** the project's construction noise levels were estimated at the nearest residential, school, and park receptors that were assumed to be 15 feet to the north, 30 feet to the south, and 50 feet to the west of proposed construction activities, respectively. As shown in **Table 2**, project construction would generate noise levels that could potentially exceed the 87 dBA Leq noise threshold by up to 9 dBA Leq at the nearby residential receptors, without implementation of any noise reduction measures.

Table 2. Potential Noise Impacts from Construction of the New Fire Station (dBA Leq[1])

Construction Phase	Nearest Residence (15 feet distance)	Nearest School[2] (30 feet distance)	Nearest Park (50 feet distance)
Demolition	96	82	85
Site Preparation	93	79	82
Grading	94	80	84
Building Construction	92	78	81
Paving	94	82	83
Exceed the 87 dBA Threshold?	**Yes**	No	No
Noise Attenuation (dBA) Needed	-9	Not Needed	Not Needed

Notes:
[1] The average A-weighted noise level during a one-hour period.
[2] Based on the information provided by the ACFD, there is a solid cinder block wall immediately adjacent to the nearest school, the Bee Best Learning Center, and separating the project site from the school. It was assumed that the wall can provide an 8 dBA reduction, according to Appendix A of the Federal Highway Administration's (FHWA's) Roadway Construction Noise Model User's Guide.
Source: Detailed calculations are provided in **Attachment A**.

To reduce potential noise impacts related to project construction, Baseline recommends implementing the following noise reduction measure. According to Appendix A of the Federal Highway Administration's (FHWA's) Roadway Construction Noise Model User's Guide,[12] if the noise source is shielded with a solid noise barrier located close to the source, an 8 dBA reduction can be achieved. In addition, reductions of 10 dBA or more can be achieved with optimal muffler systems.[13] Implementation of the noise reduction measures would reduce

[11] Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment Manual, FTA Report No.0123, September.
[12] Federal Highway Administration (FHWA), 2006. FHWA Roadway Construction Noise Model User's Guide. January.
[13] Federal Highway Administration (FHWA), 2017. Special Report – Measurement, Prediction, and Mitigation. Available at: www.fhwa.dot.gov/Environment/noise/construction_noise/special_report/hcn04.cfm. Accessed April 2024.

construction noise levels by up to 18 dBA Leq, ensuring that project construction would not result in excessive noise levels at nearby sensitive receptors.

Construction Noise Management Plan

The following noise reduction measures shall be implemented during construction:

1. The contractor shall properly muffle and maintain all construction equipment powered by internal combustion engines.

2. Idling of combustion engines shall be limited to a maximum of 5 minutes.

3. All stationary noise-generating construction equipment, such as air compressors, shall be located as far as practical from existing nearby residences, schools, and other noise-sensitive land uses. To the extent feasible, such equipment shall also be acoustically shielded with partial enclosures or temporary noise barriers.

4. Select quiet construction equipment, particularly air compressors, whenever possible. Fit motorized equipment with proper mufflers in good working order.

5. Construct or use temporary noise barriers (minimum 8 feet in height) along the project northern perimeter to shield construction and demolition noise from noise-sensitive receptors to the extent feasible. Examples of barriers include solid plywood construction barrier and/or construction noise barrier blankets on temporary fencing. These noise barriers should be installed without cracks or gaps in the face or large or continuous gaps at the base. The materials used to construct the noise barrier should have a minimum surface weight of 2.5 lb./sq. ft., such as 3/4" plywood panels. Construction noise barrier blankets should have a minimum STC rating of 25.

6. Residences and the school adjacent to project sites shall be notified 14 days in advance of construction. The notification shall include information regarding construction schedule and contact information for a noise a "noise disturbance coordinator" responsible for responding to any local complaints about construction noise.

7. The project applicant shall designate a "noise disturbance coordinator" responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of any noise complaint (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures be implemented to correct the problem. A telephone number for the noise disturbance coordinator shall be posted at the construction site.

Temporary Fire Station

The construction of the temporary fire station is anticipated to begin in June 2025 and end in October 2025, lasting for five months. The types of construction equipment that would be used on the temporary fire station site include small mobile crane, forklift, excavator, loader, and concrete truck. In accordance with guidance from FTA, daytime construction noise impacts were evaluated by quantifying the maximum noise levels that would result from the simultaneous operation of the two noisiest pieces of equipment near the perimeter of the project site closest to a sensitive receptor.[14] Because construction on the temporary fire station site would mainly occur at the proposed apparatus bay location, the distance between the apparatus bay location to the closest sensitive receptor is used in this study.

As shown in **Table 3,** the project's construction noise levels were estimated at the nearest residential receptors that were assumed to be 70 feet to the east of proposed construction activities. As shown in **Table 3**, project construction would not generate noise levels that could potentially exceed the 87 dBA Leq noise threshold at the nearby residential receptors. Therefore, construction of the project would not generate excessive noise at nearby sensitive receptors.

Table 3. Potential Noise Impacts from Construction of the Temporary Fire Station (dBA Leq)

Construction Phase	Nearest Residence (70 feet distance)
Temporary Fire Station	81
Exceed the 87 dBA Threshold?	No

Source: Detailed calculations are provided in **Attachment A**.

Noise from Project Operation

New Fire Station

The project would demolish the existing fire station and construct a new fire station on the project site. The primary sources of noise from operation of the existing fire station include the use of stationary equipment such as heating, ventilation, and air conditioning (HVAC) systems and an emergency generator, on-site vehicle maintenance and movements, and fire sirens when responding to emergency calls. Existing fire station operations and maintenance would be transferred to the new fire station, including the apparatus bays, offices, sleeping rooms and lockers, workshops, training rooms, and fleet vehicles. The existing generator and vehicle fueling station would be replaced in-kind. The existing fire station has a HVAC system. Noise generated from the new fire station's HVAC system would be similar to the existing condition.

[14] Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment Manual, FTA Report No.0123, September.

The project would not change the service area of the fire station or the number of emergency calls the employees responded to per month. The onsite noise generated by operation of the project would be substantially the same as the existing condition.

The new fire station will be staffed with eight employees, which is one employee (two one-way commute trips) more than the existing fire station. The increase in off-site traffic noise along the nearby roadways caused by the staff increase would be negligible.

Temporary Fire Station

The primary sources of noise from operation of the temporary fire station would include the use of stationary equipment such as heating, ventilation, and air conditioning (HVAC) systems and an emergency generator, on-site vehicle maintenance and movements, and fire sirens when responding to emergency calls. The temporary fire station will use the existing Castro Valley Administration building and parking lot; therefore, the noise generated from HVAC system and parking lot activities would be the same as the existing condition. On-site vehicle maintenance would occur in the enclosed apparatus bay, which will shield the noise. Operation of the emergency generator would be limited to daytime periodic testing (i.e., up to 50 hours over the course of a year) and emergencies. Therefore, noise impacts from operation of the emergency generators would be expected to be less than significant. In accordance with Alameda County Noise Ordinance chapter 6.60.070, fire sirens are exempted from noise ordinance requirements. Upon completion of the new fire station construction, the fire station operations at the temporary fire station would be transferred to the new fire station. The impact from fire sirens when responding to emergency calls would be temporary. The temporary fire station will be staffed with seven employees. The increase in off-site traffic noise along the nearby roadways caused by the staff increase would be negligible. In summary, operation of the temporary fire station would not result in excessive noise levels at nearby sensitive receptors.

Vibration from Project Construction

Construction activities can result in varying degrees of ground vibration, depending on the equipment, activity, and soil conditions. The primary types of equipment that would generate ground vibration during project construction and the associated vibration calculations are included in **Attachment A**. To evaluate the project's potential vibration effects on nearby sensitive receptors, a buffer distance that would be needed to avoid exceeding the FTA and Caltrans construction vibration thresholds mentioned above was estimated for each type of equipment. It was conservatively assumed that the equipment that could generate substantial ground vibration would be used near the project boundaries. The estimated buffer distances for potential disturbance and building damage are summarized in **Table 4 and Table 5, respectively.** In addition, the potential vibration levels generated by each type of construction

equipment were estimated at 150 feet from the project site to evaluate the potential vibration disturbance impact. The estimated vibration levels at 150 feet are also summarized in **Table 4**.

Table 4. Potential Vibration Disturbance during Construction

Construction Equipment	Vibration Levels at 150 feet (VdB)	Buffer Distances to Prevent Potential Human Disturbance (feet)	
		School (Threshold: 83 VdB)[1]	Residential (Threshold: 80 VdB) [2]
Vibratory Roller	71	58	73
Large Bulldozer	64	34	43
Loaded Trucks	63	31	40
Small Bulldozer	35	4	5
Exceed the 75 VdB at 150 feet Threshold?	No	Not Applicable	

Note: Vibration calculations are included in **Appendix A**.

[1] The FTA thresholds of 83 VdB for institutional land uses with primarily daytime use from infrequent construction events was used to calculate the buffer distances from construction equipment.

[2] The FTA thresholds of 80 VdB for residences and buildings where people normally sleep from infrequent construction events was used to calculate the buffer distances from construction equipment.

Table 5. Potential Vibration Damage to Buildings during Construction

Construction Equipment	Buffer Distances to Prevent Potential Structural Damage (feet)	
	Modern Commercial (Threshold: 0.5 in/sec)[1]	Residential (Threshold: 0.3 in/sec) [2]
Vibratory Roller (Undefined Tonnage)	14	20
1.5-ton Vibratory Roller	5	7
Large Bulldozer	8	11
Loaded Trucks	7	10
Small Bulldozer	1	1

Note: Vibration calculations are included in **Appendix A**.

[1] The Caltrans vibration threshold of 0.5 in/sec for modern commercial buildings was used to calculate the buffer distances from construction equipment for the Bee Best Learning Center.

[2] To be conservative, the Caltrans vibration threshold of 0.3 in/sec for older residential structures was used to calculate the buffer distances from construction equipment for the nearby residences.

New Fire Station

As shown in **Table 4**, vibration levels at 150 feet from the construction equipment would not exceed the 75 VdB threshold for human disturbance. Therefore, project construction activities would not generate excessive vibration levels that could potentially cause disturbance.

As shown in **Table 4**, the construction equipment that would require the largest buffer distance to avoid generating vibration levels that could cause human disturbance is the vibratory roller. Vibration from a vibratory roller could exceed the 80 VdB threshold at residences and buildings where people normally sleep located within 73 feet. The closest residential land use is about 15 feet away from the project site. Therefore, construction activities could generate excessive vibration levels that potentially disturb residential activities, such as sleeping. The use of vibration-generating equipment, such as bulldozer and vibratory roller, would mainly occur during demolition, site preparation, and grading. These construction phases are expected to last about three months in total. As mentioned above, the construction hours of the project would generally be scheduled during the daytime from 7 a.m. to 5 p.m., Monday through Friday, and possibly on weekends between 8 a.m. and 5 p.m. No nighttime construction is expected for this project. Any impact related to noise and vibration would be restricted to normal daytime hours and reducing the likelihood of disturbance of residents (e.g., sleep disturbance). As vibration annoyance impacts on people within residential buildings related to nighttime construction would not occur, construction activities would not be expected to generate excessive vibration levels that would disturb nearby residents.

In addition, vibration from a vibratory roller could exceed the 83 VdB threshold at institutional land uses located within 58 feet. The closest institutional land use, Bee Best Learning Center, is approximately 30 feet away from the proposed building footprint, and therefore could be exposed to vibration levels that exceed the 83 VdB disturbance thresholds institutional land uses. The exposure of a given receptor to vibration in excess of these thresholds would be limited in duration because the location of construction equipment would vary throughout the day depending on the location where the vibration-generating equipment is being used. As mentioned above, the use of vibration-generating equipment would be limited to demolition, site preparation, and grading, for about three months in total. The vibration impacts can be reduced by implementation of the vibration reduction measures recommended at the end of this section, such as requiring construction to be scheduled to avoid disrupting classroom activities.

There are two types of structures near the project site that could potentially be damaged by construction vibration: residences to the north and the Bee Best Learning Center to the south of the project site. As shown in **Table 5**, the construction equipment that would require the largest buffer distance to avoid generating vibration levels that could potentially damage a nearby building structure is the vibratory roller. A vibratory roller would require a 14-foot

buffer to avoid potential damage to the school and a 20-foot buffer to avoid potential damage to the nearby residential buildings. Based on these buffer distance, vibratory equipment operating near the perimeter of the project site could potentially cause structural damage to the nearby residences located approximately 15 feet north of the project site. Therefore, construction vibration could potentially exceed the Caltrans structural damage thresholds at the residential buildings to the north of the project site. The nearest school is located outside of the required buffer distance.

To reduce potential vibration impacts related to project construction, Baseline recommends implementing the following vibration reduction measure. Operating the construction off-road equipment outside the required buffer distances presented in **Table 5** would not generate vibration levels that exceed the Caltrans structural damage thresholds at the receptor locations. As shown in **Table 5**, vibratory rollers rated at 1.5 tons would require a 7-foot buffer to avoid potential damage to the nearby residential buildings. The nearest residential building is located approximately 15 feet north of the project site, outside of the required buffer distance. Alternatively, soil compaction required less than 20 feet from the adjacent residential structures can be achieved by using non-vibratory static drum rollers, which use weight instead of vibrations, to avoid vibration impacts. Using non-vibratory compaction rollers or vibratory rollers rated at 1.5 tons or less would reduce vibration levels at the receptor locations below the Caltrans structural damage thresholds. Implementation of the vibration reduction measures would ensure that project construction would not result in excessive vibration levels at nearby sensitive receptors.

Construction Vibration Management Plan

At a minimum, the project applicant shall implement the following vibration reduction measures during construction:

1. To the maximum extent practicable, the project applicant shall schedule vibration-generating construction activities (e.g. vibratory roller, large bulldozer) during periods when classes are not in session, such as summer, school breaks, and after class dismissal. The applicant shall not allow the use of heavy construction equipment during established testing periods (e.g., finals week).

2. For vibration-generating construction equipment, maintain a minimum distance of 20 feet between the directly adjacent residential buildings to the north of the project site to prevent exceedance of the Caltrans structural damage thresholds. The project applicant shall verify whether the required buffer distances mentioned above can be maintained when using vibration-generating construction equipment. If the buffer distance cannot be maintained, implement the next measure.

3. Any compaction required less than 20 feet from the adjacent residential structures would be accomplished by using non-vibratory compaction rollers or vibratory rollers rated at 1.5 tons or less.

4. If the required 20 feet and 14 feet buffer distances cannot be maintained and low-vibration equipment is not available, the project applicant shall conduct a pre-construction survey of the residential buildings and the Bee Best Learning Center adjacent to the project site to establish the baseline structural conditions including, but not limited to, the location and extent of any visible cracks or spalls on the buildings. The survey should include written descriptions and photographs of the buildings. Upon completion of the project and at the request of the property owner, the buildings should be resurveyed, and any new cracks or other changes in the buildings should be compared to pre-construction conditions and a determination should be made as to whether the proposed project caused the damage. If it is determined that project construction resulted in damage to a building, the damage should be repaired to pre-existing condition by the project applicant, provided that the property owner approves of the repair.

Temporary Fire Station

As shown in **Table 4**, vibration levels at 150 feet from the construction equipment would not exceed the 75 VdB threshold for human disturbance. Therefore, construction activities at the temporary fire station site would not generate excessive vibration levels that could potentially cause disturbance. As shown in **Table 4**, the construction equipment that would require the largest buffer distance to avoid generating vibration levels that could cause human disturbance is the vibratory roller. Vibration from a vibratory roller could exceed the 80 VdB threshold at residences and buildings where people normally sleep located within 73 feet. The closest residential land use is about 70 feet away from the project site. Therefore, construction activities could generate excessive vibration levels that potentially disturb residential activities, such as sleeping. As mentioned above, the construction hours of the project would generally be scheduled during the daytime from 7 a.m. to 5 p.m., Monday through Friday, and possibly on weekends between 8 a.m. and 5 p.m. No nighttime construction is expected for this project. Any impact related to noise and vibration would be restricted to normal daytime hours and reducing the likelihood of disturbance of residents (e.g., sleep disturbance). As vibration annoyance impacts on people within residential buildings related to nighttime construction would not occur, construction activities would not be expected to generate excessive vibration levels that would disturb nearby residents.

As discussed above, the construction equipment that would require the largest buffer distances to avoid generating vibration levels that could potentially damage a nearby building structure is the vibratory roller. A vibratory roller would require a 14-foot buffer to avoid potential damage

to the school/commercial buildings and a 20-foot buffer to avoid potential damage the nearby residential buildings. The nearest commercial building to the proposed apparatus bay is the Boulevard Auto repair shop located about 65 feet to the south, and the nearest residential building is the multi-family apartment building located about 70 feet to the east. Because the nearby structures are located outside of the required buffer distances, construction at the temporary fire station site would not generate vibration levels above the Caltrans building damage thresholds. Therefore, construction activities at the temporary fire station site would not generate excessive vibration levels that could potentially cause structure damages.

Airport Noise

The project site and the temporary fire station site are not located within the vicinity of a private airstrip or an airport land use plan, or within 2 miles of a public airport or public-use airport. The nearest airport is the Hayward Executive Airport located about 3.2 miles to the southwest of the project site. The project site and the temporary fire station site are not located within the Hayward Executive Airport Influence Area. Therefore, the project would have no impact related to the exposure of people to excess noise levels from aircraft noise.

5 CONCLUSIONS

Project operation would not result in excessive noise levels at nearby sensitive receptors. Project construction could potentially generate excessive noise and vibration levels at nearby sensitive receptors due to off-road equipment activity; however, implementation of control measures during project construction would substantially reduce the exposure of nearby sensitive receptors to excessive noise and vibration levels.

ATTACHMENT A

Supporting Noise and Vibration Calculations

Construction Noise Calculations - Fire Station 25 - Nearest Residence

Construction Phase	Equipment Type[1]	USDOT Equipment Type[2]	No. Equipment[1]	Acoustical Usage Factor[2]	Maximum Noise Level @ 50 feet (Lmax)[3]	Typical Noise Level @ 50 feet (dBA_1)	Reference Distance (D_1)	Distance to Receptor (D_2)	Ground Absorption Constant (G)	Noise Level at Receptor (dBA_2)	Two Noisiest Equipment
			Unit:	%	dBA Lmax	dBA Leq	feet	feet	unitless	dBA Leq	dBA Leq
Demolition	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	15	0	86	96
	Rubber Tired Dozers	Dozer	1	40	85	81	50	15	0	91	
	Concrete/Industrial Saws	Concrete Saw	1	20	90	83	50	15	0	93	
Site Preparation	Graders	Grader	1	40	85	81	50	15	0	91	93
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	15	0	86	
Grading	Graders	Grader	1	40	85	81	50	15	0	91	94
	Rubber Tired Dozers	Dozer	1	40	85	81	50	15	0	91	
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	15	0	86	
Building Construction	Cranes	Crane	1	16	88	80	50	15	0	90	92
	Air Compressors	Compressor (air)	1	40	80	76	50	15	0	86	
	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	15	0	86	
Paving	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	15	0	86	94
	Cement and Mortar Mixers	Vibratory Concrete Mixer	1	20	76	69	50	15	0	79	
	Pavers	Paver	1	50	85	82	50	15	0	92	
	Rollers	Roller	1	20	85	78	50	15	0	88	

Notes:

Noise level at the receptor calculated based on the following equation:[4]

$dBA_2 = dBA_1 + 10 * \log_{10}(D_1/D_2)^{2+G}$

Where:

dBA_2 = Noise level at receptor

dBA_1 = Noise level at reference distance

D_1 = Reference distance

D_2 = Receptor distance

G = Ground absorption constant (0 for hard surface, 0.5 for soft surface)

Combined noise levels at receptor calculated for two noisiest equipment using decibel addition:

$L = 10 * \log_{10}(10^{(L_1/10)}+10^{(L_2/10)})$

L = Combined noise level

L_1 = Noise level for first noisiest piece of equipment

L_2 = Noise level for second noisiest piece of equipment

[1] The type of construction equipment is based on construction equipment list provided by the applicant.

[2] U.S. Department of Transportation, 2006. FHWA Highway Construction Noise Handbook, Table 9.1. August.

[3] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-1. September.

[4] California Department of Transportation, 1998. Technical Noise Supplement (TeNS). Equation N-2141.2. October.

Construction Noise Calculations - Fire Station 25 - Nearest School (Bee Best Learning Center)

Construction Phase	Equipment Type[1]	USDOT Equipment Type[2]	No. Equipment[1]	Acoustical Usage Factor[2]	Maximum Noise Level @ 50 feet (Lmax)[3]	Typical Noise Level @ 50 feet (dBA_1)	Reference Distance (D_1)	Distance to Receptor (D_2)	Ground Absorption Constant (G)	Noise Level at Receptor (dBA_2)	Two Noisiest Equipment	Noise Attenuation Provided by the Wall
			Unit:	%	dBA Lmax	dBA Leq	feet	feet	unitless	dBA Leq	dBA Leq	dBA
Demolition	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	30	0	80	90	-8
	Rubber Tired Dozers	Dozer	1	40	85	81	50	30	0	85		
	Concrete/Industrial Saws	Concrete Saw	1	20	90	83	50	30	0	87		
Site Preparation	Graders	Grader	1	40	85	81	50	30	0	85	87	
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	30	0	80		
Grading	Graders	Grader	1	40	85	81	50	30	0	85	88	
	Rubber Tired Dozers	Dozer	1	40	85	81	50	30	0	85		
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	30	0	80		
Building Construction	Cranes	Crane	1	16	88	80	50	30	0	84	86	
	Air Compressors	Compressor (air)	1	40	80	76	50	30	0	80		
	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	30	0	80		
Paving	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	30	0	80	88	
	Cement and Mortar Mixers	Vibratory Concrete Mixer	1	20	76	69	50	30	0	73		
	Pavers	Paver	1	50	85	82	50	30	0	86		
	Rollers	Roller	1	20	85	78	50	30	0	82		

Notes:

Noise level at the receptor calculated based on the following equation:[4]

$dBA_2 = dBA_1 + 10 * \log_{10}(D_1/D_2)^{2+G}$

Where:

dBA_2 = Noise level at receptor

dBA_1 = Noise level at reference distance

D_1 = Reference distance

D_2 = Receptor distance

G = Ground absorption constant (0 for hard surface, 0.5 for soft surface)

Combined noise levels at receptor calculated for two noisiest equipment using decibel addition:

$L = 10 * \log_{10}(10^{(L_1/10)}+10^{(L_2/10)})$

L = Combined noise level

L_1 = Noise level for first noisiest piece of equipment

L_2 = Noise level for second noisiest piece of equipment

[1] The type of construction equipment is based on construction equipment list provided by the applicant.

[2] U.S. Department of Transportation, 2006. FHWA Highway Construction Noise Handbook, Table 9.1. August.

[3] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-1. September.

[4] California Department of Transportation, 1998. Technical Noise Supplement (TeNS). Equation N-2141.2. October.

Construction Noise Calculations - Fire Station 25 - Castro Valley Elementary School

Construction Phase	Equipment Type[1]	USDOT Equipment Type[2]	No. Equipment[1]	Acoustical Usage Factor[2]	Maximum Noise Level @ 50 feet (Lmax)[3]	Typical Noise Level @ 50 feet (dBA_1)	Reference Distance (D_1)	Distance to Receptor (D_2)	Ground Absorption Constant (G)	Noise Level at Receptor (dBA_2)	Two Noisiest Equipment
			Unit:	%	dBA Lmax	dBA Leq	feet	feet	unitless	dBA Leq	dBA Leq
Demolition	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	170	0	65	75
	Rubber Tired Dozers	Dozer	1	40	85	81	50	170	0	70	
	Concrete/Industrial Saws	Concrete Saw	1	20	90	83	50	170	0	72	
Site Preparation	Graders	Grader	1	40	85	81	50	170	0	70	72
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	170	0	65	
Grading	Graders	Grader	1	40	85	81	50	170	0	70	73
	Rubber Tired Dozers	Dozer	1	40	85	81	50	170	0	70	
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	170	0	65	
Building Construction	Cranes	Crane	1	16	88	80	50	170	0	69	71
	Air Compressors	Compressor (air)	1	40	80	76	50	170	0	65	
	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	170	0	65	
Paving	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	170	0	65	73
	Cement and Mortar Mixers	Vibratory Concrete Mixer	1	20	76	69	50	170	0	58	
	Pavers	Paver	1	50	85	82	50	170	0	71	
	Rollers	Roller	1	20	85	78	50	170	0	67	

Notes:

Noise level at the receptor calculated based on the following equation:[4]

$dBA_2 = dBA_1 + 10 * \log_{10}(D_1/D_2)^{2+G}$

Where:

dBA_2 = Noise level at receptor

dBA_1 = Noise level at reference distance

D_1 = Reference distance

D_2 = Receptor distance

G = Ground absorption constant (0 for hard surface, 0.5 for soft surface)

Combined noise levels at receptor calculated for two noisiest equipment using decibel addition:

$L = 10 * \log_{10} (10\text{^}(L_1/10)+10\text{^}(L_2/10))$

L = Combined noise level

L_1 = Noise level for first noisiest piece of equipment

L_2 = Noise level for second noisiest piece of equipment

[1] The type of construction equipment is based on construction equipment list provided by the applicant.

[2] U.S. Department of Transportation, 2006. FHWA Highway Construction Noise Handbook, Table 9.1. August.

[3] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-1. September.

[4] California Department of Transportation, 1998. Technical Noise Supplement (TeNS). Equation N-2141.2. October.

Construction Noise Calculations - Fire Station 25 - Adobe Park

Construction Phase	Equipment Type[1]	USDOT Equipment Type[2]	No. Equipment[1]	Acoustical Usage Factor[2]	Maximum Noise Level @ 50 feet (Lmax)[3]	Typical Noise Level @ 50 feet (dBA_1)	Reference Distance (D_1)	Distance to Receptor (D_2)	Ground Absorption Constant (G)	Noise Level at Receptor (dBA_2)	Two Noisiest Equipment
			Unit:	%	dBA Lmax	dBA Leq	feet	feet	unitless	dBA Leq	dBA Leq
Demolition	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	50	0	76	85
	Rubber Tired Dozers	Dozer	1	40	85	81	50	50	0	81	
	Concrete/Industrial Saws	Concrete Saw	1	20	90	83	50	50	0	83	
Site Preparation	Graders	Grader	1	40	85	81	50	50	0	81	82
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	50	0	76	
Grading	Graders	Grader	1	40	85	81	50	50	0	81	84
	Rubber Tired Dozers	Dozer	1	40	85	81	50	50	0	81	
	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	50	0	76	
Building Construction	Cranes	Crane	1	16	88	80	50	50	0	80	81
	Air Compressors	Compressor (air)	1	40	80	76	50	50	0	76	
	Tractors/Loaders/Backhoes	Backhoe	2	40	80	76	50	50	0	76	
Paving	Tractors/Loaders/Backhoes	Backhoe	1	40	80	76	50	50	0	76	83
	Cement and Mortar Mixers	Vibratory Concrete Mixer	1	20	76	69	50	50	0	69	
	Pavers	Paver	1	50	85	82	50	50	0	82	
	Rollers	Roller	1	20	85	78	50	50	0	78	

Notes:

Noise level at the receptor calculated based on the following equation:[4]

$dBA_2 = dBA_1 + 10 * \log_{10}(D_1/D_2)^{2+G}$

Where:

dBA_2 = Noise level at receptor

dBA_1 = Noise level at reference distance

D_1 = Reference distance

D_2 = Receptor distance

G = Ground absorption constant (0 for hard surface, 0.5 for soft surface)

Combined noise levels at receptor calculated for two noisiest equipment using decibel addition:

$L = 10 * \log_{10} (10\text{^}(L_1/10)+10\text{^}(L_2/10))$

L = Combined noise level

L_1 = Noise level for first noisiest piece of equipment

L_2 = Noise level for second noisiest piece of equipment

[1] The type of construction equipment is based on construction equipment list provided by the applicant.

[2] U.S. Department of Transportation, 2006. FHWA Highway Construction Noise Handbook, Table 9.1. August.

[3] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-1. September.

[4] California Department of Transportation, 1998. Technical Noise Supplement (TeNS). Equation N-2141.2. October.

Construction Noise Calculations - Temporary Fire Station 25 - Nearest Residence

Construction Phase	Equipment Type[1]	USDOT Equipment Type[2]	No. Equipment[1]	Acoustical Usage Factor[2]	Maximum Noise Level @ 50 feet (Lmax)[3]	Typical Noise Level @ 50 feet (dBA_1)	Reference Distance (D_1)	Distance to Receptor (D_2)	Ground Absorption Constant (G)	Noise Level at Receptor (dBA_2)	Two Noisiest Equipment
			Unit:	%	dBA Lmax	dBA Leq	feet	feet	unitless	dBA Leq	dBA Leq
Temporary Fire Station	Loader	Front End Loader	1	40	80	76	50	70	0	73	81
	Cranes	Crane	1	16	88	80	50	70	0	77	
	Excavator	Excavator	1	40	85	81	50	70	0	78	
	Concrete Mixer	Concrete Mixer	1	40	85	81	50	70	0	78	

Notes:

Noise level at the receptor calculated based on the following equation:[4]

$dBA_2 = dBA_1 + 10 * \log_{10}(D_1/D_2)^{2+G}$

Where:

dBA_2 = Noise level at receptor

dBA_1 = Noise level at reference distance

D_1 = Reference distance

D_2 = Receptor distance

G = Ground absorption constant (0 for hard surface, 0.5 for soft surface)

Combined noise levels at receptor calculated for two noisiest equipment using decibel addition:

$L = 10 * \log_{10} (10^{(L_1/10)}+10^{(L_2/10)})$

L = Combined noise level

L_1 = Noise level for first noisiest piece of equipment

L_2 = Noise level for second noisiest piece of equipment

[1] The type of construction equipment is based on construction equipment list provided by the applicant.

[2] U.S. Department of Transportation, 2006. FHWA Highway Construction Noise Handbook, Table 9.1. August.

[3] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-1. September.

[4] California Department of Transportation, 1998. Technical Noise Supplement (TeNS). Equation N-2141.2. October.

Construction Vibration Calculations for Potential Disturbance

Equipment	Typical Vibration Level @ 25 Feet[1] (RMS_1)	Reference Distance (D_1)	Receptor Distance (D2)	Vibration Level @ 150 Feet (RMS_2)
Unit	VdB	feet	feet	VdB
Vibratory Roller	94	25	150	71
Large bulldozer	87	25	150	64
Loaded trucks	86	25	150	63
Small bulldozer	58	25	150	35

Notes:

Vibration levels at a distance was calculated based on the following equation:

$RMS_2=RMS_1-30*\log_{10}(D_2/D_1)$

where

RMS_1 is the reference vibration level at a specified distance

RMS_2 is the calculated vibration level

D_1 is the reference distance

D_2 is the distance from the equipment to the receiver

Construction Vibration Calculations for Potential Building Damage

Equipment	Typical Vibration Level @ 25 Feet[1] (PPV_1)	Building Damage Vibration Threshold (PPV_2)		Reference Distance (D_1)	Buffer Distance to Damage Threshold (D_2)	
		Modern commercial buildings	Old Residential		Modern commercial buildings	Old Residential
Unit	in/sec	in/sec	in/sec	feet	feet	feet
Vibratory Roller	0.210	0.5	0.3	25	14	20
1.5-ton Vibratory Roller[3]	0.040	0.5	0.3	25	5	7
Large bulldozer	0.089	0.5	0.3	25	8	11
Loaded trucks	0.076	0.5	0.3	25	7	10
Small bulldozer	0.003	0.5	0.3	25	1	1

Notes:

Buffer distance to vibration threshold for building damage calculated based on the following equation:[2]

$D_2 = (PPV_1 / PPV_2)^{(1 / 1.5)} * D_1$

Where:

PPV_1 = Vibration level at reference distance

PPV_2 = Vibration threshold for building damage

D_1 = Reference distance

D_2 = Buffer distance to vibration threshold for building damage

[1] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Table 7-4. September.

[2] Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, Equations 7-2 and 7-3. September.

[3] Morris, D.V., Gehrig M. D., & Sweeney, S. P., Construction Vibration damage and Comparison with Theory, Texas Section of the American Society of Civil Engineers, CECON, Fall 2008

Construction Vibration Calculations for Potential Disturbance (Residential)

Equipment[1]	Typical Vibration Level @ 25 Feet[2] (RMS_1)	Annoyance Vibration Threshold (RMS_2)	Reference Distance (D_1)	Buffer Distance to Annoyance Threshold (D_2)
Unit	VdB	VdB	feet	feet
Vibratory Roller	94	80	25	73
Large bulldozer	87	80	25	43
Loaded trucks	86	80	25	40
Small bulldozer	58	80	25	5

Construction Vibration Calculations for Potential Disturbance (School)

Equipment[1]	Typical Vibration Level @ 25 Feet[2] (RMS_1)	Annoyance Vibration Threshold (RMS_2)	Reference Distance (D_1)	Buffer Distance to Annoyance Threshold (D_2)
Unit	VdB	VdB	feet	feet
Vibratory Roller	94	83	25	58
Large bulldozer	87	83	25	34
Loaded trucks	86	83	25	31
Small bulldozer	58	83	25	4

Notes:

Buffer distance to vibration threshold for human annoyance calculated based on the following equation:[3]

$D_2 = D_1 * 10^{((RMS_1 - RMS_2) / 30)}$

Where:

RMS_1 = Vibration level at reference distance

RMS_2 = Vibration threshold for human disturbance

D_1 = Reference distance

D_2 = Buffer distance to vibration threshold for human annoyance