Appendix B
Initial Study

Sacramento Municipal Utility District

Station H Substation Project

Initial Study •
November 2020

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Sacramento Municipal Utility District

Station H Substation Project

Initial Study • November 2020

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ACRONYMS AND OTHER ABBREVIATIONS

AB	Assembly Bill
BACT	Best Available Control Technology
bgs	below ground surface
BMP	best management practices
CAAQS	California Ambient Air Quality Standards
Cal EPA	California Environmental Protection Agency's
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CH_4	methane
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CRPR	California Rare Plant Ranks
CSS	combined sewer system
dB	decibels
DOC	California Department of Conservation's
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ERCS	Environmental Resources and Customer Service

ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
GHG	greenhouse gases
GIS	gas-insulated substation
H_2S	hydrogen sulfide
HFC	hydrofluorocarbons
I-5	Interstate 5
in/sec	inches per second
IPaC	Information, Planning, and Consultation System
IS	Initial Study
lbs/day	pounds per day
L_{dn}	Day-Night Level
L_{eq}	Equivalent Continuous Sound Level
MBTA	Migratory Bird Treaty Act
MMRP	mitigation monitoring and reporting program
MRZ	Mineral Resource Zones
$MTCO_2e$	metric tons of carbon dioxide equivalent
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NO_X	nitrogen oxides

NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
O_3	ozone
Pb	lead
PFC	perfluorocarbons
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
RMS	root-mean-square
ROG	reactive organic gases
RSP	Railyards Specific Plan
RWQCB	Regional Water Quality Control Board
SF_6	sulfur hexafluoride
SFD	Sacramento Fire Department
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SPD	Sacramento Police Department
SPL	sound pressure level
SQIP	Stormwater Quality Improvement Plan
SVAB	Sacramento Valley Air Basin
SVOC	semivolatile organic compounds
SWRCB	State Water Resources Control Board's
TAC	toxic air contaminants
TPH	total petroleum hydrocarbons

tpy	tons per year
UAIC	United Auburn Indian Community of the Auburn Rancheria
UPRR	Union Pacific Railroad
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tanks
VOC	volatile organic compounds

1. Introduction

1.1 Project Overview

The Sacramento Municipal Utility District (SMUD) proposes to decommission the existing Station A substation and remove all electrical-substation-related equipment from within the historic Old Folsom Powerhouse Sacramento Station A building (historic Station A building) and the outdoor substation yard. Following the removal of all Station A equipment, SMUD would construct a new electrical substation (Station H) in place of the outdoor substation along the north side of H Street between 6th Street and 7th Street in downtown Sacramento ("Station H Substation Project" or "project").

1.2 Purpose of Document

This Initial Study (IS) has been prepared by SMUD to evaluate potential environmental effects resulting from the Station H Substation Project. Chapter 2, "Project Description," presents the detailed project information.

This document has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.) and the CEQA Guidelines (California Code of Regulations [CCR] Section 15000 et seq.). Under CEQA, an IS can be prepared by a lead agency to determine if a project may have a significant effect on the environment (CEQA Guidelines Section 15063[a]), and thus to determine the appropriate environmental document. For this project, the lead agency has prepared the following analysis that identifies potential physical environmental impacts and mitigation measures that would reduce impacts to a less-than-significant level. SMUD is the lead agency responsible for complying with the provisions of CEQA.

In accordance with provisions of CEQA, SMUD is distributing this IS along with a Notice of Preparation (NOP) of an environmental impact report (EIR) to solicit comments on the scope and analysis of the EIR. The NOP will be distributed to property owners within 500 feet of the project site, as well as to the State Clearinghouse / Governor's Office of Planning and Research and each responsible and trustee agency. The IS and NOP will be available a 30-day scoping period during which time comments may be submitted to SMUD. The scoping period begins on November 4, 2020 and ends on December 8, 2020.

If you wish to send written comments (including via e-mail), they must be received by close of business on December 8, 2020. Written comments should be addressed to:

SMUD–Environmental Services
P.O. Box 15830 MS B209
Sacramento, CA 95852-1830
Attn: Rob Ferrera

E-mail comments may be addressed to rob.ferrera@smud.org. If you have questions regarding the IS or NOP, please call Rob Ferrera at (916) 732-6676.

Digital copies of the IS and NOP are available on the internet at: https://www.smud.org/CEQA. Hardcopies of the IS and NOP are available for public review at the following locations:

Sacramento Municipal Utility District
Customer Service Center
6301 S St.
Sacramento, CA 95817

Sacramento Municipal Utility District
East Campus Operations Center
4401 Bradshaw Road
Sacramento, CA 95827

1.3 CEQA Process

The purpose of an NOP is to provide sufficient information about the project and its potential environmental impacts to allow agencies and interested parties the opportunity to provide a meaningful response related to the scope and content of the EIR, including mitigation measures that should be considered and alternatives that should be addressed (CCR Section 15082[b]). Comments submitted in response to the NOP are used by the lead agency to identify broad topics to be addressed in the EIR. Comments on environmental issues received during the NOP public comment period are considered and addressed, where appropriate, in the Draft EIR

The Draft EIR will be released for a 45-day public review period during which time agencies and individuals may submit written comments regarding the Draft EIR. Following public review of the Draft EIR, a Final EIR will be prepared that will include both written and oral comments on the Draft EIR that were received during the public review period. The Final EIR will also include responses to those comments and any revisions to the Draft EIR.

Before taking action on the project, the lead agency is required to certify that the EIR has been completed in compliance with CEQA, that the decision-making body reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the lead agency.

1.4 SMUD Board Approval Process

The SMUD Board of Directors must certify the EIR and approve the mitigation monitoring and reporting program (MMRP) before it can approve the project. Prior to that, the project and relevant environmental documentation will be formally presented at a SMUD Environmental Resources and Customer Service (ERCS) Committee meeting for consideration, discussion, and recommendation to the Board. The SMUD Board of Directors will then consider certification of the EIR and adoption of the MMRP at its next regular meeting. Meetings of the SMUD Board of Directors are generally held on the third Thursday of each month.

1.5 Document Organization

This IS is organized as follows:

Chapter 1: Introduction. This chapter provides an introduction to the environmental review process and describes the purpose and organization of this document.

Chapter 2: Project Description. This chapter provides a detailed description of the project.

Chapter 3: Environmental Checklist. This chapter presents an analysis of a range of environmental issues identified in the CEQA Environmental Checklist and determines if the project would result in no impact, a less-than-significant impact, a less-than-significant impact with mitigation incorporated, or a potentially significant impact. Where needed to reduce impacts to a less-than-significant level, mitigation measures are presented.

Chapter 4: List of Preparers. This chapter lists the organizations and people that prepared the document.

Chapter 5: References. This chapter lists the references used in preparation of this Draft IS.

1.6 Environmental Factors Potentially Affected

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

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☒ Cultural Resources	☐ Geology / Soils
☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☐ Hydrology / Water Quality
☐ Land Use / Planning	☐ Mineral Resources	☐ Noise
☐ Population / Housing	☐ Public Services	☐ Recreation
☐ Transportation / Traffic	☒ Tribal Cultural Resources	☐ Utilities / Service Systems
☐ Mandatory Findings of Significance	☐ None With Mitigation	

1.7 Determination

On the basis of this initial evaluation:

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

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

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

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
	November 2, 2020
Rob Ferrera	Environmental Specialist
Printed Name	Title
Sacramento Municipal Utility District	
Agency	

2. Project Description

2.1 Introduction

SMUD's Station A electrical substation is near the end of its service life and is being replaced by the new Station G electrical substation currently under construction on an adjacent property. Upon completion of Station G, SMUD is proposing to decommission Station A and remove all electrical substation related equipment from within the historic Old Folsom Powerhouse Sacramento Station A building (historic Station A building) and the outdoor substation yard. Following the removal of all Station A equipment, SMUD would construct a new electrical substation (Station H) in place of the outdoor substation along the north side of H Street between 6th Street and 7th Street in downtown Sacramento ("Station H Substation Project" or "project").

The historic Station A building would be completely isolated from the new Station H and would continue to be used for storage of electric equipment. Station H would include two 115kV underground transmission lines, two 115/21kV transformers, a 21kV main-tie-main switchgear metal building structure, a control building, and a canopy structure between the new Station H substation yard and the historic Station A building. Station H's 115kV lines would tie into the new Station G currently under construction across Government Alley north of the site.

2.2 Project Objectives

In 2015, SMUD completed an IS/MND for the Station A Relocation and Rebuild Project which did not include plans for future use of the historic Station A building or substation yard following final construction of Station G. This project includes the future plans not known at that time and not evaluated in that IS/MND. The CEQA objectives for the project include:

- provide safe and reliable electrical service to existing and proposed development in the downtown Sacramento area;
- meet SMUD's goals of ensuring electrical service reliability in the downtown Sacramento area by 2024;
- provide greater operational flexibility between circuits and substations in the area;
- maximize the use of available SMUD property and resources;
- minimize impacts to nearby sensitive receptors; and,
- minimize potential conflicts with existing planning efforts within the City of Sacramento.

2.3 Project Location

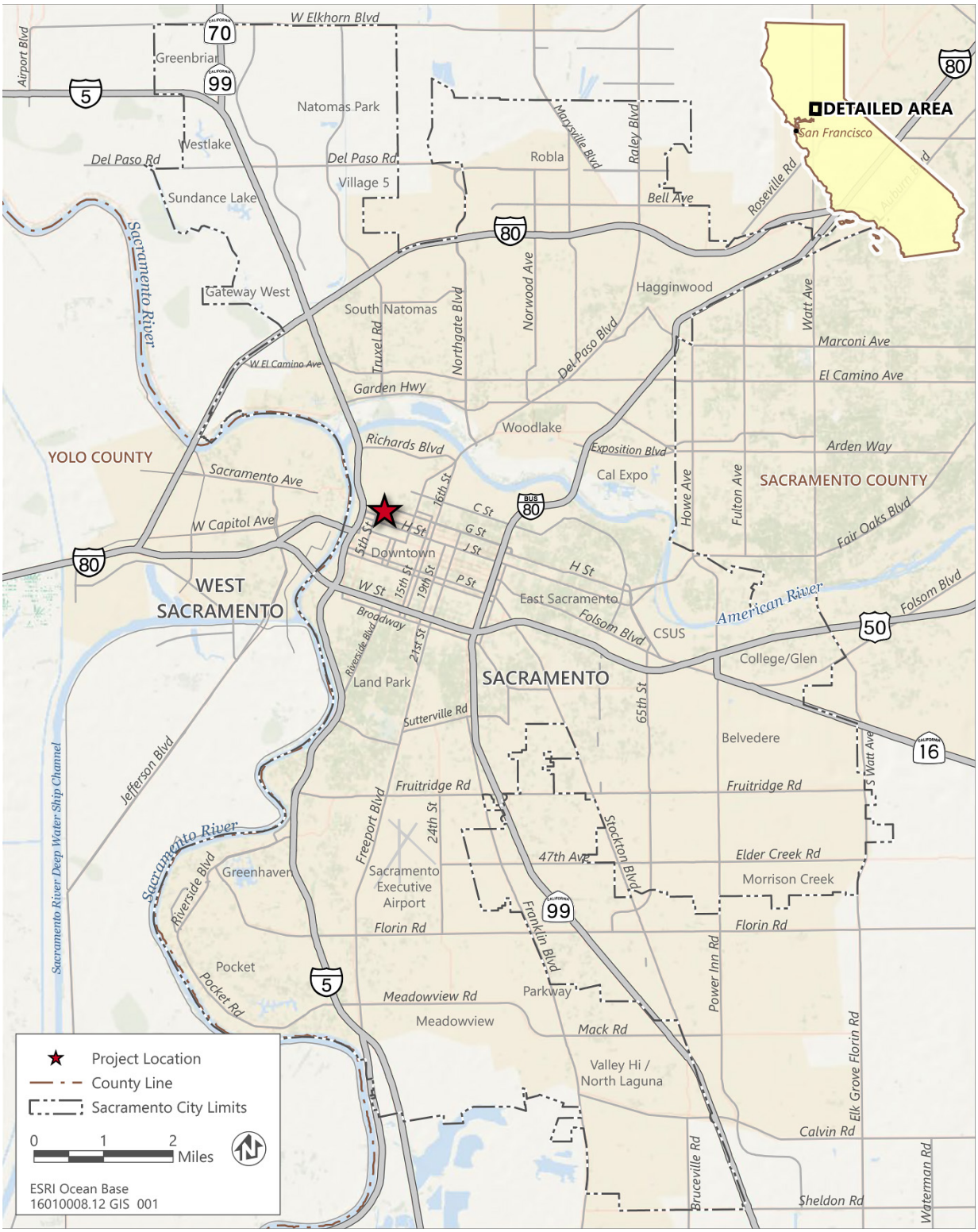
The project would be located at the northeast corner of 6th Street and H Street in downtown Sacramento (See Figure 2-1). The project site is bordered by H Street to the south, 6th Street to the west, Government Alley to the north, and the Mercy Housing 7th & H Housing Community (Mercy Housing Community) to the east. Construction staging is not yet known but is assumed to be within one mile of the project site and would be located on an existing paved area (e.g., surface parking lot). As shown in Figure 2-2, much of the project site is currently occupied by Station A equipment and the historic Station A building, which is a California Historical Landmark.

The project is located in a highly developed area of downtown Sacramento. Sacramento County municipal buildings near the project site include the Sheriff's Department, Recorder's Office, Department of Technology, courthouse, jail, Administration Center, and two parking garages. The Mercy Housing Community is directly adjacent to the eastern edge of the project site. The Mercy Housing Community includes retail and clinic space on the ground floor with 150 residential units spread across seven stories. The Mercy Housing Community also includes two large landscaped terraces on the second floor. SMUD's Station G substation is currently under construction directly north of the project site across Government Alley and is within the boundary of the Railyards Specific Plan area. The privately-owned Hall of Justice Building is across the street to the south and the U.S. District Court is across the street to the southwest. The historic Rail Depot and Sacramento Intermodal Transportation Facility are located approximately 800 feet to the west.

2.4 Project Description

With the City of Sacramento's continued implementation of both the Central City Specific Plan and the Railyards Specific Plan Environmental Impact Report (EIR), maintaining SMUD's ability to provide reliable electrical service within the downtown and the surrounding area is essential. The project involves the decommissioning and removal of outdated Station A equipment that is currently present at the project site and replacing existing equipment within the outdoor area between the historic Station A building and the Mercy Housing Community to the east with new outdoor substation equipment.

As part of the decommissioning of Station A, SMUD would remove and dismantle existing substation equipment, including protection and control equipment within the historic Station A building and transformers and switchgear within the outdoor switchyard. Decommissioning activities would also include the removal of oil pump equipment from within the historic Station A building. Equipment from inside the historic Station A building would be removed through existing doorways and no modifications to the structure would occur. Some equipment may need to be dismantled prior to removal. Additionally, two existing underground 115 kV lines located within the Government Alley to the north of the site would be abandoned in place.



Source: adapted by Ascent Environmental in 2020

Figure 2-1. Project Vicinity

Source: adapted by Ascent Environmental in 2020

Figure 2-2. Project Site

Once equipment associated with Station A has been decommissioned and the existing yard has been cleared, new equipment would be assembled and installed on site. The proposed substation would include two 115kV underground transmission lines, two 115/21kV transformers, a 21kV main-tie-main switchgear metal building structure with three feeder breakers per bay, and a control building. Station H would tie into the new Station G (currently under construction) via two new 115kV lines to be located within Government Alley, immediately north of the project site. The proposed electrical equipment to be located on site is anticipated to be no taller than existing Station A equipment currently located at the site, which is approximately 26 feet.

A canopy structure is proposed to be located between the new Station H substation yard and the historic Station A building. The canopy would be approximately the same height as the existing equipment in the outdoor area with a maximum height expected to be approximately 26 feet in height at its tallest point. The canopy roof would be angled and is designed to shield the control building in the event that bricks fall from the exterior of the Station A building.

2.4.1 Project Operation

Operation and access of the new substation generally would be similar to the existing Station A substation yard. Maintenance workers and other SMUD employees would periodically access the site through Government Alley. The historic Station A building would remain unoccupied; however, SMUD maintenance employees would visit the building approximately twice per month to conduct routine checks and maintenance.

2.4.2 Project Construction

Station H would include two 115kV underground transmission lines, two 115/21kV transformers, a 21kV main-tie-main switchgear with three feeder breakers per bay, and a control building. Two new 115kV lines would be installed beneath Government Alley to connect Station H to Station G. Excavation associated with construction of these new connections and installation of new equipment would reach a depth of 15 to 30 feet below ground surface, though piles needed for seismic support could go as deep as 55 feet. SMUD anticipates excavation and removal of existing soil and import of backfill to re-establish grade within the site, though removal and import volumes are not yet known. Lighting within the project site would consist of new light-emitting diode light sources. Lighting fixtures would be selected to complement the proposed site function and surrounding visual character.

Project construction activities would also include removal of the existing concrete block wall, located along H Street, and replacement with a new wall that would shield views of the new equipment from H Street. Some features within the new Station H yard may help shield views from the adjacent Mercy Housing Community.

Construction equipment and materials staging area would be located within nearby vacant land. While the staging areas have not yet been identified and would be identified by the contractor based on availability at the time, it is assumed that staging areas would be within one mile of the project site. During construction, access to the project site would be maintained, with the primary access point for construction equipment, deliveries, and workers located from Government Alley to avoid potential conflicts with Light Rail trains along H Street. Therefore, construction activities would require a temporary closure of Government Alley.

Construction would require an average daily worker population of approximately 10 workers, with a peak of approximately 30 workers during peak construction activities associated with on-site demolition, excavation, and heavy equipment deliveries and installations.

2.4.3 Project Schedule

The decommissioning of Station A is anticipated to begin in the second half of 2022 and would be completed by early 2023. The construction of Station H is anticipated to begin soon after the decommission of Station A and would be completed in 2024. Construction intensity and hours would be in accordance with the City's Noise Ordinance, contained in Title 8, Chapter 8.68 of the Sacramento City Code. Construction would be limited to the hours between 7 a.m. and 6 p.m. Monday through Saturday, and between the hours of 9 a.m. and 6 p.m. on Sunday.

2.5 Potential Permits and Approvals Required

Elements of the project could be subject to permitting and/or approval authority of other agencies. As the lead agency pursuant to CEQA, SMUD is responsible for considering the adequacy of the CEQA documentation and determining if the project should be approved. Other potential permits required from other agencies could include:

State

- **California Department of Transportation**: Permits for movement of oversized or excessive loads on State Highways.

Local

- **Sacramento Metropolitan Air Quality Management District (SMAQMD)**:Authority to Construct/Permit to Operate pursuant to SMAQMD Regulation 2 (Rule 201 et seq.).

- **City of Sacramento**:
  - Tree removal permit—to comply with the City of Sacramento Tree Ordinance
  - Transmission Facilities Permit – to comply with Sacramento City Code requirements
  - Building permits—to comply with Sacramento City Code requirements
  - Encroachment permit
  - Improvement Plans
  - Grading Permit
  - Design Review
- **County of Sacramento**: connection to the sewer system

3. Environmental Impact Evaluation

3.0 Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-Than-Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less-than-significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a) Earlier Analysis Used. Identify and state where they are available for review.

    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

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

9. The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and

   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

3.1 Aesthetics

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
I. Aesthetics				
Except as provided in Public Resources Code section 21099 (where aesthetic impacts shall not be considered significant for qualifying residential, mixed-use residential, and employment centers), 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?	☐	☐	☒	☐

3.1.1 Environmental Setting

The project site includes the historic Station A building and the adjacent outdoor yard that houses transformers and switchgear equipment. The historic Station A building is a 3-story building with a brick exterior. The historic Station A building is situated at the northeast corner of the intersection of 6th Street and H Street, with the building spanning the length between H Street and Government Alley. An 8-foot cinderblock wall separates the substation yard from the sidewalk along H Street, and there are two swinging chain link gates for site access. Along the north side of the site along Government Alley, there is an 8-foot tall chain link fence with sliding gates to permit site access. Along the eastern edge of the project site, there is a 30-foot tall brick wall separating the project site from the adjacent Mercy Housing Community. The transformers and switchgears in the substation yard are visible above the fencing along H Street and Government Alley.

As previously described in Section 2.0, “Project Description,” surrounding uses consist of Sacramento County municipal buildings including the Sheriff's Department, Recorder’s Office, Department of Technology, courthouse, jail, Administration Center, two parking garages, a parking lot under construction for development of Substation E, the Hall of Justice Building, and the U.S. District Court is across the street to the southwest. Additionally, the historic Rail Depot and Sacramento Intermodal Transportation Facility are located approximately 800 feet west of the project site.

Surrounding structures range in size, height, and character. The visual character of the nearby uses is typical of the downtown area, which includes a variety of State and private business buildings, public transit and parking infrastructure, and residential housing. Scenic resources within the project vicinity include the historic Station A building, which is within the project site. Distant views towards the coast ranges or the Sierra Nevada foothills are largely limited due to existing surrounding buildings and the developed nature of the project area.

3.1.2 Discussion

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

Less than Significant. A scenic vista is generally defined as a distant public view along or through an opening or corridor that is recognized and valued for its scenic quality, or a natural or cultural resource that is indigenous to the area. The *Sacramento 2035 General Plan Update* designates the American River and Sacramento River, including associated parkways, the State Capitol (as defined by the Capitol View Protection Ordinance), and important historic structures listed on the Sacramento Register of Historic and Cultural Resources, California and/or National Registers as scenic resources (City of Sacramento 2014a:4.13-4). The closest scenic resource to the project site is the historic Station A building, located within the project site. As described above, while interior equipment would be removed from the building, the project would not include any substantial adverse alterations to the building's interior and no modifications to the structure's exterior. Once project construction is complete, the building would be maintained and regularly inspected by SMUD personnel. The existing perimeter fencing would be replaced with similar fencing along both H Street and Government Alley and would be reviewed by the City of Sacramento to ensure consistency of aesthetic condition.

Existing development within the project area limits long-distance views in the project area. Further, the existing on-site development and fencing largely precludes views of and through the project site, and conditions would not change with implementation of the project, which would replace the existing fencing and outdoor substation equipment. Views in the vicinity of the project site are short- to mid-range and typical reflect the urban character of the surroundings, which are not considered scenic vistas. As the replacement equipment would be in the same location as the existing equipment and would be of similar mass and scale, the project would not further impede long-distance views in the area. Therefore, the project would have a ***less-than-significant*** impact on scenic vistas, and no mitigation is required.

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

No Impact. Though a small portion of Interstate 5 (I-5) is designated as a scenic highway, the segment of I-5 located near the project site is not designated as a state scenic highway. The nearest designated scenic roadway is Route 160, approximately 8 miles

south of the project area (Caltrans 2019). Because there are no designated state scenic highways within, adjacent to, or visible from the project area, the project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. The project would have **no impact**, and no mitigation is required.

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?

Less than Significant. During project construction, views in the project area along H Street and from north of the project site would be modified as a result of the presence of construction equipment and activities. However, the appearance of construction equipment and activities would be temporary, and once construction activities are complete, the project site would appear similar to existing conditions. Additionally, the project proposes to remove and rebuild the existing cinder block wall along H Street which would provide additional screening of electrical equipment at the site to protect public and nearby residential views of the project area. As noted previously, the replacement wall would undergo design review with the City of Sacramento prior to wall construction. The project site is currently zoned as C-3 – Central Business District Zone, which includes intense residential, retail, commercial, and office developments within the City. The project does not propose any zoning changes and project uses would be consistent with existing site uses. Therefore, the project would not conflict with any zoning or scenic quality regulations. Because impacts would be largely limited to construction, and the project would be minimally visible during operation, the project would have a ***less-than-significant*** impact related to a scenic quality, and no mitigation is required.

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

Less than Significant. Construction activities would occur during daylight hours and would not require nighttime lighting. Construction equipment is unlikely to have reflective surfaces, other than what is required for safety purposes, and would not be a substantial source of glare in the area. During project operation, exterior lighting would be present at the site for security purposes but would be angled downward and away from nearby multifamily residences. Lighting at the project site as a result of project implementation would be similar to existing security lighting present at the project site. This minimal security lighting is not anticipated to adversely affect nighttime view in the project area. Therefore, the project would have a ***less-than-significant*** impact related to light and glare, and no mitigation is required.

3.2 Agriculture and Forestry Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
II. Agriculture and Forest Resources.				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department 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?				

3.2.1 Environmental Setting

The project site is located in a highly developed, urban area of downtown Sacramento, and the project site is identified as urban and built-up land by the California Department of Conservation's (DOC's) Farmland Mapping and Monitoring Program (FMMP) (DOC 2017). No agricultural land or operations are located on or adjacent to the project site.

No portions of the project site or adjacent parcels are held under Williamson Act contracts (DOC 2015).

There are no areas either within or adjacent to the project site that are zoned as forestland, timberland, or Timberland Production Zone (City of Sacramento 2019).

3.2.2 Discussion

a-e) 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 uses; conflict with existing zoning for agricultural use, or a Williamson Act contract; 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)); result in the loss of forest land or conversion of forest land to non-forest use; or involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The project site does not contain any lands designated as Important Farmland (i.e., Prime Farmland, Unique Farmland, or Farmland of Statewide Importance) or zoned as forest land or timberland. As noted above, there are no active agricultural operations within or near the project site, and there are no Williamson Act contracts associated with the project site. No existing agricultural or timber-harvest uses are located on or near the project site. Therefore, the project would have ***no impact*** on agriculture or forest land, and no mitigation is required.

3.3 Air Quality

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
III. Air Quality.				
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied on to make the following determinations.				
Are significance criteria established by the applicable air district available to rely on for significance determinations?		☒ Yes		☐ No
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?	☐	☐	☒	☐

3.3.1 Environmental Setting

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants, which are known to be harmful to human health and the environment. These pollutants are: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (which is categorized into particulate matter less than 10 microns in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]), and sulfur dioxide (SO_2). The State of California has also established the California Ambient Air Quality Standards (CAAQS) for these six pollutants, as well as sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles. NAAQS and CAAQS were established to protect the public with a margin of safety, from adverse health impacts caused by exposure to air pollution. A brief description of the source and health effects of criteria air pollutants is provided below in Table 3.3-1.

Table 3.3-1 Criteria Air Pollutants

Pollutant	Sources	Effects
Ozone	Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG), also sometimes referred to as volatile organic compounds by some regulating agencies) and nitrogen oxides (NO_X). The main sources of ROG and NO_X, often referred to as ozone precursors, are products of combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels.	Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.
Carbon monoxide	CO is usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicle engines; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration.	Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue; impair central nervous system function; and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal.
Particulate matter	Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect.	Scientific studies have suggested links between fine particulate matter and numerous health problems, including asthma, bronchitis, and acute and chronic respiratory symptoms, such as shortness of breath and painful breathing. Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air.
Nitrogen dioxide	NO_2 is a reddish-brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2.	Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility.
Sulfur dioxide	SO_2 is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel.	SO_2 is also a precursor to the formation of particulate matter, atmospheric sulfate, and atmospheric sulfuric acid formation that could precipitate downwind as acid rain.
Lead	Leaded gasoline, lead-based paint, smelters (metal refineries), and the manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere, with lead levels in the air decreasing substantially since leaded gasoline was eliminated in the United States.	Lead has a range of adverse neurotoxic health effects.

Sources: EPA 2019
Notes: CO=carbon monoxide; NO_2= nitrogen dioxide; NO_x=nitrogen oxides; ROG-=reactive organic gases; SO_2=sulfur dioxide

The project site is located in Sacramento County which is within the Sacramento Valley Air Basin (SVAB). The SVAB encompasses Butte, Colusa, Glenn, Tehama, Shasta, Yolo, Sacramento, Yuba, and Sutter Counties and parts of Placer, El Dorado, and Solano Counties. The SVAB is bounded on the north and west by the Coast Ranges, on the east by the southern portion of the Cascade Range and the northern portion of the Sierra Nevada, and on the south by the San Joaquin Valley Air Basin. Sacramento County is currently designated as nonattainment for both the federal and State ozone standards, the federal $PM_{2.5}$ standard, and the State PM_{10} standard. The region is designated as in attainment or unclassifiable for all other federal and State ambient air quality standards. (CARB 2019).

The Sacramento Metropolitan Air Quality Management District (SMAQMD) is the local agency responsible for air quality planning and development of the air quality plan in the project area. SMAQMD maintains an updated plan for achieving the State and federal ozone standards that was updated and approved by the SMAQMD Board and the California Air Resources Board (CARB) in 2017. There are currently no plans available for achieving the federal $PM_{2.5}$ or State PM_{10} standards. The air quality plan establishes the strategies used to achieve compliance with the NAAQS and California Ambient Air Quality Standard (CAAQS) in all areas within SMAQMD's jurisdiction. SMAQMD develops rules and regulations and emission reduction programs to control emissions of criteria air pollutants, ozone precursors (oxides of nitrogen [NO_X] and reactive organic gases [ROGs]), toxic air contaminants (TACs), and odors within its jurisdiction.

SMAQMD published the *Guide to Air Quality Assessment in Sacramento County,* which provides air quality guidance when preparing CEQA documents. This document was last updated in April 2020. SMAQMD's guide establishes thresholds of significance for criteria air pollutants that SMAQMD recommends using when evaluating air quality impacts in Sacramento County. CEQA-related air quality thresholds of significance are tied to achieving or maintaining attainment designation with the NAAQS and CAAQS, which are scientifically substantiated, numerical concentrations of criteria air pollutants considered to be protective of human health. As such, for the purposes of this project, the following thresholds of significance are used to determine if project-generated emissions would produce a significant localized and/or regional air quality impact such that human health would be adversely affected.

Per SMAQMD recommendations, air quality impacts are considered significant if the project would result in any of the following:

- Construction-generated emissions of NO_X exceeding 85 pounds per day (lbs/day), PM_{10} exceeding 80 lbs/day or 14.6 tons per year (tpy), or $PM_{2.5}$ exceeding 82 lbs/day or 15 tpy;

- Operational emissions of ROG exceeding 65 lb/day, NO_X exceeding 65 lb/day, PM_{10} exceeding 80 lb/day or 14.6 tons per year (tpy), or $PM_{2.5}$ exceeding 82 lb/day or 15 tpy;

- CO emissions that would violate or contribute substantially to concentrations that exceed the 1-hour CAAQS of 20 parts per million (ppm) or the 8-hour CAAQS of 9 ppm during construction and operations;

- Expose any off-site sensitive receptor to a substantial incremental increase in TAC emissions that exceed 10 in one million for carcinogenic risk (i.e., the risk of contracting cancer) and/or a noncarcinogenic hazard index of 1.0 or greater; or

- Create objectional odors affecting a substantial number of people.

In addition to these thresholds, all SMAQMD-recommended best management practices (BMPs) and use of Best Available Control Technology (BACT) shall be implemented to minimize emission of PM_{10} and $PM_{2.5}$. Without the application of BMPs and BACT, the threshold for PM_{10} and $PM_{2.5}$ during construction and operations is zero pounds per day.

3.3.2 Discussion

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

Less than Significant with Mitigation Incorporated. As discussed previously, SMAQMD developed thresholds of significance for air quality impacts in consideration of achieving attainment for the NAAQS and CAAQS, which represent concentration limits of criteria air pollutants needed to adequately protect human health. Operational activities associated with the project would include only occasional maintenance and repair similar to the current operation of Station A. Operational emissions from the project would be negligible and similar, if not less, than existing conditions. The project does not include any land uses or operational emission sources that would result in substantial increases in operational vehicle trips. Thus, long-term operational emissions of criteria air pollutants and precursors were not estimated. Long-term operational emissions would not violate or substantially contribute to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations such that adverse health impacts would occur. Therefore, the project's contribution to operational criteria pollutants and precursors would not contribute to the exceedance of the NAAQS or CAAQS in the County nor result in greater health impacts compared to existing conditions. The project would be consistent with all applicable air quality plans for which these thresholds of significance were developed to support.

Construction activities would result in temporary generation and emissions of criteria air pollutants and precursors. Construction-related emissions were estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2 computer program in accordance with recommendations by SMAQMD and other air districts (CAPCOA 2016). Modeling was based on project-specific information, where available; reasonable assumptions based on typical construction activities; and default values in CalEEMod that are based on the project's location and land use type.

Decommission of Station A is anticipated to occur beginning in the second half of 2022 and finishing in early 2023; however, this action would not result in any earth moving activity as part of the project. Trenching, installation of equipment, and construction of Station H is anticipated to occur over a 12-month period commencing in early 2023 and completed in 2024.

Construction-related activities would result in project-generated emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ from construction activities (e.g., site preparation, trenching, conduit duct bank installation), off-road equipment, material delivery, and worker commute trips. Fugitive dust emissions of PM_{10} and $PM_{2.5}$ are associated primarily with site preparation and trenching, and vary as a function of soil silt content, soil moisture, wind speed, acreage of disturbance, and vehicle miles traveled on and off the site. Emissions of ozone precursors, ROG and NO_X, are associated primarily with construction equipment and on-road mobile exhaust. Paving results in off-gas emissions of ROG. Construction activities associated with the project would likely require the use of forklifts, cranes, excavators, rubber tiered dozers, paving equipment, rollers, concrete trucks, and generators, as well as other diesel-fueled equipment as necessary. Although exact construction schedules are not known at this time, construction was assumed to be spread over three phases: excavation, installation of electrical equipment, and construction of Station H.

It should be noted that as construction continues into the future, equipment exhaust emission rates would decrease as newer, more emission-efficient construction equipment replaces older, less efficient equipment. As noted in the project description, the project would adhere to strict daily construction hours to reduce interference with surrounding land uses and traffic patterns to the extent feasible. The construction analysis assumes that all construction equipment would be used for eight hours each day. Due to the strict timeframe during which project construction activities would occur, however, the actual daily usage of each construction equipment is expected to be less than eight hours. As such, reported emissions represent a conservative estimate of maximum daily emissions during the construction period. For assumptions and modeling inputs, refer to Appendix A.

Table 3.3-2 summarizes the modeled maximum daily emissions for all pollutants and annual emissions for particulate matter from construction activity without the application of BMPs and BACTs.

Table 3.3-2 Summary of Unmitigated Emissions Generated During Project Construction by Year

	Maximum Daily Emissions (lbs/day)				Annual Emissions (tons/year)	
	ROG	NO_X	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
2023	2	20	7	4	<1	<1
2024	2	11	1	<1	<1	<1
SMAQMD Threshold of Significance[a]	None	85	0	0	14.6	15
Exceeds Threshold?	No	No	Yes	Yes	No	No

Notes:
ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; lbs/day = pounds per day; SMAQMD = Sacramento Metropolitan Air Quality Management District
[a.] Represents SMAQMD Threshold of Significance without the application of Best Management Practices (BMPs) and Best Available Control Technology (BACT).
Maximum daily emissions represent overlapping construction phases. See Appendix A for details.
Source: Modeled by Ascent Environmental in 2020

As shown in Table 3.3-2, project construction would not generate emissions in excess of the SMAQMD thresholds for ROG and NO_X, nor would it result in a significant increase in annual emissions of PM_{10} and $PM_{2.5}$. However, the project, without the application of BMPs and BACT, would generate daily emissions of PM_{10} and $PM_{2.5}$ in excess of the SMAQMD thresholds during construction activities. Therefore, the impact of construction activities would be potentially significant.

Mitigation Measure 3.3-1: Implement SMAQMD Basic Construction Emission Control Practices.

During construction, the contractor shall comply with and implement SMAQMD's Basic Construction Emission Control Practices, which includes SMAQMD-recommended BMPs and BACT, for controlling fugitive dust emissions. Measures to be implemented during construction include the following:

- Water all exposed surfaces at least two times daily. Exposed surfaces include, but are not limited to, soil piles, graded areas, unpaved parking areas, staging areas, and access roads.

- Cover or maintain at least two (2) feet of freeboard space on haul trucks transporting soil, sand, or other loose material on the site. Cover any haul trucks that will be traveling along freeways or major roadways.

- Use wet power vacuum street sweepers to remove any visible track-out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.

- Limit vehicle speed on unpaved roads to 15 miles per hour.
- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (required by California Code of Regulations Title 13, Sections 2449[d][3] and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. Equipment will be checked by a certified mechanic and determined to be running in proper condition before it is operated.

Implementation of Mitigation Measure 3.3-1 would be considered application of BMPs and BACT and would result in the project generating emissions less than the SMAQMD thresholds for all pollutants, as shown in Table 3.3-3.

Table 3.3-3 Summary of Mitigated Emissions Generated During Project Construction by Year

	Maximum Daily Emissions (lbs/day)				Annual Emissions (tons/year)	
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**
2023	2	20	4	3	<1	<1
2024	1	11	1	1	<1	<1
SMAQMD Threshold of Significance	None	85	80	82	14.6	15
Exceeds Threshold?	No	No	No	No	No	No

Notes:
ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; lbs/day = pounds per day; SMAQMD = Sacramento Metropolitan Air Quality Management District
Maximum daily emissions represent overlapping construction phases. See Appendix A for details.
Source: Modeled by Ascent Environmental in 2020

With implementation of Mitigation Measure 3.3-1, short-term construction emissions of criteria air pollutants and precursors would not violate or substantially contribute to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations such that adverse health impacts would occur. As discussed previously, SMAQMD developed these thresholds in consideration of achieving attainment for the NAAQS and CAAQS, which represent concentration limits of criteria air pollutants needed to adequately protect human health. Therefore, implementation of Mitigation Measure 3.3-1 would reduce the impact of emissions generated during construction activities to a ***less-than-significant*** level.

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?

Less than Significant with Mitigation Incorporated. Construction of the project would result in emissions of criteria air pollutants, while project operational emissions would be negligible. Sacramento County is currently in nonattainment for federal and State ozone, State PM_{10}, and federal $PM_{2.5}$. Ozone impacts are the result of cumulative emissions from numerous sources in the region and transport from outside the region. Ozone is formed in chemical reactions involving NO_X, ROG, and sunlight. Particulate matter also has the potential to cause significant local problems during periods of dry conditions accompanied by high winds, and during periods of heavy earth disturbing activities. Particulate matter (PM_{10} and $PM_{2.5}$) may have cumulative local impacts if, for example, several unrelated grading or earth moving activities are underway simultaneously at nearby sites. This impact would be potentially significant.

Implementation of Mitigation Measure 3.3-1 (above) would reduce project construction emissions and ensure that project related emissions of NO_X, ROG, PM_{10}, and $PM_{2.5}$ would not exceed SMAQMD thresholds during construction activities. The project would implement SMAQMD BMPs and BACT to reduce fugitive dust emissions to the extent feasible. Construction emissions would be temporary and would not be generated following the completion of project construction. No long-term emissions would be generated during project operations. Therefore, with mitigation, short-term project-generated construction emissions and long-term operational emissions would not be cumulatively considerable, and impacts would be ***less than significant***.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant. Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, schools, hospitals, playgrounds, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and the potential for increased and prolonged exposure of individuals to pollutants.

Construction-related activities would result in temporary, intermittent emissions of diesel particulate matter (PM) from the exhaust of off-road, heavy-duty diesel equipment. For construction-activity, diesel PM is the primary TAC of concern. The potential cancer risk from inhaling diesel PM outweighs the potential for all other diesel PM—related health impacts (i.e. noncancer chronic risk, short-term acute risk) and health impacts from other TACs (CARB 2003). Diesel PM is highly dispersive and can be estimated to decrease by approximately 70 percent at a distance of 500 feet from the source (Zhu et. al 2002).

The project is located adjacent to sensitive receptors including the Mercy Housing Community to the east. Construction would occur over approximately 12 months. In addition, SMUD would implement Mitigation Measure 3.3-1 to reduce emissions. Because the exposure duration would be substantially shorter (3 percent) than the exposure period used for typical health risk calculations (i.e., 30 years), the project's short-term construction activities would not expose sensitive receptors to prolonged TAC concentrations.

Based on emission modeling, maximum daily emissions of exhaust PM_{10} would not exceed one (1) lb/day during construction and would be further reduced with the application of Mitigation Measure 3.3-1. As noted previously, these estimates represent a conservative analysis and would only occur nearby each sensitive receptor during a short period of time. The project would not generate emissions during operations. This impact would be ***less than significant***, and no mitigation is required.

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

Less than Significant. Minor odors from the use of heavy-duty diesel equipment and the laying of asphalt during project construction activities would be intermittent and temporary and would dissipate rapidly from the source within an increase in distance. Therefore, project construction is not anticipated to result in an odor-related impact. Project operation would not include activities that typically generate odors, such as wastewater treatment facilities, sanitary landfills, composting facilities, petroleum refineries, chemical manufacturing plants, or food processing facilities. Activities associated with project operation would be limited and would not generate odors. Implementation of the project would not result in exposure of a substantial number of people to objectionable odors. Thus, this impact would be ***less than significant***, and no mitigation is required.

3.4 Biological Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
IV. Biological Resources.				
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the 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, or regulations or by the California Department of Fish and Wildlife or the U.S. 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?	☐	☐	☐	☒

3.4.1 Environmental Setting

This section describes biological resources on the project site and evaluates potential impacts to these resources as a result of project implementation. To determine the biological resources that may be subject to impacts from the project, Ascent biologists reviewed several existing data sources including:

- California Natural Diversity Database (CNDDB) (CDFW 2020);
- California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (CNPS 2020);

- U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Consultation System (IPaC) (USFWS 2020a); and

- USFWS National Wetlands Inventory (USFWS 2020b).

Vegetation and Habitat Types

The project site is located in a highly developed area with residential and commercial land uses around it. The project site is predominantly flat with approximately one foot in elevation change across the site. There is no vegetation within the project site as it is an active electrical substation. Vegetation adjacent to the project site consists of street trees and sidewalk landscaping along H Street. Trees along H Street include sweetgum (*Liquidambar styraciflua*), box elder (*Acer negundo*), and flowering almond (*Prunus* spp.). Sidewalk landscaping areas are covered with periwinkle (Vinca minor).

Special-status Species

Special-status species are plants and animals that are legally protected under the Endangered Species Act (ESA), California Endangered Species Act (CESA), the California Fish and Game Code, or local plans, policies, and regulations or that are otherwise considered sensitive by federal, state, or local resource conservation agencies. For this IS, special-status species are defined as:

- Listed or proposed for listing as threatened or endangered under the federal ESA.

- Designated as a candidate for listing as threatened or endangered under ESA.

- Listed, proposed for listing, or a candidate for listing as threatened or endangered under CESA.

- Listed as fully protected under the California Fish and Game Code.

- Animals identified by California Department of Fish and Wildlife (CDFW) as species of special concern.

- Plants considered by CDFW to be “rare, threatened or endangered in California” (California Rare Plant Ranks [CRPR] of 1A, presumed extinct in California; 1B, considered rare or endangered in California and elsewhere; 2A, presumed extinct in California, but more common elsewhere; and 2B, considered rare or endangered in California but more common elsewhere. While these rankings do not afford the same type of legal protection as ESA or CESA, the rarity of these species requires special consideration under CEQA.

- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA Guidelines Section 15125 [c]) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G).

- taxa (i.e., taxonomic categories or groups) that meet the criteria for listing, even if not currently included on any list, as described in California Code of Regulations (CCR) Section 15380 of the State CEQA Guidelines;

Based on a review of existing data sources (CNDDB 2020, CNPS 2020, USFWS 2020a), 26 special-status wildlife species and 18 special-status plant species have potential to occur in the project area. Species ranges and habitat requirements were examined for these species. The project site does not contain habitat suitable for any of the species and/or is not within the range of the species. Therefore, it was determined that no special-status plant species are expected to occur on the project site. Refer to Appendix B for additional detail. The project site, however, is adjacent to potentially suitable habitat (landscape trees) for Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*) and native bird species that do not have a special-status designation but are afforded protection under state law. No other special-status wildlife is expected to occur on the project site due to lack of habitat suitable for those species.

3.4.2 Discussion

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?

Less than Significant with Mitigation Incorporated. Ground disturbance and staging associated with the project is located within developed land and as previously explained, special-status plants are not expected to occur on the project site. Therefore, the project would have no impact on special-status plant species.

Similarly, special-status wildlife species are not expected to occur on the project site. However, habitat for Swainson's hawk, white-tailed kite, and native bird species protected under state law is present on and adjacent to the site. Destruction of any bird nest or take of the nest or eggs of any bird is a violation of Section 3503 of the California Fish and Game Code. Project construction could include removal of one of the landscape trees and therefore has the potential to result in direct removal of bird nests. Additionally, construction activities occurring during the nesting season (between approximately February 1 and August 31), such as demolition, ground disturbance, and presence of construction equipment and crews, could generate noise and visual stimuli that may result in disturbance to active bird nests, if present, potentially resulting in nest abandonment. Nest abandonment may result in death of chicks or loss of eggs if the adult bird does not return

to the nest. While loss of nests of common migratory bird or raptor species (e.g., mourning dove, house sparrow, and Cooper's hawk) would not be considered a significant impact because it would not result in a substantial effect on their populations locally or regionally, cause any population to drop below self-sustaining levels, or result in a trend toward these species being listed as threatened or endangered, destruction of any migratory bird nest is a violation of the Migratory Bird Treaty Act (MBTA) and Section 3503 of the California Fish and Game Code.

Special-Status and Common Nesting Birds

Although the project site contains trees that could provide nesting sites for Swainson's hawk and white-tailed kite, foraging habitat is limited near the project site and therefore nesting potential is somewhat reduced by a lack of proximate foraging habitat. White-tailed kites generally nest within 0.5 mile of foraging habitat and are rarely found away from their preferred foraging habitats, which include alfalfa and other hay crops, irrigated pastures, sugar beets, and tomatoes (Erichsen et al. 1994, Dunk 1995, CDFW 2005). Swainson's hawk nest sites are generally located within approximately two miles of suitable foraging habitat, which consists of alfalfa, disked fields, fallow fields, dry-land pasture, beets, tomatoes, irrigated pasture, grains, other row crops, and uncultivated grasslands (Estep 1989, Estep 2009). While Swainson's hawks may forage 10 miles or more from their nest sites, foraging habitat within 1 mile of the nest if of primary importance and reproductive success decreases for Swainson's hawks as distance from foraging habitat increases (Estep 1989, England et al. 1995 in Estep 2009, England et al. 1997).

There are seven CNDDB records of nesting Swainson's hawks (*Buteo swainsoni*) within 1.5 miles of the project site (CDFW 2020). Three of these occurrences are within the riparian area along the Sacramento River to the west of the project (nearest is 0.81 mile to the southwest of the project site), two are within the riparian corridor of the American River to the north of the project (nearest is 1.45 miles to the north of the project site), and two occurrences are within the urban grid of midtown Sacramento (nearest is 1.08 miles to the east of the project site). While the project is highly developed, Swainson's hawks are known to nest in urban settings in some locations. Although the project site is within 10 miles of known Swainson's hawk nesting locations, because of its urban nature, the project site does not contain suitable foraging habitat for Swainson's hawk (e.g., row crops, field crops, pasture).

The nearest CNDDB record for white-tailed kite (*Elanus leucurus*) is approximately 1.5 miles to the northeast, along the north bank of the American River. This species is known to nest in riparian areas and within urban settings.

As noted above, there are no known occurrences for either Swainson's Hawk or white-tailed kite, and the site also does not present foraging habitat for either species. However, due to the presence of several mature trees in the area and based on documented occurrences of these two species nesting within urban areas, there is a potential that either species could nest near or adjacent to the project site. If so, there is a potential that

construction activities at the project site could result in nest disturbance, which would be considered a significant impact.

In addition to providing potential nesting sites for Swainson's hawk and white-tailed kite, mature trees in the project adjacent area could support nests of common raptors. The common raptors that may nest within the project site include: Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), and great horned owl (*Bubo virginianus*). In addition to common raptors, trees adjacent to the project site may also support other common nesting birds. The nests of common raptors and other common birds are protected under Sections 3503 and 3503.5 of California Fish and Game Code.

Mitigation Measure 3.4-1: Avoid disturbance of nesting birds

If construction will occur during the nesting season (between February 1 and August 31), a SMUD project biologist/biological monitor will conduct pre-construction nesting bird surveys to determine if birds are nesting in the work area or within 0.25 mile for Swainson's hawk and 500 feet for all other nesting birds of the project site.

The pre-construction nesting bird surveys will identify on-site bird species and any nest-building behavior. If no nesting Swainson's hawks are found on or within 0.25 mile or if no nesting birds are found on or within 500 feet of the project site during the pre-construction clearance surveys, construction activities may proceed as scheduled.

If pre-nesting behavior is observed, but an active nest of common nesting bird has not yet been established (e.g., courtship displays, but no eggs in a constructed nest), a nesting bird deterrence and removal program will be implemented. Such deterrence methods include removal of previous year's nesting materials and removal of partially completed nests in progress. Once a nest is situated and identified with eggs or young, it is considered to be "active" and the nest cannot be removed until the young have fledged.

If active Swainson's hawk nests are found within the nest survey area, the construction contractor shall avoid impacts on such nests by establishing a no-disturbance buffer around the nest. Monitoring of the nest by a qualified biologist during construction activities shall be required if the activity has the potential to adversely affect the nest. Based on guidance for determining a project's potential for impacting Swainson's hawks (Swainson's hawk Technical Advisory Committee 2000), projects in urban areas have a low risk of adversely affecting nests greater than 600 feet from project activities. Therefore, 600 feet is anticipated to be the adequate buffer size for protecting nesting Swainson's hawks from disturbances associated with the proposed project. However, the qualified biologist shall consult with the California Department of Fish and Wildlife to confirm the adequacy of the

no-disturbance buffer and/or if the buffer is reduced based on the biologist professional judgement.

If an active nest of common bird species is found in or within 500 feet of the project site during construction, a "No Construction" buffer zone will be established around the active nest (usually a minimum radius of 50 feet for passerine birds and 500 feet for raptors) to minimize the potential for disturbance of the nesting activity. The project biologist/biological monitor will determine and flag the appropriate buffer size required, based on the species, specific situation, tolerances of the species, and the nest location. Project activities will resume in the buffer area when the project biologist/biological monitor has determined that the nest(s) is (are) no longer active or the biologist has determined that with implementation of an appropriate buffer, work activities would not disturb the bird's nesting behavior.

If special-status bird species are found nesting on or within 500 feet of the project site, the project biologist/biological monitor shall notify SMUD's project manager to notify CDFW or USFWS, as appropriate, within 24 hours of first nesting observation.

Implementation of Mitigation Measure 3.4-1 would minimize impacts to special-status bird species by requiring pre-construction nesting surveys for nesting birds, and no-disturbance buffers around active nests. With implementation of Mitigation Measure 3.4-1, potential impacts to nesting birds would be reduced to a ***less-than-significant*** level.

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

No Impact. The project site is located within currently developed areas, and landscaped vegetation and does not contain sensitive natural communities (e.g., riparian habitat, elderberry savanna, and northern hardpan vernal pools). ***No impact*** on sensitive natural communities would occur, and no mitigation is required.

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

No Impact. The project site does not contain any wetland, stream, or other aquatic habitat that could be considered jurisdictional waters of the United States or state. All project activities would take place within previously developed areas. Therefore, ***no impact*** to wetlands or other waters of the United States or state would occur, and no mitigation is required.

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

No Impact. The project site is located within an urban setting (see Figure 2-2) within developed land cover and landscaped vegetation. This urban and disturbed setting does not support native wildlife nursery sites. The project would not alter any existing wildlife corridor and would not interfere with the movement of migratory fish or wildlife species. Therefore, ***no impact*** on the movement of native resident or migratory fish or wildlife species, movement corridors, or native wildlife nursery sites would occur, and no mitigation is required.

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

Less than Significant. The project site is located primarily within an urban area with limited landscape vegetation. During project construction, including removal and reconstruction of the masonry wall along H Street, construction activities may require work within the sidewalk area of H Street and removal of existing landscape trees.

Section 12.56.080(E) of the Sacramento City Code requires that before a public utility installs or performs maintenance on infrastructure that may cause injury to a city tree or private protected tree, the utility shall submit a plan for review and approval by the City's Public Works Director. While this provision essentially exempts SMUD from the City's tree ordinance, SMUD prefers to coordinate with the City by providing tree work plans to the City that may be approved via email. Because SMUD would comply with Sacramento City Code Section 12.56080(E) requiring approval from the City's Public Works Director prior to any work that may cause injury or removal of city and/or protected private trees, this impact would be less than significant, and no mitigation is required.

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

No Impact. The project site is not located within the plan area of an adopted habitat conservation plan, natural community conservation plan or other applicable and approved habitat conservation plan. As a result, it would not conflict with the provisions of any such plan. Therefore, the project would result in ***no impact***, and no mitigation is required.

3.5 Cultural Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
V. Cultural Resources.				
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☒	☐	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☒	☐	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☒	☐	☐	☐

3.5.1 Environmental Setting

A records search of the project site and a 1/8-mile radius was conducted by the North Central Information Center (NCIC), at California State University, Sacramento (SAC-20-117) in August 2020. The records search identified three resources within the project site and 15 resources within a 1/8-mile radius of the project site. One such resources is the historic Station A building, which is a California Historical Landmark (No. 633-2). The building was determined to be eligible for the National Register of Historic Places in 1999, and thus also was listed on the California Register of Historic Resources.

3.5.2 Discussion

a-c) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5? Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5? Disturb any human remains, including those interred outside of formal cemeteries?

Potentially Significant. The records search identified known archaeological and historic resources on the project site or within 1/8-mile of the project site (NCIC 2020). Therefore, impacts related to the project could be ***potentially significant***. These issues will be analyzed further in the EIR.

3.6 Energy

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

3.6.1 Environmental Setting

California relies on a regional power system composed of a diverse mix of natural gas, petroleum, renewable, hydroelectric, and nuclear generation resources.

- **Petroleum**: Petroleum products (gasoline, diesel, jet fuel) are consumed almost exclusively by the transportation sector, and account for almost 99 percent of the energy used in California by the transportation sector, with the rest provided by ethanol, natural gas, and electricity (Bureau of Transportation Statistics 2015). Between January 2007 and May 2016, an average of approximately 672 billion gallons of gasoline were purchased in California (California State Board of Equalization 2016). Gasoline and diesel fuel sold in California for motor vehicles is refined in California to meet specific formulations required by the California Air Resources Board (CARB) (U.S. Energy Information Administration [EIA] 2018).

- **Natural Gas**: Almost two-thirds of California households use natural gas for home heating, and about half of California's utility-scale net electricity generation is fueled by natural gas (EIA 2018).

- **Electricity and Renewables**: The California Energy Commission (CEC) estimates that 34 percent of California's retail electricity sales in 2018 will be provided by RPS-eligible renewable resources (CEC 2018). California regulations require that electricity consist of 33 percent renewables by 2020 and 50 percent renewables by 2030 for all electricity retailers in the state.

- **Alternative Fuels**: Conventional gasoline and diesel may be replaced (depending on the capability of the vehicle) with many alternative transportation fuels (e.g., biodiesel, hydrogen, electricity, and others). Use of alternative fuels is encouraged through various statewide regulations and plans (e.g., Low Carbon Fuel Standard, Assembly Bill [AB] 32 Scoping Plan).

3.6.2 Discussion

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

Less than Significant. Energy would be consumed during project construction to operate and maintain construction equipment, transport construction materials, and for worker commutes. Levels of construction-related energy consumption by the project were calculated using the California Emissions Estimator Model Version 2016.3.2 and from fuel consumption factors in the EMFAC 2011 models (see Appendix A for detailed calculations). An estimated 3,600 gallons of gasoline and 28,000 gallons of diesel would be consumed during project construction, accounting for both onsite equipment use and offsite vehicle travel. This one-time energy expenditure required to construct the project would be nonrecoverable. The energy needs for project construction would be temporary and would not require additional capacity or increase peak or base period demands for electricity or other forms of energy.

The project would generate minimal vehicle trips during operation associated with ongoing maintenance of the facility, which would not be notably greater than the existing vehicle trips accessing the project site. These maintenance trips would be essential to ensuring that Station H be functional to supply energy to customers within the SMUD service area. Therefore, the project would not result in an inefficient, wasteful, or unnecessary consumption of energy resources. This impact would be ***less than significant***, and no mitigation is required.

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

No Impact. As discussed above, the project would not result in inefficient, wasteful, or unnecessary consumption of energy resources. Furthermore, the project includes the replacement of existing electrical equipment and would result in increased efficiency in transmitting energy between source and end destinations. Thus, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The project would have ***no impact***, and no mitigation is required.

3.7 Geology and Soils

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VII. Geology and Soils. Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey 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 off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), 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?	☐	☐	☒	☐

3.7.1 Environmental Setting

Regional and Local Geology

As noted previously, the project site is located in the downtown area of the city of Sacramento, within the southern portion of the Sacramento Valley. The Sacramento Valley represents the northern portion of the Great Valley geomorphic province of California, which is bordered on the east by the foothills of the Sierra Nevada geomorphic province and on the west by the Coast Range geomorphic province. The Great Valley is an asymmetrical trough approximately 400 miles long and 40 miles wide forming the broad valley along the axis of California. Erosion of the Coast Range and the Sierra

Nevada has generated alluvial, overbank, and localized lacustrine sediments as thick as 50,000 feet in areas of the Great Valley.

The project site, which is located less than 0.5 mile east of the Sacramento River and less than 2 miles south of the American River, is underlain by Holocene Alluvium (Qa), described as levee and channel deposits, including unweathered gravel, sand, and silt deposited by present-day stream and river systems that drain the Coast Ranges, Klamath Mountains, and Sierra Nevada (Wagner, et al. 1981).

Seismicity

The Great Valley is bounded on the west by the Great Valley fault zone and the Coast Ranges and on the east by the Foothills fault zone and the Sierra Nevada. Relatively few faults in the Great Valley have been active during the last 11,700 years. The closest faults to the project site with evidence of displacement during Holocene time are the Dunnigan Hills Fault (approximately 23 miles to the northwest) and the Cleveland Hills Fault (approximately 60 miles to the north). In general, active faults are located along the western margin of the Central Valley (e.g., the Great Valley Fault) and within the Coast Ranges (Jennings 1994). There are no Alquist-Priolo Earthquake Fault Zones within Sacramento County (CGS 2010)

According to the California Geological Survey Earthquake Shaking Potential for California, the Sacramento region is distant from known, active faults and would experience lower levels of shaking less frequently that areas closer to major, active faults. However, very infrequent earthquakes could still cause strong shaking here (CGS 2016). Landslides triggered by seismic events are not expected at the project site due to the site's flat terrain.

Factors determining liquefaction potential are the soil type, the level and duration of seismic ground motions, the type and consistency of soils, and the depth to groundwater. Loose sands, peat deposits, and unconsolidated Holocene-age sediments are the most susceptible to liquefaction, while clayey silts, silty clays, and clays deposited in freshwater environments are generally stable under the influence of seismic ground shaking. The occurrence of liquefaction during an earthquake can potentially cause reduction in or loss of shear strength, seismically induced settlements, formation of boils, or lateral spreading of the liquefied soil. In order for liquefaction of soils due to ground shaking to occur, it is generally understood that subsurface soils must be in a relatively loose state, soils must be saturated, soils must be sand like (e.g. non-plastic or of very low plasticity), and the ground motion is of sufficient intensity to act as a triggering mechanism. The project site is not located in a currently established State of California Seismic Hazard Zone for liquefaction.

Soils

A review of U.S. Natural Resources Conservation Service (NRCS) soil survey data indicates that the project site is composed of urban land (NRCS 2020). This unit consists of areas covered up to 90 percent by impervious surfaces. The soil material under these impervious surfaces may have been altered during construction but are considered to be generally similar to nearby soil units (City of Sacramento 2017). While a site-specific geotechnical study has not yet been conducted for the project site, the City requires that a project-specific geotechnical investigation be submitted prior to development.

Groundwater depths in the project area range from 14 to 33 feet below ground surface (bgs) and occur at approximately 20 feet bgs at the project site (SMUD 2015:85).

Paleontological Resources

The city of Sacramento is not highly sensitive for paleontological resources present in fossil-bearing soils and rock formations as most of the downtown area has been excavated and filled (City of Sacramento 2017).

3.7.2 Discussion

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 California Geological Survey Special Publication 42.)

No Impact. Surface ground rupture along faults is generally limited to a linear zone a few yards wide. There are no Alquist-Priolo Earthquake Fault Zones within Sacramento County (CGS 2010). Consequently, the project is not expected to expose people or structures to adverse effects caused by the rupture of a known fault. There would be ***no impact*** associated with fault rupture, and no mitigation is required.

ii. Strong seismic ground shaking?

Less than Significant. The project site is located in the Sacramento Valley, which has historically experienced a low level of seismic ground shaking. The California Geological Survey has identified the region as an area of low to moderately low earthquake shaking potential (CGS 2016).

Depending on the strength of groundshaking, it is possible that structures in the area could be damaged during such an event. However, the project would be constructed in a manner consistent with within California Building Code (CBC) Title 24, which identifies specific design requirements to reduce damage from strong seismic ground shaking,

ground failure, landslides, soil erosion, and expansive soils. This impact would be ***less than significant,*** and no mitigation is required.

iii. Seismic-related ground failure, including liquefaction?

Less than Significant. For the installation of infrastructure improvements and construction of new buildings, SMUD would comply with the CBC, which incorporates seismic engineering and construction parameters designed to protect life and property to the maximum extent practicable. Preliminary project plans include construction on deep piles drilled into stable soils (depths could be up to 55 feet), and replacement of fill material with engineered, compacted fill. While the project site is underlain by younger alluvium that can be prone to liquefaction, the project would include seismic-resistant design to address potential liquefiable soils, appropriate remediation, and other measures in the CBC to protect life and property. While a project-specific geotechnical study has not yet been prepared, it would be required by the City prior to approval of site improvement plans.

Active seismic sources are a relatively long distance away and the project site is located on flat land and has low shaking hazard potential. However, in the unlikely event of a significant earthquake, widespread liquefaction could occur resulting in significant damage. The project would comply with CBC Title 24, which includes specific design requirements to reduce damage from ground failure. The project could include dewatering activities, which would further reduce the potential for ground failure. In addition, emergency shutoffs would be installed to reduce risks involving seismic-related ground failure. Therefore, the potential of adverse effects involving ground failure, including liquefaction is low and this impact would be ***less than significant***, and no mitigation is required.

iv. Landslides?

No Impact. The project site is located in a flat area of downtown Sacramento; there is no risk of landslides in such terrain (City of Sacramento 2017:4.6-21). Consequently, the project would not expose people or structures to landslides and there would be ***no impact*** associated with landslide risk, and no mitigation is required.

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

Less than Significant. As discussed above, NRCS soil survey data indicate that the project site includes soils that are classified as Urban Land (NRCS 2020). Construction activities would involve grading, excavating, trenching, moving, and filling within the project site or construction staging area. Construction activities would remove and existing concrete and paving and would expose site soils to erosion via wind in the summer months, and to surface water runoff during storm events. Sediment from construction activities could be transported within stormwater runoff and could drain to off-site areas and degrade local water quality.

Because the project would not disturb more than one acre of land, it would not be subject to the National Pollutant Discharge Elimination System (NPDES) Statewide construction general NPDES permit for stormwater runoff (Order No. 99 - 08 – DWQ and NPDES No. CAS000002 [Construction General Permit]). While the project would not be subject to the requirements of the Construction General Permit, SMUD generally complies with the City's Grading, Erosion, and Sediment Control Ordinance which requires preparation of erosion and sediment control plans which apply during and post construction.

Furthermore, and as noted above, the project would be constructed in accordance with CBC standards. These standards require that appropriate soil and geotechnical reports be prepared and that site-specific engineering design measures, including those related to general site grading, clearing and grubbing, soil stabilization, and general erosion control, be implemented to appropriately minimize potential adverse impacts related to erosion at the infill site. This, coupled with preparation of erosion and sediment control plans, would minimize potential adverse impacts related to erosion and loss of topsoil at the project site. Impacts would be ***less than significant,*** and no mitigation is required.

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

Less than Significant. As described previously, there are no slopes within the project site, and therefore there would be no potential for on- or off-site landslide. While the Holocene alluvium that underlies the area can be subject to liquefaction, the site has been developed and includes extensive fill. In addition, the project would comply all building codes and engineering recommendations. Therefore, this impact would be ***less than significant***, and no mitigation is required.

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

Less than Significant. Expansive soils shrink and swell as a result of moisture change. These volume changes can result in damage over time to building foundations, underground utilities, and other subsurface facilities and infrastructure if they are not designed and constructed appropriately to resist the damage associated with changing soil conditions. A review of NRCS (2020) soil survey data indicates that the locations where project-related earthmoving activities would occur are composed of soil classified as urban land. Soils within the downtown area primarily consist of imported fill, laid upon native soil (City of Sacramento 2017:4.6-3). The two new 115kV lines that would tie Station H into Station G would be placed in a series of conduits encased in concrete. Trenches associated with underground infrastructure would then be backfilled with a cementitious slurry mixture or compacted aggregate base to the roadway subgrade elevation to reduce the risk of expansive soils. Therefore, this impact would be ***less than significant***, and no mitigation is required.

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?

No Impact. The project would not require the use of septic tanks or alternative wastewater disposal systems. Thus, the project would have ***no impact*** related to soil suitability for use of septic tanks or alternative wastewater disposal systems, and no mitigation is required.

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

Less than Significant Impact. The downtown area of Sacramento is not considered sensitive for paleontological resources because much of the area has been previously disturbed, excavated, and filled with non-native soil (City of Sacramento 2017:4.6-11). Nonetheless, ground-disturbing activities could result in uncovering currently unknown resources and cause a substantial change in the significance of an undiscovered unique paleontological resource or geologic feature. Compliance with Sacramento General Plan Policy HCR 2.1.16 requires that proper protocols are adhered to if paleontological resources are discovered during excavation or construction. Specifically, these procedures include protocols and criteria for qualifications of personnel, and for survey, research, testing, training, monitoring, cessation and resumption of construction, identification, evaluation, and reporting, as well as compliance with recommendations to address any significant adverse effects where determined by the City to be feasible. Therefore, the policies and implementation programs contained within the General Plan would ensure that impacts to paleontological resources would be ***less than significant***, and no mitigation is required.

3.8 Greenhouse Gas Emissions

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VIII. Greenhouse Gas Emissions. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

3.8.1 Environmental Setting

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). GHG emissions contributing to global climate change are attributable, in large part, to human activities associated with on-road and off-road transportation, industrial/manufacturing, electricity generation by utilities and consumption by end users, residential and commercial onsite fuel usage, and agriculture and forestry. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcing together (IPCC 2014: 5).

Climate change is a global problem. GHGs are global pollutants because even local GHG emissions contribute to global impacts. GHGs have long atmospheric lifetimes (one to several thousand years) and persist in the atmosphere long enough to be dispersed around the globe. Although the lifetime of any particular GHG molecule is dependent on multiple variables and cannot be determined with any certainty, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration (IPCC 2013:467).

3.8.2 Discussion

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

Less than Significant. The issue of global climate change is inherently a cumulative issue, because the GHG emissions of an individual project cannot be shown to have any material effect on global climate. Thus, the level of GHG emissions associated with implementation of the project is addressed as a cumulative impact.

GHG emissions associated with implementation of the project would be generated during project construction. The project would not generate any additional GHG emissions beyond existing conditions during operations as operational activities would be limited to operation of a similar substation to the existing on-site use with occasional inspection and maintenance. Construction-related emissions of GHGs were estimated using CalEEMod Version 2016.3.2. A detailed discussion of the major construction activities and model assumptions is provided in Section 3.3, "Air Quality." Model outputs are included in Appendix A.

Project-related construction activities would result in the generation of GHG emissions from the use of heavy-duty off-road construction equipment and vehicle use during worker commute. Construction activities would include site preparation, trenching, and Station H control building construction. Total construction activity would result in total, finite emissions of 338 metric tons of carbon dioxide equivalent ($MTCO_2e$).

SMAQMD has established quantitative significance thresholds for evaluating GHG emissions. For construction of all types, emissions due to land development projects, the established significance threshold is 1,100 $MTCO_2e$ annually (SMAQMD 2020). Total construction-related GHG emissions for the project would be primarily generated in 2023 and would be no more than 338 $MTCO_2e$. Therefore, construction-related GHG emissions would not exceed SMAQMD's threshold of significance. This impact would be ***less than significant***, and no mitigation is required.

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

No Impact. Plans, policies, and regulations adopted for the purpose of reducing GHG emissions were developed with the purpose of reducing cumulative emissions related, primarily, to long-term operational emissions. As described previously, the project would not result in a considerable increase in GHG emissions as a result of construction activities and would not generate any GHG emissions during operations. In general, it is expected that the new substation equipment would be more efficient than existing equipment. Also, Station H is intended to serve increased density in the downtown area, which is consistent with regional efforts to reduce GHG emissions. Thus, the project would not conflict with any applicable plan, policy, or regulation adopting for the purpose of reducing emissions of GHGs. There would be ***no impact***, and no mitigation is required.

3.9 Hazards and Hazardous Materials

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
IX.	**Hazards and Hazardous Materials. Would the project:**				
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or 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?	☐	☐	☐	☒

3.9.1 Environmental Setting

The historic Station A building was constructed in 1894 by the Sacramento Electric Power and Light Company to distribute power that was generated at the Folsom Powerhouse. SMUD has owned and operated Station A since the 1940s. During the 1950s, the substation equipment was moved to the adjacent outdoor yard. The existing outdoor substation has three 115,000-volt (115-kV) underground transmission lines, eighteen 12-kV underground distribution lines, six 115-kV/12-kV transformers, three 12-kV switchgear, and other electrical equipment (e.g., gas-insulated substation [GIS] equipment). The eighteen 12-kV distribution lines that exit in the substation serve SMUD customers in the downtown service area.

The project site is adjacent to the southern edge of the Railyards Specific Plan (RSP) area, which encompasses approximately 244 acres. The RSP area, as a result of railroad operations, was contaminated with various hazardous substances. These affected both soil and groundwater, and remediation efforts have been ongoing for over 25 years. Most of the soil remediation within the RSP has been completed by Union Pacific Railroad (UPRR) and certified by the California Department of Toxic Substances Control (DTSC) (City of Sacramento 2016:4.8-1). The RSP site is included on the state Hazardous Waste and Substances List ("Cortese List") compiled pursuant to Government Code 65962.5 and referenced at Public Resources Code 21092.6. While the project site is not within the RSP boundaries, it is within the South Plume Groundwater Study Area (City of Sacramento 2016: Figure 4.8-2). The constituents of concern for the South Plume area include volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), and metals (City of Sacramento 2016:4.8-4 through 4.8-8).

The State Water Resources Control Board's (SWRCB) GeoTracker website, which provides data relating to leaking underground storage tanks (USTs) and other types of soil and groundwater contamination, along with associated cleanup activities. Hazards related to USTs and other types of contamination were identified directly adjacent to the project site while two additional hazards were identified within 500 feet of the project site (SWRCB 2020). The area adjacent to the project site was formerly operated as an auto service facility and included a 10,000-gallon UST (Nichols Consulting Engineers 2008). The case was considered closed in 2008. Of the other two sites, one was closed in 2011 and the other remains open for site investigation (SWRCB 2020).

The California Department of Toxic Substances Control's Envirostor Web site, which provides data related to hazardous materials spills and clean ups, identified a PG&E site approximately one mile south of the project site as well as multiple other cleanup sites within 0.5 miles of the site. The nearest cleanup site is located at the parking lot north of the project site with potentially affected groundwater and soil (DTSC 2020). Directly west of the site is another active cleanup sites (as of 2019) with potential contaminants of lead, diesel, and gas within groundwater and site soils (DTSC 2020).

There is one public school within the larger project vicinity; North Avenue Elementary School is located approximately 0.2 miles southeast of the project site. Additionally, several preschool centers are located within one mile of the project area.

No public airports or private airstrips are within 2 miles of the project site. The closest airport is Sacramento International Airport, approximately 3.8 miles north of the project site. The project site is not located within any airport safety zones (SACOG 2013: Map3).

3.9.2 Discussion

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

Less than Significant. Construction activities would involve the use of hazardous materials, such as fuels, solvents, gasoline, asphalt, and oil. The use and storage of these materials could potentially expose and adversely affect workers, the public, or the environment as a result of improper handling or use, accident, environmentally unsound disposal methods, fire, explosion, or other emergencies, resulting in adverse health or environmental effects. Project operation would involve the use of electrical equipment as well as transmission lines and would not involve the use of hazardous materials.

The California Highway Patrol and Caltrans are responsible for enforcing regulations related to the transportation of hazardous materials on local roadways, and the use of these materials is regulated by the California Department of Toxic Substances Control (DTSC), as outlined in CCR Title 22. SMUD and its construction contractors would be required to comply with the California Environmental Protection Agency's (Cal EPA's) Unified Program, which protects Californians from hazardous waste and hazardous materials by ensuring consistency throughout the state regarding the implementation of administrative requirements, permits, inspections, and enforcement at the local regulatory level. Regulated activities would be managed by the Sacramento County Environmental Management Department, which is the designated Certified Unified Program Agency, and in accordance with the regulations included in the Unified Program (e.g., hazardous materials release response plans and inventories, California Uniform Fire Code hazardous material management plans and inventories). Such compliance would reduce the potential for accidental release of hazardous materials during project construction.

The project would be required to comply with existing laws and regulations regarding the transportation, use, and disposal of hazardous materials. These regulations are specifically designed to protect the public health and the environment and must be adhered to during project construction and operation. Compliance with applicable regulations would ensure that this impact would be ***less than significant***, and no mitigation is required.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

Less than Significant. As discussed above, the project site is within the South Plume Groundwater Study Area which is subject to groundwater testing and monitoring for contamination from VOCs, SVOCs, TPH, and metals from previous activities within the RSP site. Should groundwater be encountered during project construction, testing would occur in accordance with DTSC and Regional Water Quality Control Board (RWQCB) requirements prior to dewatering activities. This may include seeking coverage under

RWQCB's General Order for Dewatering (R5-2013-0074). If dewatering activities are needed, they would include the potential use of Baker tanks and/or filtration bags, if needed, to treat water prior to discharge into the City's stormdrain system and/or sewer system. Dewatering activities would be temporary, and the volume of groundwater withdrawn would be very small relative to the subbasin's capacity.

While there is the potential for contaminated soil on the project site, SMUD will test soil samples prior to and during construction to determine whether any contamination exists and remove any contaminated soil. Project construction would involve the use of hazardous materials (e.g., fuels, oils, and lubricants), which could be accidentally upset or released into the environment. As discussed in item a) above, compliance with applicable laws and regulations regarding the transport, use, and disposal of hazardous materials would ensure that the project would result in a ***less-than-significant*** impact, and no mitigation is required.

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

Less than Significant. As discussed above, there is one public school within one-quarter mile of the project site. Small quantities of hazardous materials such as fuels, oils, and lubricants would be used during project construction. SMUD would conduct testing of soils to be removed from the project site. Also, ongoing groundwater testing would continue to take place in the South Plume Groundwater Study Area. The project would be required to comply with existing regulations associated with the transport, use, and disposal of hazardous materials. Compliance with applicable regulations regarding hazardous materials would reduce the potential for hazardous emissions within one-quarter mile of existing schools. Therefore, this impact would be ***less than significant***, and no mitigation is required.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less than Significant. Government Code Section 65962.5 requires that DTSC compile and maintain a list of hazardous waste facilities subject to corrective action, land designated as hazardous waste property, or hazardous waste disposals on public land. This list is known as the Cortese List, which can be accessed on Cal EPA's website. As described above, the area directly adjacent to the project site (currently SHRA housing) was formerly operated as an auto service facility and included a 10,000-gallon UST (Nichols Consulting Engineers 2008). However, the case was considered closed as of 2008. Additionally, the RSP area is on the Cortese List and investigation, testing, and remediation activities are ongoing. While there are active hazardous and cleanup sites located within the project vicinity, the project is not located on an active site included on a list of hazardous materials sites (SWRCB 2020, DTSC 2020). Further, if any hazardous materials or conditions are

discovered during project construction activities, the project would comply with existing laws and regulations related to the use, disposal, and transport of hazardous materials, as described in item a) and c), above. This impact would be ***less than significant***, and no mitigation is required.

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?

No Impact. The Sacramento International Airport is located approximately 8.5 miles northwest of the project site. The project site is not located within an airport land use plan or within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, and implementing the project would not result in an aviation-related safety hazard for people residing or working in the project area. Therefore, ***no impact*** would occur, and no mitigation is required.

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

Less than Significant. Project construction may require temporary lane closures and closure of Government Alley that could interfere with or slow down emergency vehicles, temporarily increasing response times and impeding existing services on these roadways. However, any project activities that may involve public ROW would be required to obtain an encroachment permit from either Caltrans or the City of Sacramento. As part of this encroachment permit application, SMUD would be required to prepare and then later implement a traffic control plan, which would require the provision of temporary traffic controls and maintenance of emergency access during construction. Once project construction is complete, all roads (and Government Alley) would return to their pre-construction state and project operations would not interfere with emergency repose or evacuation plans. As a result, this impact would be ***less than significant***, and no mitigation is required.

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

No Impact. The project is located in a highly developed area of Sacramento that is not adjacent to wildlands, therefore implementation of the project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to developed areas. There would be ***no impact*** related to wildland fires, and no mitigation is required.

3.10 Hydrology and Water Quality

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
X.	**Hydrology and Water Quality. Would the project:**				
a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or 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 on- or offsite erosion or siltation;	☐	☐	☒	☐
	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?	☐	☐	☒	☐

3.10.1 Environmental Setting

The city of Sacramento is located at the confluence of the Sacramento and American Rivers within the Sacramento River Basin. The Sacramento River Basin encompasses about 27,000 square miles and is bounded by the Sierra Nevada to the east, the Coast Ranges to the west, the Cascade Range and Trinity Mountains to the north, and the Delta to the southeast. The Sacramento River Basin is the largest river basin in California, capturing, on average, approximately 22 million acre-feet of annual precipitation (City of Sacramento 2014c:6-43). The project site is entirely developed and mostly covered with pavement. There are no surface waters within 500 feet of the project site.

Stormwater from the project site drains to the existing storm drain along 6th Street.

Stormwater at the project site drains to the existing storm drain system along 6th Street which is part of the City of Sacramento's combined sewer system (CSS). Stormwater is then conveyed to one of two facilities for primary treatment before discharge to the Sacramento River. CSS flows and discharges are currently regulated by the provisions of Waste Discharge Requirement Order No. R5-2015-0045 (NPDES No. CA0079111) (City of Sacramento 2014a: 4.7-2).

The downtown area of the city of Sacramento is within the North and South American Groundwater Subbasin, which is part of the larger Sacramento Valley Groundwater Basin (City of Sacramento 2017). Groundwater in the project vicinity has been recorded at fairly shallow depths, ranging from approximately 14 to 33 feet below the ground surface (SMUD 2015:119). Groundwater contamination recorded in the project vicinity has been associated with past uses in the RSP area, as discussed in Section 3.8, "Hazards and Hazardous Materials."

Flooding

The project is located within an area of minimal and reduced flood hazard due to existing levee infrastructure (Zone X), as identified on Federal Emergency Management Agency (FEMA) flood hazard maps (FEMA 2020).

3.10.2 Discussion

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

Less than Significant. Drainage from the project flows into the City's CSS and is discharged to the Sacramento River, which is located within the Sacramento River Basin. As such, the applicable water quality standards are listed in the Fifth Edition of the Water Quality Control Plan (Basin Plan) For the Sacramento River and San Joaquin River Basins (CRWQCB 2018).

To reduce or eliminate construction-related water quality effects, the City of Sacramento's Grading Ordinance would require future public or private contractors to comply with the requirements of the City's Stormwater Quality Improvement Plan (SQIP). As the project is not expected to disturb more than one acre of land, coverage would not be needed under the NPDES General Construction Permit. However, consistent with City requirements, the project would be required to implement BMPs intended to reduce pollutants in stormwater and other non-point source runoff. The City's SQIP and the Stormwater Quality Design Manual for the Sacramento Region include BMPs to be implemented to mitigate impacts from new development and redevelopment projects.

Consequently, violation of WDRs or water quality standards would be ***less than significant***, and no mitigation is required.

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

Less than Significant. The project site is underlain by the North and South American Groundwater Subbasin, which is part of the larger Sacramento Valley Groundwater Basin. The South American River Subbasin is estimated to have a groundwater storage capacity of 4,816,000 acre-feet (DWR 2004:2). Because construction activities would excavate up to 15-30 feet below ground surface (bgs) and groundwater in the project area ranging from approximately 14 to 33 feet bgs, project construction could include dewatering activities. Project construction would include installation of piles to a depth of approximately 55 feet, but pile installation would be via auger cast drilling which would not require dewatering activities. Should dewatering be required during project construction, water would be collected and treated prior to discharge, in accordance with City requirements. Dewatering activities would be temporary, and the volume of groundwater withdrawn would be very small relative to the subbasin's capacity. No groundwater would be withdrawn during project operation.

Because the project would involve construction activities within previously developed areas, which are primarily paved areas, the project would not involve construction practices or develop facilities that would substantially prevent or otherwise redirect groundwater resources in the project site. Implementation of the project would not result in an increase in impervious surfaces, and there would be no change in surface infiltration characteristics affecting groundwater recharge. For all these reasons, there would be a ***less-than-significant*** impact on groundwater supplies and groundwater recharge, and no mitigation is required.

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

i) Result in substantial on- or offsite erosion or siltation;

Less than Significant. Project construction activities would involve the excavation and movement of soil, which would temporarily increase erosion and siltation potential at the site. If not properly controlled, these activities could accidentally discharge wastes into waterways through runoff. However, SMUD would comply with the existing submittal and approval requirements associated with the Stormwater Management and Control Code, the Grading, Erosion and Sediment Control Ordinance, as well as the NPDES Regional MS4 Permit, which would necessitate the implementation and maintenance of on-site BMPs to control potential erosion and siltation and prevent discharges off-site. Therefore, regulatory compliance would ensure that the project does not result in substantial long-term effects on water quality. As a result, this impact would be ***less than significant***, and no mitigation is required.

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

Less than Significant. Project construction activities would occur within the developed project site and would not include the removal of any pervious surfaces. While operation of the project would be similar to pre-construction condition, it is possible that a small amount of impervious surface could be added depending on required padding for equipment. However, any addition of impervious surface would be minimal and would not be expected to substantially increase the rate or amount of surface runoff in or near the project site. Therefore, this impact would be ***less than significant***, and no mitigation is required.

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

Less than Significant. As excavation during project construction could go to a depth of 30 feet, dewatering may be required. Project construction would include installation of piles to a depth of approximately 55 feet, but pile installation would be via auger cast drilling which would not require dewatering activities. Should dewatering be required during project construction, water would be collected and treated prior to discharge, in accordance with City requirements. SMUD and its construction contractor would coordinate with the City to determine the maximum amount that could be discharged to the stormdrain system so that the project, in conjunction with other sources of stormwater, would not exceed the capacity of the existing system. The project site would be generally returned to its pre-construction condition and would not generate substantially new or polluted runoff. Therefore, the project would not exceed existing or planned stormwater capacity or provide polluted runoff. This impact would be ***less than significant***, and no mitigation is required.

iv) Impede or redirect flood flows?

Less than Significant. The project is in an area with minimal flood risk (FEMA 2020). While not expected, flooding could occur in the area. Project construction could temporarily impede or redirect flood flows as construction equipment could be located within existing rights-of-way, which could include gutters and areas near stormdrain inlets. Construction impacts would be temporary and project operation would consist of electrical equipment that would not impede or redirect flood flows. Therefore, this impact would be ***less than significant***, and no mitigation is required.

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

No Impact. The project site is located within an area of reduced flood risk (Zone X) (FEMA 2020). The project is in an area of mostly flat terrain with no large open bodies of water. For these reasons, the project would not be expected to be inundated. There would be ***no impact***, and no mitigation is required.

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

Less than Significant. During project construction, SMUD would implement BMPs, consistent with City's water quality and watershed protection measures, as required by the Phase I NPDES Permit and implemented through the SQIP. During operation, the project would not generate wastewater or stormwater runoff, so there would be no conflict with or obstruction of a water quality control plan during project operation. As previously described, though project construction would require dewatering due to the high level of the water table in the project area, the groundwater removed would be minimal compared with the groundwater supply. Project operation would not require the use of any potable water, including groundwater. Because the project would implement BMPs consistent with local water quality control measures, this impact would be ***less than significant***, and no mitigation is required.

3.11 Land Use and Planning

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XI.	**Land Use and Planning. Would the project:**				
a)	Physically divide an established community?	☐	☐	☐	☒
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?	☐	☐	☒	☐

3.11.1 Environmental Setting

The project site is located in the downtown area of the city of Sacramento in Sacramento County. The project site is currently an active substation that is owned and operated by SMUD with some electrical equipment located within the existing structure and the majority of substation related equipment, including underground equipment, located in the outdoor yard on the eastern side of the site. Surrounding uses include various business, commercial, residential, and transit-oriented uses, which is typical of the downtown area. The Mercy Housing Community is adjacent to the east side of the project site and includes 150 residential units over ground-floor commercial uses.

3.11.2 Discussion

a) Physically divide an established community?

No Impact. The project would involve the replacement of existing electrical equipment with new above and underground electrical equipment in a highly developed area of downtown Sacramento. The project would not introduce any barriers within the project area and would not lead to a physical division of an established community. There would be ***no impact***, and no mitigation is required**.**

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

Less than Significant. Project construction would occur within or immediately adjacent to the project site and would remove existing electrical equipment and replace with new above-ground and underground electrical equipment and utility lines. Further, the project would involve a continuation of use of the site as an electrical substation. The project does not propose any land use changes, and once operational, would be similar in scale and type to the existing use. As discussed in Section 3.4, Biological Resources," implementation of Mitigation Measure 3.4-2 would require compliance with the City of Sacramento's tree ordinance as it applies to public utilities. The project would not conflict

with any adopted plans, policies, or regulations adopted for avoiding or mitigating an environmental effect. Therefore, this impact would be ***less than significant***, and no mitigation is required.

3.12 Mineral Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XII. Mineral Resources. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be 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?	☐	☐	☐	☒

3.12.1 Environmental Setting

The Surface Mining and Reclamation Act directs the State Geologist to classify (identify and map) the non-fuel mineral resources of the State to show where economically significant mineral deposits occur and where they are likely to occur based upon the best available scientific data. Areas known as Mineral Resource Zones (MRZs) are classified on the basis of geologic factors, without regard to existing land use and land ownership. The areas are categorized into four general classifications (MRZ-1 through MRZ-4). Of the four, the MRZ-2 classification is recognized in land use planning because the likelihood for occurrence of significant mineral deposits is high, and the classification may be a factor in the discovery and development of mineral deposits that would tend to be economically beneficial to society.

The project site is classified as MRZ-1, which indicates no significant mineral deposits are located at the project site (DOC 1999). The project site is not designated as a locally important mineral resource recovery site in the Sacramento 2035 General Plan Update (City of Sacramento 2014c).

3.12.2 Discussion

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?

No Impact. The project site is classified as MRZ-1, and no known mineral deposits are present at the project site. Therefore, there would be ***no impact***, and no mitigation is required.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. The project site and surrounding area is not designated as a locally important mineral resource recovery site in the Sacramento 2035 General Plan Update (City of Sacramento 2014c: Figure 6-11). Thus, project implementation would not result in a loss of availability of locally important mineral resources, and the project would have ***no impact*** related to the loss of availability of a locally important mineral resource discovery site, and no mitigation is required.

3.13 Noise and Vibration

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIII. Noise. Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	☐	☐	☒	☐
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?	☐	☐	☐	☒

3.13.1 Environmental Setting

Acoustic Fundamentals

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. Sound is the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a human ear. Noise is defined as loud, unexpected, annoying, or unwanted sound. As sound travels through the atmosphere from the source to the receiver, noise levels attenuate (i.e., decrease) depending on a variety of factors, including geometric spreading (i.e., spherical or cylindrical spreading), ground absorption (i.e., hard versus soft sites), atmospheric conditions (e.g., wind direction and speed, air temperature, humidity, turbulence), and shielding by natural or human-made features.

The amplitude of pressure waves generated by a sound source determines the loudness of that source, also called the sound pressure level (SPL). SPL is most commonly described by using decibels (dB) because this logarithmic unit best corresponds to the way the human ear interprets sound pressures. However, the decibel scale does not adequately characterize how humans perceive noise because the human ear is not equally sensitive to loudness at all frequencies (i.e., pitch) in the audible spectrum. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an “A-weighted” sound level (expressed in units of A-weighted decibels or dBA) can be computed based on this information. All sound levels discussed in this section are expressed in A-weighted decibels.

Because decibels are logarithmic units, SPLs expressed in dB cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In typical noisy environments, changes in noise of 1–2 dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness (Caltrans 2013a:2-10).

Various noise descriptors have been developed to describe time-varying noise levels. The noise descriptors used in this chapter include:

- Equivalent Continuous Sound Level (L_{eq}): L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound level that occurs during the same period (Caltrans 2013a:2-48). For instance, the 1-hour equivalent sound level, also referred to as the hourly L_{eq}, is the energy average of sound levels occurring during a 1-hour period.

- Day-Night Level (L_{dn}): L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB "penalty" applied to sound levels occurring during nighttime hours between 10 p.m. and 7 a.m. (Caltrans 2013a:2-48; FTA 2018:214).

Ground Vibration

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Groundborne vibration is vibration of and through the ground. Sources ground-borne of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., explosions).

Groundborne vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV and RMS vibration velocity are normally described in inches per second (in/sec) but can also be expressed in decibel notation (VdB), which is used mainly in evaluating human response to vibration.

Existing Noise Sources

Because the project site is located in a highly developed area, several noise sources exist in the project vicinity, most prominently the six existing electrical substation transformers; vehicles traveling on local roadways (e.g., I-5, H Street, 6th Street, 7th Street), and trains for the nearby light rail. Other noise sources include the more distant Union Pacific Railroad line, construction activity at the Railyards, and mechanical equipment on nearby buildings.

Noise- and Vibration-Sensitive Receptors

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels, and because of the potential for nighttime noise to result in sleep disruption. Additional land uses such as schools, transient lodging, cemeteries, and places of worship are also generally considered sensitive to increases in noise levels. Vibration-sensitive land uses are generally considered to be buildings or structures that could be damaged due to vibration or land uses where vibration levels could interfere with operations or cause human annoyance. The nearest noise-sensitive receptor is the multifamily Mercy Housing Community located directly east of the project site, which includes 150 residential units in a 7-story building. The closest office building is located approximately 70 feet south of the project site boundary.

Local Noise Regulations

Although SMUD is not subject to the goals and policies of the City of Sacramento, the City's 2035 General Plan Environmental Constraints Element and the Noise Control Ordinance in the City of Sacramento Municipal Code contain noise policies and standards that are used as thresholds of significance in the evaluation of project-related noise impacts. All relevant local noise and vibration policies and standards are listed in depth in the Noise Report prepared for the project by Ascent Environmental in 2020 (see Appendix C). Consistent with City planning efforts, this analysis considers the following noise thresholds:

- construction-generated noise levels in excess of City Noise Control Ordinance standards during the more noise-sensitive evening, nighttime, and early-morning hours (6 p.m. to 7 a.m., Monday through Saturday, and between 6 p.m. and 9 a.m. on Sunday);

- long-term, traffic-generated noise levels in excess of the applicable normally acceptable noise standards for land use compatibility as specified in Table EC1 in the City of Sacramento General Plan Environmental Constraints Element; incremental increase standards specified in Table EC 2 in the City of Sacramento General Plan Environmental Constraints Element; or the City's interior noise standards of 45 L_{dn} and 45 L_{eq} at nearby residences and office spaces, respectively;

- long-term, operational noise levels generated by stationary or area sources that exceed the City's interior noise standards of 45 L_{dn} and 45 L_{eq} at nearby residences and office spaces, respectively;

- construction-generated vibration levels exceeding Caltrans-recommended standards with respect to the prevention of structural building damage (0.25 and 0.5 in/sec PPV for historic and new residential buildings, respectively) or FTA's maximum-acceptable-

vibration standard with respect to human response (80 VdB for residential uses and 83 Vdb for institutional land uses with primarily daytime uses) at nearby existing vibration-sensitive land uses during daytime hours; and

- 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, public use airport, or private airstrip, exposure of people residing or working in the project area to excessive noise levels.

3.13.2 Discussion

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 in other applicable local, state, or federal standards?

Less than Significant. Noise would be generated by the project during construction and operation.

Temporary Construction Noise

The operation of heavy equipment during project construction would generate noise, resulting in a temporary increase in noise levels at nearby sensitive receptors. Decommissioning of Station A is anticipated to begin in the second half of 2022 and would be completed by early 2023. The construction of Station H is anticipated to begin soon after decommissioning of Station A and would be completed in 2024. Specific construction activities and equipment associated with the project and their respective noise levels are discussed in depth in the Noise Report. The loudest pieces of equipment that would be used during construction would include excavators and auger drill rigs, both of which individually generate 85 dB L_{eq} at 50 feet (FHWA 2006:3).

The Noise Report also provides estimated levels of indoor noise exposure at nearby receptors for both onsite (i.e., within Station A) and offsite (i.e., construction of the two underground transmission lines beneath Government Alley) construction (see Table 9 in the Noise Report). Different levels of noise exposure were estimated for different floors at the Mercy Housing Community. Onsite construction noise levels would range from 50 to 58 dB L_{eq} within residential units of the Mercy Housing Community and would reach 52 dB L_{eq} within the nearest office building. The fourth floor of the Mercy Housing Community would experience the loudest levels of noise compared to other floors. Construction noise levels at more distant receptors would be lower because noise levels decrease with distance. For example, offsite construction would occur farther from noise-sensitive receptors than onsite construction and, thus, would expose receptors to less noise than onsite construction. The closest offsite construction activity would expose the fourth floor of the Mercy Housing Community and nearest office building to indoor noise levels of 56 dB L_{eq} and 41 dB L_{eq}, respectively.

Although construction activity would result in elevated noise levels at the Mercy Housing Community and nearby office buildings, construction noise would be temporary and intermittent and would only occur during daytime hours when people are less sensitive to noise. Because construction activity would only occur between 7 a.m. and 6 p.m., Monday through Saturday and between 9 a.m. and 6 p.m. on Sunday, it would be exempt from the City's daytime noise standards. Thus, because the project would adhere to the applicable City noise standard for construction-generated noise, this impact would be less than significant, and no mitigation is required.

Long-Term, Operational Noise

Transportation Noise Sources

After construction is completed, the project would not appreciably increase the number of employees or visitors to the project area. Therefore, after construction of project facilities is complete, operation of the project would result in minimal, if any, new vehicle trips to and from the area and there would be no measurable increase in traffic noise levels. Therefore, traffic noise associated with project operation and maintenance would have a less-than-significant impact, and no mitigation is required.

Stationary Noise Sources

Daily operation of electrical substation facilities generates noise primarily from the operation of transformer cooling equipment and fans. Transformers would be located approximately 26 feet from the lower stories of the Mercy Housing Community. Higher stories (i.e., stories four and above) would be more distant from the transformers but would not benefit from the noise attenuation provided by the existing 30-foot sound wall located along the east side of the project site adjacent to the Mercy Housing development.

Using the loudest operational scenario in which all cooling fans are operating, and accounting for a 5-dB noise reduction provided by the sound wall for the first three stories, interior noise levels would range from 31 dB 38 dB L_{eq} within residential units of the Mercy Housing Community (see Table 10 in the Noise Report). The fourth floor would experience the loudest noise level compared to other floors. Conservatively assuming that the noise level on the fourth floor remained consistent over 24 hours, the interior noise level on the fourth floor was calculated in the Noise Report to be 44 dB L_{dn}, which would not exceed the City's interior standard for residential land uses of 45 dB L_{dn}. The levels of interior noise exposure at the nearest office building would be 32 dB $L_{eq,}$ which would not exceed the City's interior standard for office space of 45 dB L_{eq}. Additionally, because the number of transformers would be decreased from six to two as part of the project and new equipment tends to be quieter (e.g., more up-to-date technology, cleaner, more efficient), noise levels could decrease from existing conditions. Therefore, this impact would be less than significant, and no mitigation is required.

Summary

Because both temporary and long-term noise generated by the project during construction and operation, respectively, would not exceed applicable City noise standards, this impact would be **less than significant**, and no mitigation is required.

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

Less than Significant with Mitigation Incorporated. The project would not include any operational sources of ground vibration. However, construction activities would generate temporary ground vibration, the intensity of which would depend on the specific construction equipment used and activities involved.

The most vibration–intensive activity performed during project construction would be the installation of auger cast displacement piles for construction of various support structures. Using this type of pile eliminates the need for impact pile driving, which generates much greater levels of ground vibration (Caltrans 2013b:42). The drilling of piles generates a ground vibration level of 0.089 in/sec PPV at 25 feet (FTA 2018:184).

In terms of human annoyance to building occupants, vibration from pile drilling could exceed the threshold for residential land uses of 80 VdB located within 43 feet of drilling and the daytime threshold for institutional land uses including office buildings of 83 VdB within 34 feet of drilling activities. Refer to the Noise Report (Appendix C) for detailed calculations. Pile drilling would take place within 43 feet of the Mercy Housing Community, resulting in an exceedance of the criterion for human annoyance. Because pile drilling would not take place within 34 feet of the nearest office building and the historic Station A building is unoccupied, pile drilling would not result in human annoyance in these buildings or similar buildings farther from the project site. Although construction activity would result in elevated vibration levels at the Mercy Housing Community, construction would be temporary and intermittent and would only occur during the less sensitive daytime hours between 7 a.m. and 6 p.m., Monday through Saturday and between 9 a.m. and 6 p.m. on Sunday, pursuant to the City's Noise Control Ordinance standard.

With respect to potential structural damage, pile drilling may occur in close proximity to two existing structures: the historic Station A building which was originally constructed in the 1940s; and the Mercy Housing Community, which was constructed in 2012. The historic Station A building, which would be maintained as part of the project, is considered more vulnerable to structural damage by ground vibration than the Mercy Housing Community due to its age. Based on the construction type and Caltrans-recommended thresholds identified above, pile drilling within 13 feet of a historic building and 8 feet of a residential structure would be considered potentially significant. Based on current site planning considerations, pile driving is considered to be possible within 13 feet of the historic Station A building, but due to existing underground utilities along the eastern edge of the project site, pile drilling would not occur within 8 feet of the Mercy Housing Community. Therefore,

construction activity could expose the historic Station A building to levels of ground vibration that exceed the threshold for structural damage to a historic structure.

Because construction would be temporary and would occur during the less sensitive daytime hours, human annoyance associated with construction vibration would have a less-than-significant impact. However, because of the potential for structural damage at the historic Station A building, this impact would be **potentially significant**.

Mitigation Measure 3.13-a: Implement measures to reduce ground vibration

To reduce vibration impacts from construction activities, SMUD will require the design-build team and engineers to implement the following measures:

- To the extent feasible, earthmoving and ground-impacting operations (e.g., pile drilling) will be phased so as not to occur simultaneously in areas close to sensitive receptors. The total vibration level produced could be significantly less when each vibration source is operated at separate times.

- Where there is flexibility in the location of activating involving the use of heavy-duty construction equipment, especially auger drill rigs for installing auger cast displacement piles, the equipment will be operated as far away from vibration-sensitive receptors as reasonably possible.

Mitigation Measure 3.13-b: Develop and implement a vibration control plan

A vibration control plan will be developed by SMUD's design-build team to be submitted to and approved by SMUD prior to initiating any pile drilling activities. Applicable elements of the plan will be implemented before, during, and after pile drilling activity. The plan will consider all potential vibration-inducing activities that would occur and require implementation of sufficient measures to ensure that nearby sensitive receptors, including the historic Station A building, are not exposed to vibration levels that would result in structural damage. Items that will be addressed in the plan include, but are not limited to, the following:

- Identification that the maximum allowable vibration levels at nearby buildings consist of Caltrans-recommended standards with respect to the prevention of architectural building damage, specifically: 0.25 in/sec PPV for the historic Station A building.

- SMUD or its contractor will conduct pre-construction surveys to identify any pre-existing structural damage to the historic Station A building.

- SMUD will identify minimum setback requirements for different types of ground vibration–producing activities (e.g., pile drilling) for the purpose of preventing damage to nearby structures and preventing negative human response will be

established based on the proposed construction activities, locations, and the maximum allowable vibration levels identified above. Factors to be considered include the specific nature of the vibration producing activity, local soil conditions, and the fragility/resiliency of the nearby structures. Initial setback requirements can be breached if a project-specific, site specific analysis is conducted by a qualified geotechnical engineer or ground vibration specialist that indicates that no structural damage would occur at nearby buildings or structures.

- The construction contractor will monitor and document all pile drilling-generated vibration levels at the Station A building to ensure that applicable thresholds are not exceeded. The construction contractor will submit recorded vibration data on a twice-weekly basis to SMUD. If it is found at any time by the design-build team or SMUD that thresholds are exceeded, pile drilling will cease in that location and methods will be implemented to reduce vibration to below applicable thresholds, or an alternative construction method will be used at that location.

Implementation of Mitigation Measures 3.13-a and 3.13-b require SMUD and the design-build team to restrict phasing operations, locate equipment as far from receptors as feasible, and prepare and implement a vibration control plan. This plan will refine appropriate setback distances, require SMUD to conduct pre-construction surveys, require the construction contractor to monitor and document all pile drilling-generated vibration levels at sensitive receptors, and identify other measures and/or alternative methods of construction to reduce vibration if necessary. These measures would ensure compliance with recommended levels to prevent structural damage. Thus, this impact would be reduced to a **less-than-significant** level.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The project is not located within an airport land use plan or within two miles of a public airport or public use airport. Additionally, the project is not located within two miles of a private airstrip. Sacramento Executive Airport is the closest airport and is located approximately 4 miles south of the project site. Also, the project would not include any new land uses where people would live or work. Thus, the project would have **no impact** regarding the exposure of people residing or working in the project area to excessive aircraft-related noise levels, and no mitigation is required.

3.14 Population and Housing

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIV.Population and Housing. Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.14.1 Environmental Setting

The project involves the decommissioning and removal of outdated equipment and replacement with new substation equipment. The project would not generate any new residents in the area or provide any new jobs within the Sacramento region.

3.14.2 Discussion

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. The project involves the removal of existing electrical equipment and replacement with above-ground equipment and underground lines. The project does not include new homes or businesses. Further, new electrical equipment and distribution lines would serve existing and planned future uses in the downtown area and would not induce or generate population growth. Therefore, the project would have ***no impact***, and no mitigation is required.

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

No Impact. No persons or homes would be displaced as a result of project construction or operation. Therefore, the project would have ***no impact***, and no mitigation is required.

3.15 Public Services

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XV. Public Services. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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?	☐	☐	☐	☒

3.15.1 Environmental Setting

The project site is located within the downtown of the City of Sacramento and is served by City of Sacramento public services (police, fire, schools, parks, and libraries).

Fire Protection Services

The Sacramento Fire Department (SFD) provides fire protection services to the project site the entire city, as well as some small areas outside the city boundaries within Sacramento County. The fire station closest to the proposed project is Sacramento Fire Department Station 2 at 1229 I Street, located approximately 0.5 miles southeast of the site.

Police Protection Services

The Sacramento Police Department (SPD) is principally responsible for providing police protection services in the city of Sacramento, including the project area. The SPD main office is located at 300 Richards Boulevard, located less than one mile north of the project site. Uses within the downtown area that are under state jurisdiction are served by the California Highway Patrol.

Schools

As previously described, there is one public school within the larger project vicinity; North Avenue Elementary School is located approximately 0.2 miles southeast of the project site. Additionally, several preschool centers are located within one mile of the project area, the

closest of which is the Cadence Academy Preschool located at 600 I Street, approximately 500 feet south of the project site.

Parks and Other Public Facilities

The nearest park, Cesar Chavez Plaza, is located approximately 0.25 miles southeast of the project site and includes a café, fountain, picnic and public seating areas. Additionally, Zapata Park is located less than 0.5 miles northeast of the project site. The 1.05-acre park includes a common area with picnic tables, a community garden, and a seating area with benches.

3.15.2 Discussion

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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

No Impact. Implementation of the project would not increase demand for SFD fire protection services because the project would not generate new residents, which is the driving factor for fire protection services, nor would it result in the operation of additional structures within the project area that could generate calls for service. Because the project would not increase demand for fire protection services, no construction of new or expansion of existing fire service facilities would be required. Therefore, the project would have ***no impact*** on fire protection services, and no mitigation is required.

Police Protection

No Impact. Implementation of the project would not increase demand for SPD police protection services because the project would not generate new residents, which is the driving factor for police protection services, nor would it result in the operation of additional structures within the project area that could generate calls for service. Because the project would not increase demand for police protection services, no construction of new or expansion of existing police service facilities would be required. Therefore, the project would have ***no impact*** on police facilities, and no mitigation is required.

Schools

No Impact. The project would not provide any new housing that would generate new students in the community nor result in an increase in employment opportunities that could indirectly contribute new students to the local school district. Therefore, the project would have ***no impact*** on school services and facilities, and no mitigation is required.

Parks

No Impact. The project would not provide any new structures that could result in additional residents/employees, which could necessitate new or expanded park facilities. Therefore, the project would have ***no impact*** on parks, and no mitigation is required.

Other Public Facilities

No Impact. Though the project is located near public transportation stations, including Amtrack, the project would not result in additional residents or employees that would utilize these public facilities, nor would the project attract existing residents toward the area. Therefore, the project would have ***no impact*** on other public facilities, and no mitigation is required.

3.16 Recreation

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVI. Recreation. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

3.16.1 Environmental Setting

The project site is located within the downtown area of the city of Sacramento. As previously described, the nearest park, Cesar Chavez Plaza, is located approximately 0.25 miles southeast of the project site and includes a café, fountain, picnic and public seating areas. Additionally, Zapata Park is located less than 0.5 miles northeast of the project site. The 1.05-acre park includes a common area with picnic tables, a community garden, and a seating area with benches.

3.16.2 Discussion

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. The project does not include any new development (i.e., residential, office, or commercial) that could increase the use of existing local parks or recreational facilities. Therefore, the project would have ***no impact***, and no mitigation is required.

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

No Impact. The project does not include any new development that could necessitate new or expanded recreational facilities. Therefore, the project would have ***no impact***, and no mitigation is required.

3.17 Traffic and Transportation

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVII. Transportation/Traffic. 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?	☐	☒	☐	☐

3.17.1 Environmental Setting

The project site is located between H Street and Government Alley, and between 6th Street and 7th Street. H Street along the project site is a two-lane, one-way street with traffic traveling east and light rail tracks along the northern side of the road. Along the west side of the historic Station A building, 6th Street includes three lanes for vehicle travel, with 2 lanes for southbound traffic and one lane for northbound vehicles. Most project activities would be contained within the project site owned by SMUD, but some construction equipment placement and utility connections would be required within public rights-of-way.

The Gold Line of Sacramento Regional Transit's light rail system includes track within H Street adjacent to the sidewalk fronting the project site. There are no transit stops located at or near the project site. There is also a sidewalk along 6th Street which is adjacent to the historic Station A building. Bike lanes are located along 6th Street and the south side of H Street.

3.17.2 Discussion

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

Less than Significant with Mitigation Incorporated. Project construction would temporarily interfere with existing vehicle, transit, bicycle, and pedestrian circulation as it would include temporary closures of roads, sidewalks, and bike lanes. Upon completion of construction, all facilities would be returned to their pre-project condition. Project operation would not generate additional vehicle, transit, pedestrian, or bicycle use, so there would be no conflicts with programs, plans, ordinances, or policies related to circulation.

Section 12.20.030 of the Sacramento Municipal Code requires Because project construction activities could affect the existing circulation system, this impact would be potentially significant.

Mitigation Measure 3.17-1: Traffic Control Plan

Prior to project construction within or adjacent to public roadways, SMUD's construction contractor shall develop a traffic control plan for the project and submit the plan to the City of Sacramento's Department of Public Works. The plan shall identify temporary lane, sidewalk, bicycle lane, and transit stop closures and provide information regarding how access and connectivity will be maintained during construction activities. The plan shall include details regarding traffic controls that would be employed, including signage, detours, and flaggers. The traffic control plan shall be implemented by the contractor during construction to allow for the safe passage of vehicles, pedestrians, and cyclists along the project route.

Implementation of Mitigation Measures 3.17-1 would reduce impacts related to the circulation system by ensuring that accessibility and connectivity are maintained during construction activities. Therefore, this impact would be reduced to a ***less-than-significant*** level.

b) Conflict or be inconsistent with CEQA Guidelines section 15064.3(b), which pertains to vehicle miles travelled?

Less than Significant. Temporary construction activities would result in slight increases in vehicle trips associated with worker commutes and materials delivery. However, these additional trips would only occur during the construction period. During operation, no new vehicle trips would be generated as the project involves existing facilities with existing maintenance and operations activities. Because the project would not change the amount of development projected for the area, would be consistent with the population growth and VMT projections in regional and local plans, and would have only a slight increase in VMT during construction, this impact would be ***less than significant***, and no mitigation is required.

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

Less than Significant with Mitigation Incorporated. Project operation would not result in any changes in road geometry or new uses. As discussed above, project construction would require temporary closure of vehicle lanes as well as sidewalks, bike lanes, and transit stops. This impact would be potentially significant.

Implementation of Mitigation Measures 3.17-1 would reduce impacts related to traffic hazards during construction by requiring a plan to maintain access and provide safety information. As part of the plan, requirements would be established to allow for the safe, controlled passage of vehicles through the project area. Therefore, impacts related to traffic hazards would be reduced to a ***less-than-significant*** level.

d) Result in inadequate emergency access?

Less than Significant with Mitigation Incorporated. As discussed above, project operation would not change any existing roads, including areas provided for emergency access. Project construction would involve temporary lane closures, which has the potential to impact access for emergency vehicles. This impact would be potentially significant.

Implementation of Mitigation Measures 3.17-1 would reduce impacts related to inadequate emergency access during construction by requiring implementation of a plan to maintain access for emergency vehicles during construction. Therefore, impacts related to emergency access would be reduced to a ***less-than-significant*** level.

3.18 Tribal Cultural Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVIII. Tribal Cultural Resources.				
Has a California Native American Tribe requested consultation in accordance with Public Resources Code section 21080.3.1(b)?		☒ Yes		☐ No
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?	☒	☐	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☒	☐	☐	☐

3.18.1 Environmental Setting

Tribal Consultation

On August 6, 2020, the Native American Heritage Commission (NAHC) identified a tribal cultural resource site proximate to the project site in response to a Sacred Lands File Search request (NAHC 2020). The NAHC's letter advised SMUD to contact the Ione Band of Miwuk Indians and the United Auburn Indian Community of the Auburn Rancheria for more information. The NAHC also provided a list and contact information for additional Native American contacts who may have interest in the project.

On July 17, 2020, SMUD sent emails and certified letters to the Ione Band of Miwok Indians, United Auburn Indian Community of the Auburn Rancheria (UAIC), and Wilton Rancheria. All three tribes have requested to consult on the project, as has the Shingle Springs Band of Miwok Indians.

3.18.2 Discussion

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Potentially Significant. The records search identified known tribal cultural resources at the project site or within 1/8-mile of the project site (NCIC 2020). Currently, four tribes are actively engaging in consultation with SMUD regarding potential tribal cultural resources in the project area. Therefore, impacts related to the project could be ***potentially significant***. These issues will be analyzed further in the EIR.

3.19 Utilities

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIX. Utilities and Service Systems. Would the project:				
a) Require or result in the relocation or construction of construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication 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 that 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?	☐	☐	☒	☐

3.19.1 Environmental Setting

Water supply is provided by the City of Sacramento from a combination of surface water from the American and Sacramento rivers and groundwater pumped from the North and South American Subbasins. The City operates and maintains the Sacramento River Water Treatment Plant, E. A. Fairbairn Water Treatment Plant, 18 high-lift service pumps at the water treatment plants, 27 groundwater wells that deliver potable water to the distribution system, pumping facilities, 11 storage reservoirs, and water distribution and transmission mains. (City of Sacramento 2014c:4-21)

The City's Department of Utilities provides wastewater collection and conveyance to approximately two-thirds of the area within the city limits that is not served by the combined sewer system (CSS), while the Sacramento Area Sewer District (formerly County Services District 1) provides wastewater collection to the rest of the city (City of Sacramento 2014c:4-1). The project site is served by the City's CSS for sewer only, and existing sewer mains are located along 5th Street and 7th Street (SMUD 2015). Stormwater from the project site drains to the existing storm drain along 6th Street.

Most refuse collected by the City is transported to the Kiefer Landfill (City of Sacramento 2014c:4-44). Sacramento County owns and operates the Kiefer Landfill, and the landfill is the primary solid waste disposal facility in the county. The Kiefer Landfill is classified as a Class III municipal solid waste landfill facility and is permitted to accept general residential, commercial, and industrial refuse for disposal, including municipal solid waste, construction and demolition debris, green materials, agricultural debris, and other nonhazardous designated debris.

3.19.2 Discussion

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

Less than Significant. The project would replace existing electrical equipment aboveground and would include construction of underground transmission lines. The project would also include restroom facilities in a new control building, which replace existing restroom facilities in the historic Station A building. The restroom facilities would require connections to City water and wastewater systems. Should groundwater be encountered during project construction, testing would occur in accordance with DTSC and Regional Water Quality Control Board (RWQCB) requirements prior to dewatering activities. Discharge to the stormdrain system and/or sewer system would be temporary and would not exceed system capacity as water could be retained on the project site until there is adequate capacity. Project operation would have approximately the same demand for water and generate the same amount of wastewater. This water demand and wastewater generation would be substantially similar to existing system demands and flows. This impact would be ***less than significant***, and no mitigation is required.

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

Less than Significant. The project would require a small amount of potable water for use in the restroom in the control building, which is substantially similar to the existing demand for facilities in the historic Station A building. Because the demand would be substantially similar to existing demand, the impact would be ***less than significant***, and no mitigation is required.

c) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?

Less than Significant. As discussed under item a), project construction could include dewatering and water could be discharged to the City's CSS. Water discharged to the City's CSS would be temporary and would not exceed system capacity as water could be

retained on the project site until there is adequate capacity. Once operational, the project would use the CSS for the wastewater generated by the restroom in the control building, which is expected to generate a similar amount of wastewater as the existing facilities in the historic Station A building. Therefore, the project would have ***less-than-significant*** impact related to wastewater treatment capacity, and no mitigation is required.

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

Less than Significant. The project would generate solid waste during construction activities by the removal of existing equipment on the project site. Construction debris could include asphalt, concrete, scrap lumber, finishing materials, metals, and organic materials. Compliance with the 2013 CALGreen Code and the City Construction and Demolition Debris Recycling Ordinance would result in a reduction of construction waste and demolition debris and increase recycling. In addition, the construction contractor would comply with goals of the Sacramento 2035 General Plan Update also contains goals regarding solid waste generation and recycling.

The majority of landfilled waste would be delivered to the Sacramento Recycling and Transfer Station, the Sacramento County Kiefer Landfill, the Yolo County Landfill, L and D Landfill, Florin Perkins Landfill, and Elder Creek Transfer Station. Combined, these landfills have a large volume of landfill capacity available to serve the project during construction. Project operation would include intermittent visits from SMUD personnel, so it is expected that very little solid waste would be generated during operation, similar to existing conditions. This impact would be ***less than significant***, and no mitigation is required.

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

Less than Significant. The project would cause a temporary increase in the generation of solid waste as a result of construction activities. However, the operation of the project would not generate solid waste. Compliance with the City of Sacramento policies regarding solid waste would prevent landfills from being overloaded due to the project construction activities. This impact would be ***less than significant***, and no mitigation is required.

3.20 Wildfire

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. Wildfire.				
Is the project located in or near state responsibility areas or lands classified as high fire hazard severity zones?		☐ Yes	☒ No	
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 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?	☐	☐	☐	☒

3.20.1 Environmental Setting

The project site is located within a local responsibility area that is designated as a non-Very High Fire Hazard Severity Zone (non-VHFHSZ) (CAL FIRE 2008).

3.20.2 Discussion

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

Less than Significant. Construction of the project could require temporary road lane closures that could temporarily impair emergency response plans or evacuation plans. As required by the City, SMUD and its construction contractor would develop and implement a traffic control plan that would maintain access and connectivity during project construction activities. Because access and connectivity would be maintained during construction, the project would not substantially impair an emergency response plan or evacuation plan. Once construction is complete, the project would operate similar to its pre-construction condition project features would not impair emergency response or

evacuation. Because adequate access would be maintained throughout construction activities, this impact would be ***less than significant***, and no mitigation is required.

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?

No Impact. The project would not exacerbate wildfire risks as the project site is not located within a wildfire hazard zone, is substantially surrounded by developed land, and is not near wildland areas. There would be ***no impact***, and no mitigation is required***.***

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

Less than Significant. The project involves the removal and reinstallation of electrical transmission and distribution infrastructure to provide supply reliability and serve existing and planned future uses in the downtown area. The project would not exacerbate fire risk because the project would adhere to all safety requirements for the equipment to be replaced. This impact would be ***less than significant***, and no mitigation is required*.*

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?

No Impact. The project is located in an area of predominantly flat terrain and would not involve the changing to slopes that could expose people to risks of flooding from post-fire slope instability. Project facilities would be located both aboveground and under the ground surface, however, would operate similar to current conditions and would not result in changes to existing drainage. There would be ***no impact***, and no mitigation is required.

3.21 Mandatory Findings of Significance

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. 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 an endangered, rare, or threatened species, 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 that will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Authority: Public Resources Code Sections 21083, 21083.5.

Reference: Government Code Sections 65088.4.
Public Resources Code Sections 21080, 21083.5, 21095; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; *San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

3.21.1 Discussion

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 an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?

Potentially Significant. The project is located in downtown Sacramento in an infill and transit-oriented area. There are few biological resources on the site and as described in Section 3.4, "Biological Resources," the proposed project's impacts on special-status species and potential conflicts with the City's tree ordinance would be less than significant with mitigation.

Additional evaluation is necessary to determine whether the project would affect archaeological, historic, or tribal cultural resources. This ***potentially significant*** impact will be analyzed further in the EIR.

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.)

Potentially Significant. Generally, because of the limited scope of the project (i.e., limited construction activities within less than 0.5 acre and no expansion of use beyond existing conditions), implementation would not result in cumulatively considerable contributions to the cumulative effects of development in the area. Evaluation of the project's contribution to cumulative impacts related to archaeological, historic, and tribal cultural resources will be evaluated after the project impacts are characterized in the EIR. This ***potentially significant*** impact will be analyzed further in the EIR.

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

Potentially Significant. The EIR will evaluate environmental effects that could cause substantial adverse effects on human beings associated with the construction of this project, either directly or indirectly. This ***potentially significant*** impact will be analyzed further in the EIR.

4. List of Preparers

SMUD

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APPENDIX A:
AIR EMISSIONS MODELING DATA

Energy Calculations Summary

Construction Fuel Usage Summary

Construction Phase	Diesel Off-road Equipment (gallons)	Gasoline On-road (gallons)	Diesel On-road (gallons)	Diesel Total
2023	26,040	962	429	**26,469**
2024	1,570	48	54	**1,624**
TOTAL	**27,609**	**1,009**	**484**	**28,093**

Total Gasoline	**1,009**	**gallons**
Total Diesel	**28,093**	**gallons**

2023 Construction Offroad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of days	Diesel Fuel Usage
Excavation	Excators	1	8.00	158	0.38	55	1,321
Excavation	Graders	1	8.00	187	0.41	55	1,687
Excavation	Tractors/Loaders/Backhoes	3	8.00	97	0.37	55	2,369
Installation of Equipment	Forklifts	1	6.00	89	0.20	55	294
Installation of Equipment	Graders	1	8.00	187	0.41	55	1,687
Installation of Equipment	Generator Sets	1	8.00	84	0.74	55	1,368
Installation of Equipment	Concrete/Industrial Saws	1	8.00	81	0.73	55	1,301
Installation of Equipment	Rubber Tired Dozers	1	8.00	247	0.40	55	2,174
Installation of Equipment	Tractors/Loaders/Backhoes	2	8.00	97	0.37	55	1,579
Construction Station H	Cranes	1	4.00	231	0.29	125	1,675
Construction Station H	Forklifts	2	6.00	89	0.20	125	1,335
Construction Station H	Generator Sets	1	8.00	84	0.74	125	3,108
Construction Station H	Rollers	1	8.00	80	0.38	125	1,520
Construction Station H	Tractors/Loaders/Backhoes	2	8.00	97	0.37	125	3,589
Construction Station H	Welders	1	8.00	46	0.45	125	1,035
						TOTAL	26,040

Notes: Equipment assumptions are consistent with CalEEMod. Fuel usage average of 0.05 gallons of diesel fuel per horsepower-hour is from the SCAQMD CEQA Air Quality Handbook, Table A9-3E.

Trips and VMT

Phase Name	Daily Worker Trip	Daily Vendor Trip	Daily Hauling Trip	Days per Year	Total Worker Trips	Total Vendor Trips	Total Haul Trips	Worker Trip Length (miles)	Vendor Trip Length (miles)	Haul Trip Length (miles)	Total Worker Trip Length (miles)	Total Vendor Trip Length (miles)	Total Haul Trip Length (miles)	Total gallons of gasoline	Total gallons of diesel
Excavation	13	0	0	55	715	0	-	10.00	6.50	20.00	7150	0	-	243	0
Installation of Equipment	18	0	0	55	990	0	-	10.00	6.50	20.00	9900	0	-	337	0
Construction Station H	9	3	0	125	1125	375	-	10.00	6.50	20.00	11250	2437.5	-	382	429
													TOTAL	962	429

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

Building Construction

Construction Sta	7/8/2023
Construction En	12/31/2023
Total Work Days	125

2024 Construction Offroad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of days	Diesel Fuel Usage
Construction Station H	Cranes	1	4.00	231	0.29	16	214
Construction Station H	Forklifts	2	6.00	89	0.20	16	171
Construction Station H	Generator Sets	1	8.00	84	0.74	16	398
Construction Station H	Rollers	1	8.00	80	0.38	16	195
Construction Station H	Tractors/Loaders/Backhoes	2	8.00	97	0.37	16	459
Construction Station H	Welders	1	8.00	46	0.45	16	132
						TOTAL	1,570

Notes: Equipment assumptions are consistent with CalEEMod. Fuel usage average of 0.05 gallons of diesel fuel per horsepower-hour is from the SCAQMD CEQA Air Quality Handbook, Table A9-3E.

Trips and VMT

Phase Name	Daily Worker Trip	Daily Vendor Trip	Daily Hauling Trip	Days per Year	Total Worker Trips	Total Vendor Trips	Total Haul Trips	Worker Trip Length (miles)	Vendor Trip Length (miles)	Haul Trip Length (miles)	Total Worker Trip Length (miles)	Total Vendor Trip Length (miles)	Total Haul Trip Length (miles)	**Total gallons of gasoline**	**Total gallons of diesel**
Construction Station H	9	3	0	16	144	48	-	10.00	6.50	20.00	1440	312	-	48	54
													TOTAL	48	54

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

Building Construction

Construction Start Da	1/1/2024
Construction End Dat	1/22/2024
Total Work Days	16

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: County
Region: Sacramento
Calendar Year: 2 2023
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed miles/hr	Fuel	Population vehicles	VMT miles/day	Trips trips/day	Fuel gas 1,000 gallons/day	Diesel gas 1,000 gallons/day	Miles per gallon	Gasoline miles per gallon	Diesel miles per gallon
Sacramento	2023	LDA	Aggregated	Aggregated	GAS	606308.32	21470907.57	2835871.384	665.4181032	0.00	32.27	29.42	5.68
Sacramento	2023	LDT1	Aggregated	Aggregated	GAS	65368.825	2148247.633	297348.0731	77.95506082	0.00	27.56		
Sacramento	2023	LDT2	Aggregated	Aggregated	GAS	210187.04	7110545.533	970164.8507	277.9033637	0.00	25.59		
Sacramento	2023	T7 tractor	Aggregated	Aggregated	DSL	284.69322	19393.38955	1287.086989		3.416629408	5.68		

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

SMUD Station H Construction Emissions

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	20.47	1000sqft	0.47	20,470.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2025
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	590.31	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

SMUD Station H Construction Emissions - Sacramento County, Annual

Project Characteristics - Climate Zone 6 Based on Zip Code 95814

Land Use - 0.47
-acre parcel

Construction Phase - No earthmovement associated with decommissioning of Station A. Construction to commence in early 2023 and completed in 2024. Construction to occur Monday-Saturday.

Off-road Equipment - CalEEMod Defaults Utilized.

Grading - No import/export of materials

Trips and VMT - Construction crew of 10 works, peak of 30 during building construction.

Off-road Equipment - Construction Equipment List Derived from Station A Appendix

Off-road Equipment - Equipment list derived from Station A Appendix

Off-road Equipment -

Construction Off-road Equipment Mitigation - Mitigation Measure 3.3-1

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterExposedAreaPM10PercentReduction	55	50
tblConstDustMitigation	WaterExposedAreaPM25PercentReduction	55	50
tblConstructionPhase	NumDays	100.00	170.00
tblConstructionPhase	NumDays	1.00	55.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	11/24/2022	1/22/2024
tblConstructionPhase	PhaseEndDate	7/7/2022	6/24/2023
tblConstructionPhase	PhaseEndDate	7/5/2022	4/10/2023
tblConstructionPhase	PhaseStartDate	7/8/2022	7/8/2023
tblConstructionPhase	PhaseStartDate	7/6/2022	4/22/2023
tblConstructionPhase	PhaseStartDate	7/5/2022	2/5/2023
tblGrading	AcresOfGrading	27.50	0.00

tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00
tblTripsAndVMT	WorkerTripNumber	9.00	60.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1997	1.7704	1.9378	3.6100e-003	0.2083	0.0806	0.2889	0.1024	0.0757	0.1781			314.4546	0.0685	0.0000	316.1683
2024	0.0133	0.1086	0.1426	2.5000e-004	4.3500e-003	4.8400e-003	9.1900e-003	1.1600e-003	4.5600e-003	5.7300e-003			22.0145	4.2500e-003	0.0000	22.1208
Maximum	**0.1997**	**1.7704**	**1.9378**	**3.6100e-003**	**0.2083**	**0.0806**	**0.2889**	**0.1024**	**0.0757**	**0.1781**			**314.4546**	**0.0685**	**0.0000**	**316.1683**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1997	1.7704	1.9378	3.6100e-003	0.1255	0.0806	0.2061	0.0569	0.0757	0.1326			314.4543	0.0685	0.0000	316.1679
2024	0.0133	0.1086	0.1426	2.5000e-004	4.3500e-003	4.8400e-003	9.1900e-003	1.1600e-003	4.5600e-003	5.7300e-003			22.0144	4.2500e-003	0.0000	22.1208
Maximum	**0.1997**	**1.7704**	**1.9378**	**3.6100e-003**	**0.1255**	**0.0806**	**0.2061**	**0.0569**	**0.0757**	**0.1326**			**314.4543**	**0.0685**	**0.0000**	**316.1679**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**38.94**	**0.00**	**27.78**	**43.94**	**0.00**	**24.76**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
3	12-21-2022	3-20-2023	0.2252	0.2252
4	3-21-2023	6-20-2023	0.6789	0.6789
5	6-21-2023	9-20-2023	0.4775	0.4775
6	9-21-2023	12-20-2023	0.5335	0.5335
7	12-21-2023	3-20-2024	0.1857	0.1857
		Highest	0.6789	0.6789

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0895	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			5.1000e-004	0.0000	0.0000	5.4000e-004
Energy	3.9500e-003	0.0359	0.0302	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003			122.3196	4.8400e-003	1.5600e-003	122.9063
Mobile	0.0263	0.1128	0.3160	1.1500e-003	0.1110	8.9000e-004	0.1119	0.0298	8.3000e-004	0.0306			105.7678	4.4600e-003	0.0000	105.8794
Waste						0.0000	0.0000		0.0000	0.0000			5.1519	0.3045	0.0000	12.7636
Water						0.0000	0.0000		0.0000	0.0000			7.9902	6.0700e-003	3.7100e-003	9.2465
Total	**0.1197**	**0.1487**	**0.3465**	**1.3700e-003**	**0.1110**	**3.6200e-003**	**0.1147**	**0.0298**	**3.5600e-003**	**0.0333**			**241.2300**	**0.3198**	**5.2700e-003**	**250.7964**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0895	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			5.1000e-004	0.0000	0.0000	5.4000e-004
Energy	3.9500e-003	0.0359	0.0302	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003			122.3196	4.8400e-003	1.5600e-003	122.9063
Mobile	0.0263	0.1128	0.3160	1.1500e-003	0.1110	8.9000e-004	0.1119	0.0298	8.3000e-004	0.0306			105.7678	4.4600e-003	0.0000	105.8794
Waste						0.0000	0.0000		0.0000	0.0000			5.1519	0.3045	0.0000	12.7636
Water						0.0000	0.0000		0.0000	0.0000			7.9902	6.0700e-003	3.7100e-003	9.2465
Total	**0.1197**	**0.1487**	**0.3465**	**1.3700e-003**	**0.1110**	**3.6200e-003**	**0.1147**	**0.0298**	**3.5600e-003**	**0.0333**			**241.2300**	**0.3198**	**5.2700e-003**	**250.7964**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Excavation	Trenching	2/5/2023	4/10/2023	6	55	
2	Installation of Equipment	Site Preparation	4/22/2023	6/24/2023	6	55	
3	Construction of Station H	Building Construction	7/8/2023	1/22/2024	6	170	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Installation of Equipment	Graders	1	8.00	187	0.41
Excavation	Excavators	1	8.00	158	0.38
Installation of Equipment	Generator Sets	1	8.00	84	0.74
Installation of Equipment	Concrete/Industrial Saws	1	8.00	81	0.73
Construction of Station H	Cranes	1	4.00	231	0.29
Construction of Station H	Forklifts	2	6.00	89	0.20
Excavation	Graders	1	8.00	187	0.41
Installation of Equipment	Forklifts	1	6.00	89	0.20
Construction of Station H	Generator Sets	1	7.00	84	0.74
Construction of Station H	Rollers	1	8.00	80	0.38
Installation of Equipment	Rubber Tired Dozers	1	8.00	247	0.40
Construction of Station H	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Construction of Station H	Welders	1	8.00	46	0.45
Installation of Equipment	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Excavation	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Trips and VMT

SMUD Station H Construction Emissions - Sacramento County, Annual

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Excavation	5	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Equipment	7	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Construction of Station H	8	60.00	3.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0282	0.2972	0.3202	5.8000e-004		0.0125	0.0125		0.0115	0.0115			51.0350	0.0165	0.0000	51.4477
Total	**0.0282**	**0.2972**	**0.3202**	**5.8000e-004**		**0.0125**	**0.0125**		**0.0115**	**0.0115**			**51.0350**	**0.0165**	**0.0000**	**51.4477**

3.2 Excavation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.6700e-003	1.0100e-003	0.0118	4.0000e-005	4.0400e-003	3.0000e-005	4.0700e-003	1.0700e-003	2.0000e-005	1.1000e-003			3.2082	7.0000e-005	0.0000	3.2100
Total	**1.6700e-003**	**1.0100e-003**	**0.0118**	**4.0000e-005**	**4.0400e-003**	**3.0000e-005**	**4.0700e-003**	**1.0700e-003**	**2.0000e-005**	**1.1000e-003**			**3.2082**	**7.0000e-005**	**0.0000**	**3.2100**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0282	0.2972	0.3202	5.8000e-004		0.0125	0.0125		0.0115	0.0115			51.0350	0.0165	0.0000	51.4476
Total	**0.0282**	**0.2972**	**0.3202**	**5.8000e-004**		**0.0125**	**0.0125**		**0.0115**	**0.0115**			**51.0350**	**0.0165**	**0.0000**	**51.4476**

3.2 Excavation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.6700e-003	1.0100e-003	0.0118	4.0000e-005	4.0400e-003	3.0000e-005	4.0700e-003	1.0700e-003	2.0000e-005	1.1000e-003			3.2082	7.0000e-005	0.0000	3.2100
Total	**1.6700e-003**	**1.0100e-003**	**0.0118**	**4.0000e-005**	**4.0400e-003**	**3.0000e-005**	**4.0700e-003**	**1.0700e-003**	**2.0000e-005**	**1.1000e-003**			**3.2082**	**7.0000e-005**	**0.0000**	**3.2100**

3.3 Installation of Equipment - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1656	0.0000	0.1656	0.0910	0.0000	0.0910			0.0000	0.0000	0.0000	0.0000
Off-Road	0.0553	0.5529	0.4492	9.3000e-004		0.0244	0.0244		0.0230	0.0230			81.0172	0.0178	0.0000	81.4624
Total	**0.0553**	**0.5529**	**0.4492**	**9.3000e-004**	**0.1656**	**0.0244**	**0.1900**	**0.0910**	**0.0230**	**0.1140**			**81.0172**	**0.0178**	**0.0000**	**81.4624**

3.3 Installation of Equipment - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.6700e-003	1.0100e-003	0.0118	4.0000e-005	4.0400e-003	3.0000e-005	4.0700e-003	1.0700e-003	2.0000e-005	1.1000e-003			3.2082	7.0000e-005	0.0000	3.2100
Total	**1.6700e-003**	**1.0100e-003**	**0.0118**	**4.0000e-005**	**4.0400e-003**	**3.0000e-005**	**4.0700e-003**	**1.0700e-003**	**2.0000e-005**	**1.1000e-003**			**3.2082**	**7.0000e-005**	**0.0000**	**3.2100**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0828	0.0000	0.0828	0.0455	0.0000	0.0455			0.0000	0.0000	0.0000	0.0000
Off-Road	0.0553	0.5529	0.4492	9.3000e-004		0.0244	0.0244		0.0230	0.0230			81.0172	0.0178	0.0000	81.4623
Total	**0.0553**	**0.5529**	**0.4492**	**9.3000e-004**	**0.0828**	**0.0244**	**0.1072**	**0.0455**	**0.0230**	**0.0685**			**81.0172**	**0.0178**	**0.0000**	**81.4623**

3.3 Installation of Equipment - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.6700e-003	1.0100e-003	0.0118	4.0000e-005	4.0400e-003	3.0000e-005	4.0700e-003	1.0700e-003	2.0000e-005	1.1000e-003			3.2082	7.0000e-005	0.0000	3.2100
Total	**1.6700e-003**	**1.0100e-003**	**0.0118**	**4.0000e-005**	**4.0400e-003**	**3.0000e-005**	**4.0700e-003**	**1.0700e-003**	**2.0000e-005**	**1.1000e-003**			**3.2082**	**7.0000e-005**	**0.0000**	**3.2100**

3.4 Construction of Station H - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0986	0.8913	1.0430	1.6800e-003		0.0434	0.0434		0.0410	0.0410			144.3917	0.0332	0.0000	145.2222
Total	**0.0986**	**0.8913**	**1.0430**	**1.6800e-003**		**0.0434**	**0.0434**		**0.0410**	**0.0410**			**144.3917**	**0.0332**	**0.0000**	**145.2222**

3.4 Construction of Station H - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	5.2000e-004	0.0186	5.0500e-003	5.0000e-005	1.3200e-003	3.0000e-005	1.3500e-003	3.8000e-004	3.0000e-005	4.1000e-004			5.1706	2.6000e-004	0.0000	5.1772
Worker	0.0137	8.2900e-003	0.0968	2.9000e-004	0.0333	2.2000e-004	0.0335	8.8500e-003	2.0000e-004	9.0500e-003			26.4237	6.0000e-004	0.0000	26.4388
Total	**0.0142**	**0.0269**	**0.1018**	**3.4000e-004**	**0.0346**	**2.5000e-004**	**0.0348**	**9.2300e-003**	**2.3000e-004**	**9.4600e-003**			**31.5944**	**8.6000e-004**	**0.0000**	**31.6160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0986	0.8913	1.0430	1.6800e-003		0.0434	0.0434		0.0410	0.0410			144.3915	0.0332	0.0000	145.2220
Total	**0.0986**	**0.8913**	**1.0430**	**1.6800e-003**		**0.0434**	**0.0434**		**0.0410**	**0.0410**			**144.3915**	**0.0332**	**0.0000**	**145.2220**

3.4 Construction of Station H - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	5.2000e-004	0.0186	5.0500e-003	5.0000e-005	1.3200e-003	3.0000e-005	1.3500e-003	3.8000e-004	3.0000e-005	4.1000e-004			5.1706	2.6000e-004	0.0000	5.1772
Worker	0.0137	8.2900e-003	0.0968	2.9000e-004	0.0333	2.2000e-004	0.0335	8.8500e-003	2.0000e-004	9.0500e-003			26.4237	6.0000e-004	0.0000	26.4388
Total	**0.0142**	**0.0269**	**0.1018**	**3.4000e-004**	**0.0346**	**2.5000e-004**	**0.0348**	**9.2300e-003**	**2.3000e-004**	**9.4600e-003**			**31.5944**	**8.6000e-004**	**0.0000**	**31.6160**

3.4 Construction of Station H - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0116	0.1053	0.1308	2.1000e-004		4.8100e-003	4.8100e-003		4.5400e-003	4.5400e-003			18.1720	4.1500e-003	0.0000	18.2758
Total	**0.0116**	**0.1053**	**0.1308**	**2.1000e-004**		**4.8100e-003**	**4.8100e-003**		**4.5400e-003**	**4.5400e-003**			**18.1720**	**4.1500e-003**	**0.0000**	**18.2758**

3.4 Construction of Station H - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	2.2900e-003	5.9000e-004	1.0000e-005	1.7000e-004	0.0000	1.7000e-004	5.0000e-005	0.0000	5.0000e-005			0.6468	3.0000e-005	0.0000	0.6477
Worker	1.6200e-003	9.4000e-004	0.0113	4.0000e-005	4.1900e-003	3.0000e-005	4.2100e-003	1.1100e-003	3.0000e-005	1.1400e-003			3.1956	7.0000e-005	0.0000	3.1973
Total	**1.6800e-003**	**3.2300e-003**	**0.0119**	**5.0000e-005**	**4.3600e-003**	**3.0000e-005**	**4.3800e-003**	**1.1600e-003**	**3.0000e-005**	**1.1900e-003**			**3.8424**	**1.0000e-004**	**0.0000**	**3.8450**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0116	0.1053	0.1308	2.1000e-004		4.8100e-003	4.8100e-003		4.5400e-003	4.5400e-003			18.1720	4.1500e-003	0.0000	18.2758
Total	**0.0116**	**0.1053**	**0.1308**	**2.1000e-004**		**4.8100e-003**	**4.8100e-003**		**4.5400e-003**	**4.5400e-003**			**18.1720**	**4.1500e-003**	**0.0000**	**18.2758**

3.4 Construction of Station H - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	2.2900e-003	5.9000e-004	1.0000e-005	1.7000e-004	0.0000	1.7000e-004	5.0000e-005	0.0000	5.0000e-005			0.6468	3.0000e-005	0.0000	0.6477
Worker	1.6200e-003	9.4000e-004	0.0113	4.0000e-005	4.1900e-003	3.0000e-005	4.2100e-003	1.1100e-003	3.0000e-005	1.1400e-003			3.1956	7.0000e-005	0.0000	3.1973
Total	**1.6800e-003**	**3.2300e-003**	**0.0119**	**5.0000e-005**	**4.3600e-003**	**3.0000e-005**	**4.3800e-003**	**1.1600e-003**	**3.0000e-005**	**1.1900e-003**			**3.8424**	**1.0000e-004**	**0.0000**	**3.8450**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0263	0.1128	0.3160	1.1500e-003	0.1110	8.9000e-004	0.1119	0.0298	8.3000e-004	0.0306			105.7678	4.4600e-003	0.0000	105.8794
Unmitigated	0.0263	0.1128	0.3160	1.1500e-003	0.1110	8.9000e-004	0.1119	0.0298	8.3000e-004	0.0306			105.7678	4.4600e-003	0.0000	105.8794

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	142.68	27.02	13.92	298,037	298,037
Total	142.68	27.02	13.92	298,037	298,037

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	10.00	5.00	6.50	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.568817	0.036545	0.209097	0.111572	0.015710	0.004830	0.018344	0.024276	0.001951	0.001803	0.005698	0.000617	0.000741

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000			83.2023	4.0900e-003	8.5000e-004	83.5565
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000			83.2023	4.0900e-003	8.5000e-004	83.5565
NaturalGas Mitigated	3.9500e-003	0.0359	0.0302	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003			39.1173	7.5000e-004	7.2000e-004	39.3498
NaturalGas Unmitigated	3.9500e-003	0.0359	0.0302	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003			39.1173	7.5000e-004	7.2000e-004	39.3498

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	733031	3.9500e-003	0.0359	0.0302	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003			39.1173	7.5000e-004	7.2000e-004	39.3498
Total		**3.9500e-003**	**0.0359**	**0.0302**	**2.2000e-004**		**2.7300e-003**	**2.7300e-003**		**2.7300e-003**	**2.7300e-003**			**39.1173**	**7.5000e-004**	**7.2000e-004**	**39.3498**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	733031	3.9500e-003	0.0359	0.0302	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003			39.1173	7.5000e-004	7.2000e-004	39.3498
Total		**3.9500e-003**	**0.0359**	**0.0302**	**2.2000e-004**		**2.7300e-003**	**2.7300e-003**		**2.7300e-003**	**2.7300e-003**			**39.1173**	**7.5000e-004**	**7.2000e-004**	**39.3498**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	310735	83.2023	4.0900e-003	8.5000e-004	83.5565
Total		**83.2023**	**4.0900e-003**	**8.5000e-004**	**83.5565**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	310735	83.2023	4.0900e-003	8.5000e-004	83.5565
Total		**83.2023**	**4.0900e-003**	**8.5000e-004**	**83.5565**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0895	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			5.1000e-004	0.0000	0.0000	5.4000e-004
Unmitigated	0.0895	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			5.1000e-004	0.0000	0.0000	5.4000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	9.4900e-003					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0800					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			5.1000e-004	0.0000	0.0000	5.4000e-004
Total	**0.0895**	**0.0000**	**2.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**5.1000e-004**	**0.0000**	**0.0000**	**5.4000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	9.4900e-003					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0800					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			5.1000e-004	0.0000	0.0000	5.4000e-004
Total	**0.0895**	**0.0000**	**2.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**5.1000e-004**	**0.0000**	**0.0000**	**5.4000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.9902	6.0700e-003	3.7100e-003	9.2465
Unmitigated	7.9902	6.0700e-003	3.7100e-003	9.2465

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	4.73369 / 0	7.9902	6.0700e-003	3.7100e-003	9.2465
Total		**7.9902**	**6.0700e-003**	**3.7100e-003**	**9.2465**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	4.73369 / 0	7.9902	6.0700e-003	3.7100e-003	9.2465
Total		**7.9902**	**6.0700e-003**	**3.7100e-003**	**9.2465**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	5.1519	0.3045	0.0000	12.7636
Unmitigated	5.1519	0.3045	0.0000	12.7636

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	25.38	5.1519	0.3045	0.0000	12.7636
Total		**5.1519**	**0.3045**	**0.0000**	**12.7636**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	25.38	5.1519	0.3045	0.0000	12.7636
Total		**5.1519**	**0.3045**	**0.0000**	**12.7636**

9.0 Operational Offroad

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

SMUD Station H Construction Emissions

Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	20.47	1000sqft	0.47	20,470.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2025
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	590.31	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

SMUD Station H Construction Emissions - Sacramento County, Summer

Project Characteristics - Climate Zone 6 Based on Zip Code 95814

Land Use - 0.47
-acre parcel

Construction Phase - No earthmovement associated with decommissioning of Station A. Construction to commence in early 2023 and completed in 2024. Construction to occur Monday-Saturday.

Off-road Equipment - CalEEMod Defaults Utilized.

Grading - No import/export of materials

Trips and VMT - Construction crew of 10 works, peak of 30 during building construction.

Off-road Equipment - Construction Equipment List Derived from Station A Appendix

Off-road Equipment - Equipment list derived from Station A Appendix

Off-road Equipment -

Construction Off-road Equipment Mitigation - Mitigation Measure 3.3-1

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterExposedAreaPM10PercentReduction	55	50
tblConstDustMitigation	WaterExposedAreaPM25PercentReduction	55	50
tblConstructionPhase	NumDays	100.00	170.00
tblConstructionPhase	NumDays	1.00	55.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	11/24/2022	1/22/2024
tblConstructionPhase	PhaseEndDate	7/7/2022	6/24/2023
tblConstructionPhase	PhaseEndDate	7/5/2022	4/10/2023
tblConstructionPhase	PhaseStartDate	7/8/2022	7/8/2023
tblConstructionPhase	PhaseStartDate	7/6/2022	4/22/2023
tblConstructionPhase	PhaseStartDate	7/5/2022	2/5/2023
tblGrading	AcresOfGrading	27.50	0.00

tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00
tblTripsAndVMT	WorkerTripNumber	9.00	60.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.0820	20.1401	16.8427	0.0352	6.1742	0.8876	7.0619	3.3506	0.8371	4.1877			3,389.7407	0.7170	0.0000	3,407.6662
2024	1.4276	11.4148	15.2340	0.0272	0.4745	0.5096	0.9840	0.1263	0.4804	0.6066			2,594.5403	0.4944	0.0000	2,606.8993
Maximum	**2.0820**	**20.1401**	**16.8427**	**0.0352**	**6.1742**	**0.8876**	**7.0619**	**3.3506**	**0.8371**	**4.1877**			**3,389.7407**	**0.7170**	**0.0000**	**3,407.6662**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.0820	20.1401	16.8427	0.0352	3.1632	0.8876	4.0508	1.6955	0.8371	2.5326			3,389.7407	0.7170	0.0000	3,407.6662
2024	1.4276	11.4148	15.2340	0.0272	0.4745	0.5096	0.9840	0.1263	0.4804	0.6066			2,594.5403	0.4944	0.0000	2,606.8993
Maximum	**2.0820**	**20.1401**	**16.8427**	**0.0352**	**3.1632**	**0.8876**	**4.0508**	**1.6955**	**0.8371**	**2.5326**			**3,389.7407**	**0.7170**	**0.0000**	**3,407.6662**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**45.29**	**0.00**	**37.42**	**47.60**	**0.00**	**34.52**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4902	2.0000e-005	2.0800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			4.4800e-003	1.0000e-005		4.7700e-003
Energy	0.0217	0.1969	0.1654	1.1800e-003		0.0150	0.0150		0.0150	0.0150			236.2710	4.5300e-003	4.3300e-003	237.6750
Mobile	0.2424	0.7906	2.6090	9.0300e-003	0.8363	6.4900e-003	0.8428	0.2234	6.0400e-003	0.2295			916.0911	0.0367		917.0087
Total	**0.7543**	**0.9875**	**2.7765**	**0.0102**	**0.8363**	**0.0215**	**0.8578**	**0.2234**	**0.0210**	**0.2445**			**1,152.3666**	**0.0412**	**4.3300e-003**	**1,154.6885**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4902	2.0000e-005	2.0800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			4.4800e-003	1.0000e-005		4.7700e-003
Energy	0.0217	0.1969	0.1654	1.1800e-003		0.0150	0.0150		0.0150	0.0150			236.2710	4.5300e-003	4.3300e-003	237.6750
Mobile	0.2424	0.7906	2.6090	9.0300e-003	0.8363	6.4900e-003	0.8428	0.2234	6.0400e-003	0.2295			916.0911	0.0367		917.0087
Total	**0.7543**	**0.9875**	**2.7765**	**0.0102**	**0.8363**	**0.0215**	**0.8578**	**0.2234**	**0.0210**	**0.2445**			**1,152.3666**	**0.0412**	**4.3300e-003**	**1,154.6885**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Excavation	Trenching	2/5/2023	4/10/2023	6	55	
2	Installation of Equipment	Site Preparation	4/22/2023	6/24/2023	6	55	
3	Construction of Station H	Building Construction	7/8/2023	1/22/2024	6	170	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Installation of Equipment	Graders	1	8.00	187	0.41
Excavation	Excavators	1	8.00	158	0.38
Installation of Equipment	Generator Sets	1	8.00	84	0.74
Installation of Equipment	Concrete/Industrial Saws	1	8.00	81	0.73
Construction of Station H	Cranes	1	4.00	231	0.29
Construction of Station H	Forklifts	2	6.00	89	0.20
Excavation	Graders	1	8.00	187	0.41
Installation of Equipment	Forklifts	1	6.00	89	0.20
Construction of Station H	Generator Sets	1	7.00	84	0.74
Construction of Station H	Rollers	1	8.00	80	0.38
Installation of Equipment	Rubber Tired Dozers	1	8.00	247	0.40
Construction of Station H	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Construction of Station H	Welders	1	8.00	46	0.45
Installation of Equipment	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Excavation	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Excavation	5	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Equipment	7	20.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Construction of Station H	8	60.00	3.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0262	10.8087	11.6444	0.0211		0.4540	0.4540		0.4177	0.4177			2,045.6903	0.6616		2,062.2307
Total	**1.0262**	**10.8087**	**11.6444**	**0.0211**		**0.4540**	**0.4540**		**0.4177**	**0.4177**			**2,045.6903**	**0.6616**		**2,062.2307**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0699	0.0332	0.5072	1.4300e-003	0.1521	9.8000e-004	0.1531	0.0404	9.0000e-004	0.0413			142.2416	3.2900e-003		142.3238
Total	**0.0699**	**0.0332**	**0.5072**	**1.4300e-003**	**0.1521**	**9.8000e-004**	**0.1531**	**0.0404**	**9.0000e-004**	**0.0413**			**142.2416**	**3.2900e-003**		**142.3238**

3.2 Excavation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0262	10.8087	11.6444	0.0211		0.4540	0.4540		0.4177	0.4177			2,045.6903	0.6616		2,062.2307
Total	**1.0262**	**10.8087**	**11.6444**	**0.0211**		**0.4540**	**0.4540**		**0.4177**	**0.4177**			**2,045.6903**	**0.6616**		**2,062.2307**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0699	0.0332	0.5072	1.4300e-003	0.1521	9.8000e-004	0.1531	0.0404	9.0000e-004	0.0413			142.2416	3.2900e-003		142.3238
Total	**0.0699**	**0.0332**	**0.5072**	**1.4300e-003**	**0.1521**	**9.8000e-004**	**0.1531**	**0.0404**	**9.0000e-004**	**0.0413**			**142.2416**	**3.2900e-003**		**142.3238**

3.3 Installation of Equipment - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	2.0121	20.1069	16.3356	0.0338		0.8866	0.8866		0.8362	0.8362			3,247.4991	0.7137		3,265.3424
Total	**2.0121**	**20.1069**	**16.3356**	**0.0338**	**6.0221**	**0.8866**	**6.9087**	**3.3102**	**0.8362**	**4.1465**			**3,247.4991**	**0.7137**		**3,265.3424**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0699	0.0332	0.5072	1.4300e-003	0.1521	9.8000e-004	0.1531	0.0404	9.0000e-004	0.0413			142.2416	3.2900e-003		142.3238
Total	**0.0699**	**0.0332**	**0.5072**	**1.4300e-003**	**0.1521**	**9.8000e-004**	**0.1531**	**0.0404**	**9.0000e-004**	**0.0413**			**142.2416**	**3.2900e-003**		**142.3238**

3.3 Installation of Equipment - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0110	0.0000	3.0110	1.6551	0.0000	1.6551			0.0000			0.0000
Off-Road	2.0121	20.1069	16.3356	0.0338		0.8866	0.8866		0.8362	0.8362			3,247.4991	0.7137		3,265.3424
Total	**2.0121**	**20.1069**	**16.3356**	**0.0338**	**3.0110**	**0.8866**	**3.8977**	**1.6551**	**0.8362**	**2.4913**			**3,247.4991**	**0.7137**		**3,265.3424**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0699	0.0332	0.5072	1.4300e-003	0.1521	9.8000e-004	0.1531	0.0404	9.0000e-004	0.0413			142.2416	3.2900e-003		142.3238
Total	**0.0699**	**0.0332**	**0.5072**	**1.4300e-003**	**0.1521**	**9.8000e-004**	**0.1531**	**0.0404**	**9.0000e-004**	**0.0413**			**142.2416**	**3.2900e-003**		**142.3238**

3.4 Construction of Station H - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3061	11.8051	13.8145	0.0223		0.5751	0.5751		0.5425	0.5425			2,108.1397	0.4850		2,120.2651
Total	**1.3061**	**11.8051**	**13.8145**	**0.0223**		**0.5751**	**0.5751**		**0.5425**	**0.5425**			**2,108.1397**	**0.4850**		**2,120.2651**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	6.8000e-003	0.2430	0.0629	7.2000e-004	0.0181	3.4000e-004	0.0184	5.1900e-003	3.3000e-004	5.5200e-003			76.3197	3.7400e-003		76.4131
Worker	0.2098	0.0997	1.5215	4.2800e-003	0.4564	2.9300e-003	0.4594	0.1211	2.7000e-003	0.1238			426.7249	9.8600e-003		426.9714
Total	**0.2166**	**0.3427**	**1.5844**	**5.0000e-003**	**0.4745**	**3.2700e-003**	**0.4777**	**0.1263**	**3.0300e-003**	**0.1293**			**503.0446**	**0.0136**		**503.3846**

3.4 Construction of Station H - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3061	11.8051	13.8145	0.0223		0.5751	0.5751		0.5425	0.5425			2,108.1397	0.4850		2,120.2651
Total	**1.3061**	**11.8051**	**13.8145**	**0.0223**		**0.5751**	**0.5751**		**0.5425**	**0.5425**			**2,108.1397**	**0.4850**		**2,120.2651**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	6.8000e-003	0.2430	0.0629	7.2000e-004	0.0181	3.4000e-004	0.0184	5.1900e-003	3.3000e-004	5.5200e-003			76.3197	3.7400e-003		76.4131
Worker	0.2098	0.0997	1.5215	4.2800e-003	0.4564	2.9300e-003	0.4594	0.1211	2.7000e-003	0.1238			426.7249	9.8600e-003		426.9714
Total	**0.2166**	**0.3427**	**1.5844**	**5.0000e-003**	**0.4745**	**3.2700e-003**	**0.4777**	**0.1263**	**3.0300e-003**	**0.1293**			**503.0446**	**0.0136**		**503.3846**

3.4 Construction of Station H - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2242	11.0862	13.7638	0.0223		0.5064	0.5064		0.4774	0.4774			2,108.5518	0.4818		2,120.5961
Total	**1.2242**	**11.0862**	**13.7638**	**0.0223**		**0.5064**	**0.5064**		**0.4774**	**0.4774**			**2,108.5518**	**0.4818**		**2,120.5961**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	6.4800e-003	0.2384	0.0588	7.1000e-004	0.0181	3.2000e-004	0.0184	5.1900e-003	3.1000e-004	5.5000e-003			75.8735	3.6900e-003		75.9658
Worker	0.1970	0.0901	1.4114	4.1200e-003	0.4564	2.8600e-003	0.4593	0.1211	2.6400e-003	0.1237			410.1150	8.9000e-003		410.3374
Total	**0.2035**	**0.3285**	**1.4702**	**4.8300e-003**	**0.4745**	**3.1800e-003**	**0.4777**	**0.1263**	**2.9500e-003**	**0.1292**			**485.9885**	**0.0126**		**486.3032**

3.4 Construction of Station H - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2242	11.0862	13.7638	0.0223		0.5064	0.5064		0.4774	0.4774			2,108.5518	0.4818		2,120.5961
Total	**1.2242**	**11.0862**	**13.7638**	**0.0223**		**0.5064**	**0.5064**		**0.4774**	**0.4774**			**2,108.5518**	**0.4818**		**2,120.5961**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	6.4800e-003	0.2384	0.0588	7.1000e-004	0.0181	3.2000e-004	0.0184	5.1900e-003	3.1000e-004	5.5000e-003			75.8735	3.6900e-003		75.9658
Worker	0.1970	0.0901	1.4114	4.1200e-003	0.4564	2.8600e-003	0.4593	0.1211	2.6400e-003	0.1237			410.1150	8.9000e-003		410.3374
Total	**0.2035**	**0.3285**	**1.4702**	**4.8300e-003**	**0.4745**	**3.1800e-003**	**0.4777**	**0.1263**	**2.9500e-003**	**0.1292**			**485.9885**	**0.0126**		**486.3032**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2424	0.7906	2.6090	9.0300e-003	0.8363	6.4900e-003	0.8428	0.2234	6.0400e-003	0.2295			916.0911	0.0367		917.0087
Unmitigated	0.2424	0.7906	2.6090	9.0300e-003	0.8363	6.4900e-003	0.8428	0.2234	6.0400e-003	0.2295			916.0911	0.0367		917.0087

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	142.68	27.02	13.92	298,037	298,037
Total	142.68	27.02	13.92	298,037	298,037

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	10.00	5.00	6.50	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.568817	0.036545	0.209097	0.111572	0.015710	0.004830	0.018344	0.024276	0.001951	0.001803	0.005698	0.000617	0.000741

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0217	0.1969	0.1654	1.1800e-003		0.0150	0.0150		0.0150	0.0150			236.2710	4.5300e-003	4.3300e-003	237.6750
NaturalGas Unmitigated	0.0217	0.1969	0.1654	1.1800e-003		0.0150	0.0150		0.0150	0.0150			236.2710	4.5300e-003	4.3300e-003	237.6750

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	2008.3	0.0217	0.1969	0.1654	1.1800e-003		0.0150	0.0150		0.0150	0.0150			236.2710	4.5300e-003	4.3300e-003	237.6750
Total		**0.0217**	**0.1969**	**0.1654**	**1.1800e-003**		**0.0150**	**0.0150**		**0.0150**	**0.0150**			**236.2710**	**4.5300e-003**	**4.3300e-003**	**237.6750**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	2.0083	0.0217	0.1969	0.1654	1.1800e-003		0.0150	0.0150		0.0150	0.0150			236.2710	4.5300e-003	4.3300e-003	237.6750
Total		**0.0217**	**0.1969**	**0.1654**	**1.1800e-003**		**0.0150**	**0.0150**		**0.0150**	**0.0150**			**236.2710**	**4.5300e-003**	**4.3300e-003**	**237.6750**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4902	2.0000e-005	2.0800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			4.4800e-003	1.0000e-005		4.7700e-003
Unmitigated	0.4902	2.0000e-005	2.0800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			4.4800e-003	1.0000e-005		4.7700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0520					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4381					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			4.4800e-003	1.0000e-005		4.7700e-003
Total	**0.4902**	**2.0000e-005**	**2.0800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**			**4.4800e-003**	**1.0000e-005**		**4.7700e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0520					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4381					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			4.4800e-003	1.0000e-005		4.7700e-003
Total	**0.4902**	**2.0000e-005**	**2.0800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**			**4.4800e-003**	**1.0000e-005**		**4.7700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B:
THREATENED AND ENDANGERED SPECIES LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Consultation Code: 08ESMF00-2020-SLI-2679
Event Code: 08ESMF00-2020-E-08228
Project Name: SMUD Station H Substation Project

August 20, 2020

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2020-SLI-2679

Event Code: 08ESMF00-2020-E-08228

Project Name: SMUD Station H Substation Project

Project Type: ** OTHER **

Project Description: SMUD is proposing to decommission Station A and remove all equipment from the Old Folsom Powerhouse Sacramento Station A building and the outdoor switchyard, and reconstruct a new substation (Station H) in place of the outdoor switchyard along the north side of H Street between 6th Street and 7th Street in downtown Sacramento ("Station H Substation Project" or "project"). Station A's equipment is near the end of its service life and would be removed. The Old Folsom Powerhouse Sacramento Station A brick building would be completely isolated from the new Station H and would be abandoned in place. Station H would include two 115kV underground transmission lines, two 115/21kV transformers, and 21kV main-tie-main switchgear. Station H's 115kV lines would tie into the new Station G currently under construction across the alley way north of the site.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.58409133664253N121.49736286902683W

Counties: Sacramento, CA

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/7850
Habitat assessment guidelines:
https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp *Lepidurus packardi*	Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/2246

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

U.S. Fish and Wildlife Service

National Wetlands Inventory

USFWS 2020b

August 20, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: BIOS selection

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Andrena subapasta An andrenid bee	IIHYM35210	None	None	G1G2	S1S2	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Astragalus tener var. ferrisiae Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1	S1	1B.1
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	IICOL02106	None	None	G5TH	SH	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Cuscuta obtusiflora var. glandulosa Peruvian dodder	PDCUS01111	None	None	G5T4?	SH	2B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Dumontia oregonensis hairy water flea	ICBRA23010	None	None	G1G3	S1	
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elderberry Savanna Elderberry Savanna	CTT63440CA	None	None	G2	S2.1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Fritillaria agrestis stinkbells	PMLIL0V010	None	None	G3	S3	4.2
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	G2	S2.1	
Great Valley Valley Oak Riparian Forest Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	G1	S1.1	
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Juncus leiospermus var. ahartii Ahart's dwarf rush	PMJUN011L1	None	None	G2T1	S1	1B.2
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasthenia chrysantha alkali-sink goldfields	PDAST5L030	None	None	G2	S2	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidium latipes var. heckardii Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T1	S1	1B.2
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Northern Claypan Vernal Pool Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Northern Volcanic Mud Flow Vernal Pool Northern Volcanic Mud Flow Vernal Pool	CTT44132CA	None	None	G1	S1.1	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Oncorhynchus tshawytscha pop. 6 chinook salmon - Central Valley spring-run ESU	AFCHA0205A	Threatened	Threatened	G5	S1	
Oncorhynchus tshawytscha pop. 7 chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	G5	S1	
Orcuttia tenuis slender Orcutt grass	PMPOA4G050	Threatened	Endangered	G2	S2	1B.1
Orcuttia viscida Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	G1	S1	1B.1
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	GNR	S3	SSC
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	
Xanthocephalus xanthocephalus yellow-headed blackbird	ABPBXB3010	None	None	G5	S3	SSC

Record Count: 65

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

Plant List

17 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B], Found in Quads 3812165, 3812164, 3812163, 3812155, 3812154, 3812153, 3812145 3812144 and 3812143;

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Fabaceae	annual herb	Apr-May	1B.1	S1	G2T1
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	May-Sep	2B.1	S2	G5
Centromadia parryi ssp. parryi	pappose tarplant	Asteraceae	annual herb	May-Nov	1B.2	S2	G3T2
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	Jul-Oct	2B.2	SH	G5T4?
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	2B.2	S2	GU
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	1B.2	S2	G2
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	1B.2	S3	G5T3
Juglans hindsii	Northern California black walnut	Juglandaceae	perennial deciduous tree	Apr-May	1B.1	S1	G1
Juncus leiospermus var. ahartii	Ahart's dwarf rush	Juncaceae	annual herb	Mar-May	1B.2	S1	G2T1
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	1B.1	S2	G2
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	1B.2	S1	G4T1
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	Apr-Nov	1B.1	S2	G2
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	1B.1	S2	G2
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	1B.1	S1	G1
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	1B.2	S3	G3
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	1B.2	S2	G2
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2	S2	G2

Suggested Citation

California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 20 August 2020].

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APPENDIX C:
NOISE REPORT

Noise Report
for the
Station H Substation Project

Prepared for:
Sacramento Municipal Utility District
6201 S Street
Sacramento, CA 95817

Prepared by:
Ascent Environmental
455 Capitol Mall, Suite 300
Sacramento, CA 95814

October 2020

Noise Report
for the
Station H Substation Project

Prepared for

Sacramento Municipal Utility District
6201 S Street
Sacramento, CA 95817
Rob Ferrera,
Environmental Specialist

Prepared by

Ascent Environmental, Inc.
455 Capitol Mall, Suite 300
Sacramento, CA 95814
Cori Resha,
Project Manager

October 2020

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

Caltrans	California Department of Transportation
CNEL	Community Noise Equivalent Level
dB	decibels
EPA	U.S. Environmental Protection Agency
FTA	Federal Transit Administration
Hz	hertz
I-5	Interstate 5
in/sec	inches per second
L_{dn}	Day-Night Level
L_{eq}	Equivalent Continuous Sound Level
L_{ma}	Maximum Sound Level
mPa	micro-Pascals
PPV	peak particle velocity
RMS	root-mean-square
SPL	sound pressure level
VdB	vibration decibels

1 INTRODUCTION

The proposed project would include decommissioning the existing SMUD Station A electrical substation, which would involve removing the equipment housed within the Old Folsom Powerhouse Sacramento historic Station A building and removing the six transformers located in the outdoor substation yard directly east of the historic Station A building along the north side of H Street, between 6th Street and 7th Street. After decommissioning Station A, a new substation called Station H would be constructed on the same site, consisting of two 115kV underground transmission lines, two 115/21kV transformers, and a 21kV main-tie-main switchgear metal building with a canopy structure.

This noise report includes a background in acoustic fundamentals; a summary of applicable regulations related to noise and vibration; a description of the existing noise environment, including a discussion of prominent noise sources and existing noise-sensitive receptors; and an analysis of short-term construction and long-term operational-source noise and vibration impacts associated with the project. Additional data is provided in Appendix A, "Noise Measurement Data and Noise Modeling Calculations."

2 ACOUSTIC FUNDAMENTALS

Before discussing the regulatory setting for the project, background information about sound, noise, vibration, and common noise descriptors is needed to provide context and a better understanding of the technical terms referenced throughout this section.

2.1.1 Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a human ear. Noise is defined as loud, unexpected, annoying, or unwanted sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

FREQUENCY

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

SOUND PRESSURE LEVELS AND DECIBELS

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this large range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB).

Addition of Decibels

Because decibels are logarithmic units, SPLs expressed in dB cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when

two identical sources are each producing sound of the same loudness at the same time, the resulting sound level at a given distance would be 3 dB higher than if only one of the sound sources was producing sound under the same conditions. For example, if one idling truck generates an SPL of 70 dB, two trucks idling simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level approximately 5 dB louder than one source.

A-Weighted Decibels

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within this range better than sounds of the same amplitude with frequencies outside of this range. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an "A-weighted" sound level (expressed in units of A-weighted decibels) can be computed based on this information.

The A-weighting approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgment correlates well with the A-scale sound levels of those sounds. Thus, noise levels are typically reported in terms of A-weighted decibels. All sound levels discussed in this noise report are expressed in A-weighted decibels. Table 1 describes typical A-weighted noise levels for various noise sources.

Table 1 Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1,000 feet	— 100 —	
Gas lawn mower at 3 feet	— 90 —	
Diesel truck at 50 feet at 50 miles per hour	— 80 —	Food blender at 3 feet, Garbage disposal at 3 feet
Noisy urban area, daytime, Gas lawn mower at 100 feet	— 70 —	Vacuum cleaner at 10 feet, Normal speech at 3 feet
Commercial area, Heavy traffic at 300 feet	— 60 —	
Quiet urban daytime	— 50 —	Large business office, Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime	— 30 —	Library, Bedroom at night
Quiet rural nighttime	— 20 —	
	— 10 —	Broadcast/recording studio
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Notes: dB = decibel

Source: Caltrans 2013a: Table 2-5.

HUMAN RESPONSE TO CHANGES IN NOISE LEVELS

As described above, the doubling of sound energy results in a 3-dB increase in the sound level. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different from what is measured.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear can discern 1-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the midfrequency (1,000–8,000 Hz) range. In general, the healthy human ear is most sensitive to sounds between 1,000 and 5,000 Hz and perceives both higher and lower frequency sounds of the same magnitude with less intensity (Caltrans 2013a:2-18). In typical noisy environments, changes in noise of 1–2 dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness (Caltrans 2013a:2-10). Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dB increase in sound would generally be perceived as barely detectable.

COMMON NOISE DESCRIPTORS

Noise in our daily environment fluctuates over time. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors used throughout this section.

Equivalent Continuous Sound Level (L_{eq}): L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound level that occurs during the same period (Caltrans 2013a:2-48). For instance, the 1-hour equivalent sound level, also referred to as the hourly L_{eq}, is the energy average of sound levels occurring during a 1-hour period.

Day-Night Level (L_{dn}): L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB "penalty" applied to sound levels occurring during nighttime hours between 10 p.m. and 7 a.m. (Caltrans 2013a:2-48; FTA 2018:214).

Community Noise Equivalent Level (CNEL): CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m. and a 5-dB penalty applied to the sound levels occurring during evening hours between 7 p.m. and 10 p.m. (Caltrans 2013a:2-48).

Maximum Sound Level (L_{max}): L_{max} is the highest instantaneous sound level measured during a specified period (Caltrans 2013a:2-48; 2018:207–208).

SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The manner in which a noise level decreases with distance depends on geometric spreading, ground absorption, atmospheric effects, and shielding by natural or human-made features, described in detail below.

Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Roads and highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources, thus propagating at a slower rate in comparison to a point source. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

Ground Absorption

The propagation path of noise from a source to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave–canceling provides additional attenuation associated with geometric spreading. Traditionally, this additional attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive

ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), additional ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the attenuate rate associated with cylindrical spreading, the additional ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance. This would hold true for point sources, resulting in an overall drop-off rate of up to 7.5 dB per doubling of distance.

Atmospheric Effects

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels, as wind can carry sound. Other factors such as air temperature, humidity, and turbulence can also affect sound attenuation.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction (Caltrans 2013a:2-41; FTA 2018:42). Barriers higher than the line of sight provide increased noise reduction (FTA 2018:16). Vegetation between the source and receiver is rarely effective in reducing noise because it does not create a solid barrier unless there are multiple rows of vegetation of sufficient height (FTA 2018:15, 104, 106).

2.1.2 Ground Vibration

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Ground-borne vibration is vibration of and through the ground. Ground-borne vibration can range from levels that are imperceptible by humans to levels that can create substantial damage to buildings and structures. Sources ground-borne of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., explosions). Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, or acceleration.

Ground-borne vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV and RMS vibration velocity are normally described in inches per second (in/sec) or in millimeters per second. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (FTA 2018:110; Caltrans 2013a:6).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2018:110, 199; Caltrans 2013b:7). This is based on a reference value of 1 microinch per second.

The typical background ground-borne vibration-velocity level in residential areas is approximately 50 VdB. Ground vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2018:120; Caltrans 2013b:27).

Typical outdoor sources of perceptible ground vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur to fragile buildings. Construction activities can generate sufficient ground

vibrations to pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FTA 2018:113).

Ground vibration levels generated by construction activity can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations are generated by vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment.

Table 2 summarizes the general human response to different ground vibration-velocity levels.

Table 2 Human Response to Different Levels of Ground Noise and Vibration

Vibration-Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Notes: VdB = vibration decibels referenced to 1 microinch/second and based on the root mean square (RMS) velocity amplitude.

Source: FTA 2018:120.

3 REGULATORY SETTING

3.1 FEDERAL

3.1.1 U.S. Environmental Protection Agency Office of Noise Abatement and Control

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate Federal noise control activities. In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, documents and research completed by the EPA Office of Noise Abatement and Control continue to provide value in the analysis of noise effects.

3.1.2 Federal Transit Administration Standards for Exposure to Ground Vibration

To address the human response to ground vibration, the Federal Transit Administration (FTA) has set forth guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines are presented in Table 3.

Table 3 Ground-Borne Vibration Impact Criteria for General Assessment for Human Response

Land Use Category	Ground-Borne Vibration Impact Levels for Human Response (VdB re 1 microinch/second)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations.	65 [4]	65 [4]	65 [4]
Category 2: Residences and buildings where people normally sleep.	72	75	80
Category 3: Institutional land uses with primarily daytime uses.	75	78	83

Notes: VdB re 1 microinch/second = vibration decibels referenced to 1 microinch/second and based on the root mean square (RMS) velocity amplitude.

[1] "Frequent Events" is defined as more than 70 vibration events of the same source per day.

[2] "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.

[3] "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.

[4] This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research would require detailed evaluation to define acceptable vibration levels.

Source: FTA 2018:123–126.

3.2 STATE

3.2.1 California Building Code Sound Transmission Standards

Noise within habitable units that is attributable to external sources is regulated by the California Building Standards codified in CCR, Title 24, Part 2, Section 1207. These standards are enforceable at the time of construction or during occupancy and apply to habitable units with common interior walls, partitions, and ceilings or those adjacent to public areas such as halls, corridors, stairways, and service areas. Under these standards the interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metrics used to measure these levels can be day-night average sound level (L_{dn}) or Community Noise Equivalent Level (CNEL), consistent with

the local general plan. An acoustical analysis documenting compliance with the interior sound level standards shall be prepared for structures containing habitable rooms. Under California Public Resources Code Section 25402.1(g), all cities and counties in the state are required to enforce the adopted California Building Code, including these standards for noise in interior environments.

3.2.2 California General Plan Guidelines

The State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research, provides guidance for the compatibility of projects within areas of specific noise exposure (OPR 2017). Acceptable and unacceptable community noise exposure limits for various land use categories have been determined to help guide new land use decisions in California communities. In many local jurisdictions, including the City of Sacramento, these guidelines are used to derive local noise standards and guidance. Citing EPA materials and the State Sound Transmissions Control Standards, the State's general plan guidelines recommend interior and exterior CNEL of 45 and 60 decibels (dB) for residential units, respectively (OPR 2017:378).

3.2.3 California Department of Transportation Standards for Exposure to Ground Vibration

In 2013, Caltrans published the Transportation and Construction Vibration Manual (Caltrans 2013b). The manual provides general guidance on vibration issues associated with construction and operation of projects in relation to human perception and structural damage. Table 4 presents recommendations for levels of vibration that could result in damage to structures exposed to continuous vibration.

Table 4 Caltrans Recommended Threshold Criteria for Vibration Exposure

Maximum PPV (in/sec)		Type of Building and Condition
Transient Sources	Continuous/Frequent Intermittent Sources	
0.12	0.08	Extremely fragile historic buildings, ruins, ancient monuments
0.2	0.1	Fragile buildings
0.5	0.25	Historic and some old buildings
0.5	0.3	Older residential structures
1.0	0.5	New residential structures
2.0	0.5	Modern industrial/commercial buildings

Notes: PPV = Peak Particle Velocity; in/sec = inches per second

Source: Caltrans 2013b:38.

3.3 LOCAL

3.3.1 City of Sacramento 2035 General Plan

The Noise section of the Environmental Constraints Element of the City of Sacramento 2035 General Plan (City of Sacramento 2015) establishes the following standards and policies that are relevant to the analysis of the noise and vibration effects of the project:

- EC 3.1.1 Exterior Noise Standards. The City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in Table EC 1 (presented as Table 5, below), to the extent feasible.

Table 5 Exterior Noise Compatibility Standards for Various Land Uses

Land Use Type	Highest Level of Noise Exposure that is Regarded as "Normally Acceptable" [1] (L_{dn} or CNEL, dB)
Residential—Low Density Single Family, Duplex, Mobile Homes	60 dB [2]
Residential—Multifamily [3]	65 dB
Urban Residential Infill [4] and Mixed-Use Projects [5,6]	70 dB
Transient Lodging—Motels, Hotels	65 dB
Schools, Libraries, Churches, Hospitals, Nursing Homes	70 dB
Auditoriums, Concert Halls, Amphitheaters	Mitigation based on site-specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site-specific study
Playgrounds, Neighborhood Parks	70 dB
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75 dB
Office Buildings—Business, Commercial and Professional	70 dB
Industrial, Manufacturing, Utilities, Agriculture	75 dB

Notes: dB = decibel; L_{dn} = Day Night Average Level; CNEL = Community Noise Equivalent Level

[1] "Normally Acceptable" means that the specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements.

[2] Applies to the primary open space area of a detached single-family home, duplex, or mobile home, which is typically the backyard or fenced side yard, as measured from the center of the primary open space area (not the property line). This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches.

[3] Applies to the primary open space areas of townhomes and multifamily apartments or condominiums (private year yards for townhomes; common courtyards, roof gardens, or gathering spaces for multifamily developments). These standards shall not apply to balconies or small attached patios in multistoried multifamily structures.

[4] With land use designations of Central Business District, Urban Neighborhood (Low, Medium, or High) Urban Center (Low or High), Urban Corridor (Low or High).

[5] All mixed-use projects located anywhere in the City of Sacramento

[6] See notes 2 and 3 above for definition of primary open space areas for single-family and multifamily developments.

Source: OPR 2017, cited in City of Sacramento 2015, 2035 General Plan Table EC 1

- EC 3.1.2 Exterior Incremental Noise Standards. The City shall require noise mitigation for all development that increases existing noise levels by more than the allowable increment shown in Table EC 2 (presented as Table 6, below), to the extent feasible.

Table 6 Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dB)

Residences and Buildings where People Normally Sleep[1] Existing L_{dn}	Residences and Buildings where People Normally Sleep[1] Allowable Noise Increment	Institutional Land Uses with Primarily Daytime and Evening Uses[2] Existing Peak Hour L_{eq}	Institutional Land Uses with Primarily Daytime and Evening Uses[2] Allowable Noise Increment
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	0	75	1
80	0	80	0

Notes: L_{dn} = Day Night Average Level; L_{eq} = Equivalent Continuous Sound Level

[1] This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

[2] The category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.

Source: FTA 2006, cited in City of Sacramento 2015, 2035 General Plan Table EC 2

- **EC 3.1.3 Interior Noise Standards.** The City shall require new development to include noise mitigation to assure acceptable interior noise levels appropriate to the land use type: 45 dB L_{dn} (with windows closed) for residential, transient lodgings, hospitals, nursing homes and other uses where people normally sleep; and 45 dB L_{eq} (peak hour with windows closed) for office buildings and similar uses.
- **EC 3.1.5 Interior Vibration Standards.** The City shall require construction projects anticipated to generate a significant amount of vibration to ensure acceptable interior vibration levels at nearby residential and commercial uses based on the current City or Federal Transit Administration (FTA) criteria.
- **EC 3.1.7 Vibration.** The City shall require an assessment of the damage potential of vibration-induced construction activities, highways, and rail lines in close proximity to historic buildings and archaeological sites and require all feasible measures be implemented to ensure no damage would occur.
- **EC 3.1.8 Operational Noise.** The City shall require mixed-use, commercial, and industrial projects to mitigate operational noise impacts to adjoining sensitive uses when operational noise thresholds are exceeded.
- **EC 3.1.10 Construction Noise.** The City shall require development projects subject to discretionary approval to assess potential construction noise impacts on nearby sensitive uses and to minimize impacts on these uses, to the extent feasible.
- **EC 3.1.11 Alternatives to Sound Walls.** The City shall encourage the use of design strategies and other noise reduction methods along transportation corridors in lieu of sound walls to mitigate noise impacts and enhance aesthetics.

City of Sacramento Noise Control Ordinance

The City's Noise Control Ordinance in the City of Sacramento Municipal Code (City of Sacramento 2020) establishes the following standards related to noise and vibration that are applicable to the project:

8.68.070 Exterior Noise Standards

A. The following noise standards, unless otherwise specifically indicated in this article, shall apply to all agricultural and residential properties.

   1. From seven a.m. to ten p.m. the exterior noise standard shall be 55 dB.
   2. From ten p.m. to seven a.m. the exterior noise standard shall be 50 dB.

   For the sake of the noise impact analysis in this report it is assumed that these standards are L_{eq} standards because other local jurisdictions in the region have similar daytime and nighttime L_{eq} standards.

B. It is unlawful for any person at any location to create any noise which causes the noise levels when measured on agricultural or residential property to exceed for the duration of time set forth following, the specified exterior noise standards in any one hour by:

Cumulative Duration of the Intrusive Sound	Allowance Decibels
Cumulative period of 30 minutes per hour	0
Cumulative period of 15 minutes per hour	+5
Cumulative period of 5 minutes per hour	+10
Cumulative period of 1 minute per hour	+15
Level not to be exceeded for any time per hour	+20

C. Each of the noise limits specified in subsection B of this section shall be reduced by 5 dB for impulsive or simple tone noises, or for noises consisting of speech or music.

D. If the ambient noise level exceeds that permitted by any of the first four noise limit categories specified in subsection B of this section, the allowable noise limit shall be increased in 5 dB increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category.

8.68.080 Interior Noise Standards

A. In any apartment, condominium, townhouse, duplex or multiple dwelling unit it is unlawful for any person to create any noise from inside his or her unit that causes the noise level when measured in a neighboring unit during the periods ten p.m. to seven a.m. to exceed:

1. Forty-five dB for a cumulative period of more than five minutes in any hour;
2. Fifty dB for a cumulative period of more than one minute in any hour;
3. Fifty-five dB for any period of time.

B. If the ambient noise level exceeds that permitted by any of the noise level categories specified in subsection A of this section, the allowable noise limit shall be increased in five dB increments in each category to encompass the ambient noise level.

8.68.090 Exemptions

The following activities shall be exempted from the provisions of this chapter:

D. Noise sources due to the erection (including excavation), demolition, alteration or repair of any building or structure between the hours of 7 a.m. and 6 p.m. on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday, and between 9 a.m. and 6 p.m. on Sunday; provided, however, that the operation of an internal combustion engine shall not be exempt pursuant to this subsection if such engine is not equipped with suitable exhaust and intake silencers which are in good working order. The director of building inspections may permit work to be done during the hours not exempt by this subsection in the case of urgent necessity and in the interest of public health and welfare for a period not to exceed three days. Application for this exemption may be made in conjunction with the application for the work permit or during progress of the work.

8.68.110 Residential pumps, fans, and air conditioners

A. It is unlawful for any person to operate any residential fans, air conditioners, stationary pumps, stationary cooling towers, stationary compressors, similar mechanical device or any combination thereof installed after the effective date of this chapter in any manner so as to create any noise which would cause the maximum noise level to exceed:

1. Sixty (60) dB at any point at least one foot inside the property line of the affected residential or agricultural property and three to five feet above ground level;
2. Fifty-five (55) dB in the center of a neighboring patio three to five feet above ground level;
3. Fifty-five (55) dB outside of the neighboring living area window nearest the equipment location, measurements shall be taken with the microphone not more than three feet from the window opening but at least three feet from any other surface.

B. Equipment installed five years after the effective date of this chapter must comply with a maximum limit of fifty-five (55) dB at any point at least one foot inside the property line of the affected residential or agricultural property and three to five feet above ground level.

C. Equipment installed before the effective date of this chapter must comply with a limit of sixty-five (65) dB maximum sound level, at any point at least one foot inside the property line of the affected agricultural or residential property and three to five feet above ground level after the effective date of this chapter.

4 EXISTING NOISE ENVIRONMENT

4.1 EXISTING NOISE- AND VIBRATION-SENSITIVE LAND USES

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels, and because of the potential for nighttime noise to result in sleep disruption. Additional land uses such as schools, transient lodging, cemeteries, and places of worship are also generally considered sensitive to increases in noise levels. Vibration-sensitive land uses are generally considered to be buildings or structures that could be damaged due to vibration or land uses where vibration levels could interfere with operations or cause human annoyance.

The area around the project site consists of several land uses, including undeveloped lots and surface parking to the north and west, a parking garage and multifamily residential building to the east, and office buildings to the south. The nearest noise-sensitive receptor is the multifamily Mercy Housing 7th & H Housing Community (Mercy Housing Community) located directly east of the project site, which includes 150 residential units in a 7-story building. The closest office building is located approximately 70 feet south of the project site boundary. Figure 1 shows the locations of these receptors in relation to the project site.

4.2 EXISTING NOISE SOURCES AND AMBIENT LEVELS

Because the project site is located in a heavily developed area, several noise sources exist in the project vicinity, most prominently the six existing electrical substation transformers; vehicles traveling on local roadways (e.g., Interstate 5 (I-5), H Street, 6th Street, 7th Street), and trains for the nearby light rail. Other noise sources include the more distant Union Pacific Railroad line, construction activity at the Railyards, and mechanical equipment on nearby buildings.

Noise measurements were not collected because activity levels in the project area are not representative of normal conditions due to the COVID-19 pandemic. To characterize the existing ambient noise environment, this noise report references noise measurements collected in December 2012 within the Mercy Housing Community by AECOM. These noise level measurements do not, however, incorporate noise generated by the Station G electrical substation, which is currently being constructed north of Government Ally and will be operational when construction begins for the proposed project. This noise report does not analyze the noise generated by Station G, which was analyzed in the SMUD Station A Substation Rebuild and Relocation Project Initial Study/Mitigated Negative Declaration (SMUD 2015). The results of the AECOM noise report and detailed descriptions of the noise measurement locations are summarized in Table 7. The higher level of noise level at the fourth-floor unit is a result of reduced shielding from the existing sound wall compared to the third-floor unit, while the lower level of noise exposure at the fifth-floor unit is a result of increased distance from the substation transformers.

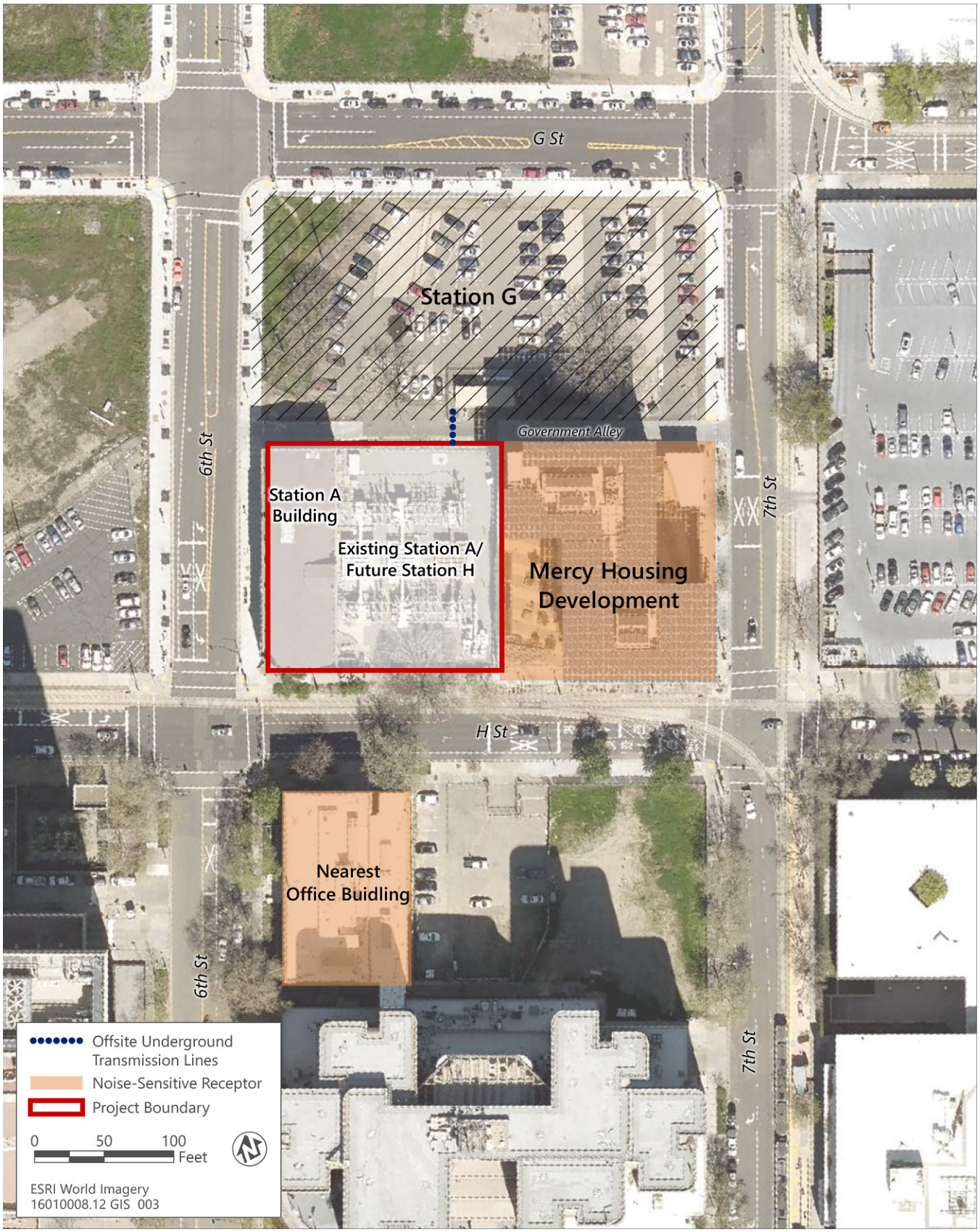
Table 7 Ambient Noise Levels

Location	Noise Level (L_{eq})
Inside a third-floor Mercy Housing Community unit facing the project site	47
Inside a fourth-floor Mercy Housing Community unit facing the project site	50
Inside a fifth-floor Mercy Housing Community unit facing the project site	46

Notes: dB = decibel; L_{eq} = Equivalent Continuous Sound Level

Source: AECOM 2012

As shown in Table 7, all Mercy Housing Community units within which noise measurements were taken exceeded 45 dB L_{eq}.



Source: adapted by Ascent Environmental in 2020

Figure 1 Noise-Sensitive Receptors Near the Project Site

5 IMPACT ASSESSMENT

5.1 METHODOLOGY

5.1.1 Construction Noise and Vibration

To assess potential short-term (construction-related) noise and vibration impacts, sensitive receptors and their relative exposure were identified. Project-generated construction-generated noise and vibration levels were estimated based on methodologies, reference emission levels, and usage factors from FTA's *Guide on Transit Noise and Vibration Impact Assessment* methodology (FTA 2018) and FHWA's *Roadway Construction Noise Model User's Guide* (FHWA 2006). Reference levels for noise and vibration emissions for specific equipment or activity types are well documented and their use common practice in the field of acoustics. This analysis compares levels of noise exposure at off-site noise-sensitive receptors to applicable City noise standards, as well as Caltrans and FTA vibration standards listed in Section 3, "Regulatory Setting."

5.1.2 Operational Noise

The assessment of long-term, operational noise levels focuses on noise generated by the transformers that would be installed onsite. Reference noise levels of transformers measured by AECOM were used in an attenuation analysis (AECOM 2012).

5.2 ANALYSIS

5.2.1 Construction Noise

The project would be comprised of both onsite and offsite construction. Offsite activities would include the construction of two 115kV underground transmission lines beneath Government Alley to connect to Station G, requiring trenching to a depth of 15-30 feet below the ground surface. Onsite construction activities would include installation of two 115/21kV transformers, installation of a 21kV main-tie main switchgear, and the removal and replacement of an existing concrete block wall along H Street.. Types of heavy equipment that would be used for these types of construction activities include excavators, a crane, dozers, pavers, and an auger drill rig. The loudest pieces of equipment that would be used during construction would include excavators and auger drill rigs, both of which individually generate 85 dB L_{eq} at 50 feet (FHWA 2006:3). An auger drill rig would be used to install auger cast displacement piles for construction of various support structures. Reference noise levels of heavy equipment likely to be used in construction are summarized in Table 8.

Table 8 Noise Levels Generated by Construction Equipment

Equipment Type	Typical Noise Level (dB) at 50 feet
Auger drill rig	85
Backhoe	80
Concrete mixer truck	85
Concrete pump truck	82
Crane	85
Dozer	85
Dump truck	84
Excavator	85

Equipment Type	Typical Noise Level (dB) at 50 feet
Front End Loader	80
Grader	85
Paver	85
Pickup truck	55
Pneumatic tools	85

Notes: dB = decibel

Source: FHWA 2006:3

The combined noise levels generated by construction and demolition activity would fluctuate depending on the type, number, and duration of use of various equipment. The effects of construction noise largely depend on the type of construction activities occurring on any given day; the noise levels generated by those activities; distances to noise-sensitive receptors; any noise-attenuating features, such as topography, vegetation, and existing structures; and existing ambient noise levels. Table 9 shows the estimated levels noise exposure at nearby receptors during onsite construction. Different levels of noise exposure were estimated for different floors of the Mercy Housing Community. Noise modeling assumed that the existing sound wall along the Mercy Housing development would provide 5-dB of attenuation for the first three floors and no attenuation for the fourth floor and above.

Table 9 Interior Noise Levels at Nearby Receptors during Onsite Project Construction

Receptor	Approximate Distance from Construction Activity to Receptor (feet)[1, 2]	Indoor Noise Level at Receptor [3] (dB L_{eq})
Second-floor Mercy Housing Community units	14	61
Third-floor Mercy Housing Community units	24	56
Fourth-floor Mercy Housing Community units	36	58
Fifth-floor Mercy Housing Community units	50	55
Sixth-floor Mercy Housing Community units	63	53
Seventh-floor Mercy Housing Community units	77	51
Eighth-floor Mercy Housing Community units	91	50
Nearest office building	80	52

Notes: dB = decibel; L_{eq} = equivalent continuous sound level

[1] The distances to residential units within the Mercy Housing Community account for the height of each building story.

[2] It is assumed that the existing sound wall would provide 5 dB of attenuation for the first three floors of the Mercy Housing Community and no attenuation for the fourth floor and above. Building walls would provide 30 dB of attenuation (Caltrans 2013a:7-17).

[3] Noise exposure level estimates assume simultaneous operation of three pieces of equipment (auger drill rig, excavator, and dozer) in close proximity to each other and approximately 10 feet inside the project boundary nearest to the receptor. Noise level estimates assume all equipment is properly maintained and fitted with operational noise control device, per manufacturer specifications. See Appendix A for detailed noise modeling and input parameters.

Source: Modeled by Ascent Environmental in 2020

As shown in Table 9, onsite construction noise levels would range from 50 to 58 dB L_{eq} within residential units of the Mercy Housing Community and would reach 52 dB L_{eq} within the nearest office building. Construction noise levels at more distant receptors would be lower because noise levels decrease with distance. Detailed calculations are provided in Appendix A. Construction noise would result in an increase in the daytime noise level at nearby receptors. Existing interior noise levels within the third, fourth, and fifth floors of the Mercy Housing Community, shown in Table 7, are all lower than the respectively modeled construction noise levels shown in Table 9. Existing noise levels are unknown at nearby office buildings, but the modeled interior noise level of 52 dB L_{eq} is 7 dB higher than the City's interior standard of 45 dB L_{eq} for office space. The noise levels shown in Table 9 represent a loudest-case scenario

with the loudest pieces of equipment operating simultaneously as close to receptors as possible. Thus, noise exposure within nearby residences and office buildings would oftentimes be less extreme than the noise levels shown in Table 9, as the type of construction activities occurring, types of equipment used, and distance to individual receptors changes from day to day.

Offsite construction would occur farther from noise-sensitive receptors than onsite construction and, thus, would expose receptors to less noise than onsite construction, discussed above. The offsite construction activity closest to the fourth floor of the Mercy Housing Community, being the loudest floor according to Table 9, would be approximately 45 feet away and approximately 240 feet from the nearest office building, exposing these receptors to indoor noise levels of 56 dB L_{eq} and 41 dB L_{eq}, respectively.

Although construction activity would result in elevated noise levels at the Mercy Housing Community and nearby office buildings, construction noise would be temporary and intermittent and would occur during daytime hours when people are less sensitive to noise. Construction activity occurring between 7 a.m. and 6 p.m., Monday through Saturday and between 9 a.m. and 6 p.m. on Sunday, which would be exempt from the City's daytime noise standards. All construction activity would occur during these exempt times of the day. Thus, the project would adhere to the applicable City noise standard for construction-generated noise.

5.2.2 Construction Vibration

Construction activities generate varying degrees of temporary ground vibration, the intensity of which would depend on the specific construction equipment used and activities involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, result in low rumbling sounds and detectable vibrations at moderate levels, and, at high levels, cause annoyance, sleep disturbance, or damage to nearby structures. Pile driving and blasting are the types of construction activities that typically generate the highest vibration levels and are, therefore, of greatest concern when evaluating construction-related vibration impacts. However, pile driving and blasting would not be conducted as part of the project.

The most vibration–intensive activity performed during project construction would be the installation of auger cast displacement piles for construction of various support structures. Using this type of pile eliminates the need for impact pile driving, which generates much greater levels of ground vibration (Caltrans 2013b:42). The drilling of piles generates a ground vibration level of 0.089 in/sec PPV at 25 feet (FTA 2018:184).

In terms of human annoyance to building occupants, vibration from pile drilling could exceed the threshold for residential land uses of 80 VdB located within 43 feet of drilling and the daytime threshold for institutional land uses including office buildings of 83 VdB within 34 feet of drilling activities. Refer to Appendix A for detailed calculations. Pile drilling would take place within 43 feet of the Mercy Housing Community, resulting in an exceedance of the criterion for human annoyance. Because pile drilling would not take place within 34 feet of the nearest office building and the historic Station A building is unoccupied, pile drilling would not result in human annoyance in these buildings or similar buildings farther from the project site. Although construction activity would result in elevated vibration levels at the Mercy Housing Community, construction would be temporary and intermittent and would only occur during the less sensitive daytime hours between 7 a.m. and 6 p.m., Monday through Saturday and between 9 a.m. and 6 p.m. on Sunday, pursuant to the City's Noise Control Ordinance standard.

With respect to potential structural damage, pile drilling may occur in close proximity to two existing structures: the historic Station A building which was originally constructed in the 1940s; and the Mercy Housing Community, which was constructed in 2012. The historic Station A building, which would be maintained as part of the project, is considered more vulnerable to structural damage by ground vibration than the Mercy Housing Community due to its age. The Caltrans-recommended thresholds of 0.25 in/sec PPV and 0.5 in/sec PPV would apply to the historic Station A building and Mercy Housing Community, respectively. Based on the type of construction and Caltrans-recommended thresholds identified above, pile drilling within 13 feet of a historic building and 8 feet of a residential structure would be considered potentially significant. Based on current site planning considerations, pile driving is

considered to be possible within 13 feet of the historic Station A building, but due to existing underground utilities along the eastern edge of the project site, pile drilling would not occur within 8 feet of the Mercy Housing Community. Therefore, construction activity could expose the historic Station A building to levels of ground vibration that exceed the threshold for structural damage to a historic structure.

5.2.3 Operational Noise

Daily operation of electrical substation facilities generates noise primarily from the operation of transformer cooling equipment and fans. Transformers would be located approximately 26 feet from the lower stories of the Mercy Housing Community. Higher stories (i.e., stories four and above) would be more distant from the transformers but would not benefit from the noise attenuation provided by the existing 30-foot sound wall located along the east side of the project site adjacent to the Mercy Housing Community. It is assumed that the wall would offer a 5-dB reduction in noise for the first three stories of the Mercy Housing Community and no attenuation for the fourth floor and above. Six transformers with all cooling fans operating produce a combined noise level of approximately 74 dB L_{eq} at 20 feet (AECOM 2012), which represents the loudest operational scenario. Table 10 shows the estimated levels of noise exposure that nearby receptors would experience when all the cooling fans are operating, accounting for noise attenuation provided by the noise wall when applicable.

Table 10 Interior Noise Levels at Receptors during Project Operation

Receptor	Attenuation Provided by Building and/or Sound Wall[1]	Approximate Distance from Electrical Transformers to Receptor (feet)[2]	Indoor Noise Level at Receptor (dB L_{eq})[3]
Second-floor Mercy Housing Community units	35	26	37
Third-floor Mercy Housing Community units	35	30	36
Fourth-floor Mercy Housing Community units	30	38	38
Fifth-floor Mercy Housing Community units	30	49	36
Sixth-floor Mercy Housing Community units	30	62	34
Seventh-floor Mercy Housing Community units	30	75	32
Eighth-floor Mercy Housing Community units	30	88	31
Nearest office building	30	84	32

Notes: dB = decibel; L_{eq} = equivalent continuous sound level

[1] It is assumed that the existing sound wall would provide 5 dB of attenuation for the first three floors of the Mercy Housing Community and no attenuation for the fourth floor and above. Building walls would provide 30 dB of attenuation (Caltrans 2013a:7-17).

[2] The distances for residential units within the Mercy Housing Community account for the height of each building story.

[3] Interior noise levels shown in the table account for the loudest possible scenario in which all cooling fans in the facility are turned on. See Appendix A for detailed noise modeling and input parameters.

Source: Modeled by Ascent Environmental in 2020.

As shown in Table 10, the levels of interior noise exposure at the nearest office building would be 32 dB $L_{eq,}$ which would not exceed the City's interior standard for office space of 45 dB L_{eq}. The residential units on the fourth floor of the Mercy Housing Community would experience the loudest noise levels, which would reach 38 dB L_{eq}. Conservatively assuming that this noise level remained consistent over 24 hours, the interior noise level on the fourth floor would be 44 dB L_{dn}, which would not exceed the City's interior standard for residential land uses of 45 dB L_{dn}.

Additionally, because the number of transformers would be decreased from six to two as part of the project and new equipment tends to be quieter (e.g., more up-to-date technology, cleaner, more efficient), noise levels will likely decrease from existing conditions.

6 REFERENCES

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SMUD. *See* Sacramento Municipal Utility District.

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Construction Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,581	55.0
second floor of Mercy housing	14	96.1
third floor of Mercy housing	24	91.4
fourth floor of Mercy housing	36	87.9
fifth floor of Mercy housing	50	85.0
sixth floor of Mercy housing	63	83.0
seventh floor of Mercy housing	77	81.2
eighth floor of Mercy housing	91	79.8
office building	70	82.1
fourth floor of Mercy housing	45	85.9
office building	240	71.4

Equipment	Reference Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Auger Drill Rig	85	0.2
Excavator	85	0.4
Dozer	85	0.4

Ground Type	hard
Source Height	8
Receiver Height	14
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Auger Drill Rig	78.0
Excavator	81.0
Dozer	81.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
85.0

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Table 4-26 from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 86).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2018 (pg 176 and 177).

$L_{eq}(equip) = E.L.+10*\log (U.F.) - 20*\log (D/50) - 10*G*\log (D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2018: pg 86); and

D = Distance from source to receiver.

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS s	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jac	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (	20	90	90	212	84.0	77.0	100	84.0	77.0
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzl	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-tru	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0

Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0

Source:
FHWA Roadway Construction Noise Model, January 2006. Table 9.1
U.S. Department of Transportation
CA/T Construction Spec. 721.560

Distance Propagation Calculations for Stationary Sources of Ground Vibration

KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

STEP 1: Determine units in which to perform calculation.

— If vibration decibels (VdB), then use Table A and proceed to Steps 2A and 3A.

— If peak particle velocity (PPV), then use Table B and proceed to Steps 2B and 3B.

STEP 2A: Identify the vibration source and enter the reference vibration level (VdB) and distance.

STEP 3A: Select the distance to the receiver.

Table A. Propagation of vibration decibels (VdB) with distance

Noise Source/ID	Reference Noise Level			Attenuated Noise Level at Receptor		
	vibration level (VdB)	@	distance (ft)	vibration level (VdB)	@	distance (ft)
pile drilling	87	@	25	79.9	@	43
pile drilling	87	@	25	83.0	@	34

The Lv metric (VdB) is used to assess the likelihood for vibration to result in human annoyance.

STEP 2B: Identify the vibration source and enter the reference peak particle velocity (PPV) and distance.

STEP 3B: Select the distance to the receiver.

Table B. Propagation of peak particle velocity (PPV) with distance

Noise Source/ID	Reference Noise Level			Attenuated Noise Level at Receptor		
	vibration level (PPV)	@	distance (ft)	vibration level (PPV)	@	distance (ft)
pile drilling	0.089	@	25	0.237	@	13
pile drilling	0.089	@	25	0.492	@	8

The PPV metric (in/sec) is used for assessing the likelihood for the potential of structural damage.

Notes:

Computation of propagated vibration levels is based on the equations presented on pg. 185 of FTA 2018. Estimates of attenuated vibration levels do not account for reductions from intervening underground barriers or other underground structures of any type, or changes in soil type.

Sources:

Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment. FTA Report No. 0123. Prepared by John A. Volpe National Transportation Systems Center, Cambridge, MA. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed April 8, 2020.

Long-Term Noise Measurement Summary

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

Location: Fourth floor unit of Mercy Housing Community
Project Name: Station H Substation Project

			Computation of CNEL					
Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Period of 24-Hour Day (1=included, 0=not)			Sound Power Breakdown by Period of Day		
			Day	Evening	Night	Day	Evening	Night
0:00	38.0	6,310	0	0	1	0	0	6,310
1:00	38.0	6,310	0	0	1	0	0	6,310
2:00	38.0	6,310	0	0	1	0	0	6,310
3:00	38.0	6,310	0	0	1	0	0	6,310
4:00	38.0	6,310	0	0	1	0	0	6,310
5:00	38.0	6,310	0	0	1	0	0	6,310
6:00	38.0	6,310	0	0	1	0	0	6,310
7:00	38.0	6,310	1	0	0	6,310	0	0
8:00	38.0	6,310	1	0	0	6,310	0	0
9:00	38.0	6,310	1	0	0	6,310	0	0
10:00	38.0	6,310	1	0	0	6,310	0	0
11:00	38.0	6,310	1	0	0	6,310	0	0
12:00	38.0	6,310	1	0	0	6,310	0	0
13:00	38.0	6,310	1	0	0	6,310	0	0
14:00	38.0	6,310	1	0	0	6,310	0	0
15:00	38.0	6,310	1	0	0	6,310	0	0
16:00	38.0	6,310	1	0	0	6,310	0	0
17:00	38.0	6,310	1	0	0	6,310	0	0
18:00	38.0	6,310	1	0	0	6,310	0	0
19:00	38.0	6,310	0	1	0	0	6,310	0
20:00	38.0	6,310	0	1	0	0	6,310	0
21:00	38.0	6,310	0	1	0	0	6,310	0
22:00	38.0	6,310	0	0	1	0	0	6,310
23:00	38.0	6,310	0	0	1	0	0	6,310

Sum of Sound Power during Period wo/penalty	75,715	18,929	56,786
Log Factor for CNEL Penalty (i.e., 10*log(x))	1	3	10
Sound Power during Period with penalty	75,715	56,786	567,862

Total Daily Sound Power, with penalties	700,363
Hours per Day	24
Average Hourly Sound Power, with penalties	29,182
CNEL	44.7

Ldn computation on next page.

Computation of Ldn

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	6,310
0	1	0	6,310
0	1	0	6,310
0	1	0	6,310
0	1	0	6,310
0	1	0	6,310
0	1	0	6,310
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
1	0	6,310	0
0	1	0	6,310
0	1	0	6,310

Sum of Sound Power during Period wo/penalty	94,644	56,786
Log Factor for Penalty (i.e., 10*log(x))	1	10
Sound Power during Period with penalty	94,644	567,862

Total Daily Sound Power, with penalties	662,505
Hours per Day	24
Average Hourly Sound Power, with penalties	27,604
Ldn	44.4

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Deaprtment of Transportation (Caltrans), Divisiong of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement* . Sacramento, CA. Available: <http://www.dot.ca.gov/hq/env/noise/>. Accessed September 24, 2010.

Attenuation Calculations for Stationary Noise Sources

KEY:

Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

STEP 1: Identify the noise source and enter the reference noise level (dBA and distance).

STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.

STEP 3: Select the distance to the receiver.

Noise Source/ID	Receptor	Reference Noise Level			Attenuation Characteristics				Exterior Noise Level at Receptor (Without Sound Wall)			Interior Noise Level at Receptor (With Sound Wall, Where Applicable)		
		noise level (dBA)	@	distance (ft)	Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	noise level (dBA)	@	distance (ft)	noise level (dBA)	@	distance (ft)
electrical transformer (all cooling fans on)	second floor of Mercy housing	74.0	@	20	hard	13	14	0.00	71.7	@	26	36.7	@	26
electrical transformer (all cooling fans on)	third floor of Mercy housing	74.0	@	20	hard	13	28	0.00	70.5	@	30	35.5	@	30
electrical transformer (all cooling fans on)	fourth floor of Mercy housing	74.0	@	20	hard	13	42	0.00	68.4	@	38	38.4	@	38
electrical transformer (all cooling fans on)	fifth floor of Mercy housing	74.0	@	20	hard	13	56	0.00	66.2	@	49	36.2	@	49
electrical transformer (all cooling fans on)	sixth floor of Mercy housing	74.0	@	20	hard	13	70	0.00	64.2	@	62	34.2	@	62
electrical transformer (all cooling fans on)	seventh floor of Mercy housing	74.0	@	20	hard	13	84	0.00	62.5	@	75	32.5	@	75
electrical transformer (all cooling fans on)	eighth floor of Mercy housing	74.0	@	20	hard	13	98	0.00	61.1	@	88	31.1	@	88
electrical transformer (all cooling fans on)	nearest office building	74.0	@	20	hard	13	13	0.00	61.5	@	84	31.5	@	84

Notes:

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 176 and 177 of FTA 2018.

Computation of the ground factor is based on the equation presentd in Table 4-26 on pg. 86 of FTA 2018, where the distance of the reference noise leve can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Calculation uses the distance value rather than reciever height to calculate varying noise levels at each building story.

Sources:

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment. Washington, D.C. Available: <http://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf>Accessed: March 5, 2020.