FINAL

SUPPLEMENTAL INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

HAYWARD MAINTENANCE COMPLEX PHASE 2 PROJECT

SCH # 2010122013

BART

October 2022

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SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

HAYWARD MAINTENANCE COMPLEX PHASE 2 PROJECT

SCH # 2010122013

Submitted to:

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October 2022

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LIST OF ABBREVIATIONS AND ACRONYMS

°C	degrees Celsius
°F	degrees Fahrenheit
A	Agriculture
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACCWP	Alameda Countywide Clean Water Program
ACFC	Alameda Creek Flood Control
ACFCD	Alameda County Flood Control District
ACFCWCD	Alameda County Flood Control and Water Conservation District
ACWD	Alameda County Water District
ADD	Average Daily Demand
AJD	Approved Jurisdictional Determination
APE	Area of Potential Effect
AQIA	Air Quality Impact Analysis
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
BAAQMD	Bay Area Air Quality Management District
BART	San Francisco Bay Area Rapid Transit District
BART Board	BART Board of Directors
Basin Plans	Water Quality Control Plans
BMP	Best Management Practices
BRS	Biological Resources Study
BTU	British thermal units
CA WET	California Wet Extraction Testing
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Occupational Safety and Health Administration
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model

CARB	California Air Resources Board
CARE	Community Air Risk Evaluation
CBC	California Building Code
CBDS	Caltrans Bridge Design Specifications
CBTC	Communications Based Train Control
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERS	California Environmental Reporting System
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGP	Construction General Permit
CGS	California Geological Survey
CH_4	methane
CHHSL	(OEHHA) California Human Health Screening Level
CIDH	cast-in-drilled-hole
CMP	corrugated metal pipe
CNDDB	California Natural Diversity Data Base
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
COCs	Contaminants of Concern
CoIWMP	Countywide Integrated Waste Management Plan
CPUC	California Public Utilities Commission
CREC	Controlled Recognized Environmental Conditions
CSMP	Construction Site Monitoring Program
CUPA	Certified Unified Program Agency

CWA	Clean Water Act
dB	decibel(s)
dBA	A-weighted decibel(s)
DOE	United States Department of Energy
DDT	dichlorodiphenyltrichloroethane
DIR	California Department of Industrial Relations
DNL	day-night average level, also L_{dn}
DOSH	Division of Occupational Safety and Health
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EBDA	East Bay Dischargers Authority
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District
EDR	Environmental Data Resources
EIR	Environmental Impact Report
EO	Executive Order
EOC	(Alameda County) Emergency Operations Center
EOP	(Alameda County) Emergency Operations Plan
ESA	Environmental Site Assessment
ESL	RWQCB Environmental Screening Level
FAR	floor area ratio
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FGC	Fish and Game Code
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FOTF	Fleet of the Future
FP	State Fully Protected
FST	floating slab track
FTA	Federal Transit Administration
GHG	greenhouse gas

GP	General Permit
GWh	gigawatt-hours
HARD	Hayward Area Recreation District
HASP	Health and Safety Plan
HCP	Habitat Conservation Plan
HFCs	hydrofluorocarbons
HMBP	Hazardous Materials Business Plan
HMC	Hayward Maintenance Complex
HMC2 Project	Hayward Maintenance Complex – Phase 2 Project
HTT	Hayward Test Track
HUSD	Hayward Unified School District
I-880	Interstate 880
IC	Innovation Corridor
IGP	Industrial General Permit
in/sec	inches per second
IP	Industrial Park
IS/MND	Initial Study/Mitigated Negative Declaration
kV	kilovolt
kWh	kilowatt-hours
lbs/ft^2	pounds per square foot
L_{dn}	day-night average level, also DNL
L_{eq}	equivalent continuous sound level
LID	low-impact development
L_{max}	maximum noise level
LRA	Local Responsibility Area
LUST	Leaking Underground Storage Tank
M&E	Maintenance and Engineering
MBTA	Migratory Bird Treaty Act
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mgd	million gallons per day

MMI	Modified Mercalli Intensity
mph	miles per hour
MRP	Municipal Regional Stormwater Permit
MRZ	Mineral Resource Zone
MS4	municipal separate storm sewer systems
MTC	Metropolitan Transportation Commission
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOD	Notice of Determination
NOI	Notice of Intent
NO_X	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NWIC	Northwest Information Center
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OPR	Governor's Office of Planning and Research
OSHA	(United States Department of Labor) Occupational Safety and Health Administration
OWUS	Other Waters of the United States
PAHs	polyaromatic hydrocarbons
Pb	lead
PCBs	polychlorinated biphenyls
PFCs	perfluorocarbons
PHD	Peak Hourly Demand

PM	particulate matter
PM_{10}	particulate matter less than 10 microns in size
$PM_{2.5}$	particulate matter less than 2.5 microns in size
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PPV	peak particle velocity
PR	Parks and Recreation
PRC	Public Resources Code
PRD	Permit Registration Document
PW	Potential Wetland
RCEC	Russell City Energy Center
RCRA	Resource Conservation and Recovery Act
RECs	recognized environmental conditions
RMP	Risk Management Plan
RMS	root-mean-square
ROCs	reactive organic compounds
ROGs	reactive organic gases
RWQCB	Regional Water Quality Control Board
San Francisco Bay RWQCB	San Francisco Bay Regional Water Quality Control Board
SB	Senate Bill
SCE	State Candidate Endangered
SCP	Stormwater Control Plan
SCS	Sustainable Communities Strategy
SDS	Safety Data Sheets
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SFPUC	San Francisco Public Utilities Commission
SMARA	Surface Mining and Reclamation Act of 1974
SMARTS	Stormwater Multiple Application and Report Tracking System
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure

SR 238	State Route 238
SRA	State Responsibility Area
SSC	State Species of Special Concern
STC	Sound Transmission Class
STLC	soluble threshold limit concentration
SVOCs	semi volatile organic compounds
SW	sound wall
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TDA	tire-derived aggregate
TMDL	total maximum daily load
TPSS	Traction Power Substation
TS&L	Type, Size, and Location
TTLC	total threshold limit concentration
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UWMP	Urban Water Management Plan
VCP	Vitrified Clay Pipe
VDB	vibration velocity decibels
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	vehicle miles traveled
VOCs	volatile organic compounds
Waters of the U.S.	Waters of the United States
WDR	Waste Discharge Requirements
WPCF	Water Pollution Control Facility

WQAR	Water Quality Assessment Report
WQC	Water Quality Certification
WS	Waters of the State

1.0 INTRODUCTION

1.1 OVERVIEW

This Initial Study has been prepared in accordance with the provisions of the California Environmental Quality Act (CEQA) and assesses the potential environmental impacts of implementing the proposed Project described below. The Initial Study consists of a completed environmental checklist and an explanation of the environmental topics addressed in the checklist.

The San Francisco Bay Area Rapid Transit District (BART) proposes to construct the Hayward Maintenance Complex Phase 2 Project (HMC2 Project), an element of the larger Hayward Maintenance Complex (HMC) Project. Because the proposed Project is an element of the HMC Project and major components would be constructed within the existing Hayward Yard, this Initial Study relies on the *San Francisco Bay Area Rapid Transit District Hayward Maintenance Complex Project Final Initial Study/Mitigated Negative Declaration* (2011 IS/MND), which evaluated the development of the HMC Project at the Hayward Yard. The 2011 IS/MND was adopted by the BART Board of Directors (BART Board) on May 26, 2011. Because the Project included federal funding, the Federal Transit Administration (FTA) reviewed the HMC Project pursuant to the National Environmental Policy Act (NEPA) and approved a Categorical Exclusion for the HMC Project on September 21, 2011. An Addendum to the IS/MND was adopted by the BART Board in 2013, and a second Addendum was adopted in 2017.

The subject of this Supplemental Initial Study/Mitigated Negative Declaration (IS/MND) is the HMC2 Project, which includes two major components – the East Storage Yard and the Northern Mainline Connector. The East Storage Yard would include vehicle storage for approximately 250 BART vehicles, as well as ancillary wayside and maintenance facilities. The Northern Mainline Connector would consist of a new trackway connection between the East Storage Yard and the BART mainline trackway. The East Storage Yard improvements were evaluated in the 2011 IS/MND; however, several key features were not fully addressed or developed in the 2011 IS/MND; these features, along with the Northern Mainline Connector, comprise the HCM2 Project.

BART's decision to construct the HMC2 Project constitutes a "project" under CEQA and requires a discretionary action by BART. BART is both the Project proponent and the Lead Agency for review of the proposed Project under CEQA. Pursuant to the requirements of CEQA, BART must evaluate the potential for construction or operation of the proposed Project to create adverse environmental effects. This Supplemental IS/MND has been prepared for the proposed Project pursuant to the rules for supplemental environmental review under Public Resources Code (PRC) Section 21166 and *State CEQA Guidelines* Section 15163. This Initial Study analyzes whether proposed changes to the HMC Project, which comprise the HMC2 Project, would result in any new or substantially more severe significant environmental impacts than those analyzed in the prior CEQA documents or whether any of the other standards requiring further environmental review under CEQA are met.

1.2 PUBLIC REVIEW

In accordance with California Environmental Quality Act (CEQA) Guidelines Section 15073, the Public Review Draft Supplemental IS/MND for the proposed HMC2 Project was released for public review on June 17, 2022. The public review period was scheduled to end on July 18, 2022; however, due to technical issues with the email address provided by BART for receiving comments and questions about the project, the comment period was extended until August 8, 2022, resulting in a 53-day public review period. During this period, the Supplemental IS/MND was made available to local, State, and federal agencies and to interested organizations and individuals for review. The Public Review Draft Supplemental IS/MND was posted on the project website (www.bart.gov/projects), made available to local libraries, and presented to the community at a public meeting on July 14, 2022. One comment letter was received by BART during this comment and review period and verbal comments were also received at the public hearing. In general, the comments received in writing and at the public hearings were related to wetland impacts and mitigation, project clarification, and impacts to the adjacent golf course driving range.

BART will consider adoption of the Final Supplemental IS/MND for the proposed Project at the BART Board of Directors meeting on November 17, 2022. If the proposed Project is approved, BART will file a Notice of Determination (NOD), which will be available for public inspection and posted within 24 hours of receipt at the County Clerk's Office for 30 days. The filing of the NOD starts a 30-day statute of limitations on court challenges to the approval under CEQA (*State CEQA Guidelines* Section 15075(g)).

2.0 PROJECT INFORMATION

1. **Project Title:**

   Hayward Maintenance Complex Phase 2 Project (HMC2 Project)

2. **Lead Agency Name and Address:**

   San Francisco Bay Area Rapid Transit District (BART)
   2150 Webster Street
   Oakland, CA 94612

3. **Contact Person:**

   Aidin Sarabi, BART Project Manager
   asarabi@bart.gov

4. **Project Location:**

   The proposed Project would be located within the existing BART Hayward Maintenance Complex at 95 Whipple Road and along BART right-of-way north of Industrial Parkway in the City of Hayward, Alameda County, California. Figures 1 and 2 show the regional location and aerial view of the Project site, respectively.

5. **Project Sponsor's Name and Address:**

   BART
   2150 Webster Street
   Oakland, CA 94612

6. **General Plan Designation: City of Hayward**

   Parks and Recreation (PR)
   Industrial Technology and Innovation Corridor (IC)

7. **Zoning: City of Hayward**

   Industrial Park (IP)
   Agriculture (A)

8. **Description of Project:**

   The San Francisco Bay Area Rapid Transit District proposes to construct the Hayward Maintenance Complex Phase 2 Project (HMC2 Project), an element of the HMC Project. A full Project Description is provided in Section 3.0.

9. **Surrounding Land Uses and Setting:**

   The proposed Project is located within an urban area comprised of industrial, commercial, recreational, and residential land uses. The Hayward Hills, which consist of undeveloped open grasslands, lie approximately 0.75 mile to the east. A more detailed description of the Project site and existing site conditions is provided in Section 3.0.

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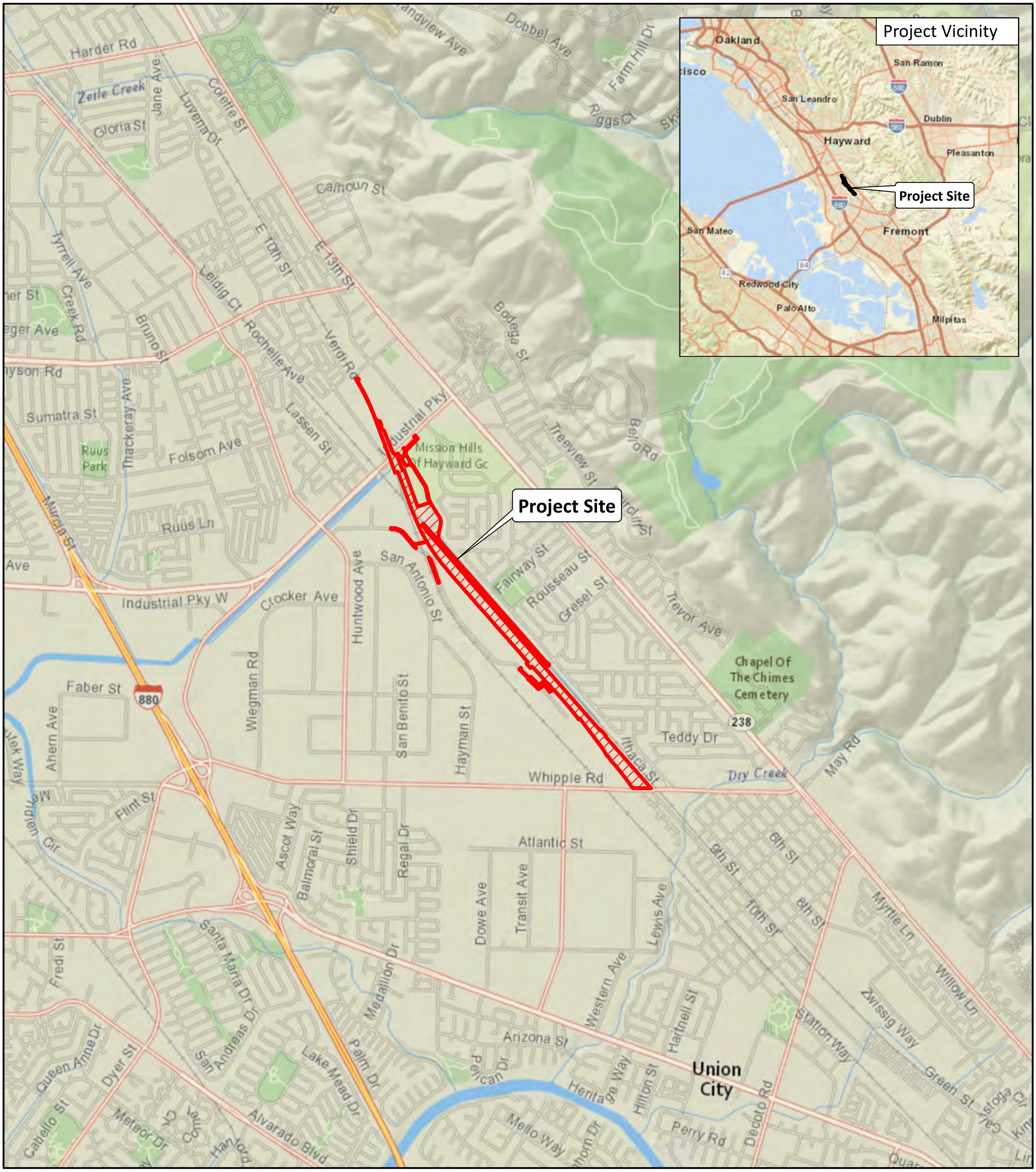

LEGEND

Project Site

FIGURE 1

0 1500 3000
FEET

SOURCE: National Geographic (2020); Esri World Street Map (2020); Jacobs (07/2021); PGH Wong Eng (12/2021).

BART HMC2 Project Supplemental IS/MND

Regional Location and Vicinity

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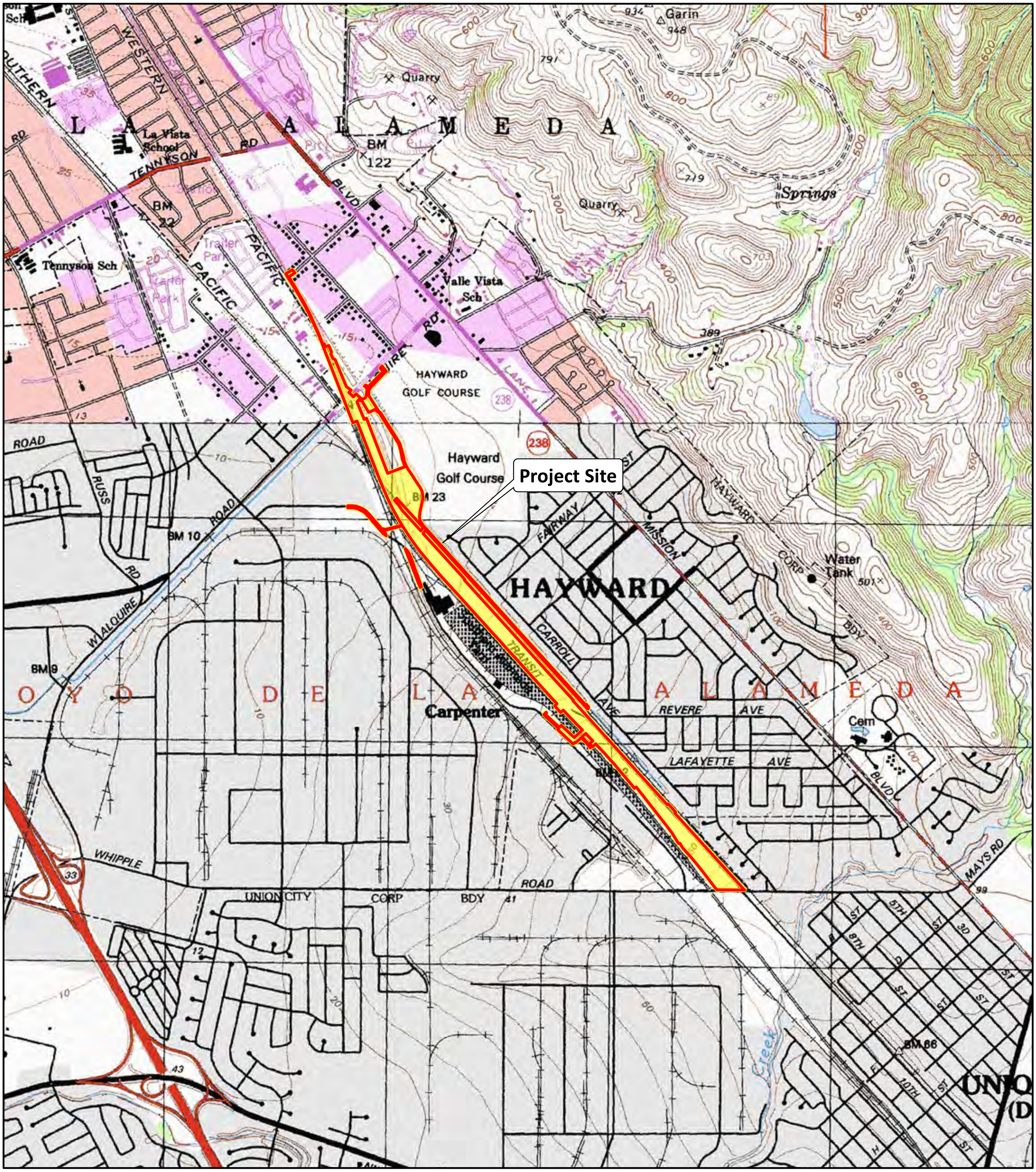

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LEGEND

Project Site

FIGURE 2

0 1000 2000
FEET

SOURCE: Jacobs (07/2021); PGH Wong Eng (12/2021);
USGS 7.5-minute Topo Quads - *Newark, Calif.* (1993) and *Hayward, Calif.* (1990).

BART HMC2 Project Supplemental IS/MND

Project Site

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10. Public Agencies Whose Approval is Required (e.g., permits, financial approval, or participation agreements):

- State Water Resources Control Board (SWRCB) – National Pollutant Discharge Elimination System (NPDES) General Permit for Industrial and Construction Stormwater Discharges and Stormwater Pollution Prevention Plan (SWPPP) approval

- Regional Water Quality Control Board (RWQCB) – Waste Discharge Requirements (WDR) and 401 Water Quality Certification

- United States Army Corps of Engineers (USACE) – Individual 404 Permit for dredging and filling Waters of the United States (Waters of the U.S.)

- California Department of Fish and Wildlife (CDFW) – Section 1602 Streambed Alteration Agreement

- City of Hayward – Temporary construction easement along Industrial Parkway

- Hayward Area Recreation and Park District (HARD) – Temporary construction and access agreement for construction and relocation of the boundary fence separating the BART tracks from the Mission Hills of Hayward Golf Course Driving Range

Other

- Union Pacific Railroad (UPRR) – Permit for jack and bore for culvert under UPRR tracks and construction easement for work adjacent to the UPRR tracks

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resource Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

On August 31, 2020, BART sent Assembly Bill (AB) 52 outreach letters to the tribes listed in the contact list provided by the Native American Heritage Commission (NAHC) on June 10, 2020. The letters, sent via certified mail to the tribal contacts, described the Project, provided maps of the Project site, and invited the tribes to request consultation should they have any concerns. No comments were received from the tribal contacts.

On December 15, 2021, BART sent follow-up letters to the same tribal contacts to provide supplemental information regarding modifications to the proposed Project, which resulted in adjustments to the proposed Area of Potential Effects (APE) map prepared for the Project. To date, one tribal contact responded to confirm receipt of the notification; however, no requests for consultation have been received.

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3.0 PROJECT DESCRIPTION

The following describes the proposed HMC2 Project (proposed Project) that would include development of key features within the East Storage Yard and construction of the Northern Mainline Connector to provide a new trackway connection between the East Storage Yard and the BART mainline trackway. BART is both the Project proponent and the Lead Agency for review of the proposed Project under CEQA.

3.1 PROJECT PURPOSE AND NEED

BART has been in operation since 1972 and currently operates in five Bay Area counties. It operates and maintains 131 miles of revenue track and 50 stations serving an average of 405,000 passenger trips on an average weekday (prior to the Covid-19 pandemic). The most recent extension to the BART system was to the Berryessa/North San Jose Station in San José, which opened in June 2020. The existing BART system is illustrated in Figure 3.

The BART fleet has 669 legacy revenue vehicles and has ordered 775 "Fleet of the Future" cars. The first Fleet of the Future train carried passengers in January 2018. The size of BART's fleet will be dynamic while new trains are put into service and old trains are retired. The current forecast indicates the balance of new train cars will be delivered by Spring 2022.[1] Approximately 620 vehicles are in service on a typical day.

BART's current fleet of 728 revenue vehicles can all be stored within the four existing yards associated with the four vehicle maintenance shops. As the fleet expands to meet future needs, additional maintenance and storage will be necessary, both to accommodate the expected number of cars and to minimize non-revenue train movements to initiate and end daily service.

Maintenance will also need to be expanded to ensure future reliability and performance. BART has instituted a Strategic Maintenance Program (SMP) that will provide scheduled maintenance and overhauls for the vehicle fleet. The acquisition of the three properties (with four warehouses) adjacent to Hayward Yard (HMC Phase 1) created an efficient complex that could provide the necessary maintenance and also allow a consolidation of existing BART services.

As part of the Transbay Corridor Core Capacity Program, BART has prioritized three interrelated capital investment initiatives to ensure the system can safely, efficiently, and comfortably serve current and new riders. Collectively these projects are known as the "Big 3" and include the following:

- The Fleet of the Future (FOTF) – Replacement and expansion of its fleet size through procurement of new Fleet of the Future train cars. BART will replace its legacy fleet which consists of 669 cars with 775 new Fleet of the Future cars. This project is currently underway.

1 San Francisco Bay Area Rapid Transit District (BART). 2021. "System Facts". Website: www.bart.gov/about/history/facts (accessed July 30, 2021).

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FIGURE 3

N

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BART HMC2 Project Supplemental IS/MND

Existing BART System Map

SOURCE: San Francisco Bay Area Rapid Transit District, 2021

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- Communications Based Train Control (CBTC) – An improved train control system to enable trains to operate more frequently.

- HMC Phase 2 Project (HMC2 Project) – Expansion of the HMC to provide new train maintenance facilities and a new train storage yard east of the existing yard. The expanded HMC would ensure that BART's maintenance and repair capacity is sufficient to support the new railcar fleet for both the current system and system expansions.

The "Big 3" together address some key current bottlenecks that hinder BART's ability to meet pre-pandemic and forecasted future ridership growth. The HMC2 Project consists of both the East Storage Yard and the Northern Mainline Connector. These projects are located on the undeveloped land east of the Hayward Maintenance Complex and would provide an economical means to expand vehicle storage on suitable, vacant land, which BART already owns.

3.1.1 Project Objectives

The objectives for the proposed Project are to:

- Provide additional storage tracks for approximately 250 additional BART cars.

- Provide increased flexibility for BART operations by allowing some maintenance operations that now occur on the west side of the mainline to be conducted at the East Storage Yard.

- Increase flexibility for BART operations by providing a direct and efficient rail connection from the East Storage Yard to the BART northbound mainline via the Northern Mainline Connector.

3.2 PROJECT BACKGROUND

3.2.1 2011 Project and IS/MND

On May 26, 2011, the BART Board adopted the *Hayward Maintenance Complex Project Final IS/MND* (SCH #2010122013), which evaluated development of the HMC Project at the existing Hayward Yard, including the proposed Phase 1 Expansion and Phase 2 Expansion. The HMC Project evaluated in the 2011 IS/MND is shown in Figure 4.

The Phase 1 Expansion entailed the acquisition of three properties containing four warehouses adjacent to the west side of the existing Hayward Yard, totaling approximately 28 acres. BART is reconfiguring the properties for use as an integrated maintenance complex that includes a new vehicle level overhaul shop, component repair shop, central warehouse, and maintenance and engineering (M&E) shop and storage area. A new motor vehicle connection allows vehicle access between the newly acquired properties and Sandoval Way, the existing yard roadway. Rail car access is being added along the east side of the warehouse properties to connect them to the existing Hayward Yard. Some existing maintenance operations and storage will move from the east side yard to the west side with the establishment of the M&E shop and storage area.

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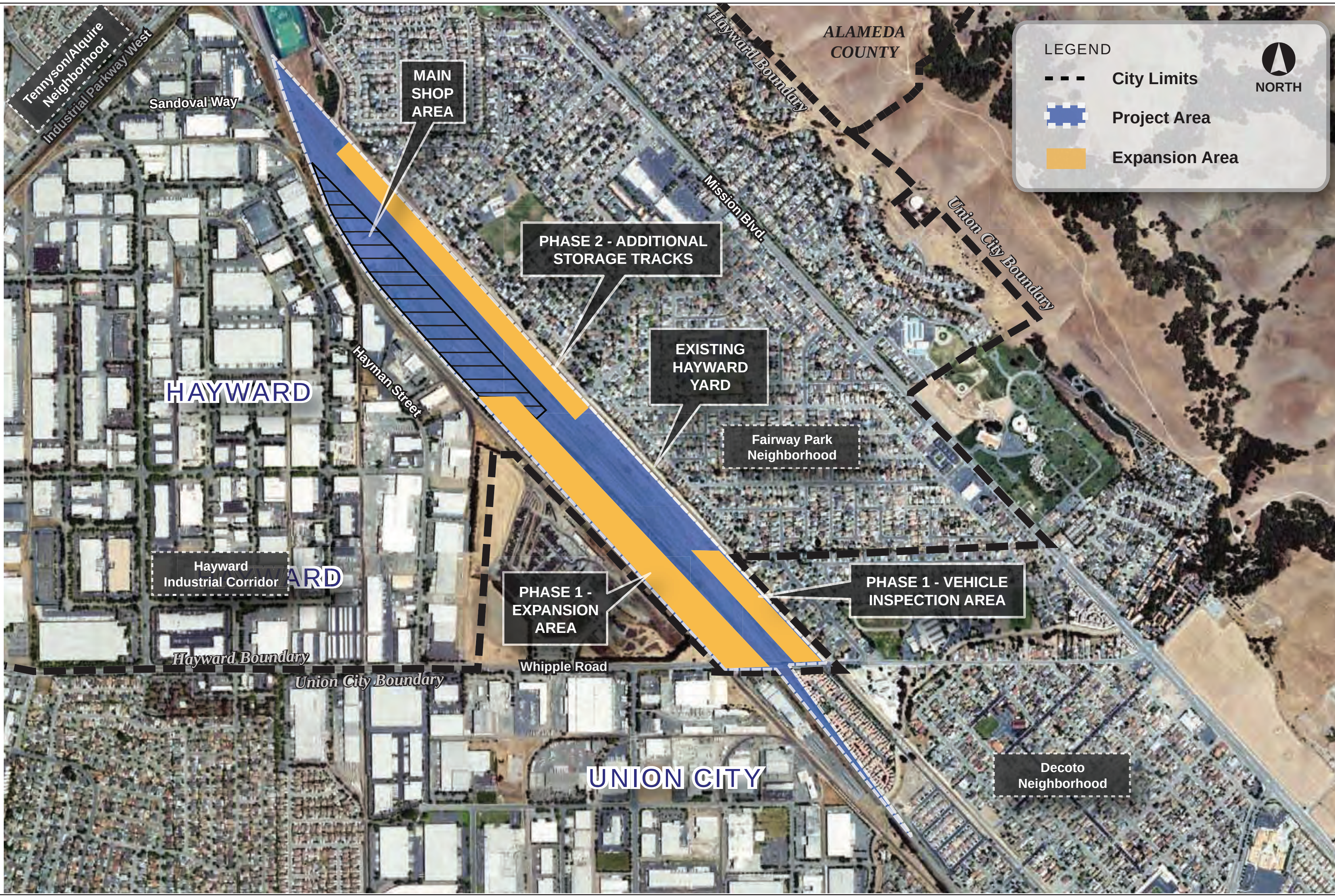

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FIGURE 4

NOT TO SCALE

BART HMC2 Project Supplemental IS/MND

2011 Hayward Maintenance Complex Project Boundaries

SOURCES: Environmental Data Resources, Inc., 2009; Google Earth, 2009; PBS&J, 2010.

P:\WRO2001 Hayward BART\PRODUCTS\Graphics\ISMND\Figure 4.ai (9/30/2021).

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As described in the 2011 IS/MND, the Phase 2 Expansion would include a new BART car storage area on approximately 13 acres of an undeveloped 20-acre portion of the northeast quadrant of the Hayward Yard. In addition to the new expansion areas to the east, a portion of the approximately 12 acres of the existing BART storage yard (an existing paved area) would be configured with connecting tracks. The 2011 IS/MND evaluated the following specific improvements associated with the Phase 2 Expansion:

- **East Storage Yard.** The 2011 design for the east side storage project was designed to provide storage for a maximum of 250 vehicles and connecting trackwork. Almost all the new facilities and yard modifications would have occurred east of the existing yard and mainline tracks. Two new crossovers would have been installed on the BART tracks south of Whipple Avenue (in the City of Union City) to provide access from the existing BART tracks via the test track to the new storage area. The East Storage Area included the following components: site grading; underground utilities; traction power, train control, and communications systems; contact rails; a traction power substation; storage and transfer racks; drainage facilities; lighting; a new access road from Whipple Road to the expansion area; a cleaning supplies facility; and perimeter fencing.

- **Flyovers.** In 2011, the new east side storage tracks would have been connected to the mainline tracks via turnouts that use the test track as a route to the proposed train storage area. In addition, to reduce the potential disruption to test track activity and mainline traffic due to trains moving in and out of the east side storage area, two flyovers were proposed. The southern flyover would have provided access from the storage area to the southbound mainline, and the northern flyover would have provided direct access from the east side storage area to the northbound mainline. The two flyovers were to be constructed independently of each other. Each would have provided a separate and independent function for train movements in the yard. Due to cost and construction constraints working around the mainline, these flyovers are no longer part of the proposed Project.

The 2011 IS/MND examined a full range of potential environmental impacts associated with construction and operation of both Phases 1 and 2. Potentially significant impacts were identified related to aesthetics/visual resources, air quality, biological resources, cultural resources, greenhouse gas emissions, hazardous materials, hydrology and water quality, noise and vibration, and transportation. Mitigation measures were proposed to reduce potentially significant impacts to a less-than-significant level.

To allow the receipt of federal funding, the FTA reviewed the HMC Project pursuant to NEPA and approved a Categorical Exclusion for the HMC Project on September 21, 2011.

3.2.2 2013 Addendum

In March 2013, the BART Board approved the *Addendum to Final Initial Study/Mitigated Negative Declaration for the Hayward Maintenance Complex Project. Component Repair Shop – Building 3 Replacement* (2013 Addendum), which evaluated proposed modifications to the approved HMC Project, specifically, the demolition of Building 3 and construction of a new structure to house the Component Repair Shop. As modified, the structure would be slightly larger and taller and shifted further to the south to accommodate the roadway and associated utilities. The 2013 Addendum determined that the proposed modifications related to the Component Repair Shop would result in no new impacts or substantially more severe significant impacts and no additional environmental review was required.

3.2.3 2017 Second Addendum

In January 2017, the BART Board approved the *Hayward Maintenance Complex Project Second Addendum to the Final Initial Study/Mitigated Negative Declaration* (2017 Second Addendum), which evaluated further modifications to the approved HMC Project, including construction of new buildings for the M&E Shop and Central Warehouse (rather than retrofitting the two existing warehouses) and relocation of a sound wall (SW), designated as SW-3 from ground level to atop an existing concrete structure that slopes up towards the north, to mitigate operational noise generated as a result of Phase 2 improvements. The 2017 Second Addendum also evaluated an associated increase in the number of employees at the Hayward Yard associated with the proposed modifications.

The 2017 Second Addendum did not identify any substantial changes to the affected environment and did not identify any new or substantially more severe impacts not already identified in the previous environmental documents or changes in the feasibility or effectiveness of mitigation measures. All mitigation measures identified in the 2011 IS/MND would apply to the proposed modifications.

The preceding text describes the prior CEQA documents that have been considered in this CEQA analysis. Each of the following documents are hereby incorporated by reference and can be obtained from BART at 2150 Webster Street, Oakland, CA 94612, and/or located at: https://www.bart.gov/about/projects/hmc.

3.2.4 Relationship of Proposed Project to Prior Environmental Review

To date, the majority of the improvements proposed as part of Phase 1 of the HMC Project are in the process of being completed. As described below, the East Storage Yard, which was identified as part of the Phase 2 Expansion, was environmentally evaluated in the 2011 IS/MND; however, several key features that were not fully addressed or developed when the 2011 IS/MND was prepared are now proposed. These features, along with the Northern Mainline Connector component, form the basis of the proposed Project, which is described more fully below. In addition, the two flyovers are no longer proposed and have been dropped from the Project.

This Supplemental IS/MND evaluates the environmental impacts of the proposed Project and compares the findings with the conclusions in the prior environmental documents to identify whether the proposed Project would result in any new or substantially more severe impacts than those analyzed in the 2011 IS/MND or whether any of the other standards requiring further environmental review under CEQA are met.

3.3 PROJECT SITE AND SITE DESCRIPTION

3.3.1 Regional Setting

The proposed Project would be located within the existing Hayward Yard located in the City of Hayward, just north of Whipple Avenue and south of Industrial Parkway (Figure 2). Tracks at the south end of the Hayward Yard extend into Union City. The Hayward Yard is one of four rail vehicle maintenance facilities serving the BART system (Hayward, Concord, Richmond, and Daly City) with train storage, train washing, and general maintenance facilities for the BART fleet. In addition, the Hayward Yard has a parts warehouse and can provide accident and component repair, which is not available at the other BART maintenance yards.

Regional access to the Project site is via Interstate 880 (I-880), approximately 1.5 miles west of the site and State Route 238 (SR 238), approximately 0.5 mile to the east. Whipple Road and Industrial Parkway are major arterial roadways in proximity to the Project site. Existing vehicle access to the Hayward Yard is via Sandoval Way and Whipple Road. Vehicle access from the north to the main BART shop area and the yard from the west side of the BART mainline tracks is from Sandoval Way, which connects to Huntwood Avenue just south of Industrial Parkway. The main shop and warehouse area also are accessible from the south via a BART driveway from Whipple Road. Access to the Hayward Yard on the east side of the BART mainline tracks is from a BART access road on the north side of Whipple Road; this is the only vehicular access to the Hayward Yard east of the BART mainline tracks.

3.3.2 Project Vicinity and Surrounding Land Uses

The Hayward Yard is bordered on the west by industrial and warehouse development and a Union Pacific Railroad (UPRR) line (Oakland subdivision). A second UPRR line borders the yard to the east (Niles subdivision).[2] In the Project vicinity, industrial uses are generally located west of the UPRR corridor and residential uses are located east of the UPRR corridor. Surrounding uses include industrial businesses and warehouses to the west, residential development to the north and east, the Mission Hills of Hayward Golf Course and driving range to the north, and Whipple Road to the south. Two public parks, Bidwell Park and Twin Bridges Park, are located further to the east within the adjacent residential development.

3.3.3 Existing Site Conditions

The Hayward Yard has a long and narrow configuration and is oriented north-south along both sides of the BART mainline tracks. The yard currently has train storage tracks and maintenance facilities to the west of the BART mainline tracks and maintenance-of-way[3] materials storage and new BART car receiving to the east of the mainline tracks. Motor vehicles access the main shop and the yard west of the mainline tracks from Sandoval Way or Whipple Road, and access to the yard east of the mainline is only from Whipple Road.

[2] Two sets of Union Pacific tracks run north-south in the project vicinity. One set is immediately adjacent to the Hayward Yard on the east and the second set is approximately 1,100 feet to the west of the first.

[3] Maintenance-of-way refers to the material, equipment, and operations necessary to maintain the track and right-of-way.

The Hayward Yard operates 24 hours per day, 365 days per year. BART activities are cyclical and the number of employees at the Hayward Yard increases or decreases depending on various BART operations and maintenance activities occurring over the course of a day. The Hayward Yard currently supports a total of 370 BART employees, working on site each day. BART typically operates approximately 126 trains from the Hayward Yard during a typical week.[4]

Rail car storage capacity at the Hayward Yard is 303 cars, all on the yard's west side. Presently, 280 cars can be stored as complete trains of commonly scheduled lengths (twenty-four 10-car trains, and eight 5-car trains). The remaining spaces accommodate 23 single cars. Currently, all of BART's other yards are nearly at capacity, so the proposed Hayward East Storage Yard would provide the only additional storage capacity to allow for increased revenue service through San Francisco and Oakland. The East Storage Yard would accommodate approximately 250 additional cars.

The Hayward Yard also contains the BART test track, where cars with mechanical problems are tested before being returned to service, and where new cars are delivered and tested before entering service. The test track is 2.25 miles long and extends beyond the Hayward Yard approximately 3,730 feet (0.71 mile) to the north and 1,750 feet (0.33 mile) to south. Testing hours are 8:00 a.m. to 4:00 p.m. Test track hours could be longer during periods of new fleet acceptance. New cars can be delivered to the yard by either rail or flatbed semi-trailer.

The Project site is located at the north-eastern end of the HMC and consists of approximately 55 acres of land including portions of the existing HMC property and BART right-of-way north of Industrial Parkway. The majority of proposed improvements would be located within the northeast quadrant of the HMC property, on the east side of the mainline BART tracks north of the existing maintenance and engineering facility and rail storage yard. The connecting tracks would be constructed on land that primarily consists of grasslands with sparse patches of trees and bushes, a low-lying wetland area, a linear man-made drainage ditch, and in a narrow corridor between the existing BART Hayward Test Track (HTT) and the Mission Hills of Hayward Golf Course Driving Range. The Northern Mainline Connector track guideway would tie-into the BART mainline tracks approximately 700 feet north of Industrial parkway. Construction of the Northern Mainline Connector would take place largely within existing BART right-of-way.

3.4 PROPOSED PROJECT

BART proposes to construct the HMC2 Project, an element of the HMC Project, which was environmentally evaluated in the 2011 IS/MND. The HMC2 Project is subdivided into two major components, the East Storage Yard and the Northern Mainline Connector. Figure 5 shows the two Project components.

[4] These numbers represent pre-pandemic train schedules. BART train schedules have varied due to pandemic conditions that have caused service reductions. BART anticipates a return to a full schedule at some point in the future.

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FIGURE 5

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Project Site

Project Components

East Storage Yard

Northern Mainline Connector

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SOURCE: Google Maps (2021).

BART HMC2 Project Supplemental IS/MND

Project Components

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3.4.1 East Storage Yard

The East Storage Yard, the first component of the HMC2 Project, includes a vehicle storage yard capable of storing approximately 250 BART vehicles. The need for the East Storage Yard is driven by BART's plan to increase its fleet size to accommodate a growing demand for reliable and more frequent train service to/from downtown San Francisco and Oakland.

The East Storage Yard also features ancillary wayside and maintenance facilities needed for a fully functional, electrified, storage yard. The East Storage Yard was evaluated under CEQA in 2011; however, several key features were not fully addressed or developed in the 2011 IS/MND. These features, along with the Northern Mainline Connector component, form the basis of the proposed Project. Figure 6 shows the East Storage Yard Project Components. Key features of the East Side Vehicle Storage Yard are as follows:

- **Drainage.** An existing open drainage channel that extends the length of the proposed East Storage Yard and the existing rail storage yard and maintenance facilities almost to Whipple Road would be filled. The length of the fill would be approximately 4,781 linear feet, and the surface area of the fill would be approximately 33,102 square feet (0.76 acre). The amount of fill required would be approximately 18,900 cubic yards. Replacement of the drainage channel is needed for the construction of a perimeter access road, which would provide for maintenance and emergency vehicles egress through the storage yard.

  A second drainage ditch, which originates in the middle of the yard and directs flow towards the western boundary of the HMC, would be partially filled to accommodate construction of the pedestrian/golf cart bridge crossing. The length of fill would be approximately 210 linear feet and the surface area of fill would be approximately 1,656 square feet (0.038 acre). A detoured culvert around the filled portion of the ditch would allow it to maintain its functionality for proper drainage.

- **Car Cleaning Platform.** A car cleaning platform would be provided within the storage yard. The car cleaning platform would allow car cleaners to access trains at vehicle door height, similar to typical passenger platforms. Canopies, mop sinks, and storage cabinets would also be provided along the cleaning platform. The dimensions of the platform would be approximately 700 long by 11 feet wide.

- **Cart Bridge Overcrossing.** An overcrossing structure would provide access for personnel carts and pedestrians to allow workers to traverse between the East Vehicle Storage Yard and the existing Hayward Yard. The cart bridge overcrossing would be approximately 780 feet long and 20 feet above the ground.

- **Extension of Whistle Stop Structure.** The existing Whistle Stop Structure would be extended to the east to allow Train Operators to cross over the Hayward Test Track and access the East Vehicle Storage Yard. The Whistle Stop Structure would also allow for additional pedestrian movement between the existing Hayward Yard and the East Storage Yard area. The Whistle Stop Structure would be approximately 100 feet long by 5 feet wide.

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FIGURE 6

BART HMC2 Project Supplemental IS/MND

East Storage Yard

SOURCE: Microsoft Bing (2021).

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- **Traction Power Substation.** A Traction Power Substation (TPSS) would be located in the East Vehicle Storage Yard. The TPSS would provide power to the storage yard. The dimensions of the TPSS would be 180 feet long by 70 feet wide by 12 feet high.

- **Train Operator Facility/Car Cleaner/Cart Charging Facility.** A two-story administrative building would provide work and break facilities for Car Cleaners and Train Operators. The facility would be located on the south end of the East Vehicle Storage Yard and would also include facilities to allow for the charging of electric carts. The facility would be approximately 8,600 square feet and 12 feet long by 40 feet wide by 32 feet high.

- **Ditch Restoration.** The East Storage Yard component would include a narrow linear area approximately 500 feet long located within the Hayward Maintenance Complex that is bounded by Sandoval Way on the east and the UPRR Oakland Subdivision rail line on the west, which could accommodate proposed restoration of an existing ditch as mitigation for wetland impacts, if needed.

3.4.2 Northern Mainline Connector

The Northern Mainline Connector would consist of a new trackway connection between the East Storage Yard and the BART mainline trackway. The Northern Mainline Connector would be located on approximately 25 acres of undeveloped property located in the northeast corner of the Hayward Yard, extending along the BART right-of-way north of Industrial Parkway.

The Northern Mainline Connector area would be bounded by the UPRR Niles Subdivision rail line and Mission Hills of Hayward Golf Course Driving Range on the east, the BART Mainline and Hayward Test Track to the west, and the East Storage Yard to the south.

The Northern Mainline Connector would also include the relocation of the western fence[5] of the Mission Hills of Hayward Golf Course Driving Range (driving range) to a location further to the east to allow for the construction of new trackway. Key features of the Northern Mainline Connector are shown in Figure 7 and described as follows:

- **Extended Trackway.** The BART tracks would be extended from the vehicle storage area north approximately 3,600 feet, to a point approximately 700 feet north of Industrial Parkway. A combination of turnouts and crossovers[6] would be installed, including three crossovers and eight turnouts that are north of the vehicle storage yard.

[5] The driving range fence consists of black safety netting and associated steel support poles that extend approximately 120 feet above ground level.

[6] A crossover is defined as a pair of switches that connects two parallel rail tracks, allowing a train on one track to cross over to the other. A turnout is a mechanical device used to guide the trains from one rail track to another.

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FIGURE 7

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Project Site

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SOURCE: Microsoft Bing (2021).

BART HMC2 Project Supplemental IS/MND

Northern Mainline Connector

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- **Retained Fill Embankment.** A retained fill embankment would be constructed to carry the connecting tracks north from the storage tracks to the UPRR tunnel and from the UPRR tunnel to approximately 700 feet north of Industrial Parkway. The retained fill embankment would be approximately 3,600 feet (0.68 mile) long, 25 to 50 feet wide, and 25 feet at the highest location. Between the UPRR tracks on the east and the BART test track on the west, the embankment would be constructed between two retaining walls and would carry a series of tracks from the East Storage Yard that would converge to just one track connecting to the BART mainline north of Industrial Parkway. The embankment would also carry a service road parallel to the tracks. The embankment would be lighted with shielded security lights 15 to 18-feet high.

- **Bridge Overcrossing of Industrial Parkway.** A new bridge overcrossing structure would be constructed over Industrial Parkway to carry the new Northern Connecter trackway. The structure would be approximately 230 feet long, 25 feet wide, and 25 feet high and would be supported by columns placed in the median and either side of the roadway.

- **Sound Wall.** A ~~6~~500-foot-long, ~~10~~8-foot-high sound wall ~~(5 feet above track top of rail)~~ would be constructed along the east side the Northern Connector tracks north of Industrial Parkway as mitigation for noise impacts associated with construction of nearby crossovers (see Section 5.13, Noise). Approximately 275 feet of the proposed sound wall would be constructed atop the proposed retaining wall; the remaining 230 feet would consist of a stand-alone sound wall.

- **Drainage.** Underground culvert pipes would replace portions of an existing open culvert/linear-ditch along the west side of Northern Mainline Connector site to allow for the construction of a perimeter access road, which will provide access for emergency vehicles throughout the storage yard and to accommodate a Gap Breaker Station and a Train Control House.

- **Bioretention Basin.** A bioretention basin would be located between the retained fill embankment on the east and the BART test tracks on the west. Its dimensions would be approximately 580 feet long by approximately 50 feet wide by 4 feet deep. The bioretention basin would have an area of approximately 29,000 square feet and a capacity of approximately 44,000 cubic feet of stormwater storage. Flows from the Phase 1 (west side of Hayward maintenance yard) and Phase 2 (East Side Storage Area) would be conveyed by gravity into the bioretention basin.

- **Stormwater Storage.** In addition to the bioretention basin, the proposed Project would include stormwater storage to accommodate runoff from the Phase 1 area (west side of the mainline tracks) of the Hayward Yard. Stormwater from the Phase 1 area would be conveyed to storage culverts beneath the proposed bioretention basin. The storage facility would consist of four side-by-side box culverts that would be cross-connected to act as a single storage unit. The combined culvert dimensions would be approximately 40 feet wide by 8 feet deep by 400 feet long and would provide approximately 100,000 cubic feet of storage. Stormwater runoff from the Phase 1 site would flow to a bypass structure on the site, where the Phase 1 flows would be stored in the box culverts and excess storm flows would be conveyed to an existing outfall.[7]

[7] The Regional Water Quality Control Board requires treatment to the 85th percentile of stormwater volume.

Once a storm event has passed and there is capacity in the bioretention basin, a pump station would lift the Phase 1 flows into the bioretention basin for treatment and eventual discharge to an existing outfall on the eastern side of the UPRR tracks. Pump stations and piping for this component would be provided as part of the proposed Project.

- **Jack and Bore 30-Inch Storm Drain**. A 30-inch storm drain culvert would be installed via jack and bore underneath the UPRR Niles Subdivision tracks to connect to an existing culvert east of the UPRR tracks. The existing culvert outlets to an Alameda County Flood Control District (ACFCD) channel. Approximately 200 feet of the storm drain would be jacked and bored. The existing drainage outfall to the ACFCD channel would not be impacted by construction activities.

- **Jack and Bore Sanitary Sewer**. An 8-inch sanitary sewer would be installed via jack and bore underneath the UPRR Oakland Subdivision, BART Hayward Test Track, and BART mainline trackways to connect to provide a connection to an existing sanitary sewer system located on Sandoval Way.

- **Underground Utilities.** Power, water, sanitary sewer, and communications would be extended from the existing connections to the expansion area.

- **Traction Power, Train Control, and Communications Systems.** Embedded electrical conduit for traction power would be provided for power and communications circuits. A third rail to provide power to tracks and to power the vehicles would be installed.

- **Gap Breaker Stations**. Two gap breaker stations, one at the north end of the connecting tracks adjacent to the east side of the BART tracks north of Industrial Parkway and another at the south end of the Northern Mainline Connector tracks would be installed. These facilities would be approximately 1,000 square feet in size and provide for continuity in and the ability to isolate sections of contact rail. The gap breaker stations would be approximately 56 feet long by 20 feet wide by 13 feet high. Figure 8 shows a cross section of the Northern Mainline Connector north of Industrial Parkway.

- **Train Control House.** A train control house would be located at the south end of the Northern Connector where the storage tracks start to merge. This facility would be approximately 3,800 square feet in size and would house automatic train control equipment. The train control house would be approximately 126 feet long by 30 feet wide by 18 feet high.

- **Access Road.** A new 20- to 27-foot-wide paved road would extend along the east side of the storage tracks to a point just north of the current wetlands area. This extension of the planned road would extend from the East Storage Yard towards the northern transfer tracks. It would provide for both BART and fire and emergency access to the proposed Project area.

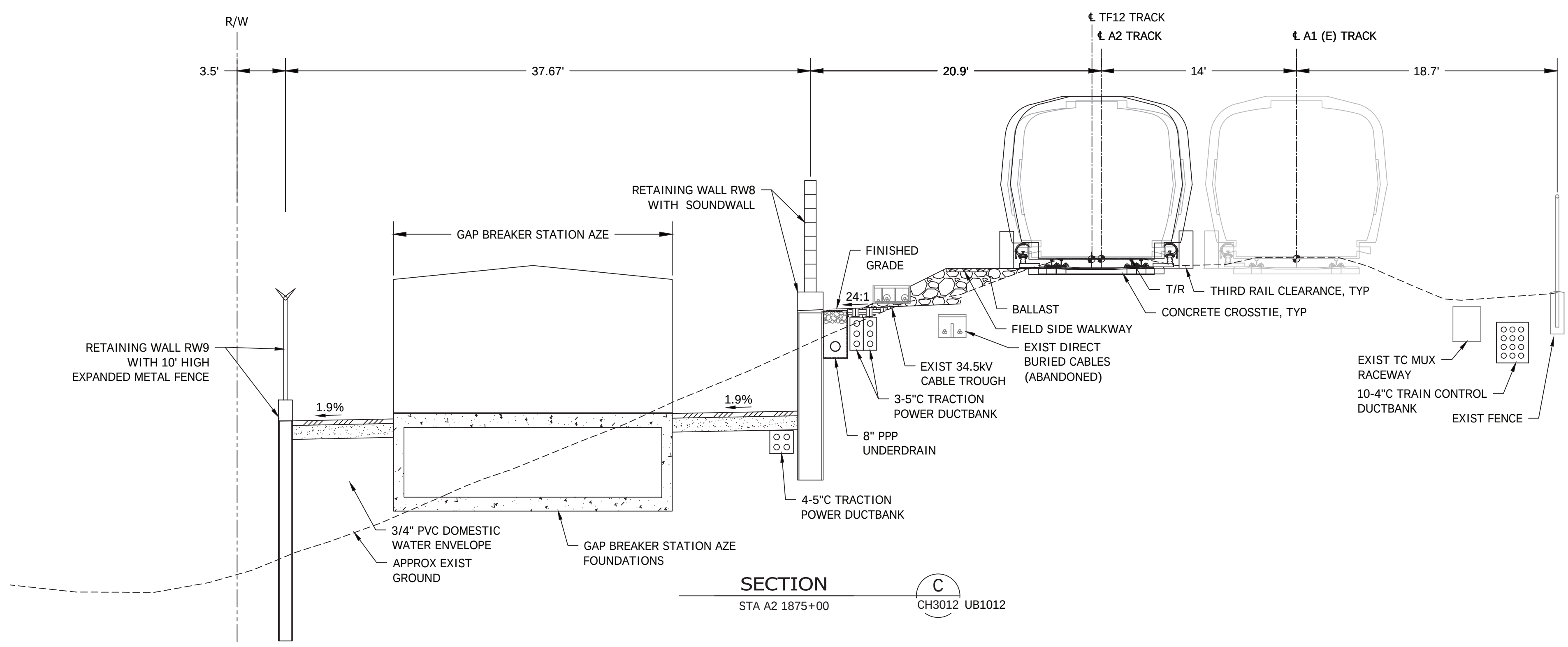

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FIGURE 8

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BART HMC2 Project Supplemental IS/MND

Typical Cross Section - North of Industrial Parkway

SOURCE: San Francisco Bay Area Rapid Transit District, 2021

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- **Relocation of Driving Range Fence.** Construction of the track for the Northern Mainline Connector would require the relocation of the boundary fence (e.g., safety netting and 120-foot-tall steel support poles) between the driving range and the BART tracks. The property is owned by BART, but the Hayward Area Recreation and Park District (HARD) has a permanent operating easement for the property for the operation of the driving range. The relocation would shift the boundary fence a maximum of approximately 50 feet to the east along 1,310 feet (the full length of the driving range). Figure 9 shows a cross section of the Northern Mainline Connector in the area of the driving range. Approximately 61,444 square feet (1.41 acres) of property would be affected. The boundary shift would require BART and HARD to extinguish a portion of the existing operating easement.

- **Wetland Mitigation Area.** Approximately 2.24 acres of HARD property south of the driving range is being considered for conversion to a permanent wetland area as mitigation for the loss of wetlands on site. Development of wetlands would follow use of this area as the Secondary Staging Area during construction.

- **Train Wash**. A train wash facility would be constructed at the south end of the Northern Connector tracks, just north of the vehicle storage area. The train wash would allow BART to clean the exteriors of trains as they enter the storage yard following the completion of revenue service. The train wash would be approximately 200 feet long by 30 feet wide by 14 feet high.

- **Site Lighting.** Light poles for security lighting would be added along the new trackway. Light poles would be 15 to 18 feet high with shielded lamps. The new lights would not include motion detectors.

- **Perimeter Fence.** A 9-foot-high security fence would be provided along the new perimeter of the expansion area topped with razor coil adding 12 inches in height.

3.4.3 Train Activity

With implementation of the proposed Project, an increased level of train activity in the proposed Project area would occur, as many as 12 trains could be dispatched from the east side storage tracks and use the Northern Mainline Connector to join the northbound mainline in the morning and return at the end of the operating day. Train movements in the connecting tracks would range from 5 to 30 miles per hour as trains prepared to merge with mainline train traffic.

3.4.4 Employees

BART activities vary by time of day, and the number of employees at the Hayward Yard increases or decreases depending on various BART operations and maintenance activity occurring at the time. Currently, approximately 370 BART employees work at the Hayward Yard in a given day (24 hours), distributed over several shifts. No new activities are planned at the new storage area. Rather, the new storage area would provide additional car storage capacity and increased operational flexibility for existing activities.

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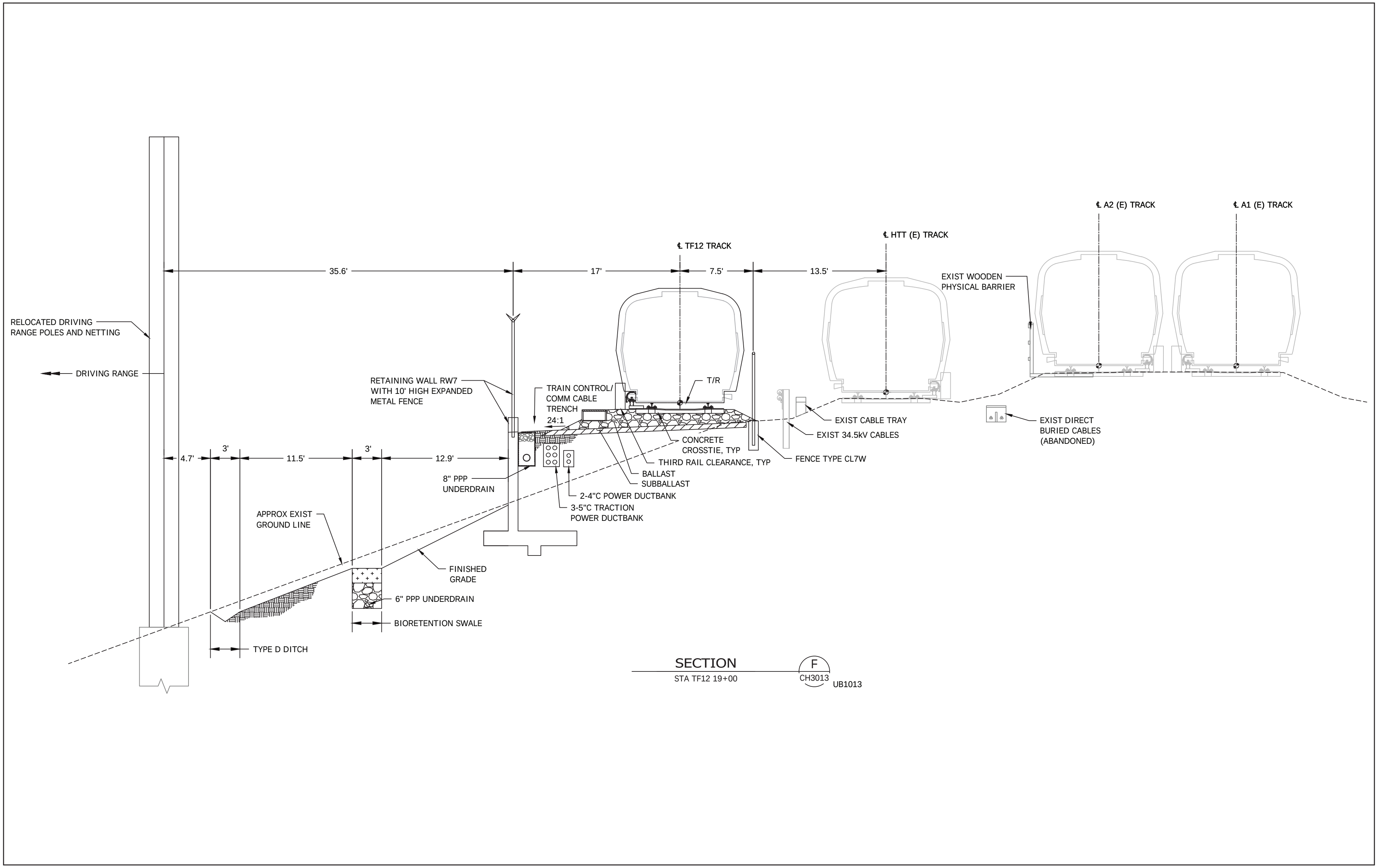

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FIGURE 9

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BART HMC2 Project Supplemental IS/MND

Typical Cross Section - Golf Course Driving Range

SOURCE: San Francisco Bay Area Rapid Transit District, 2021

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Though designed primarily for train storage, the new storage area is designed to allow train operations on the west side of the yard (such as train dispatch) to expand to the east side expansion area at some time in the future.

3.4.5 Project Construction

It is estimated that construction activities would commence in Summer 2024 and extend through Spring 2028. Typical construction equipment would consist of dump trucks, self-propelled earth-scrapers, water trucks, bulldozers, grade-alls, cranes, loaders, excavators, rollers, lubrication/fueling service trucks, transit-mix concrete trucks, concrete pumps, and diesel-driven generators, specialized truck trailers, and compressed air units for construction power, equipment, and tools. Construction equipment for mainline track tie-in work would consist of excavators, loaders, trucks with high-rail equipment and ballast tamper. Conventional construction equipment can also be brought to the site via BART flat-bed cars.

Construction activities would be phased and include site grading, and construction of embankment and retaining walls, drainage improvements, underground utilities, access roads, new railroad track, gap breaker stations, a substation, miscellaneous train operator and car cleaner facilities, a train wash, and system components such as signals, as described further below. The duration of each phase would vary. Each phase would require different types of construction equipment and result in varying levels of imported/exported material; therefore, the number of vehicle trips associated with Project construction would vary by phase. Overall, the HMC2 Project is anticipated to result in approximately 14,434 truck trips over the approximately 3.5-year construction period.

3.4.5.1 Construction Staging Areas

The primary construction staging area would be located in an area immediately to the south of the Project site, in an area that would become the East Storage Area (Figure 10). This area would be used to stage construction equipment, contractor offices, and construction materials.

A secondary staging area would be included on the east side of the UPRR (Niles Subdivision) trackway and south of the driving range on a parcel that is currently owned by HARD (Figure 10). This 3-acre, secondary staging area is accessible from Mission Boulevard via Gresel Street and the UPRR right-of-way and would provide an area for the contractor to stage materials and construction equipment east of the UPRR trackway.

Construction staging would also occur on the driving range. A temporary construction easement would be established along the westernmost portion of the driving range parallel to the new retained fill embankment. The construction easement would extend approximately 130 feet onto the driving range, occupying approximately 89,500 square feet. The construction easement would be in place for approximately 14 months, while the new embankment and trackway is constructed.

A small construction staging area would also be available within an enclosed area within the Gap Breaker AZE site following construction of the proposed retaining walls. This site would provide a convenient laydown area and secure material and equipment storage.

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FIGURE 10

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Project Site
Limits of Work
Construction Staging Area
Construction Access Road

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SOURCE: Microsoft Bing (2021).

BART HMC2 Project Supplemental IS/MND

Construction Access and Staging

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3.4.5.2 Construction Site Access

Construction access to the Project site would be accomplished through three possible routes: (1) by way of the existing BART gate at Whipple Road (951 Whipple Road), (2) by way of Industrial Parkway through the driving range parking area, and (3) by way of Mission Boulevard through Gresel Street, a local neighborhood roadway. This third route would also traverse through UPRR-owned property. Construction access for the proposed sound wall would be from Valle Vista Avenue. Construction vehicles would access the site via a gated access at the end of the cul-de-sac that provides access to the east side of the mainline tracks. The construction access routes are shown on Figure 10.

Access Route 1, through Whipple Road, would likely be utilized for the full Project construction duration, estimated at four years. Access Route 2, though Industrial Parkway, would likely be utilized for 13 months. Access Route 3, through Gresel Street and the UPRR owned property, would likely be utilized during construction of the proposed retaining wall, located adjacent to the driving range, estimated at 13 months, as well.

3.4.5.3 Clearing, Grubbing, and Site Grading

As the first order of work, approximately 6 acres of undeveloped land for the Northern Mainline Connector would be cleared and grubbed of topsoil material. Approximately 4 to 6 inches of topsoil and organic material would be removed and transported from the Project site. This activity would be followed by site grading where excavation will occur to accommodate below grade stormwater storage and imported fill material will be brought to the site via trucks to build up the trackway embankment.

Roughly 84,700 cubic yards of import material would be needed for this work, including 10 percent additional material to account from shrinkage due to the compaction of soils. Assuming an average truck capacity of 15 cubic yards per truck, approximately 5,650 truckloads (or 11,300 truck trips) would be generated through clearing, grubbing, importation of fill, and grading activities. It is estimated that the clearing, grubbing, fill, and grading activities would take 110 working days to complete. In general, this work would be conducted away from BART's fenced active trackway area. It is expected that the clearing, grubbing, and grading work would generate approximately 51 truckloads (or 102 truck trips) per day. Approximately 70 percent of construction traffic (36 truckloads/72 truck trips) would likely traverse along the main construction access road to Whipple Road, while the remaining traffic (15 truckloads/30 truck trips) would traverse along the secondary construction access road to Gresel Street.

3.4.5.4 Installation of Underground Stormwater Storage Structure

An underground stormwater storage structure would be installed below the bioretention area located between the retained fill trackway and the Hayward Test Track. The underground storage structure would be composed of precast reinforced concrete box culverts connected with an equalizer pipe composed of reinforced concrete pipe segments. A pump station would also be installed adjacent to the underground storage structure to allow stormwater to be pumped up and into the bioretention area. This work would require the use of cranes, excavators, loaders, and flat-bed trucks.

The underground stormwater structure and pump station would be composed of predominantly precast parts which would be manufactured off site. The precast materials would be delivered to site via flatbed trucks. It is anticipated that this work would generate approximately 80 truckloads (or 160 truck trips). This work is anticipated to take roughly 30 days to complete. Construction traffic for this portion of the Project would likely use the main construction access road to Whipple Road.

3.4.5.5 Installation of Industrial Parkway Structure

A new track overcrossing structure would be constructed over Industrial Parkway. The structure would be a cast-in-place, reinforced concrete box girder constructed in five spans. The substructure would consist of either cast-in-drilled-hole (CIDH) piles or driven hollow steel piles. The reinforced concrete columns would be approximately 35 square feet in size (5 feet by 7 feet).

Construction of the proposed overcrossing would require approximately 675 cubic yards of concrete that would need to be delivered to the Project site. Assuming an average concrete truck capacity of 9.5 cubic yards per truck, 71 truckloads (or 142 truck trips) would be generated throughout overcrossing structure construction activities. Industrial Parkway Overcrossing construction would take approximately 400 working days to complete. Construction traffic required for this Project component would likely access the site via Industrial Parkway.

Temporary realignments of vehicular traffic lanes on Industrial Parkway may be necessary to allow for the erection of falsework during the construction of the overcrossing structure.

3.4.5.6 Installation of Retaining Walls and Sound Wall

Retaining walls would be constructed using two methods depending on location. A proposed retaining wall north of Industrial Parkway (west of Gap Breaker Station AZE) would be a secant retaining wall. This work would require the use of drilling rigs. A proposed retaining wall north of Industrial Parkway (east of Gap Breaker Station AZE) would be a sheet pile retaining wall. Installation of this retaining wall would require use of vibratory pile drivers. Cast-in-place retaining walls would be constructed elsewhere following clearing, grubbing, and grading activities and would take place along the eastern limits of the Project from Industrial Parkway south to the UPRR Niles Subdivision tunnel structure. South of the UPRR tunnel retaining walls would be constructed on either side of the proposed trackway using cast-in-place technology.

One portion of ~~T~~the proposed sound wall would be located at the northernmost end of the Project limit, north of the proposed retaining wall. The proposed sound wall would be approximately 230 feet long and 8 feet above grade. The sound wall would be constructed on CIDH concrete piles ~~with a concrete masonry pier wall on top. The sound wall would be constructed using prefabricated masonry units filled with concrete and would require the use of drilling rigs.~~ using drilling rigs to drill the pile location, drop steel cages and pour concrete in place. The top of the piles would be connected with a continuous concrete pier wall and the ribbed steel sound wall would be constructed on top of it. An additional 275 feet of sound wall would be constructed atop the proposed retaining wall. Both sound wall components would be comprised of the same ribbed steel material.

Materials needed for the proposed retaining walls would include approximately 3,700 cubic yards of concrete and approximately 1,850 square feet of masonry that would need to be delivered to the Project site. Assuming an average concrete truck capacity of 9.5 cubic yards per truck, 390 truckloads (or 780 truck trips) would be generated throughout the retaining wall and sound wall construction activities. Retaining wall construction would take approximately 280 working days, and sound wall construction would take approximately 90 working days to complete. Approximately 80 percent of construction traffic (312 truckloads/624 truck trips) required for this activity would likely utilize the main construction access road to/from Whipple Road and to/from Industrial Parkway, while the remaining traffic (130 truckloads/260 truck trips) would likely utilize the secondary construction access road to/from Gresel Street. Construction access for the proposed sound wall would be via the gated access at the end of Valle Vista Avenue.

3.4.5.7 Installation of Access Roadway and Cart Paths

Following the installation of retaining walls, construction of the access roadway and cart paths would commence. An access road is proposed along the Northern Mainline Connector trackway and a cart path for maintenance is proposed between the northern transfer tracks. These roadways would consist of aggregate base rock material and hot mix asphalt concrete. The roadway/cart path construction work would require 2,700 cubic yards of asphalt and aggregate base rock material. Bringing this material to the Project site and would generate 180 truckloads (or 360 truck trips) over a period of 30 working days. Construction traffic for this activity would likely utilize the main construction access road to/from Whipple Road.

3.4.5.8 Installation of Trackwork

Installation of rail trackwork would be accomplished following the completion of the access roadway and cart paths. Trackwork construction would include the fine grading and compaction of track subgrade, installation of subballast, ballast, concrete ties, rails, and special trackwork (such as switches for rail turnouts and crossovers).

Trackwork materials would be delivered to the Project site via rail car or truck. Ballast and subballast materials would be delivered to the site by truck. Existing ballast and subgrade materials would be disposed of off site. Approximately 5,800 cubic yards of ballast material would be needed for this work, which would generate approximately 400 truckloads (or 800 truck trips). Trackwork construction would take approximately 305 working days to complete. Approximately 85 percent of the construction traffic required for this activity (340 truckloads/680 truck trips) would likely utilize the main construction access road to/from Whipple Road, while the remaining traffic (60 truckloads/120 truck trips) would likely utilize the secondary access road to/from Gresel Street.

3.4.5.9 Installation of Gap Breaker Stations

Two Gap Breaker Stations (approximately 1,000 square feet in size) would be installed as the final stage of construction. For gap breaker station foundations, the construction method would be cast-in-place concrete. Thus, the contractor would deliver concrete and other related materials to the site via concrete and flat-bed trucks to facilitate the construction of the foundations.

Gap breaker station housings would be prefabricated structures which would be fabricated off site and delivered to the Project site in pieces via specialized truck trailers. The housings would be assembled on site and installed over the cast-in-place foundations utilizing cranes. It is estimated that Gap Breaker Station installation work would be completed within a 2-month period. Construction traffic for this activity would likely access the site from Industrial Parkway. This phase of project construction would require approximately two truckloads (or four truck trips) per day over the 2-month construction period, for a total of 160 truck trips.

3.4.5.10 Installation of Train Control House

A Train Control House (approximately 3,800 square feet in size) would be installed along with the Gap Breaker Stations as the final stage of construction. The train control house foundations would consist of cast-in-place concrete. The facility would consist of masonry block walls with a metal truss roof deck system. It is estimated that Train Control House installation work would be completed within a 2-month period. Construction traffic for this activity would likely utilize the main construction access road to/from Whipple Road. This phase of Project construction would require approximately 2 truckloads (or 4 truck trips) per day over the 2-month construction period, for a total of 160 truck trips.

3.4.5.11 Bioretention Basin

A bioretention basin would be installed above the underground stormwater storage facility and between the Northern Connector tracks and the Hayward Test Track. The bioretention basin would consist of an 18-inch-thick biofiltration soil mix layer over 12 inches of drainage aggregate. Perforated plastic underdrains would be installed within the drainage aggregate layer. Approximately 3,150 cubic yards of biofiltration soil mix and drainage aggregate would be delivered to the site for this work, generating 350 truckloads (or 700 truck trips). This work would take approximately 20 days to complete. Construction traffic for this activity would likely utilize the main construction access road to/from Whipple Road

3.4.5.12 Construction Hours

Most construction activity would take place during typical workday hours 7:00 a.m. through 7:00 p.m. However, trackwork construction near the vicinity of Industrial Parkway, where rail tie-ins between the Northern Connector and the existing mainline trackwork are proposed would take place during weekends where BART would have a localized shutdown in revenue service (also known as weekend “blanket” work). The weekend blanket work would take place around the clock for two or three-day weekends to minimize disruptions to BART’s revenue train service. This work would be scheduled accordingly, where BART can accommodate localized revenue service shutdowns (between South Hayward and Union City BART stations). Preparation and post-construction train control testing work would be accomplished during non-revenue hours (1:30 a.m. through 4:30 a.m.).

3.4.5.13 Construction Employees

Construction of the Northern Mainline Connector would require approximately 200 construction workers over the course of the Project. Although only an estimated 40 workers would be on site at any one time, BART and the Contractor would make arrangements for on-site or other off-street parking alternative for workers.

3.4.6 Project Cost and Funding

The entire HMC2 Project would cost approximately $500 million. The Northern Mainline Connector expansion area would cost $100M. The Project would be funded through an FTA Full Funding Grant Agreement. Award of the Full Funding Grant Agreement occurred in 2020.

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4.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that requires new mitigation as indicated by the checklist in Chapter 5.0.

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

4.1 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 ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	6/14/22 Date
Donald Dean, Manager of Environmental Review	

4.2 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 any effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.

4. “Negative Declaration: Less Than Significant With Mitigation Incorporated” applies where 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 Analysis may be used where, pursuant to the tiering, program EIR, or another CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case a discussion should identify the following:

   a. Earlier analysis used. Identify earlier analyses 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 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 significant.

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5.0 CEQA ENVIRONMENTAL CHECKLIST

5.1 AESTHETICS

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

5.1.1 Background

The proposed Project site is located in an urbanized portion of the City of Hayward and is surrounded by single-family and multi-family residential development to the north and east, and commercial and industrial development to the west and south. The Project site consists of approximately 55 acres of land, including approximately 30 acres of land associated with the East Storage Yard and approximately 25 acres of land in the northeast quadrant of the HMC property and along the BART right-of-way north of Industrial Parkway where the Northern Mainline Connector is proposed. The Project site is bound by the Union Pacific Railroad (UPRR) Oakland Subdivision rail line and Mission Hills of Hayward Golf Course Driving Range (golf course driving range) on the east, the BART Mainline and Hayward Test Track to the west, and the BART Rail Storage Yard to the south.

The Project site primarily consists of undeveloped property located north of the BART Rail Storage Yard, where the East Storage Yard is proposed. The existing HMC facility includes a rail storage yard and ancillary facilities. Structures within the HMC generally include one- to two-story industrial and warehouse buildings. Further north within the same undeveloped property and west of the Mission Hills of Hayward Golf Course driving range is the area where the Northern Mainline Connector is proposed. These areas consist of grasslands, with sparse patches of trees and bushes, low-lying wetland areas, a linear man-made drainage ditch, and a narrow corridor adjacent to the existing BART test track. The Project site also includes a portion of the golf course driving range.

The Project area is situated on relatively flat terrain. The majority of the proposed Project site is located entirely within a fenced area with restricted access, and it is not visible to the public in general. Most of the views of the Project site are from Industrial Parkway, sidewalks on Industrial Parkway, fenced backyards of residences located across the UPRR tracks along the eastern perimeter of the proposed Project site, and from the driving range and public parks east of the Project site.

Elements of the proposed Project that would be potentially visible from public vantage points include: the new embankment, retaining walls, and fencing; the new gap breaker station north of Industrial Parkway; the new overcrossing of Industrial Parkway; and new light poles throughout the Project site. The conclusions provided below are based on the Visual Impact Assessment prepared by LSA[8] (LSA 2022a).

5.1.2 Prior Environmental Analysis

The 2011 IS/MND determined that the HMC Project would have no impact related to scenic vistas or damage to scenic resources within a State scenic highway. Impacts related to light and glare were found to be less than significant due to the existing lighting system at the Hayward Yard. Similarly, the 2011 IS/MND determined that changes to the visual quality and character of the site associated with the majority of proposed improvements (e.g., redevelopment of existing industrial buildings, installation of sound walls, construction of proposed flyovers) would be less than significant. However, the removal of trees to the west of the BART mainline would alter views from the adjacent residential area and increase the visibility of the industrial uses to the west. This impact was determined to be potentially significant. Mitigation Measure VQ-1 was identified to reduce potential impacts associated with removal of trees south of Whipple Road during construction to a less-than-significant level:

Mitigation Measure VQ-1 *Replacement of Trees that Screen Views of Industrial Buildings.* If construction activities south of Whipple Road require removal of the existing trees near the industrial buildings west of the BART mainline, BART shall plant replacement trees at a 1:1 ratio in the area of removal, after construction activities are complete.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe significant impacts than were identified in the 2011 IS/MND. No change to the previous CEQA determinations were identified.

5.1.3 Impact Analysis

*a. Would the project have a substantial effect on a scenic vista? **(No New Impact)***

The proposed Project site proper does not contain any unique visual features or scenic resources, including landmark trees, rock outcroppings, or historic structures. Scenic resources within the City of Hayward include the natural topography, open grassland vegetation, rolling hills, and the San Francisco Bay shoreline. The hills are located approximately 1 mile east of the Project site and are within viewing distance from the proposed Project site. However, no other scenic resources, including the open grasslands within the Project area, are visible from publicly accessible viewpoints

8 LSA. 2022a. *San Francisco Bay Area Rapid Transit. Hayward Maintenance Complex Phase 2 Project. Visual Impact Assessment.* June.

within or adjacent to the Project site.[9] Therefore, impacts associated with the proposed Project would not result in new impacts to scenic vistas or substantially increase the severity of impacts analyzed in the prior environmental documents. No additional analysis is required.

b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? ***(No New Impact)***

California's Scenic Highway Program was created by the Legislature in 1963 to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways.[10] The proposed Project site is not located within or in close proximity to a State-designated scenic highway. The nearest eligible State scenic highway is Interstate 580, which is located over 5 miles north of the Project site. Interstate 880 is a County-designated scenic route; however, it is located approximately 1.5 miles west of the Project site[11] and the proposed Project site is not within viewing distance of this highway. Therefore, impacts associated with the proposed Project would not result in new impacts to scenic routes or substantially increase the severity of impacts analyzed in the prior environmental documents. No additional analysis is required

c. In non-urbanized areas, would the project 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 a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? ***(No New Impact)***

The Project site is located within an urbanized area and, therefore, would have an impact under CEQA if it would conflict with applicable zoning or other regulations governing scenic quality. The proposed Project would occur within an existing transit right-of-way that is governed by BART, which is not bound by the policies of the cities within which it has facilities. However, the City of Hayward's zoning regulations related to scenic quality were considered and incorporated into the Project design, to the extent feasible.

The Project site is zoned as Industrial Park (IP) and Agriculture (A) and is bordered to the east by lands zoned Agriculture, Planned Development, and Single-Family Residential. The IP District allows for a maximum floor area ratio (FAR) of 0.8 and requires a 1.5-acre minimum lot size. The IP District also allows for a maximum height of 75 feet, except within 20 feet of a Residential, Mobile Home Park, Commercial, or Planned Development district where the maximum height is limited to 20 feet. Within 45 feet of an Agriculture, Open Space, or Floodplain district, no part of the structure may extend above a line of a 1:1 slope extending upward from the boundary of the zoning district. Buildings associated with the proposed Project would be consistent with the development standards set forth by the City of Hayward Zoning Ordinance. In addition, Section 10-1.1606 of the City of Hayward Zoning Ordinance establishes supplemental standards applicable to all properties within the Industrial Districts. Consistent with Section 10.1.1606 of the City's Zoning Ordinance, solid masonry retaining wall/sound walls would be provided where the Project boundary abuts adjacent

9 LSA. 2022a. op. cit.
10 California State of, Streets and Highways Code, Section 260 et seq.
11 Hayward, City of, 2014. *Hayward 2040 General Plan*. July.

residential and recreational uses. Therefore, the proposed Project would not conflict with applicable zoning or other regulations governing scenic quality.

As outlined in the Project Description, the proposed Project would include the construction of new tracks that would connect the East Storage Yard to the mainline tracks at a point north of Industrial Parkway. Elements of the proposed Project that would be potentially visible from public vantage points include: the new overcrossing of Industrial Parkway; the new gap breaker station north of Industrial Parkway; the new embankment, retaining walls, and fencing associated with the Northern Mainline Extension; and new light poles throughout the Project site.

To illustrate the degree of anticipated change that would result from the Project, photographs of existing conditions were taken from seven representative viewpoints (Figure 11) and photographic simulations were prepared to represent anticipated views from six of these locations[12] to represent visual changes associated with the proposed Project. Visual changes associated with the new overcrossing, gap breaker station, the new embankment, retaining walls, and fencing are summarized below. A discussion of proposed lighting is included in Section 5.1.3(d).

Overcrossing at Industrial Parkway. As shown in Figure 12, a new bridge to carry the BART trackway would be constructed adjacent to and just east of the existing BART overcrossing. The new overcrossing would block views of the existing overcrossing but would be similar in visual character to the existing overcrossing such that the change in view would not be discernible. The primary visual change with implementation of the proposed Project would be the addition of several new bridge footings on both sides of the roadway within the middle ground view; however, these would be similar in scale and material to the existing bridge footings. Although the proposed Project would result in a change in the view from the roadway, the components of the proposed Project would be consistent with the type of infrastructure currently present within the viewshed, including the existing BART overcrossing and associated bridge footings. Foreground and background views from this viewpoint would remain unchanged.

Gap Breaker Station. The proposed Project would include the construction of three gap breaker stations that would be approximately 20 feet in height. Two would be located within the existing HMC complex and would not be visible to the public. However, a third gap breaker would be constructed within the BART right-of-way at the north end of the connecting tracks adjacent to the east side of the BART tracks just north of Industrial Parkway. The new gap breaker station would be constructed between the existing BART tracks and the townhome community (currently under construction). Two viewpoints were used to assess the visual changes associated with implementation of the proposed gap breaker station and trackwork associated with the Northern Mainline Connector – one from Industrial Parkway (Figure 13) and one from Notion Way within the Sohay residential neighborhood (Figure 14).

[12] View 4 is the existing view from Industrial Parkway to the east, which would not change with implementation of the proposed Project. Therefore, no simulation was prepared for this view.

LSA

FIGURE 11

Photo Locations

Project Site Boundary

0 400 800

FEET

BART HMC2 Project Supplemental IS/MND

Project Site and Photo Locations

SOURCES: GOOGLE EARTH, 3/28/18; LSA, 2021.

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Photo 1: View 1 - Existing Conditions

Photo 2: View 1 - Proposed Project

LSA

FIGURE 12

BART HMC2 Project Supplemental IS/MND

Conceptual Rendering - Industrial Parkway Overcrossing - View 1

SOURCES: PGH Wong; WRECO, 2021.

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Photo 3: View 2 - Existing Conditions

Photo 4: View 2 - Proposed Project

LSA

FIGURE 13

SOURCES: PGH Wong; WRECO, 2022.

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Photo 5: View 3 - Existing Conditions

Photo 6: View 3 - Proposed Project

LSA

FIGURE 14

BART HMC2 Project Supplemental IS/MND
Conceptual Rendering - Sohay Loop - View 3

SOURCES: PGH Wong; WRECO, 2022.

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A new retaining wall, approximately 8 feet high would be constructed along the east side of the existing BART tracks, and a new, approximately ~~6~~500-foot-long, ~~5~~8-foot-high sound wall would also be constructed on the east side of the existing BART tracks to minimize sound impacts associated with the new crossover. Approximately 275 feet of the proposed sound wall would be constructed atop the proposed retaining wall; the remaining 230 feet would consist of a stand-alone sound wall. The proposed retaining wall would consist of a sheet pile wall with a concrete cap, which would be topped with an approximately 10-foot expanded metal fence with barbed wire/ razor wire. The proposed building pad would be raised, and a ramp constructed for vehicle access from the street level to the site level. As shown in Figure 13, the existing sidewalk and some landscaping would continue to be visible in the foreground; however, the foreground view would be dominated by the new perimeter fencing and driveway ramp for the proposed gap breaker station, as well as the new overcrossing of Industrial Parkway. The majority of the existing vegetation that currently characterize the site would be removed. The existing BART tracks, proposed retaining wall, and proposed sound wall would be visible in the middle ground view. The background view would be unchanged.

The retaining wall, sound wall and the new overcrossing would be the most visible to pedestrians along Industrial Parkway between the UPRR tracks and Pacific Street, as well as along Pacific Street. Further west along Industrial Parkway, the sound wall would be screened by existing commercial and residential uses and mature street trees. The remainder of the Project site would only be visible to pedestrians on Industrial Parkway when they are immediately adjacent to or directly across from the Project site. Otherwise, the Project site would be screened by the existing BART overcrossing, mature street trees, and the townhouse development that is currently under construction. From locations further east or west along Industrial Parkway, views of the proposed Project would be fully screened by existing development and mature street trees, and views of the hills would be retained.

As shown, in Figure 14, the existing sound/boundary wall would remain and a taller wall would be installed behind, extending above the existing wall. As described above, the proposed retaining wall would be topped with an approximately 10-foot-tall expanded metal fence with barbed wire/razor wire. The existing BART embankment and associated landscaping would be removed and an approximately 8-foot-tall retaining wall, topped with a 5-foot-high sound wall would be constructed along the BART tracks. The new gap breaker station would be constructed between the boundary wall and the retaining wall; the top of the breaker station building would be just visible above the proposed boundary wall. The primary visual change would be the replacement of the earth-toned, vegetated embankment with gray masonry structures (e.g., retaining wall and sound wall).

Although the proposed Project would result in a change in the view from these vantage points, the components of the proposed Project would be generally consistent with the type of infrastructure currently present within the viewshed, including the existing boundary wall and the existing BART tracks/embankment. The proposed retaining wall with associated expanded metal fence and barbed wire/razor wire would be consistent with perimeter fencing around the HMC and other BART facilities, as needed to provide necessary security. Proposed improvements have been designed, to the extent feasible, to complement existing visual features.

Embankment, Retaining Walls, and Fencing. As shown in in Figure 15, components of the proposed Project that would be visible from the existing golf course parking lot, chipping area, putting green, and the two-story driving range include the retaining wall, which would screen the proposed tracks associated with the Northern Connector. As described above, the proposed retaining wall would be topped with an approximately 10-foot-tall expanded metal fence with barbed wire/razor wire. The existing embankment would be largely removed with just a small portion remaining at the base of the proposed retaining wall. The existing driving range poles/safety netting would be shifted to the east, further down the embankment slope. These visual changes would be visible in the middle ground view.

Figure 16 shows the view from the golf course and Twin Bridges Park. As shown in Figure 16, components of the proposed Project that would be visible would include the retained fill embankment, retaining walls with expanded metal fencing, and relocated fence poles. These components would be visible in the middle ground view beyond the existing fence line.

Although the proposed Project would result in a change in the view from these public sites, Project components would be consistent with the type of infrastructure currently present on the Project site, including the existing BART tracks, embankment, and poles/safety netting associated with the existing driving range. Foreground and background views would remain unchanged. Therefore, the proposed Project would not result in a substantial adverse change in the visual quality of the Project site or its surroundings.

Graffiti. When the BART HMC Project was originally approved in 2011, concerns were raised about the potential for graffiti and vandalism on new sound and retaining walls. The proposed Project would also include new retaining and sound walls, as shown in Figure 15. As described in the Response to Comments document included in the 2011 IS/MND, BART would work with local communities to achieve a design that would restrict access to the proposed retaining walls. As described above, the proposed Project would include retaining walls topped with expanded metal fence and barbed wire or razor wire around the perimeter of the property to restrict trespass onto the BART tracks. As described above and shown on Figures 13 through 16, these features would be visible from various public viewpoints but would be similar to existing fencing around the HMC property and BART tracks.

As described above, the proposed Project would not result in substantial degradation of public views of the site and its surroundings. In addition, the proposed Project would include facilities similar to those that currently exist on the Project site and would be designed to have a similar visual character. Although the proposed Project would introduce new built elements (e.g., sound wall, retaining wall/berm, gap breaker station, light standards) into views from publicly accessible viewpoints, the overall quality of the views would remain the same given that scenic vistas and views of scenic resources would be preserved and built features would be consistent with existing development at the Project site. Therefore, impacts associated with the proposed Project would not result in new impacts or substantially increase the severity of impacts analyzed in the prior environmental documents. No additional analysis is required.

Photo 8: View 5 - Existing Conditions

Photo 9: View 5 - Proposed Project

LSA

FIGURE 15

SOURCES: PGH Wong; WRECO, 2022.

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Photo 10: View 6 - Existing Conditions

Photo 11: View 6 - Proposed Project

LSA

FIGURE 16

BART HMC2 Project Supplemental IS/MND
Conceptual Rendering -
Golf Course/Driving Range and Twin Bridge Park - View 6

SOURCES: PGH Wong; WRECO, 2021.

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d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? ***(No New Impact)***

The prominent existing sources of light and glare include existing lighting standards up to 40 feet high within the HMC. Additionally, light and glare sources are present in the areas surrounding the Project site, including streetlights along Industrial Parkway, Brookside Lane, Carroll Avenue, and other roadways in the vicinity of the Project site, vehicle headlights and taillights on these roadways, and lighting associated with nearby commercial and residential development. Consistent with current operations at the HMC, operation of the HMC2 Project would be conducted 24-hours per day, 365 days per year.

New exterior light associated with the proposed Project would be provided on 15- to 18-foot-high poles, which would generally be lower in height than those at the existing HMC Yard. However, some of the proposed poles would be located on top of the approximately 25-foot-tall, retained fill embankment, resulting in a total height of 40 to 43 feet. Shielding to direct the light downward would be provided and motion detectors would not be used. As shown in Figure 17, shielding would limit the spill of new lighting on adjacent properties. Additionally, the existing exterior lights in and around the HMC are on 40-foot-high poles. Therefore, the addition of new lighting similar to the existing lighting would not create a significant new source of light and glare.

A new car cleaning platform would also be constructed as part of the proposed Project that would be located in the center of the HMC East Storage Yard, just north of the train operator/car cleaner facility. The platform would include canopy lighting at approximately 14 feet in height at select locations. As noted above, the HMC currently contains light poles at up to 40 feet in height. Lighting requirements for the car cleaning platform would be 60-foot candles; the remainder of the yard would have a lighting requirement of 5-foot candles. Although the lighting for the car cleaning platform would be brighter than other lighting at the yard, its location within the HMC Yard and distance from adjacent development would prevent any new light or glare from the car cleaning platform from spilling onto any adjacent properties. Therefore, because the lights would be screened by existing development within the HMC, would be similar or lower in height compared to existing lighting on the Project site, and would be somewhat distant from adjacent development, the car cleaning platform would not result in a new source of light or glare. No new impacts or substantially more severe significant impacts would result with implementation of the proposed Project.

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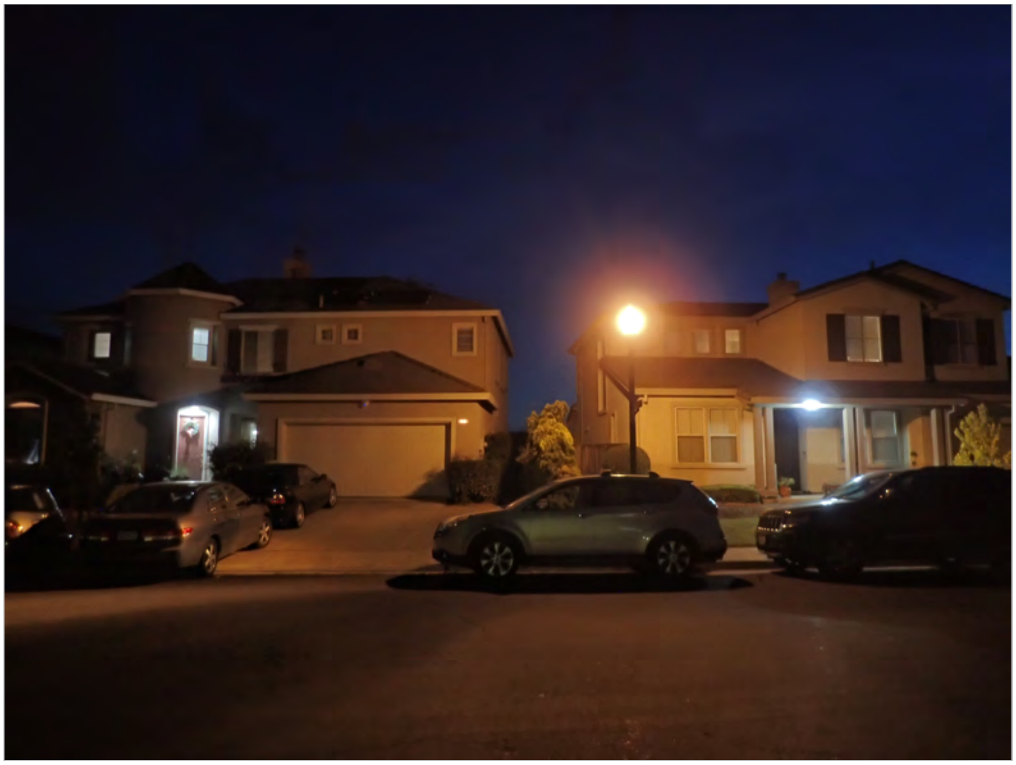

Photo 12: View 7 - Existing Conditions

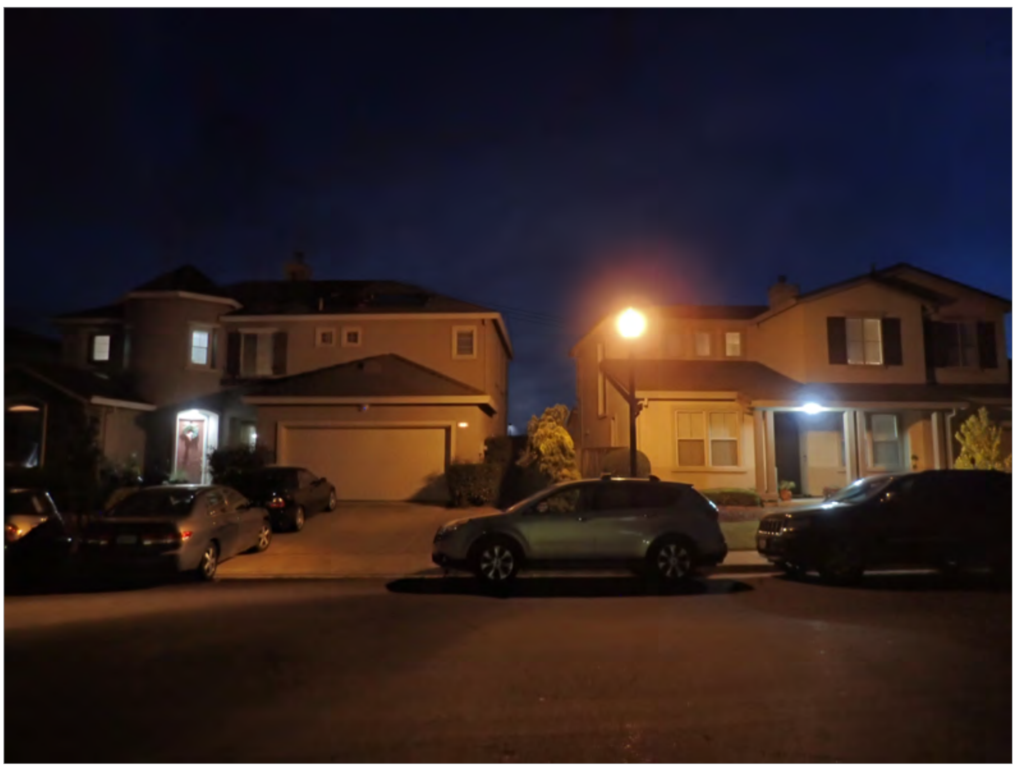

Photo 13: View 7 - Proposed Project

LSA

FIGURE 17

SOURCES: PGH Wong; WRECO, 2020.

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5.2 AGRICULTURE AND FORESTRY RESOURCES

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
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?	☐	☐	☐	☒

5.2.1 Background

The majority of the Project site is currently developed and is located within an urbanized area of Alameda County. The undeveloped portion of the Project site, proposed for the Northern Mainline Connector consists of grasslands, with sparse patches of trees and bushes, low-lying wetland areas, a linear man-made drainage ditch, and a narrow corridor adjacent to the existing BART test track.

The Project site is bordered by existing industrial, commercial, and residential development; no agricultural uses are located within or adjacent to the Project site. The Project site is classified as "Urban and Built-Up Land" by the State Department of Conservation,[13] which is defined as land that is occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. Examples of Urban and Built-Up Land include residential, industrial, commercial, institutional facilities, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, and water control structures.[14]

The majority of the Project site is zoned "Industrial Park," [15] which does not allow for agricultural uses. The northern portion of the Project site is zoned "Agriculture." This portion of the Project site includes the golf course driving range, which is a permitted conditional use in the agricultural zoning

[13] California, State of. 2016. Department of Conservation. California Important Farmland Finder. Website: maps.conservation.ca.gov/dlrp/ciff (accessed July 16, 2021).

[14] California, State of. 2016. op. cit.

[15] Hayward, City of. 2021a. Hayward Web Map. Website: webmap.hayward-ca.gov/ (accessed July 16, 2021).

district. However, no portions of the Project site are currently used for agricultural or forestry purposes.

5.2.2 Prior Environmental Analysis

The prior environmental documents determined that the Project site is located in an urbanized area, has not been used for agricultural production and is not encumbered by a Williamson Act Land Conservation Agreement. Therefore, the Project was deemed to result in no impacts related to agricultural resources.

5.2.3 Impact Analysis

a. *Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?* ***(No New Impact)***

The Project site is not used for agricultural production and is not designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, the proposed Project would not convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or any other type of farmland to non-agricultural uses. No new impacts or substantially more severe significant impacts to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance would occur. No additional analysis is required.

b. *Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?* ***(No New Impact)***

The Project site is not currently used for agricultural purposes, and is not protected by, or eligible for, a Williamson Act contract. As described above, a portion of the Project site is zoned "Agriculture" due to the existing golf course driving range. As described in Section 3.4.2, the proposed Project would include relocation of the western fence of the driving range to a location further to the east to allow for the construction of new trackway; however, no change in the current operation of the driving range would occur. Therefore, the proposed Project would not conflict with existing zoning or Williamson Act contracts. No new or substantially more severe significant impacts to farmland or zoning beyond what has been analyzed in the prior environmental documents would occur. No additional analysis is required.

c. *Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?* ***(No New Impact)***

Neither the Project site nor the surrounding area is zoned for forest land, timberland, or timberland production. Therefore, no new or substantially more severe significant impacts to farmland beyond what has been analyzed in the prior environmental documents would occur. No additional analysis is required.

d. Would the project result in the loss of forest land or conversion of forestland to non-forest use? ***(No New Impact)***

No forest or timberland exists on the Project site or in the surrounding area. Therefore, the proposed Project would not result in the loss of forest land or the conversion of forest land to non-forest use. Therefore, no new or substantially more severe significant impacts to forest land beyond what has been analyzed in the prior environmental documents would occur. No additional analysis is required.

e. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? ***(No New Impact)***

The Project site is currently developed for transportation/industrial uses. No portion of the site is currently used as farmland or forest land. The proposed Project would not result in the conversion of farmland on or off the Project site to non-agricultural uses because there are no agricultural uses on or in the immediate vicinity of the Project site. Likewise, the proposed Project would not result in impacts related to changes in the existing environment that could result in the conversion of agricultural land to non-agricultural uses. Therefore, no new or substantially more severe significant impacts related to conversion of farmland or forest land beyond what has been analyzed in the prior environmental documents would occur. No additional analysis is required.

5.3 AIR QUALITY

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

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
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?	☐	☐	☐	☒

5.3.1 Background

The U.S. Environmental Protection Agency (USEPA) has designated air basins throughout the nation for the purpose of managing the air resources on a regional basis. The proposed Project site is within the San Francisco Bay Area Air Basin (SFBAAB). The Bay Area Air Quality Management District (BAAQMD) is the State agency that administers State and federal air quality standards in the SFBAAB. The BAAQMD adopted the Bay Area 1991 Clean Air Plan to implement the requirements of the California Clean Air Act of 1988 and has since then been updated. The most recent updated and adopted version is the 2017 Clean Air Plan.[16]

With the assistance of BAAQMD, the California Air Resources Board (CARB) compiles inventories and projections of emissions of major pollutants. In the San Francisco Bay Area, CARB reports air quality conditions for “criteria air pollutants” and “toxic air contaminants” (TACs).

Criteria air pollutants are defined as pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. Both the State and federal governments have established health-based Ambient Air Quality Standards (AAQS) for six criteria air pollutants:[17] carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable

16 Bay Area Air Quality Management District (BAAQMD). 2017a. Final 2017 Clean Air Plan. April. Website: www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en (accessed May 2020).

17 United States Environmental Protection Agency (USEPA). 2014. Criteria pollutants are defined as those pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health.

margin for safety. The SFBAAB is under State non-attainment status for O_3, PM_{10} (defined as particulate matter less than 10 microns in size), and $PM_{2.5}$ (defined as particulate matter less than 2.5 microns in size) standards. The SFBAAB is also classified as non-attainment for both federal O_3 8-hour standard and the federal $PM_{2.5}$ 24-hour standard.

TACs are pollutants of concern because they are injurious in small quantities; examples of TACs include benzene, butadiene, formaldehyde, and hydrogen sulfide. The health effects of TACs can result from either acute (severe exposure and rapid absorption) or chronic (prolonged or repeated exposures over many days, months, or years) exposure; many types of cancer are associated with chronic TAC exposures. TACs do not have ambient air quality standards for a variety of reasons (i.e., insufficient data on toxicity association with particular workplace exposures rather than general environmental exposures, etc.), but are regulated by the USEPA and CARB. In addition, the BAAQMD Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risk associated with exposures to outdoor TACs in the Bay Area. The CARE program examines TAC emissions from point source, area sources, and on-and off-road mobile sources with an emphasis on diesel exhaust, which is a major contributor to airborne health risk in California. The BAAQMD regulates TACs emitted by commercial and industrial sources and evaluates which TACs need to be regulated to minimize risk to human health. If a TAC must be regulated to minimize human health risks, the BAAQMD determines which source(s) of that TAC to control and the degree to which the TAC must be controlled. The BAAQMD has collected and compiled air toxic emissions data from industrial and commercial sources of pollution throughout the Bay Area and has identified portions of the City of Hayward as an affected community.

USEPA and CARB maintain ambient air monitoring stations, and these agencies use air quality data to identify whether certain areas are in attainment or non-attainment of the National Ambient Air Quality Standards (NAAQS). The air quality monitoring station closest to the proposed Project is the 3466 Las Mesa Drive monitoring station in the City of Hayward, which monitors air pollutant data for O_3. Air quality trends for CO, $PM_{2.5}$, NO_2, and SO_2 are monitored at the 2295 International Boulevard monitoring station in the City of Oakland. PM_{10} is not monitored in Alameda County. Ambient air quality in the Project area from 2016 to 2018 are included in the Air Quality Impact Analysis (AQIA).[18]

Pollutant monitoring results indicate that air quality in the Alameda County area has generally been good. However, 1-hour O_3 concentrations exceeded the State standard[19] twice in 2017 and 2019. The 8-hour ozone concentrations exceeded the federal standard three times in 2017 and twice in 2019 and the State standard four times in 2017 and twice in 2019. In addition, the federal $PM_{2.5}$ standard was exceeded nine times in 2017 and 13 times in 2018. The CO and NO_2 standards were not exceeded in this area during the 3-year period.

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18 LSA. 2022b. *San Francisco Bay Area Rapid Transit (BART) Hayward Maintenance Complex – Phase 2 (HMC2) Project. Air Quality Impact Analysis*. June.

19 The State standard, approved by CARB, is set at 8-hour standard for ozone of 0.070 ppm and a 1-hour average of 0.09 ppm. A ppm refers to one part of a substance dissolved into a million parts of another substance.

Volatile organic compounds (VOCs) (also known as reactive organic gases [ROGs] and reactive organic compounds [ROCs]) are formed from the combustion of fuels and the evaporation of organic solvents. VOCs are not defined as criteria pollutants, however, because VOCs accumulate in the atmosphere more quickly during the winter, when sunlight is limited and photochemical reactions are slower, they are a prime component of the photochemical smog reaction. The current Clean Air Plan contains district-wide control measures to reduce O_3 precursor emissions (e.g., ROG and NO_X), particulate matter and greenhouse gas (GHG) emissions.

Occupants of facilities such as schools, daycare centers, parks and playgrounds, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to air pollutants because these population groups have increased susceptibility to respiratory disease. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. Residential areas are considered more sensitive to air quality conditions, compared to commercial and industrial areas, because people generally spend longer periods of time at their residences, with greater associated exposure to ambient air quality conditions. Recreational uses are also considered sensitive compared to commercial and industrial uses due to greater exposure to ambient air quality conditions associated with exercise.

The BAAQMD's *CEQA Air Quality Guidelines*[20] provide methodologies and thresholds of significance intended to assist local jurisdictions and agencies in the evaluation of air quality impacts. An AQIA[21] for the Project was prepared using the methods in the BAAQMD *CEQA Air Quality Guidelines* and also includes regulatory background information on air pollutants and their health effects, including information from the CARB 2005 *Air Quality and Land Use Handbook* (CARB Handbook).[22]

5.3.2 Prior Environmental Analysis

The 2011 IS/MND concluded that since project operational emissions are expected to decrease compared to existing baseline conditions, operation of the HMC Project would not have a significant impact on air quality, either individually or cumulatively and the HMC Project would not conflict with or obstruct implementation of the air quality plans designed to bring the region into attainment. Impacts related to odors were also determined to be less-than-significant.

The 2011 IS/MND identified potentially significant impacts related to construction emissions of NO_X and fugitive dust (PM_{10} and $PM_{2.5}$). Mitigation measures were identified to reduce these air quality impacts to a less-than-significant level. The following mitigation measures would apply to the proposed Project:

Mitigation Measure AQ-1 *Construction Phasing to Reduce Air Emissions.* For construction of the storage tracks in Phase 2, BART shall ensure that all work involving clearing, grubbing, grading, and fill transport associated with work on the Project site north of Whipple Road not be conducted concurrently with construction work south of Whipple

20 Bay Area Air Quality Management District (BAAQMD). 2017b. *CEQA Air Quality Guidelines*. May.

21 LSA. 2022b. op. cit.

22 California Air Resources Board (CARB). 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April.

Road to assure that the Bay Area Air Quality Management District (BAAQMD) nitrogen oxide (NO_X) construction equipment emission threshold would not be exceeded.

Mitigation Measure AQ-2 *Dust Control during Construction.* BART shall ensure implementation of the following mitigation measures during Project construction, in accordance with BAAQMD standard mitigation requirements:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day, or as necessary to control dust.
- All haul trucks transporting soil, sand, or other loose material off site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as practical.
- Building pads shall be laid as soon as practical after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage stating the regulations shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe significant impacts than were identified in the 2011 IS/MND with implementation of the mitigation measures identified in the 2011 IS/MND. No change to the previous CEQA determinations were identified.

5.3.3 Impact Analysis

*a. Would the project conflict with or obstruct implementation of the applicable air quality plan? **(No New Impact)***

The applicable air quality plan is the BAAQMD 2017 Clean Air Plan (Clean Air Plan),[23] which was adopted on April 19, 2017. The Clean Air Plan is a comprehensive plan to improve Bay Area air quality and protect public health. The Clean Air Plan defines control strategies to reduce emissions and ambient concentrations of air pollutants; safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily affected by air pollution; and reduce greenhouse gas emissions to protect the climate. Consistency with the Clean Air Plan can be determined if the Project: (1) supports the goals of the Clean Air Plan; (2) includes applicable control measures from the Clean Air Plan; and (3) would not disrupt or hinder implementation of any control measures from the Clean Air Plan.

Clean Air Plan Goals. The three primary goals of the Bay Area Clean Air Plan are to: (1) attain air quality standards; (2) reduce population exposure and protect public health in the Bay Area; and (3) reduce greenhouse gas emissions and protect climate.

The BAAQMD has established significance thresholds for project construction and operation impacts at a level at which the cumulative impact of exceeding these thresholds would have an adverse impact on the region's attainment of air quality standards. The health and hazards thresholds were established to help protect public health. As discussed below in Section 5.3.3(b), implementation of the proposed Project would result in less-than-significant operation-period emissions and, with implementation of Mitigation Measure AQ-2, identified in the 2011 HMC IS/MND, the Project would result in less-than-significant construction-period emissions. Therefore, the Project would not conflict with the Clean Air Plan goals.

Clean Air Plan Control Measures. The control strategies of the Clean Air Plan include measures in the following categories: Stationary Source Measures, Transportation Measures, Energy Measures, Building Measures, Agriculture Measures, Natural and Working Lands Measures, Waste Management Measures, Water Measures, and Super-GHG Pollutants Measures. The Project would result in the construction of new vehicle maintenance and storage facilities for BART within their existing HMC facility. The Stationary Source, Energy Control, Building Control, Agricultural Control, Natural and Working Lands Control, Water Control, and Super GHG Control Measures are not applicable to the proposed Project.

The BAAQMD identifies Transportation Measures as part of the Clean Air Plan to decrease emissions of criteria pollutants, TACs, and GHGs by reducing demand for motor vehicle travel, promoting

[23] Bay Area Air Quality Management District (BAAQMD). 2017a. op. cit.

efficient vehicles and transit service, decarbonizing transportation fuels, and electrifying motor vehicles and equipment. The proposed Project would be consistent with these strategies as the Project would include new vehicle maintenance and storage facilities for BART. The increased use of BART would help to reduce the demand for travel by single occupancy vehicles. Therefore, the Project would promote the BAAQMD's initiatives to reduce vehicle trips and vehicle miles traveled and would increase the use of alternate means of transportation.

The Waste Management Measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The Project would comply with local requirements for waste management (e.g., recycling and composting services). Therefore, the Project would be consistent with the Waste Management Control Measures of the Clean Air Plan.

Clean Air Plan Implementation. As discussed above, the proposed Project would generally implement the applicable measures outlined in the Clean Air Plan, including Transportation Control Measures. Therefore, the Project would not disrupt or hinder implementation of a control measure from the Clean Air Plan. The proposed Project would not result in any new or more severe impacts compared to those previously identified in the prior environmental documents, and no new mitigation would be required.

b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? ***(No New Impact)***

The BAAQMD is currently designated as a nonattainment area for State and national ozone standards and national particulate matter ambient air quality standards. The BAAQMD's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the Project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. The following sections describe the proposed Project's construction- and operation-related air quality impacts and CO impacts.

Construction Air Quality Impacts. During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by grading, site preparation, building, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO_X, VOCs, directly emitted particulate matter ($PM_{2.5}$ and PM_{10}), and TACs such as diesel exhaust particulate matter.

Project construction would involve grading, site preparation, and other activities. Construction-related effects on air quality from the proposed Project would be greatest during the site preparation phase due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Sources of fugitive dust would include disturbed soils at the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. The BAAQMD has established standard measures for reducing fugitive dust emissions (PM_{10}). With the implementation of these Basic Construction Mitigation Measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_X, ROGs and some soot particulate ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Construction emissions were estimated for the Project using the California Emissions Estimator Model version 2016.3.2 (CalEEMod). As discussed in the Project Description, during clearing, grubbing and site grading, approximately 84,700 cubic yards of import material would be required, which would generate approximately 11,300 truck trips. During installation of the underground stormwater structure, precast materials would be delivered to the site, generating approximately 160 truck trips. During installation of the Industrial Parkway structure, approximately 675 cubic yards of concrete would need to be delivered to the Project site, generating approximately 142 truck trips. During installation of retaining walls, approximately 3,100 cubic yards of concrete that would need to be delivered to the Project site, generating approximately 652 truck trips. The roadway/cart path construction work would require 2,700 cubic yards of asphalt and aggregate base rock material, which would generate 360 truck trips. Installation of rail trackwork would require approximately 5,800 cubic yards of ballast material, which would generate 800 truck trips. In addition, installation of the bioretention basin would require approximately 3,150 cubic yards of biofiltration soil mix and drainage aggregate, generating 700 truck trips. Construction of the Project would require approximately 200 construction workers over the course of the Project; however, only an estimated 40 workers would be on site at any one time. The truck trips and construction workers have been included in the CalEEMod analysis. As identified in the Project Description, construction is expected to occur during the hours of 7:00 a.m. and 7:00 p.m. Although heavy equipment would typically be in use for 8 hours per day, to be conservative, this analysis assumes the use of construction equipment for 12 hours per day. Construction-related emissions are presented in Table A. CalEEMod output sheets are provided in Appendix B of this Supplemental IS/MND.

Table A: Project Construction Emissions (in Pounds Per Day)

Project Construction	ROG	NO_X	Exhaust PM_{10}	Fugitive Dust PM_{10}	Exhaust $PM_{2.5}$	Fugitive Dust $PM_{2.5}$
Average Daily Emissions	3.8	33.7	1.3	2.3	1.2	1.0
BAAQMD Thresholds	54.0	54.0	82.0	BMP	54.0	BMP
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA Associates, Inc. (August 2021).
BAAQMD = Bay Area Air Quality Management District
BMP = best management practices
NO_X = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gases

As shown in Table A, construction emissions associated with the Project would be less than significant for ROG, NO_X, $PM_{2.5}$, and PM_{10} exhaust emissions. The BAAQMD requires the implementation of the BAAQMD's Basic Construction Mitigation Measures to reduce construction fugitive dust impacts to a less-than-significant level, as identified in Mitigation Measure AQ-2 from the 2011 IS/MND. With implementation of Mitigation Measure AQ-2, construction of the proposed Project would not result in emissions that would be a cumulatively considerable net increase of any criteria pollutant for which the Project site is in nonattainment under an applicable federal or State ambient air quality standard.

Operational Air Quality Impacts. Long-term air pollutant emission impacts are those associated with mobile sources (e.g., vehicle trips), energy sources (e.g., electricity and natural gas), and area sources (e.g., architectural coatings and the use of landscape maintenance equipment) related to the proposed Project.

PM_{10} emissions typically result from running engine exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. Entrainment of PM_{10} occurs when vehicle tires pulverize small rocks and pavement, and the vehicle wakes generate airborne dust. The contribution of tire and brake wear is small compared to the other PM emission processes. Gasoline-powered engines have small rates of particulate matter emissions compared with diesel-powered vehicles.

Energy source emissions typically result from activities in buildings for which electricity and natural gas are used. The quantity of emissions is the product of usage intensity (i.e., the amount of electricity or natural gas) and the emission factor of the fuel source.

Typically, area source emissions consist of direct sources of air emissions located at the Project site, including architectural coatings and the use of landscape maintenance equipment. Area source emissions associated with the Project would include emissions from the use of architectural coatings, consumer products, and landscaping equipment.

Similar to current operations of the HMC, operation of the HMC2-Northern Mainline Connector Project would occur 24 hours per day. Operations of HMC2 would increase the level of train movement activity in the Project area, as eventually 12 trains could be dispatched from the east side storage tracks and use the Northern Mainline Connector to join the northbound mainline in the morning and return at the end of the operating day. Train movements in the connecting tracks would range from 10 to 30 miles per hour as trains prepared to merge with mainline train traffic. Though designed primarily for train storage, the new storage area would be designed to allow train operations on the west side of the yard (such as train dispatch) to move to the expansion area at some time in the future.

Current operations at the HMC do not involve the use of equipment that emit substantial amounts of air pollutants (e.g., portable diesel powered equipment like generators, power washers); all the equipment used for train maintenance work is electrically powered. As part of the HMC2 Project, a train wash facility would be constructed south of the vehicle storage facility near the rail storage racks. Water for the train wash facility would be heated using an electric water heater. Although washing and other maintenance activities would increase with Project implementation, the HMC's reliance on electrically powered equipment for this maintenance work would continue. Thus, there would be no increase in air pollutant emissions from on-site use of portable powered equipment.

The proposed Project would result in an increase in energy source emissions. Light poles for security lighting would be added along the new trackway. The Project would result in low levels of off-site emissions due to energy generation associated with the lighting. In addition, since the BART trains are electrically powered, the increased activity of trains would generate energy source emissions. However, these emissions would be minimal and would not exceed the pollutant thresholds established by the BAAQMD.

As discussed in the Project Description, BART activities are cyclical and the number of employees at the Hayward Yard increases or decreases depending on various BART operations and maintenance activity occurring at the time. Currently, there are approximately 370 BART employees at the Hayward Yard, distributed over 24 hours and several shifts. No new activities or employees are planned at the new storage area. Rather, the new storage area would provide additional car storage capacity and increased operational flexibility for existing activities. As such, the proposed Project is not expected to generate new vehicle trips. Therefore, implementation of the proposed Project would not result in an increase in air pollutant emissions associated with employee vehicle trips. The proposed Project would not have significant operational air pollutant emissions. Operation of the proposed Project would not result in emissions that would result in a cumulatively considerable net increase of any criteria pollutant for which the Project site is in nonattainment under an applicable federal or State ambient air quality standard.

Long-Term Microscale (CO Hot Spot Analysis). Emissions and ambient concentrations of CO have decreased dramatically in the Bay Area with the introduction of the catalytic converter in 1975. No exceedances of the State or federal CO standards have been recorded at Bay Area monitoring stations since 1991. The BAAQMD's 2017 *CEQA Air Quality Guidelines* include recommended methodologies for quantifying concentrations of localized CO levels for proposed transportation projects. A screening level analysis using guidance from the BAAQMD CEQA Guidelines was performed to determine the impacts of the Project. The screening methodology provides a conservative indication of whether the implementation of a proposed Project would result in significant CO emissions. According to BAAQMD's *CEQA Air Quality Guidelines*, a proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

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

Implementation of the proposed Project would not conflict with the Alameda County Transportation Commission's Congestion Management Program for designated roads or highways, a regional transportation plan, or other agency plans. As discussed above, the proposed Project is not expected to generate new vehicle trips; therefore, the proposed Project would not result in localized CO concentrations that exceed State or federal standards, and this impact would be less than significant.

With implementation of Mitigation Measure AQ-2, identified in the 2011 IS/MND, the proposed Project would not result in any new or more severe impacts compared to those identified in the prior environmental documents. No additional analysis is required.

c. *Would the project expose sensitive receptors to substantial pollutant concentrations?* ***(No New Impact)***

Sensitive receptors are defined as residential uses, schools, daycare centers, nursing homes, and medical centers. Individuals particularly vulnerable to diesel particulate matter are children, whose lung tissue is still developing, and the elderly, who may have serious health problems that can be aggravated by exposure to diesel particulate matter. Exposure from diesel exhaust associated with construction activity contributes to both cancer and chronic non-cancer health risks.

The closest sensitive receptors include residential land uses adjacent to the eastern boundary of the Project site including single-family homes along Carroll Avenue, St. Anne's Place, Brookview Way, Brookside Lane, and Industrial Parkway. Construction activities associated with the proposed Project may expose surrounding sensitive receptors to airborne particulates, as well as a small quantity of construction equipment pollutants (i.e., usually diesel-fueled vehicles and equipment). However, as described in Section 5.3.3(b), Project construction emissions would be below the BAAQMD's significance thresholds. In addition, construction contractors would be required to implement measures to reduce emissions by implementing the BAAQMD's Basic Construction Mitigation Measures, as required by Mitigation Measure AQ-2 above. Due to the linear nature of the Project, construction activities at any one receptor location would occur for a limited duration. In addition, once the proposed Project is constructed, the Project would not be a significant source of long-term operational emissions as BART trains and maintenance operations on the Project site are electric. With implementation of Mitigation Measure AQ-2, the proposed Project would not result in any new or more severe impacts compared to those previously identified in the prior environmental documents. No additional analysis is required.

d. *Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?* ***(No New Impact)***

During Project construction, residents and businesses in close proximity to the construction areas may also experience occasional odors from diesel equipment exhaust. However, these odors would be temporary and limited to the construction period. This effect would be intermittent, would be contingent on prevailing wind conditions, and occur only during construction activities.

Once operational, BART trains operating on the Project site are electrically run and, therefore, do not emit odorous exhaust; the only odors from the site would be an occasional exposure to diesel exhaust from trucks accessing the site from public roadways and occasional odors from use of common, non-toxic, cleaning agents, solvents, and chemicals associated with cleaning and maintenance. The operation of equipment and cleaning of the vehicles can generate localized odors that are typically only noticeable by workers near these sources. These odors are localized and wouldn't be noticeable beyond the Project site. Since the generation of odors would be periodic, and because these emissions would not affect a substantial number of people, the Project would not be a source of odors. Therefore, the proposed Project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. The proposed Project would not result in any new or more severe impacts compared to those previously identified in the prior environmental documents.

5.4 BIOLOGICAL RESOURCES

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
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?	☐	☐	☐	☒

5.4.1 Background

A Biological Resources Study (BRS)[24] was prepared for the proposed Project, which included background research and field surveys. The BRS is included in Appendix C of this Supplemental IS/MND, and the findings of the BRS are summarized below.

5.4.1.1 Methods

The biological study area encompasses the Project limits and surrounding areas that are potentially inhabited by regional special-status species that could be affected directly or indirectly by the Project. The total study area is 162.84 acres (7,093,482 square feet). Database and literature searches were then conducted to gather information regarding habitat types and special-status species that have documented occurrence in or near the Project area. These include the:

24 WRECO. 2021a. *Northern Mainline Connector Project. Biological Resources Study*. Prepared for San Francisco Bay Area Rapid Transit District. November.

- U.S. Fish and Wildlife Service (USFWS) online database for federally threatened and endangered species.[25]
- California Department of Fish and Wildlife (CDFW), California Natural Diversity Database (CNDDB).[26]
- California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants.[27]
- Peer reviewed literature as cited in the text.

The results of the online database searches are included in the BRS.

Site visits were conducted on June 7, 2019, and February 6, March 10, April 22, and May 19, 2020, to perform jurisdictional wetlands delineations and botanical and wildlife surveys to determine what sensitive biological resources may be present at the Project site.

5.4.1.2 Vegetation Communities

The study area is located in an area comprised of industrial, commercial, residential, and recreational land uses. The surrounding area is primarily urban with the undeveloped Hayward Hills to the east.

Four vegetation communities are present in the study area: urban, ruderal, fresh emergent wetland, and annual grassland. These communities are described below. Representative plant and wildlife species observed in the study area are included in the biological study.

Urban Vegetation. Urban vegetation includes a variety of landscaped tree groves, street strips, shade tree/lawns, lawns, and shrub cover associated with development. Within the study area, urban vegetation is present within residential landscapes, a golf course, and landscaping associated with urban streets. Non-native landscape species and invasive weeds are common throughout the study area where industrial buildings and minimal landscaped areas occur. The dominant species observed in this community include field bindweed (*Convolvulus arvensis*) and English ivy (*Hedera helix*).

Ruderal. Ruderal plant communities consist of varied, often temporary, collections of mostly non-native plants along roadsides or other disturbed areas. Ruderal vegetation communities occur along the railroad track edges and disturbed areas throughout the study area. The dominant species observed in this community include soft chest brome (*Bromus hordeaceus*), wild oats (*Avena fatua*),

25 United States Fish and Wildlife Service (USFWS). 2021. Information for Planning and Conservation. Environmental Conservation Online System. Website: ecos.fws.gov/ipac/ (accessed August 3, 2021).

26 California Department of Fish and Wildlife (CDFW). 2021. California Natural Diversity Database. RareFind 5. Version 3.1. Website: www.wildlife.ca.gov/Data/Maps-and-Data. (accessed August 2, 2021).

27 California Native Plant Society (CNPS). Rare Plant Program. 2021. Inventory of Rare and Endangered Plants. Online edition, Ver. 8-02. Sacramento, CA. Website: www.rareplants.cnps.org. (accessed August 2, 2021).

wild radish (*Raphanus sativus*), Italian thistle (*Carduus pycnocephalus*), and prickly lettuce (*Lactuca serriola*).

Fresh Emergent Wetland. Fresh emergent wetland is a broad term for depressions on level to gently rolling land that is permanently or seasonally inundated with freshwater. There are two fresh emergent plant communities within the study area, and both are associated with potential wetlands. Dominant species observed in this habitat type include Italian rye grass (*Lolium perenne*), bird's foot trefoil (*Lotus corniculatus*), tall flatsedge (*Cyperus eragrostis*), and bristly ox-tongue (*Helminthotheca echioides*). Given the plant species' composition present in the wetlands, according to the Manual of California Vegetation Online,[28] the plant community falls within the classification of an "Herbaceous Semi-Natural Alliance," specifically Perennial Rye Grass Fields, which is not on the CDFW's Sensitive Natural Community list.[29]

Annual Grassland. Annual grassland contains non-native grasses that have naturalized, and this community dominates the majority of the 6-acre portion of the Project site. In the study area, annual grassland occurs between the fresh emergent wetland and soil stockpiles, between the UPRR and Hayward Yard service tracks. The dominant species include ripgut brome (*Bromus diandrus*) and wild oats.

5.4.1.3 Jurisdictional Waters

Three wetlands were delineated within the study area and were determined to be potentially jurisdictional under Sections 404 and 401 of the Clean Water Act (CWA) and thus subject to regulation under the USACE and the RWQCB. These wetlands, designated as Potential Wetland (PW) 1, PW 2, and PW 3, satisfy the three-parameter definition of a wetland as defined by the USACE.[30] The combined area of these wetlands is 0.652 acre (28,401 square feet). Figures 18a and 18b depict the aquatic resources delineated at the Project site.

A drainage feature towards the north end of the study area adjacent to Industrial Parkway was determined to be potentially jurisdictional under Sections 404 and 401 of the CWA. This feature was delineated on July 1, 2021, and still had flow despite drought conditions.

Another drainage feature runs along the west side of the Project site for considerable length. This drainage feature was designated as Waters of the State (WS) 1 and is segmented by three culverts along its length. This ditch was determined to be non-jurisdictional by the USACE.

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28 California Native Plant Society (CNPS). 2020. *A Manual of California Vegetation Online*. Website: vegetation.cnps.org/alliance/425 (accessed September 23, 2020).

29 California Department of Fish and Wildlife (CDFW). 2020. California Sensitive Natural Communities. Website: nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609&inline. (accessed September 23, 2020).

30 United States Army Corps of Engineers (USACE). 1986. *Federal Register*. Definition of Waters of the U.S. 33 Code of Federal Regulations 328.3(1).

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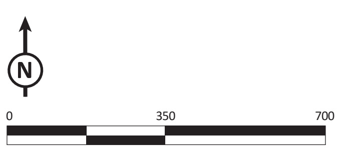
LSA

FIGURE 18a



BART HMC2 Project Supplemental IS/MND
Aquatic Resources Delineation

SOURCE: WRECO, 2022

P:\WRO2001 Hayward BART\PRODUCTS\Graphics\ISMND\Figure 18a.ai (6/10/2022).

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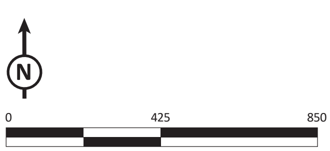
FIGURE 18b

LSA



BART HMC2 Project Supplemental IS/MND
Aquatic Resources Delineation

SOURCE: WRECO, 2021

P:\WRO2001 Hayward BART\PRODUCTS\Graphics\ISMND\Figure 18b.ai (6/10/2022)

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The final delineated feature is another drainage designated as Waters of the State (WS) 2, which is shorter than WS 1 and originates in the middle of the HMC Yard west of the mainline and directs flow towards the western boundary. Table B lists the potential USACE and RWQCB jurisdictional areas that were delineated within the study area. As shown in Table B, some of these features fall under the jurisdiction of both the USACE and RWQCB.

Table B: Potential Jurisdictional Wetlands/Waters within the Study Area

Feature	USACE Jurisdictional Area	RWQCB Jurisdictional Area
PW 1	24,045 square feet 0.552 acre	24,045 square feet 0.552 acre
PW 2	2,701 square feet 0.062 acre	2,701 square feet 0.062 acre
PW 3	1,655 square feet 0.038 acre	1,655 square feet 0.038 acre
Total Potential Wetlands of the U.S.	**28,401 square feet 0.652 acre**	**28,401 square feet 0.652 acre**
OWUS 2	3,348 square feet 0.077 acre 106 linear feet	3,348 square feet 0.077 acre 106 linear feet
Total Potential Other Waters of the U.S.	**3,348 square feet 0.077 acre 106 linear feet**	**3,348 square feet 0.077 acre 106 linear feet**
WS 1 (non-federal)	N/A	35,464 square feet 0.814 acre 5,542 linear feet
WS 2 (non-federal)	N/A	8,022 square feet 0.184 acre 997 linear feet
Total Waters of the State	**N/A**	**43,486 square feet 0.998 acre 6,539 linear feet**
RIP 1 (riparian habitat above OWUS 2)	N/A	3,715 square feet 0.085 acre 129 linear feet
Total Riparian Habitat	**N/A**	**3,715 square feet 0.085 acre 129 linear feet**

Source: *Northern Mainline Connector Project. Biological Resources Study.* Prepared for San Francisco Bay Area Rapid Transit District. June (WRECO 2022a).
N/A = Not Applicable (these dimensions are not used by resource agencies to calculate impacts).
OWUS = Other Waters of the U.S.
PW = Potential Wetland
RIP = Riparian Habitat
WS = Waters of the State

5.4.1.4 Special-Status Plant Species

Combined, the California Natural Diversity Data Base (CNDDB), California Native Plant Society (CNPS), and USFWS databases list a total of 38 special-status plants (including federally listed, state-listed, and/or CNPS List 1B or 2) that could occur within a 5-mile radius of the biological study area.

The BRS[31] lists the special-status plants generated from these databases and provides explanations for the potential presence or absence of these plants. The table provides the names and listed status of each species, descriptions of their preferred habitats, and their likelihood of occurrence in the study area.

Reconnaissance level botanical surveys were conducted at the site on February 6, March 10, and May 19, 2020. No special-status plant species were observed in the biological study area. This is likely due to the high degree of disturbance associated with the development of the UPRR tracks, BART tracks, and HMC Yard. Thus, the presence of special-status plant species can effectively be ruled out due to the high degree of previous disturbances within the study area.

5.4.1.5 Special-status Wildlife Species

A total of 40 special-status wildlife species and protected habitats have the potential to occur within the study area, as indicated by the CNDDB and USFWS online databases. The BRS[32] lists the 40 special-status wildlife species generated from the database searches and provides descriptions for the potential presence or absence of the wildlife, listed status, required habitats, and their likelihood of occurrence in the study area. Of those 40 species, only the species listed below in Table C were determined during the evaluation process to have some potential to occur in the BSA; all other species were determined to have no possibility of occurrence due to the lack of potentially suitable habitat and high degree of disturbance within the study area.

Table C: Special-Status Wildlife Species with Potential to Occur in the Study Area

Common Name	Scientific Name	Listing Fed/State	Potential for Occurrence
Western burrowing owl	*Athene cunicularia*	--/SSC	Low
White-tailed kite	*Elanus leucurus*	--/FP	High
Migratory Birds	N/A	MBTA/FGC Sections 3503 and 3800	High
Pallid bat	*Antrozous pallidus*	SSC	Low
Roosting Bats	N/A	--/FGC Sections 2000, 2002, 2014, 4150 CCR 251.1 Some species are SSC	Low

Source: *Northern Mainline Connector Project. Biological Resources Study.* Prepared for San Francisco Bay Area Rapid Transit District. June (WRECO 2022a).

-- = not federally listed
CCR = California Code of Regulations
FGC = Fish and Game Code
FP = State Fully Protected
MBTA = Migratory Bird Treaty Act
N/A = not applicable
SCE = State Candidate Endangered
SSC = State Species of Special Concern

31 WRECO. 2022a. *Northern Mainline Connector Project. Biological Resources Study*. Prepared for San Francisco Bay Area Rapid Transit District. June. See Table 4, page 32.

32 WRECO. 2022a. *Northern Mainline Connector Project. Biological Resources Study*. Prepared for San Francisco Bay Area Rapid Transit District. June. See Table 5, page 42.

5.4.1.6 Sensitive Natural Communities

Sensitive natural communities are recurring associations of plants and animals found in particular locations with specific physical conditions. Natural Communities of Special Concern are plants, animals, and natural resources that may have high species diversity, high productivity, limited distribution, decreasing range, or unusual characteristics. Natural Communities of Special Concern as designated by CDFW, may include wetlands and "Waters of the United States", "Waters of the State," protected trees, riparian habitats, and federally designated essential fish habitats.

A CNDDB online database search identified no sensitive natural communities within a 5-mile radius of the biological study area.[33]

5.4.1.7 Regulatory Requirements – Biological Resources

The following Federal and State regulatory requirements and laws apply to the proposed Project:

Federal Endangered Species Act.USFWS and the National Marine Fisheries (NMFS) implement the Federal Endangered Species Act (FESA); 16 United States Code § 153 et seq.). Projects that would result in take of any federally-listed threatened or endangered species are required to obtain authorization from the USFWS and the NMFS through either Section 7 (interagency consultation) or Section 10(a) (incidental take permit) of FESA, depending on whether the federal government is involved in permitting or funding the Project. The authorization process is used to determine if a project would jeopardize the continued existence of a listed species and the mitigation measures required to avoid jeopardizing the species.

Federal Clean Water Act, Sections 301, 404, and 402. The objective the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Section 301 prohibits the discharge of any pollutant into the nation's waters without a permit, and Section 402 establishes the permit program. Under Section 404 of the CWA, the U.S. Army Corps of Engineers (USACE) has the authority to regulate activities that discharge fill or dredge material into wetlands and Other Waters of the U.S. The USACE implements the federal policy embodied in Executive Order 11990, which is intended to result in no-net-loss of wetland values or acres.

Federal Clean Water Act, Section 401, and Porter-Cologne Water Quality Control Act. The State Water Resources Control Board (SWRCB) has authority over federally jurisdictional wetlands through Section 401 of the CWA, which requires that an applicant for a Section 404 permit (to discharge dredged or fill material into Waters of the U.S.) obtain certification from the appropriate state agency, stating that the fill is consistent with the State's water quality standards. In California, the authority to certify permits is delegated by the SWRCB to the nine regional boards. The San Francisco Bay Regional Water Quality Control Board (San Francisco Bay RWQCB) is the appointed authority for Section 401 compliance within the study area. A request for certification is submitted to the regional board at the same time that an application is filed with the USACE. Because no USACE permit is valid under the CWA unless "certified" by the State, these boards may effectively veto or add conditions to any USACE permit. In addition, the SWRCB and SFBRWQCB have authority

33 WRECO. 2022a. op. cit.

over wetlands that are not federally jurisdictional under the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), which requires a permit for discharges to Waters of the State.

Migratory Bird Treaty Act (MBTA). The MBTA regulates or prohibits the taking, killing, possession of, or harm of migratory bird species listed in Title 50 Code of Federal Regulations (CFR) Section 10.13. It implements an international treaty for the conservation and management of bird species that migrate through more than one country and is enforced in the United States by the USFWS. The hunting Hunt of specific migratory game birds is permitted under the regulations listed in Title 50 CFR 20.

California Endangered Species Act (CESA). The CDFW drives its authority from the Fish and Game Code of California, which implements CESA 1985 (Fish and Game Code 2050 et seq.). CESA prohibits the “take” of listed, threatened, or endangered species. Take under CESA is restricted to the direct killing of a listed species and does not prohibit indirect harm by way of habitat modification.

Fish and Game Code – Sections 3503, 3503.5, and 3513. Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code, or any regulation made pursuant hereto. Fish and Game Code Section 3503.5 protects all birds-of-prey (raptors) and their eggs and nests. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA. These regulations could require that elements of the proposed Project (particularly vegetation removal or construction near nest trees) be reduced or eliminated during critical phases of the nesting cycle unless surveys by a qualified biologist demonstrate that their nests, eggs, or nesting birds will not be disturbed, subject to approval by CDFW and/or USFWS.

Fish and Game Code – Sections 3511, 4700, 5050, and 5515. Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians) and 5515 (fish) of the California Fish and Game Code designate certain species as “fully protected.” Fully protected species, or parts thereof, may not be taken or possessed at any time, and no provision of the California Fish and Game Code or any other law may be construed to authorize the issuance of permits or licenses to take a fully protected species. No such permits or licenses heretofore issued may have any force or effect for any such purpose, except that the California Fish and Game Commission may authorize the collected of such species for necessary scientific research. Legally imported and fully protected species or parts thereof may be possessed under permit issued by CDFW.

Fish and Game Code – Sections 2000, 2002, and 2014. Sections 2000, 2002, and 2014 of the California Fish and Game Code state that it is the policy of the State of California to conserve it natural resources and to prevent the willful or negligent destruction of birds, mammals, fish, reptiles or amphibia, and that the state may recover damages in a civil action against any person or local agency that unlawfully or negligently takes protected wildlife. It is also unlawful to take, possess, or harass a bird, mammal, fish, or amphibian without a State issued permit or license or other entitlement to take a species. Harass is defined as an intentional act which disrupts an animal’s normal behavior patterns, which includes, but is not limited to breeding, feeding, or sheltering.

5.4.2 Prior Environmental Analysis

The 2011 IS/MND concluded that impacts related to special-status species and sensitive natural communities would be less than significant because the site is largely developed and provides no suitable habitat for special-status species. Potentially significant impacts were identified related to wetlands and tree removal, which may also impact nesting birds. The 2011 IS/MND determined that the HMC Project had the potential to indirectly affect the drainage channel adjacent to the east side storage area and the approximately 1.2–acre wetland north of the HMC Project site. In addition, the HMC Project would require vegetation and tree removal for HMC Project construction, which if conducted during the nesting season (March 1 to September 15) could result in the loss of active bird nests. Mitigation Measures BIO-1 through BIO-4 were identified to reduce significant impacts. With implementation of these mitigation measures, the 2011 IS/MND determined that impacts to biological resources would be less than significant. The following mitigation measures applied to the 2011 Project:

Mitigation Measure BIO-1 *Wetland Avoidance and Protection.* BART shall ensure that the wetlands adjacent to the east side expansion area of the Project site are not affected during construction by installing orange exclusionary fence to alert construction crews that the areas are to be avoided during construction, and through compliance with applicable statewide National Pollutant Discharge Elimination System (NPDES) general permits.

In addition, BART shall ensure that post installation conditions shall not cause significant changes to the pre-project hydrology, water quality, or water quantity in any wetland or other Water of the United States that is affected by the Project. This shall be accomplished through implementation of Mitigation Measures HYD-1 and HYD-2 provided in Section 5.10, Hydrology and Water Quality, Stormwater Drainage System Design, and through compliance with applicable statewide NPDES general permits.

Mitigation Measure BIO-2 *Restrictions on Tree or Shrub Removal to Avoid Nesting Birds.* Tree or shrub removal or pruning shall be avoided from March 1 through September 15, the bird nesting period, to the extent feasible. If no tree or shrub removal or pruning is proposed during the nesting period, no surveys or further mitigation measures are required.

Mitigation Measure BIO-3 *Pre-construction Nesting Bird Survey and Measures to Reduce Harm to Nesting Birds.* If tree and shrub removal is unavoidable during the nesting season, BART shall hire a qualified biologist to conduct a survey for nesting raptors and other birds covered by the Migratory Bird Treaty Act (MBTA). BART shall have a qualified biologist conduct nest surveys no more than 30 days prior to any demolition/ construction or ground-disturbing activities that are within 500 feet of potential nest trees or suitable nesting habitat (i.e., trees, tule, cattails, grassland). A pre-construction survey report shall be submitted to the California Department of Fish and Wildlife (CDFW) that includes, at a minimum: (1) a description of the methodology including dates of field visits, the names of survey personnel with resumes, and a list of references cited and persons contacted; and (2) a map showing the location(s) of any bird nests observed on the Project site. If no active nests of MBTA-covered species are identified, then no further mitigation is required.

If active nests of protected bird species are identified in the focused nest surveys, BART will consult with the appropriate regulatory agencies to identify project-level mitigation requirements, based on the agencies' standards and policies as then in effect. Mitigation may include the following, based on current agency standards and policies:

- BART, in consultation with CDFW, would delay construction in the vicinity of active nest sites during the breeding season (March 1 through September 15) while the nest is occupied with adults and/or young. A qualified biologist would monitor any occupied nest to determine when the nest is no longer used. If the construction cannot be delayed, avoidance measures would include the establishment of a non-disturbance buffer zone around the nest site. The size of the buffer zone would be determined in consultation with the CDFW but will be a minimum of 100 feet. The buffer zone would be delineated with highly visible temporary construction fencing.
- No intensive disturbance (e.g., heavy equipment operation associated with construction, or use of cranes) or other project-related activities that could cause nest abandonment or forced fledging would be initiated within the established buffer zone of an active nest between March 1 and September 15.
- If construction activities are unavoidable within the buffer zone, BART would retain a qualified biologist to monitor the nest site to determine if construction activities are disturbing the adult or young birds. If abandonment occurs, the biologist would consult with the CDFW or United States Fish and Wildlife Service (USFWS) (who monitor compliance with the MBTA) for the appropriate salvage measures (e.g., remove abandoned nestlings to an agency approved wildlife care group). BART would be required to fund the full costs of the salvage measures.
- If fully protected species are found to be nesting near the construction area, their nests would be completely avoided

until the birds fledge. Avoidance would include the establishment of a non-disturbance buffer zone of 250 feet, or as determined in consultation with the CDFW.

Mitigation Measure BIO-4 *Tree Survey and Replacement of Protected Trees to be Removed.* Prior to construction, BART shall retain a certified arborist to survey trees in the Project area, including potential access roads and staging areas, to identify and evaluate trees that shall be removed. A report shall be prepared and submitted to BART to document the trees that are to be removed. Mitigation shall be required for impacts to trees designated as "protected trees" in the cities of Hayward or Union City. Replacement trees will be a native tree species. Each removed tree meeting the above classifications will be replaced at a 1:1 ratio. Trees will be planted in locations suitable for the replacement species. Selection of the replacement sites and installation of replacement plantings will be supervised by a qualified botanist. Trees will be replaced as soon as practical after construction is completed. A qualified botanist will monitor newly planted trees at least once a year for 5 years. Each year during that period, any trees that do not survive will be replaced. Any trees planted as remediation for failed plantings will be planted as stipulated here for original plantings and will be monitored for a period of 5 years following installation.

As described further below, Mitigation Measure BIO-1 would not apply to the HMC2 Project, as implementation of the proposed Project would require fill of wetlands within the east side expansion area in order to provide sufficient storage capacity (250 vehicles) and to efficiently dispatch trains toward the north to San Francisco and Oakland. During the design process, various alternatives were considered; however, complete avoidance of wetlands within the Project area was determined to be infeasible. As a result, the proposed Project would result in new impacts to potential Waters of the U.S. and Waters of the State and new mitigation measures are required to ensure that impacts are reduced to a less-than-significant level, as described below. Mitigation Measures BIO-2, BIO-3, and BIO-4, identified in the 2011 IS/MND and listed above, would apply to the proposed Project.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe significant impacts than were identified in the 2011 IS/MND with implementation of the mitigation measures identified in the 2011 IS/MND. No change to the previous CEQA determinations were identified.

5.4.3 Impact Analysis

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

As described above, the BRS determined that the following species could be present within the Project area and could be impacted by Project activities:

- White-tailed kite
- Western burrowing owl
- Pallid bat
- Roosting bats
- Nesting birds

Potential impacts to each of these species are described below. With implementation of the mitigation measures identified below, impacts to these special-status species would be reduced to a less-than-significant level.

White-tailed Kite and Western Burrowing Owl. The white-tailed kite (*Elanus leucurus*) is a state, fully protected (FP) species and is also protected under the federal MBTA. White-tailed kites take cover and build nests in trees and tall shrubs with dense canopies. Their nests are situated near open foraging areas and are constructed of loosely piled sticks and twigs in the fork near the top of a tree or bush.[34] Suitable nesting trees are present in the residential areas immediately east of the HMC property.

A pair of white-tailed kites, a State fully protected species, were observed nesting in a tall pine tree in the yard of a residence located 50 feet east of the UPRR tracks. Kites demonstrate a high degree of nest site fidelity from year to year and therefore, they could nest in the area during construction of the proposed Project.

The western burrowing owl (*Athene cunicularia*) is a California SSC (breeding) and has no federal listing status. The burrowing owl lives in grassland habitat but has adapted well to some agricultural and developed areas that have suitable burrows for roosting and nesting in relatively short vegetation. There is a very low potential for western burrowing owl to nest at the site. Although there are no CNDDB occurrences within a 5-mile radius of the Project site, the disturbed grassland and discarded debris mounds provide suitable nesting habitat for this species.

Mitigation Measure BIO-3, identified in the 2011 IS/MND and described above, which protects nesting birds will also provide protection of nesting white-tailed kites and western burrowing owls. A new mitigation measure, Mitigation Measure BIO-5 (to follow Mitigation Measure BIO-4 as described in Section 5.4.2 above) is required to be implemented to ensure that there are no impacts to white-tailed kits and western burrowing owls. With implementation of Mitigation Measures BIO-3, and BIO-5, no new impacts or increase in the severity of impacts would occur.

Mitigation Measure BIO-5 *Pre-Construction Surveys for White-Tailed Kite and Western Burrowing Owl.* During the white-tailed kite and burrowing owl breeding season (February 1 through August 31), pre-construction nesting bird surveys shall be conducted by a qualified biologist no

34 Polite, C. 2005. White-tailed Kite. In California Wildlife Habitat Relationships System. Website: nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1659&inline=1 (accessed: August 2, 2021).

more than 48 hours prior to the commencement of construction. If an active nest is found within 300 feet of the Project limits, the biologist shall establish a protective buffer zone along the edge of the 300-foot radius. The buffer zones shall be delineated with high-visibility environmentally sensitive area fencing or demarcated with pin flags or ribbon, as applicable based on-site conditions. If it becomes necessary for work to occur in closer proximity to a nest, the Project biologist may develop a nest monitoring plan in coordination with BART that shall include continual monitoring of the nest as construction moves closer. If at any time the biologist determines that activities may cause nest abandonment, construction activity in that area must cease.

Pallid Bat. The pallid bat (*Antrozous pallidus*), a State species of special concern, occurs throughout most of California in lower elevations in a wide variety of habitats including grasslands, shrublands, woodlands, and forests. Day roost and hibernation roost sites include caves, rock or bridge crevices, buildings, and hollow trees. At night, they roost usually in the open near foliage or in open buildings. Pallid bats leave their day roost an hour after sunset capturing their prey on vegetation or on the ground. They hibernate in the winter near the summer day roost. Maternity colonies form in early April, with the young born between April and July.

The only CNDDB records for pallid bat are from museum specimens (#129, #130) with vague collection data though this does not rule out the potential presence of this species in the Project vicinity because bat surveys may not have been conducted in the area. There is a low potential that pallid bats could roost in crevices beneath the BART overpass over Industrial Boulevard. The noise and vibration caused by the frequent BART train crossings make it unlikely that they would roost in the structure. Furthermore, the overpass structure would not be altered and work near the structure would occur immediately to the east. If pallid bats are roosting in the structure, it is not likely that construction activity would disturb them because the area is highly trafficked. Therefore, impact to pallid bat would be less than significant.

Roosting Bats. Several species of bats are considered Species of Concern by the State of California, including: pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), western red bat (*Lasiurus blossevillii*), and western mastiff bat (*Eumops perotis californicus*). In addition to bat species listed as sensitive by the resource agencies, state laws protect bats and their occupied roosts from harassment and destruction. Protection under California Law is found in the Fish and Game Code Sections 2000, 2002, 2014 and 4150, and under California Code of Regulations Section 251.1.

Approximately 52 trees would be removed during construction of the proposed Project. Bat species that depend on trees for roosting include western red bat, hoary bat (*Lasiurus cinereus*) and silver-haired bat (*Lasionycteris noctivagans*). To prevent impacts to roosting bats, a new mitigation measure, Mitigation Measure BIO-6 would be implemented. With implementation of Mitigation Measure BIO-6, no new impacts or increase in the severity of impacts would occur.

Mitigation Measure BIO-6 *Pre-Construction Surveys for Roosting Bats.* A qualified biologist shall conduct a survey to look for evidence of bat use within two weeks prior to the onset of work activities. Pre-construction surveys will be conducted focusing on trees that will be removed. The biologist will survey for suitable bat roosting habitat including, trees (snags, rotten stumps, broken limbs, tree cavities, exfoliating bark, dense foliage, etc.), and vegetation. Pre-construction surveys shall be performed by visually inspecting all potential roosting sites, utilizing a ladder as needed to access potential roosting sites in tall trees, at a minimum. If evidence of bat occupancy is observed, or if high-quality roost sites are present in areas where evidence of bat use might not be detectable (such as a tree cavity), an evening survey and/or nocturnal acoustic survey may be necessary to determine if roosting bats are present and to identify the specific location of the bats.

To the extent practicable, structures and trees will be removed from September 1 to March 1 to avoid disturbing maternal colonies or roosts. If potential roost sites (trees, snags, etc.) are to be removed or trimmed, limbs smaller than 3 inches in diameter will be cut and the tree shall be left overnight to allow for any bats using the tree/snag for roosting time to leave and find another roost. A biological monitor will be present during the trimming or removal of trees/snags with potential bat roosting habitat.

Nesting Birds. Trees, shrubs, and other vegetation would be removed to construct the proposed Project. Trees and shrubs found within the study area could provide suitable nesting habitat for a variety of birds. Nesting birds, including raptors, are protected by the California Department of Fish and Game Code 3503 which reads, “It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.” Passerines and non-passerine land birds are further protected under the MBTA. Mitigation Measures BIO-2 and BIO-3, identified in the 2011 IS/MND and described above, would be implemented by BART to reduce the Project’s impact on nesting migratory birds to a less-than significant level. With implementation of these mitigation measures, no new or substantially more severe impacts would occur than have been analyzed in the prior environmental documents.

In addition to the species-specific mitigation measures identified above, one additional mitigation measure would be implemented to reduce potential impacts to special-status species to a less-than-significant level:

Mitigation Measure BIO-7 *Environmental Awareness Training.* Prior to construction, a qualified biologist shall conduct Worker Environmental Awareness Training regarding potential sensitive species that could occur in or near the study area, including burrowing owl, white-tailed kite, migratory birds, and roosting bats. At a minimum, the training will include a description of these species, the specific measures that are being implemented to avoid adverse effects to biological resources, and the boundaries within which the Project may be accomplished. The training shall explain local, State, and federal regulations/ authorizations pertaining to biological resources that are/may be applicable to the Project, as well as all measures related to biological resources that must be implemented during construction.

With implementation of Mitigation Measures BIO-2 and BIO-3, identified in the 2011 IS/MND and new Mitigation Measures BIO-5, BIO-6, and BIO-7, described above, no new impacts or substantially more severe impacts to special-status wildlife species would occur. No additional analysis is required.

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

As described above, an area of riparian habitat has been identified below the top of bank of Other Waters of the U.S.(OWUS) 2. This riparian habitat is within the jurisdiction of the CDFW under Section 1602 of the Fish and Game Code. No other sensitive natural communities have been identified within the Project site.

Approximately, 0.009 acre (377 square feet) and 18 linear feet of the riparian habitat is expected to be temporarily impacted due to construction of the track overcrossing of Industrial Parkway. Impacts to this community are considered significant under CEQA and require mitigation. Impacts to riparian habitat may also require a CDFW Streambed Alteration Agreement and a RWQCB Water Quality Certification permit, which would require mitigation, annual monitoring, and reporting as part of permit compliance. To mitigate impacts to riparian habitat, a new mitigation measure, Mitigation Measure BIO-8 would be implemented. With implementation of Mitigation Measure BIO-8, impacts to riparian habitat would be less-than-significant.

Mitigation Measure BIO-8

Riparian Habitat. Prior to any vegetation removal or other work within the riparian corridor, BART shall notify the California Department of Fish and Wildlife pursuant to Section 1602 of the California Fish and Game Code. The notification will include measures to avoid and minimize impacts to riparian habitat. At a minimum, the following measures shall be implemented:

- Disturbance or removal of vegetation will not exceed the minimum necessary to complete the proposed Project.
- Protective fencing shall be placed along the drip line of riparian trees to prevent compaction of the root zone and to avoid damage to riparian vegetation by people or equipment.
- Branches and/or limbs overhanging the work areas that may be impacted will be properly pruned prior to mobilization of equipment under the supervision of a certified arborist.

- Temporarily disturbed areas shall be seeded with a riparian native seed mix. Riparian vegetation permanently impacted by the proposed Project shall be replaced at a minimum 1:1 ratio (square footage of trees/shrubs planted: square footage of herbaceous vegetation removed). All replacement trees and shrubs shall be of local stock and be native species. A Habitat Mitigation and Monitoring Plan shall be prepared with specific success criteria and contingency measures to be implemented if success criteria are not met. The plantings shall be monitored and maintained for five years or until the success criteria are met.

c. *Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?* ***(New Mitigation Required)***

As described above, the 2011 IS/MND determined that the HMC Project had the potential to indirectly affect drainages and wetlands areas in proximity to the site and identified Mitigation Measure BIO-1 to reduce these impacts to less than significant; no direct impacts to wetlands were identified in the 2011 IS/MND.

As described further below, implementation of the HMC2 Project would require fill of wetlands within the east side expansion area in order to provide sufficient storage capacity (250 vehicles) and to efficiently dispatch trains toward the north to San Francisco and Oakland. As a result, the Proposed HMC2 Project will result in new impacts to potential Waters of the U.S. and Waters of the State; therefore, new mitigation measures are required to ensure that impacts are reduced to a less-than-significant level.

Wetlands. Construction of the bioretention basin would impact the entire PW 1 wetland area. In addition, the conversion of the existing drainage to an underground culvert system, would impact the entire jurisdictional area identified as PW 2. Total impacts to wetlands would be 0.614 acre (26,746 square feet).

Other Waters of the U.S.BART has received an Approved Jurisdictional Determination (AJD) from the USACE for portions of the drainage designated as OWUS 1 and OWUS 1 (culverts). These two portions, accounting for 4,301 linear feet of the drainage, were determined to not fall under USACE jurisdiction and would not be impacted by the proposed Project. An additional OWUS (OWUS 2) was delineated during the 2021 delineation, but no impacts to this feature are anticipated. Therefore, no impacts to Waters of the U.S. are anticipated.

Waters of the State. The entirety of the 5,542 linear feet drainage designated as WS 1 is subject to regulation under the RWQCB. The vast majority of WS 1 would be converted to an underground culvert system, which would result in 0.760 acre (33,102 square feet) and 4,781 linear feet of impacts to the drainage. An additional drainage within RWQCB jurisdiction designated as WS 2 would have 0.038 acre (1,656 square feet) and 210 linear feet of permanent impacts associated with the construction of a pedestrian/golf cart bridge crossing. Total impacts to Waters of the State would be 0.798 acre (34,758 square feet) and 5,201 linear feet.

Riparian Habitat. As described above, total impacts to riparian habitat would be 0.009 acre (337 square feet) and 18 linear feet.

Table D describes the impacts to each aquatic feature as well as the USACE and RWQCB jurisdictional areas. Figures 19a and 19b depict the aquatic resources impacted by the proposed Project.

Table D: Potential Jurisdictional Wetlands/Waters Impacted by the Proposed Project

Feature	Jurisdictional Area within the Project Site	Impacted Area
PW 1	24,045 square feet 0.552 acre	24,045 square feet 0.552 acre
PW 2	2,701 square feet 0.062 acre	2,701 square feet 0.062 acre
PW 3	1,655 square feet 0.038 acre	None
Total Impacts to Wetlands of the U.S.	**28,401 square feet** **0.652 acre**	**26,746 square feet** **0.614 acre**
OWUS 2	3,348 square feet 0.077 acre 106 linear feet	No Impacts
Total Potential Other Waters of the U.S.	**20,031 square feet** **0.450 acre** **4,407 linear feet**	No Impacts
WS 1 (non-federal)	35,464 square feet 0.814 acre 5,542 linear feet	33,102 square feet 0.760 acre 4,781 linear feet
WS 2 (non-federal)	8,022 square feet 0.184 acre 997 linear feet	1,656 square feet 0.038 acre 210 linear feet
Total Waters of the State	**43,486 square feet** **0.998 acre** **6,539 linear feet**	**34,758 square feet** **0.798 acre** **5,201 linear feet**
RIP 1 (riparian habitat above OWUS 2)	3,715 square feet 0.085 acre 129 linear feet	377 square feet 0.009 acre 18 linear feet
Total Riparian Habitat	**3,715 square feet** **0.085 acre** **129 linear feet**	**377 square feet** **0.009 acre** **18 linear feet**

Source: *Northern Mainline Connector Project. Biological Resources Study.* Prepared for San Francisco Bay Area Rapid Transit District. June (WRECO 2022a).
OWUS = Other Waters of the U.S.
PW = Potential Wetland
RIP = Riparian Habitat
WS = Waters of the State

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FIGURE 19a

LSA

SOURCE: WRECO, 2021

BART HMC2 Project Supplemental IS/MND

Impacts to Aquatic Resources

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FIGURE 19b

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FEET

BART HMC2 Project Supplemental IS/MND
Impacts to Aquatic Resources

SOURCE: WRECO, 2021

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To mitigate impacts to wetlands and Waters of the State, a new mitigation measure, Mitigation Measure BIO-9 would be implemented. Implementation of Mitigation Measure BIO-9 would reduce potential impacts to wetlands to a less-than-significant level.

Mitigation Measure BIO-9 *State or Federally Protected Wetlands.* Prior to impacting any state or federally protect wetlands, BART shall obtain permits from the USACE (Clean Water Act [CWA] Section 404 permit), and Regional Water Quality Control Board (RWQCB, CWA Section 401 water quality certification). Impacts to wetlands shall be mitigated by providing compensatory mitigation at a minimum 1:1 ratio in area. A Habitat Mitigation and Monitoring Plan shall be prepared and implemented for proposed mitigation approaches. This plan shall be subject to approval by the USACE, RWQCB, and/or CDFW prior to any disturbance of wetlands.

d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? ***(No New Impact)***

The study area does not provide habitat connectivity for wildlife due to the surrounding vast network of city streets, SR 238, and the BART and UPRR rail corridors that traverse the site. Wildlife that dwell in urban environments, such as raccoons (*Procyon lotor*), skunks (*Mephitis mephitis*), and opossums (*Didelphis virginiana*), typically establish small territories from which they seldom venture. As described in Section 5.4.3(a) above, removal of trees, shrubs and other vegetation could impact nesting birds. Implementation of Mitigation Measures BIO-2 and BIO-3, identified in the 2011 IS/MND and described above, would reduce the Project's impact on nesting migratory birds to a less-than-significant level. With implementation of the mitigation measures identified in the 2011 IS/MND, no new or substantially more severe impacts related to wildlife movement would occur than have been analyzed in the prior environmental documents. No additional analysis is required.

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? ***(No New Impact)***

Pursuant to California Code Section 53090, as a rapid transit district, BART is exempt from local land use policies, plans, and zoning ordinances. However, BART provides information concerning local regulations for information purposes. Per the City of Hayward tree ordinance[35] (City of Hayward, 2020), protected trees are defined in Section 10-15.13 of Article 15 as:

- Trees having a minimum trunk diameter of 8 inches measured 54 inches above the ground. For multi-trunk trees, the diameters of the three largest trunks must be added together.
- A tree or trees of any size planted as replacement for a protected tree.

[35] Hayward, City of. Municipal Code. Article 15 Tree Preservation. Website: www.hayward-ca.gov/sites/default/files/Ch-10_A-15_TreePreservation.pdf (accessed: August 2, 2021).

- Trees of the following species that have reached a minimum of four inches diameter truck size:
  - California big leaf maple (*Acer macrophyllum*)
  - California buckeye (*Aesculus californica*)
  - Madrone (*Arbutus menziesii*)
  - Western dogwood (*Cornus nuttallii*)
  - California sycamore (*Plantanus racemosa*)
  - Coast live oak (*Quercus agrifolia*)
  - Canyon live oak (*Q. chrysolepis*)
  - Blue oak (*Q. douglassii*)
  - Oregon white oak (*Q. garryana*)
  - California black oak (*Q. kelloggi*)
  - Valley oak (*Q. lobata*)
  - Interior live oak (*Q. wislizenii*)
  - California bay (*Umbellularia californica*)

A total of 33 interior live oak trees that fall within the protected tree criteria would be removed for construction of the East Storage Yard component of the HMC2 Project. A total of 14 redwood and five mature willow trees would be removed for construction of the Northern Mainline Connector. Similar to the findings from the 2011 IS/MND, BART considers the proposed tree removal a potentially significant impact. Implementation of Mitigation Measure BIO-4, identified in the 2011 IS/MND and described above, would reduce potential impacts related to tree removal to a less-than-significant level. With implementation of Mitigation Measure BIO-4, no new impacts or substantially more severe significant impacts would occur.

*f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? **(No New Impact)***

No existing Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) cover the proposed Project area. The City of Hayward General Plan goal, NR-1 states that the City shall coordinate with Alameda County, the cities of Fremont and Union City, the Hayward Area Recreation and Park District, and the East Bay District to develop and adopt a comprehensive Habitat Conservation Plan for areas within and surrounding Hayward. Currently, the City has not adopted an HCP. The nearest adopted HCPs are the San Francisco Alameda Watershed HCP, the East Contra Costa County Habitat Conservation Plan, and the Santa Clara Valley Habitat Plan. The Project area is not located within the boundaries of either of these plans and therefore, there would be no impact to HCPs, NCCPs, or other local regional, or State habitat conservation plans.

5.5 CULTURAL RESOURCES

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

5.5.1 Background

The following analysis was prepared using background information obtained from the *BART Hayward Maintenance Complex Phase 2 Project – Cultural Resources Study*[36] and the *BART Hayward Maintenance Complex Phase 2 Project – Supplemental Cultural Resources Study.*[37]

The San Francisco Bay Area has a long and complex history of Native American habitation that dates to at least 10,000 years ago, and it was one of the most densely populated regions of California prior to European contact. From approximately 10,000 to 2,500 years ago, archaeological studies indicate that prehistoric groups were sparsely distributed, highly mobile, and foraged for resources. Populations are thought to have moved to new areas when old ones became depleted of resources or seasonally to exploit resources as they became available. Winters were spent in base camps along the coast, while groups moved to the interior valleys and hills during summers.

Hayward is within the ancestral territory of the Costanoan people, also commonly referred to as the Ohlone. Ohlone territory extended from the southern edge of the Carquinez Strait, south of Monterey Bay, and approximately 50 miles inland from the coast. The Ohlone lived in “tribelets” or village communities, which were autonomous political units that occupied a distinct territory. Village communities generally consisted of one main village occupied year-round and a series of small hamlets and resource gathering and processing locations occupied intermittently or seasonally. Tribal population within each territory ranged between 50 and 500 persons and was largely determined by the carrying capacity of the community’s territory. At the time of Euro-American contact, the Yrgin tribe occupied the area that includes present-day Hayward.

By the late 18th century, Spanish exploration and settlement of the Bay Area had dramatically transformed Ohlone culture. Spanish settlers moved into northern California and established the mission system. Mission records indicate the Yrgin were baptized between 1799 and 1805 at Mission San Jose. Following the secularization of the missions in 1834, many Ohlone worked as manual laborers and house servants on ranchos.

36 LSA. 2021. *BART Hayward Maintenance Complex Phase 2 Project – Cultural Resources Study.* March.

37 LSA. 2022c. *BART Hayward Maintenance Complex Phase 2 Project – Supplemental Cultural Resources Study.* June.

Alameda County takes its name from Alameda Creek. Alameda is a Spanish word meaning "place where the poplar trees grow," but it can be used to reference any tree-shaded area. In the fall of 1769, Gaspar de Portolá sent out an expedition led by José Francisco de Ortega to find an overland route from the eastern shore of the newly discovered San Francisco Bay to Point Reyes. In early 1769, the party crossed Alameda Creek into what would become Alameda County. A second expedition led by Pedro Fages crossed into the future Alameda County on April 1, 1772, while searching for an overland route to Point Reyes. Captain Juan Bautista de Anza came to Alameda County in early 1776 on an expedition to explore the Carquinez Strait. No further Spanish exploration of the Alameda County area is on record until 1795, when Sergeant Pedro Amador visited southern Alameda County while searching for a suitable location to establish the Mission San Jose.

The modern City of Hayward (City) is located on one of two divisions of Rancho San Lorenzo. The division containing Hayward and Castro Valley was awarded to Guillermo Castro in 1841 by Governor Juan B. Alvarado. Castro had a map surveyed for a town covering 28 blocks near his adobe home and began selling land to traders, one of which was William Hayward who built a general store and lodging house at present day A and Main Streets. This was located near the intersection of the main roads between Oakland and San Jose and the Castro and Livermore valleys. A settlement grew around these establishments and was initially called Haywards, then later shortened to Hayward.

The area around the Hayward settlement had rich soil and plentiful water to support farming and ranching industries. Several farms and ranches were established in the area, most ranging in size from 100 to 500 acres, though a few encompassed 1,000 acres or more.

Railroad development accelerated urban and agricultural growth in the region. A local rail line was established in 1865 with service between Hayward and Alameda, where trains connected with ferries to San Francisco. The line was bought by the Central Pacific Railroad, and by 1869, transcontinental trains began running through Hayward. In 1878, a second railroad began service along the Bayshore with a station at Eden Point.

Hayward had a population of 1,000 and a prosperous commercial district by 1870, and the settlement was incorporated in 1876. At that time, the town plat extended from the vicinity of present-day Mission Boulevard to Fourth Street; a street that marked Hayward's northern boundary; and E Street and Jackson Street marked the southern boundary. These boundaries would remain relatively unchanged for the next 30 to 40 years.

The early decades of the 20th century brought an influx of farmers and townspeople, which resulted in the expansion of Hayward's boundary and the division of larger farms into smaller farms. County roads were improved, and the City gained prominence in 1919 when the Hayward-San Mateo Bridge opened, and automobile traffic greatly increased. The 1920s were prosperous for Hayward as the population increased to 5,000 and the City's boundary expanded again. By the time the United States entered World War II in 1941, the City's population had grown to 7,000, but it remained an agricultural town.

Hayward's population doubled between 1941 and 1950. Housing tracts were built at the periphery of the City limits, which now extended to Tennyson Road in the south and to the Southern Pacific Railroad tracks in the west. The City also annexed a new municipal airport that had been constructed during World War II as a military airbase.

Hayward's population experienced unprecedented growth during the 1950s, and it reached 72,000 by 1960. This rapid population growth was facilitated in part by the opening of the Nimitz Freeway (Interstate 880). Extensive tracts of agricultural land between the City limits and Union City to the south and San Francisco Bay to the west were annexed. They were developed into residential subdivisions, shopping centers, and industrial parks, transforming Hayward into a suburban bedroom community. Employment opportunities were created during the 1960s and 1970s when Hayward experienced a surge in industrial development, facilitating additional population growth. To keep the costs of extending City water, storm drain, and sewer facilities for the larger population down, developers began to concentrate on constructing multi-family housing. Multi-family housing development continued into the 1980s, while in-fill construction of single-family detached homes on smaller lots became the predominant type of residential development during the 1990s. Near the end of the 1990s, townhouse developments became more common, especially in the downtown area. Today, Hayward is a highly urbanized community with most available land having been developed for housing, commercial, industrial, or other urban uses. The City is now focusing on maintaining and enhancing existing neighborhoods, business districts, and surrounding open areas.

5.5.2 Prior Environmental Analysis

The 2011 IS/MND concluded that although no prehistoric or archaeologically significant resources were identified in the 2011 Project area, construction of the proposed HMC Project could result in disturbance to buried prehistoric archaeological and/or human remains. No historic resources were identified on the Project site; therefore, no impacts to historic resources would occur. The 2011 IS/MND identified two mitigation measures to reduce impacts related to archaeological and/or human remains. These two mitigation measures would apply to the HMC2 Project:

Mitigation Measure CR-1 *Avoidance of Discovered Cultural Resources and Measures to Reduce Harm.* If evidence of an archaeological site or other suspected historic resource is encountered during construction, including darkened soil representing past human activity ("midden") that could conceal material remains (e.g., worked stone, faunal bone, hearths, or storage pit), all ground-disturbing activity within 100 feet of the find shall be halted and BART notified. BART will hire an archaeologist meeting the Secretary of the Interior's Standards for Professional Archaeologist to assess the find. Impacts to any significant resources may be mitigated through avoidance, data recovery, or other methods determined adequate by the qualified archaeologist and that are consistent with the Secretary of the Interior's Standards for Archeological Documentation. Any mitigation plan developed by the qualified archaeologist shall be approved by BART prior to implementation. Project-related ground-disturbing activities shall not be continued in the vicinity of any discovered resource until the significance of the resource is resolved, and mitigation action (if any) is completed.

Mitigation Measure CR-2 *Avoidance of Discovered Human Remains and Measures to Reduce Harm.* If human remains, including disarticulated or cremated remains, are discovered during any phase of construction, all ground-disturbing activities in the vicinity and any nearby area reasonably suspected to overlie adjacent human remains shall be immediately halted. BART and the Alameda County Coroner shall be notified immediately, according to Section 5097.98 of the State Public Resources Code and Section 7050.05 of California's Health and Safety Code. If the remains are determined by the County Coroner to be Native American, it is the responsibility of the County Coroner to inform the Native American Heritage Commission (NAHC) within 24 hours. The guidelines of the NAHC should be adhered to in the treatment and disposition of the remains. BART shall retain a qualified archaeologist who meets the Secretary of the Interior's Standards for Professional Archaeologist and with Native American burial experience to conduct a field investigation of the specific site and consult with the person identified as the Most Likely Descendent, if any, identified by the NAHC. BART shall approve any mitigation recommended by the qualified archaeologist prior to implementation, taking account of the provisions of State law as set forth in the California Environmental Quality Act (CEQA) Guidelines Section 15064.5(e) and Public Resources Code Section 5097.98. Approved mitigation must be implemented before resumption of ground-disturbing activities in the vicinity of where the remains were discovered.

With implementation of Mitigation Measures CR-1 and CR-2, the 2011 IS/MND concluded that impacts to prehistoric archaeological resources and human remains would be less than significant.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe significant impacts than were identified in the 2011 IS/MND with implementation of the mitigation measures identified in the 2011 IS/MND because the proposed modifications would occur within the boundaries of the Area of Potential Effects (APE) established for the HMC Project. No change to the previous CEQA determinations were identified.

5.5.3 Impact Analysis

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5? ***(No New Impact)***

For a cultural resource to be considered a historical resource (i.e., eligible for listing in the California Register of Historical Resources), it generally must be 50 years or older. Under CEQA, historical resources can include precontact (i.e., Native American) archaeological deposits, historic-period archaeological deposits, historic buildings, and historic districts. CEQA requires agencies considering projects that are subject to discretionary action to consider the potential impacts on cultural resources that may occur from project implementation (see *State CEQA Guidelines* Section 15064.5).

An APE was identified for the proposed Project for both direct and indirect impacts related to Project operation and construction. The APE covered the existing HMC facility, including the undeveloped portion of the HMC proposed for the Northern Mainline Connector extending north of Industrial Parkway. It also included all construction access routes, and staging areas.

A cultural resources records search was conducted on February 27, 2020, at the Northwest Information Center (NWIC) of the California Historical Resources Information System to identify previous cultural resources studies and site records for the APE and vicinity. The results of the search indicated no cultural resources have been recorded in or within a 0.5-mile radius of the APE.

Historic period maps and historic-period aerial photographs of the Project site indicate the APE was undeveloped, other than railroad tracks and the development of the BART facilities, indicating a low potential for intact cultural deposits at shallow depths just below the surface (e.g., artifact-filled features, such as wells or privies). Pedestrian field surveys of the APE were conducted on February 28, 2020, and on September 21, 2021, and no cultural resources were found.

Although no known built historic resources or historic archaeological resources have been identified on the Project site, it cannot be entirely ruled out that archaeological cultural resources could be encountered during construction at the Project site. Should archaeological deposits be encountered during Project ground disturbance, a substantial adverse change in the significance of a historical resource would occur from its demolition, destruction, relocation, or alteration such that the significance of the resource would be materially impaired (*State CEQA Guidelines* Section 15064.5(b)(1)). If such resources are encountered, implementation of Mitigation Measure CR-1, identified in the 2011 IS/MND would reduce any potential impacts to historic archaeological resources to a less-than-significant level. With adherence to Mitigation Measure CR-1, there would be no new or substantially more severe significant impacts to historic resources beyond what has been analyzed in the prior environmental documents. No additional analysis is required.

b. *Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?* ***(No New Impact)***

Pursuant to *State CEQA Guidelines* Section 15064.5(c)(1), "When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource." Those archaeological sites that do not qualify as historical resources shall be assessed to determine if they qualify as "unique archaeological resources" pursuant to California Public Resources Code (PRC) Section 21083.2.

Although no archaeological resources have been identified at the Project site, it cannot be entirely ruled out that archaeological cultural resources could be encountered during Project construction at the Project site. Should archaeological deposits be encountered during Project ground disturbance, a substantial adverse change in the significance of an archaeological resource would occur from its demolition, destruction, relocation, or alteration such that the significance of the resource would be materially impaired (*State CEQA Guidelines* Section 15064.5(b)(1)). If such resources are encountered, implementation of Mitigation Measure CR-1 from the 2011 IS/MND would reduce any potential impacts to archaeological and/or Native American resources to a less-than-significant level.

With adherence to previous Mitigation Measure CR-1, no new or substantially more severe significant impacts to archaeological resources would occur beyond what has been analyzed in the prior environmental documents. No additional analysis is required.

c. *Would the project disturb any humans remains, including those interred outside of formal cemeteries?* ***(No New Impact)***

Based on previous archaeological investigation and analysis, there is a low potential for the disturbance of archaeological cultural resources or human remains. However, if human remains are encountered at the Project site, State Health and Safety Code Section 7050.5 and *State CEQA Guidelines Section* 15064.5(e)(1) state that no further disturbance shall occur to the area of the find until the County Coroner has made a determination of origin and disposition of the human bone pursuant to PRC Section 5097.98. Mitigation Measure CR-2 outlines the actions required to comply with Section 7050.5 of the California Health and Safety Code and PRC Section 5097.98 regarding the treatment of human remains. If human remains are encountered, implementation of Mitigation Measure CR-2 from the 2011 IS/MND would ensure that potential impacts to human remains would be less than significant. With implementation of Mitigation Measure CR-2 as identified in the 2011 IS/MND, no new or substantially more severe significant impacts to human remains would occur beyond what has been analyzed in the prior environmental documents.

5.6 ENERGY

	New Potentially Significant Impact	**New Mitigation Required**	**Reduced Impact**	**No New Impact**
Would the project:				
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	☐	☐	☐	☒
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

5.6.1 Background

An analysis of potential energy consumptions and calculations were conducted for the Project and are presented as part of the Air Quality Impact Analysis (AQIA). The findings of the energy analysis are summarized below.

5.6.1.1 Regulatory Framework

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation (USDOT), the United States Department of Energy (DOE), and the United States Environmental Protection Agency (USEPA) are three federal agencies with substantial influence over energy policies and programs. Generally, federal agencies influence and regulate transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, funding of energy related research and development projects, and funding for transportation infrastructure improvements. On the state level, the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) are two agencies with authority over different aspects of energy.

The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CPUC serves the public interest by protecting consumers and ensuring the provision of safe, reliable utility service and infrastructure at reasonable rates with a commitment to environmental enhancement and a healthy California economy.

The CEC is the State's primary energy policy and planning agency. The CEC forecasts future energy needs, promotes energy efficiency, supports energy research, develops renewable energy resources and plans for and directs State responses to energy emergencies.

State Assembly Bill (AB) 1575, which created the CEC, amended Public Resources Code (PRC) Section 21100(b)(c) and *State CEQA Guidelines* Section 15126.4 to require Environmental Impact Reports (EIRs) to include, where relevant, proposed mitigation measures to minimize the wasteful, inefficient, and unnecessary consumption of energy caused by a project. Appendix F of the *State CEQA Guidelines* also states that the goal of conserving energy implies the wise and efficient use of energy and the means of achieving this goal, including: (1) decreasing overall per capita energy consumption; (2) decreasing reliance on fossil fuels such as coal, natural gas, and oil; and (3) increasing reliance on renewable energy sources.

Energy source emissions typically result from activities in buildings for which electricity and natural gas are used. The quantity of emissions is the product of usage intensity (i.e., the amount of electricity or natural gas) and the emission factor of the fuel source.

5.6.1.2 Energy Resources

Electricity. Electricity is a man-made resource. The production of electricity requires the consumption or conversion of energy resources (including water, wind, oil, gas, coal, solar, geothermal, or nuclear resources) into energy. Electricity is used for a variety of purposes (e.g., lighting, heating, cooling, and refrigeration, and for operating appliances, computers, electronics, machinery, and public transportation systems). According to the most recent data available, in 2018, California's electricity was generated primarily by natural gas (46.54 percent), renewable sources (32.35 percent), large hydroelectric (11.34 percent), nuclear (9.38 percent), coal (0.15 percent), and oil (0.02 percent). Total electric generation in California in 2018 was 285,488 gigawatt-hours (GWh), down 2 percent from the 2017 total generation. In 2018, California produced approximately 68.2 percent and imported 31.8 percent of the electricity it used.

According to the CEC, total electricity consumption in the PG&E service area in 2019 was 78,072 GWh (78,071,647,500 kilowatt-hours [kWh]). Total electricity consumption in Alameda County in 2019 was 10,684 GWh (10,684,085,867 kWh).

Natural Gas. Natural gas is a non-renewable fossil fuel. Fossil fuels are formed when layers of decomposing plant and animal matter are exposed to intense heat and pressure under the surface of the Earth over many years. Natural gas is a combustible mixture of hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas is found in naturally occurring reservoirs in deep underground rock formations. Natural gas is used for a variety of uses (e.g., heating buildings, generating electricity, and powering appliances such as stoves, washing machines and dryers, gas fireplaces, and gas grills). Natural gas consumed in California is used for electricity generation (45 percent), residential uses (21 percent), industrial uses (25 percent), and commercial uses (9 percent). California continues to depend on out-of-state imports for nearly 90 percent of its natural gas supply.

PG&E is the natural gas service provider for the City of Hayward. According to the CEC, total natural gas consumption in the PG&E service area in 2019 was 4,942 million therms (4,942,089,326 therms). Total natural gas consumption in Alameda County in 2019 was 384 million therms (384,150,526 therms).

Fuel. Petroleum is also a non-renewable fossil fuel. Petroleum is a thick, flammable, yellow-to-black mixture of gaseous, liquid, and solid hydrocarbons that occurs naturally beneath the earth's surface. Petroleum is primarily recovered by oil drilling. It is refined into a large number of consumer products, primarily fuel oil and gasoline. Gasoline is the most used transportation fuel in California, with 97 percent of all gasoline being consumed by light-duty cars, pickup trucks, and sport utility vehicles. According to the most recent data available, total gasoline consumption in California was

365,610 thousand barrels or 1,847.8 trillion British thermal units (BTU) in 2018. Of the total gasoline consumption, 349,108 thousand barrels or 1,764.4 trillion BTU were consumed for transportation. Based on fuel consumption obtained from EMFAC2017, vehicle trips in Alameda County in 2020 consumed 160,542,514 gallons of diesel fuel and 559,515,714 gallons of gasoline.

5.6.2 Prior Environmental Analysis

The topic of the Project's energy use was not analyzed in the 2011 IS/MND, the 2013 Addendum or the 2017 Second Addendum.

5.6.3 Impact Analysis

*a. Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation? **(No New Impact)***

The proposed Project would increase the demand for energy through day-to-day operations and fuel consumption associated with Project construction.

Construction. Construction of the proposed Project is anticipated to last 40 months and would require energy for activities such as the manufacture and transportation of building materials, demolition and grading activities, and building and infrastructure construction. Construction of the proposed Project would require energy to power construction-related equipment. The construction-related equipment would not be powered by natural gas, and no natural gas demand is anticipated during construction.

Transportation energy represents the largest energy use during construction and would occur from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction worker vehicles that would use petroleum fuels (e.g., diesel fuel and/or gasoline). Therefore, the analysis of energy use during construction focuses on fuel consumption. Construction trucks and vendor trucks hauling materials to and from the Project site are anticipated to use diesel fuel, whereas construction workers traveling to and from the Project site are anticipated to use gasoline-powered vehicles. Fuel consumption from transportation uses depends on the type and number of trips, vehicle miles traveled, the fuel efficiency of the vehicles, and travel mode.

Based on the proposed Project's anticipated construction schedule, equipment, and worker/truck trips, the proposed Project's construction activities would consume approximately 494,495 gallons of diesel fuel and approximately 27,566 gallons of gasoline during construction.[38] Based on fuel consumption obtained from EMFAC2017, vehicle trips in Alameda County in 2020 consumed 160,542,514 gallons of diesel fuel and 559,515,714 gallons of gasoline. As such, the proposed Project would increase the annual construction generated fuel use in Alameda County by

[38] California Air Resources Board (CARB). 2020. *MSEI - Documentation - Off-Road - Diesel Equipment*. Website: ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-road (accessed August 2021).

approximately 0.31 percent for diesel fuel usage and less than 0.01 percent for gasoline fuel usage. As such, Project construction would have a negligible effect on local and regional energy supplies.

In addition, construction activities are not anticipated to result in an inefficient use of energy, as gasoline and diesel fuel would be supplied by construction contractors who would conserve the use of their supplies to minimize their costs on the Project. Energy usage on the Project site during construction would be temporary in nature and would be relatively small in comparison to the State's available energy sources. Therefore, construction of the proposed Project would not result in the wasteful, inefficient, or unnecessary consumption of fuel or energy, and no new impact would occur.

Operation. Typically, energy consumption is associated with fuel used for vehicle trips and electricity and natural gas use. The proposed Project would consist of the East Storage Yard and a new trackway connection between the East Storage Yard and the BART mainline trackway to the north. Electricity for the majority of proposed Project facilities would be provided by PG&E; power for the contact rail system would be via BART's existing 34.5 kilovolt (kV) systems, which is stepped down to 1,000 volts. Power for the BART 34.5 kV system is provided by PG&E through substations located throughout the BART system.

No new activities or employees are planned at the new storage area. Rather, the new storage area would provide additional car storage capacity and increased operational flexibility for existing activities. As such, the proposed Project is not expected to generate new vehicle trips and would not increase gasoline fuel consumption. In addition, operation of the proposed Project would not require the consumption of natural gas. Therefore, energy use consumed by the proposed Project would primarily be associated with electricity consumption.

The proposed Project would result in an increase in electricity demand. All the equipment used for train maintenance work is electrically powered. As part of the HMC2 Project, a train wash facility would be constructed south of the vehicle storage facility near the rail storage racks. Water for the train wash facility would be heated using an electric water heater. In addition, embedded electrical conduit for traction power would be provided for power and communications circuits. A third rail to provide power to tracks and to power the vehicles would be installed. Two gap breaker stations and a train control house would also be included as part of the proposed Project and would result in an increase in electricity demand. In addition, light poles for security lighting would be added along the new trackway.

The proposed Project is expected to consume approximately 300,000 kWh per year. The existing HMC Yard consumes a gross load of 3,825,074 kWh and a net load of 3,480,190 kWh per year. Therefore, operation of the proposed Project would increase the annual electricity consumption at the HMC Yard by approximately 9 percent. In addition, as discussed above, total electricity consumption in Alameda County in 2019 was 10,684,085,867 kWh.[39] Therefore, operation of the proposed Project would increase the annual electricity consumption in Alameda County by less than

[39] California Energy Commission (CEC). 2020. Electricity Consumption by County. Website: ecdms.energy.ca.gov/elecbycounty.aspx (accessed October 2020).

0.01 percent. Therefore, electricity demand associated with Project operations would not be considered inefficient, wasteful, or unnecessary and no new impact would occur.

b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? ***(No New Impact)***

As discussed above, the CEC recently adopted the *2020 Integrated Energy Policy Report*. The Integrated Energy Policy Report provides the results of the CEC's assessments of a variety of energy issues facing California. In addition, BART has adopted a Sustainability Action Plan[40] that identifies, evaluates and prioritizes the most important actions BART can take to advance sustainability through 2025 and implement the revised 2017 Sustainability Policy. The Sustainability Action Plan includes actions to help meet adopted targets for BART's energy and greenhouse gas (GHG) emissions reductions.

As indicated above, energy usage on the Project site during construction would be temporary in nature and would be relatively small in comparison to the overall use in the County. In addition, energy usage associated with operation of the proposed Project would be relatively small in comparison to the overall use in Alameda County, and the State's available energy source. Therefore, energy impacts at the regional level would be negligible. Because California's energy conservation planning actions are conducted at a regional level, and because the proposed Project's total impact on regional energy supplies would be minor, the proposed Project would not conflict with or obstruct California's energy conservation plans as described in the CEC's Integrated Energy Policy Report. Additionally, as demonstrated above, the proposed Project would not result in the inefficient, wasteful, and unnecessary consumption of energy. Therefore, the proposed Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency and no new impact would occur.

[40] San Francisco Bay Area Rapid Transit District (BART). 2017a. *BART Sustainability Action Plan*. December. Website: www.bart.gov/sustainability (accessed December 15, 2021).

5.7 GEOLOGY AND SOILS

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
Would the project:				
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii. Strong seismic ground shaking?	☐	☐	☐	☒
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv. Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

5.7.1 Background

The proposed Project area is located on the eastern side of the San Francisco Bay within the Coast Range Geomorphic Province of California, a region shaped by complex and dynamic geologic processes. Faulting, folding, and erosion have produced the northwest-trending ridges and valleys, which characterize the Coast Ranges.

The proposed Project site is underlain by Quaternary alluvial deposits consisting of unconsolidated, poorly graded, permeable fine sands, and clays with coarse sand. Deposits include the early Holocene Temescal Formation and artificial fill. The Santa Clara Formation consists of alluvial fan deposits inter-fingered with lake, swamp, river channel and floodplain deposits. The Alameda Formation includes a sequence of alluvial fan deposits bounded by mud deposits on top and bottom of the formation. The Temescal Formation is an alluvial deposit consisting primarily of silts and clays with some gravel layers. Artificial fill is found mostly along the bay front and wetland areas and is derived primarily from dredging as well as quarrying, construction, demolition debris, and municipal waste. Lithology in the vicinity of the site consists of clay, silt, silty sand, and sand with gravel to approximately 60 feet below ground surface.

Settlement occurs in areas prone to different rates of ground surface sinking and densification (differential compaction). These areas are underlain by sediments that differ laterally in composition or degree of existing compaction. Differential settlement can damage structures and other subsurface features. Strong ground shaking can also cause soil settlement by vibrating sediment particles into more tightly compacted configurations, thereby reducing pore space. Unconsolidated, loosely packed alluvial deposits and sand are especially susceptible to this phenomenon. Poorly compacted artificial fills may experience seismically-induced settlement. BART Standard Specifications (BART Facilities Standards)[41] require that loads resulting from estimated amounts of differential settlement must be accounted for in the Project design.

5.7.2 Prior Environmental Analysis

The 2011 IS/MND determined that implementation of the HMC Project would result in less-than-significant impacts related to seismic ground shaking, seismic-related ground failure (e.g., liquefaction), erosion, and unstable and expansive soils. The 2011 IS/MND also determined that the HMC Project would have no impact related to fault rupture, landslide, septic systems, and paleontological resources. No mitigation measures were required.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe impacts related to geology and soils as the proposed modifications would be constructed within the same Project site evaluated in the 2011 IS/MND and would comply with BART Facilities Standards.

5.7.3 Impact Analysis

a. *Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:*

   i. *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?* ***(No New Impact)***

The proposed Project site is not within an Alquist-Priolo Earthquake Fault Zone.[42] The closest active fault is the southern segment of the Hayward Fault, approximately 3,000 feet (0.57 mile) east of the proposed Project site. Therefore, there would be no impact associated with fault rupture because there are no fault zones within the proposed Project site.

   ii. *Strong seismic ground shaking?* ***(No New Impact)***

The Project site and the entire San Francisco Bay Area are located in a seismically active region subject to strong seismic ground shaking. Ground shaking is a general term referring to all aspects of motion of the earth's surface resulting from an earthquake and is normally the major cause of

41 San Francisco Bay Area Rapid Transit District (BART). 2018. BART Facilities Standards, Standard Specifications, BFS R 3.1.2. April.

42 California Department of Conservation (DOC). 2019. EQ Zapp: California Earthquake Hazards Zone Application Website: maps.conservation.ca.gov/cgs/EQZApp/app/ (accessed: September 22, 2021).

damage in seismic events. The extent of ground-shaking is controlled by the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions. The magnitude of a seismic event is a measure of the energy released by an earthquake; it is assessed by seismographs that measure the amplitude of seismic waves. The intensity of an earthquake is a subjective measure of the perceptible effects of a seismic event at a given point. The Modified Mercalli Intensity (MMI) scale is the most commonly used scale to measure the subjective effects of earthquake intensity. It uses values ranging from I to XII.

Numerous faults in the region of the proposed Project could cause an earthquake that could affect the proposed Project site, most notably the San Andreas Fault. However, the United States Geological Survey (USGS) considers the most hazardous fault system in the Bay Area to be the Hayward and Rogers Creek Fault. The southern Hayward Fault ruptured in a magnitude 6.8 earthquake in 1868, causing extensive damage to man-made structures in downtown Hayward. Studies by the USGS indicate there is a 72 percent chance that an earthquake measuring magnitude 6.7 will occur by 2050.[43]

Mapping has been compiled by the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) for the likely shaking intensities in the Bay Area that would have a 10 percent chance of occurring in any 50-year period. A large earthquake (magnitude 6.7 or greater) on one of the major active faults in the region would generate violent (MMI 9) ground shaking at the Project site.[44]

The most significant adverse impact associated with strong seismic shaking is potential damage to structures and improvements. Although there is a potential for strong seismic ground shaking and structural damage to occur at the proposed Project site and possible ground failure (see Item a. (iii) below), the risk of excessive permanent damage would be minimized because the HMC2 components would comply with seismic safety standards per BART Facilities Standards, which incorporate the relevant seismic safety provisions of the California Building Code (CBC) and the Caltrans Bridge Design Specifications (CBDS), along with other professional industry standards.

Consequently, the proposed Project is not expected to expose people or structures to risks associated with strong ground shaking that could not be mitigated through standard engineering design. With adherence to required seismic safety standards, there would be no new or substantially more severe significant impacts related to ground shaking beyond what has been analyzed in the prior environmental documents.

iii. Seismic-related ground failure, including liquefaction? ***(No New Impact)***

The proposed Project site is in an active seismic region with potential for strong ground shaking that could cause liquefaction. According to California Geological Survey (CGS) mapping under the Seismic

43 United States Geological Society (USGS). 2020. Science Explorer. Earthquake Probabilities. Website: www.usgs.gov/science-explorer-results?es=earthquake+probabilities (accessed: September 29, 2020).

44 Metropolitan Transportation Commission (MTA) and Association of Bay Area Governments (ABAG). 2018. Probabilistic Earthquake Shaking Hazard Map. Website: mtc.maps.arcgis.com/apps/webappviewer/index.html? id=4a6f3f1259df42eab29b35dfcd086fc8 (accessed September 22, 2021).

Hazards Zone mapping program,[45] the northernmost portion of the proposed Project site requires special study for liquefaction hazard. Under the Seismic Hazards Mapping Act, appropriate site-specific geologic or geotechnical investigations must be performed and measures incorporated into the Project design to reduce potential damage. This requirement would be implemented through compliance with the general design policy of BART Facilities Standards' Structural Criteria for Seismic Design. In addition, the liquefaction potential was evaluated, and the results are included in the *Draft Foundation Report – Hayward Maintenance Complex Phase II – East Storage Project* (Draft Foundation Report).[46]

Lateral spreading involves the lateral displacement of surficial blocks of sediment (e.g., alluvium) as a result of liquefaction in a subsurface layer. The surficial mass moves toward an unconfined area, such as a descending slope, and can occur on slope gradients as gentle as one degree.[47] Given the potential for liquefaction in at least a portion of the site, lateral spreading is a potential hazard that would require site-specific evaluation and mitigation if any deep excavations are constructed.

In areas susceptible to liquefaction, the primary hazards are seismic-induced settlement and temporary increase in lateral earth pressures on below-grade structures. Methods considered to eliminate or minimize the effects of the seismic liquefaction include, but are not limited to, in-situ densification with stone columns, dynamic compaction, vibro-compaction, surcharging, and/or compaction grouting. Methods used to address this on recent BART projects include in-situ treatment/densification with vibro-replacement stone columns; load transfer to underlying bearing layers, which are non-liquefiable with soil/cement columns; and the over excavation method involving soil removal and replacement with compacted engineered fill. The exact method(s) to be used will be determined during final engineering in accordance with BART Facilities Standards Structural Criteria for Seismic Design along with the guidelines recommended in the Draft Foundation Report. Implementing these design requirements would reduce the potential exposure of people to hazards from seismic risk associated with liquefaction.

In 2017 and 2018, a total of 31 bores were conducted within the HMC property. For each bore, the liquefaction potential was evaluated, and the results are included in the Draft Foundation Report. Twenty of the locations were not considered susceptible to liquefaction. Estimated post-liquefaction settlement at the other 11 locations ranged from 0.22 to 3.31 inches. The Draft Foundation Report includes recommendations for each structure at the site that would be built on subsurface soils that may be prone to liquefaction. With the implementation of the recommendations in the Draft Foundation Report, the new Project components proposed are not expected to expose people or structures to seismic-related ground failure with liquefaction or lateral spreading. The impact would be less-than-significant, and no new impacts or increase in the severity of impacts would occur.

[45] California Department of Conservation (DOC). 2019. op. cit.

[46] Parikh Consultants, Inc. 2019a. *Draft Foundation Report – Hayward Maintenance Complex Phase II, East Storage Project.*

[47] Youd, T., et al. "Mapping liquefaction induced ground failure potential", in Proceedings of American Society of Civil Engineers, Journal of the Geotechnical Engineer Division, 1978; Tinsley, J., et al., Evaluating Liquefaction Potential. In *Evaluating Earthquake Hazards in the Los Angeles Region – an Earth Science Perspective,* USGS Professional Paper 1360, 1985, p. 263-315.

*iv. Landslides? **(No New Impact)***

The proposed Project site is located in a flat area and is not identified by the CGS as a seismically-induced landslide hazard zone requiring special study.[48] Consequently, the proposed Project components would not expose people or structures to landslides. No new or substantially more severe significant impacts related to landslide would occur.

*b. Would the project result in substantial soil erosion or the loss of topsoil? **(No New Impact)***

Construction activity anticipated for the proposed Project components would disturb soil that could be subject to wind or water erosion. The potential for soil erosion exists during the period of earthwork activities and between the time when earthwork is completed and new vegetation is established or hardscape is installed. Exposed soils could be entrained in stormwater runoff and transported off the Project site. Construction specifications require the preparation of a Stormwater Pollution and Prevention Plan (SWPPP) prior to any ground disturbance activities as required by the National Pollutant Discharge Elimination System (NPDES) General Permit (GP) for Construction (Order 2009-009-DWQ). The SWPPP would provide the details of the erosion control measures to be applied on the Project site during the construction period, including Best Management Practices (BMPs) for erosion control that are recognized by the San Francisco Bay RWQCB. Additional details regarding the SWPPP are provided in Section 5.10, Hydrology and Water Quality.

In addition, the proposed Project would be required to comply with BART Facilities Standards, which identify specific methods to be used to prevent erosion of excavated areas, embankments, stockpiled earth materials and other erodible construction areas, as well as shoring of excavated areas to protect workers from potential hazards. In accordance with BART Facilities Standards, any salvaged topsoil from stripped and excavated areas would be stockpiled on the site at appropriate locations and protected to prevent contamination by other materials. Stockpiled topsoil would be placed in areas to be landscaped.

With the implementation of these specifications, there would be no substantial soil erosion or loss of topsoil. No new or substantially more severe significant impacts related to erosion would occur.

*c. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? **(No New Impact)***

See Section 5.7(a(iii)) above, regarding lateral spreading and liquefaction. Potential effects associated with weak or unstable soils can be reduced or eliminated when they are re-engineered for stability prior to use. An acceptable degree of soil stability could be achieved for expansive or compressible soils through routine soil treatment programs (replacement, grouting, compaction, drainage control, etc.). Properly designing buildings and roads can offset the limited ability of the soil to support a load. All Project components would be constructed in accordance with the BART Facilities Standards, which would ensure that impacts associated with on- or off-site landslide,

[48] California Department of Conservation (DOC). 2019. op. cit.

lateral spreading, subsidence, liquefaction or collapse would be less-than-significant. No new impacts or substantially more severe significant impacts related to unstable souls would occur.

d. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? ***(No New Impact)***

Soils at the proposed Project site (Rincon clay loam, 0-2% slopes; Clear Lake clay, 0-2% slopes, drained) have a high shrink-swell potential.[49] Expansive soils could potentially damage foundations, pavements, and other rigid structures installed as part of the proposed Project. BART Facilities Standards require that proposed components be designed to account for soil expansion. Standard engineering practices would be implemented where necessary to minimize the potential for damage from expansive soils. The specific practices used will be selected during the final design stages of the proposed Project but may involve the treatment of expansive soils with lime to reduce expansion potential, the installation of structures that can withstand pressures generated by expansive soils, and/or the replacement of expansive soils with non-expansive fill material. Compliance with the practices and standards set forth in the BART Facilities Standards would ensure that impacts related to expansive soils would be less than significant. No new or substantially more severe significant impacts related to expansive soils would occur.

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? ***(No New Impact)***

The proposed Project would not involve the use of septic systems. Therefore, there would be no impact associated with septic systems. No new impacts or substantially more severe significant impacts related to expansive soils would occur.

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? ***(No New Impact)***

Paleontological resources are non-renewable fossilized evidence of previous animal and plant life found in the geologic record. The evidence contains the remains or traces of the past life that has existed during the 600-million-year geological history of the San Francisco Bay Region.[50] A review of the geologic map of San Francisco Bay Region indicates the region is underlain by Holocene alluvium in the northern portion of the Project area and Pleistocene alluvium in the southern end of the Project area. Both formations have a low potential to contain significant paleontological resources. Therefore, the proposed Project would not be expected to affect significant paleontological resources. No new or substantially more severe significant impacts to paleontological resources would occur.

[49] United States Department of Agriculture (USDA), Soil Conservation Service. Soil Survey of Alameda County, California, Western Part, 1981, pp.10,23.

[50] R.W. Graymer. B.C. Moring, G.J. Saucedo, C.M. Wentworth, E.E. Brabb, and K.L. Knudsen. 2006. *Geologic Map of the San Francisco Bay Region.*

5.8 GREENHOUSE GAS EMISSIONS

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
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?	☐	☐	☐	☒

5.8.1 Background

Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. The Earth's average near-surface atmospheric temperature rose 0.6 ± 0.2° Celsius (°C) or 1.1 ± 0.4° Fahrenheit (°F) in the 20th century. The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of carbon dioxide (CO_2) and other greenhouse gases (GHG) are the primary causes of the human-induced component of warming. GHGs are released by the burning of fossil fuels, land clearing, agriculture, and other activities, and they lead to an increase in the greenhouse effect.[51]

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, which is believed to be causing global climate change. The gases that are widely seen as the principal contributors to human-induced global climate change are:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)

Some of these GHGs are present in the atmosphere naturally, including CO_2, CH_4, and N_2O. These GHGs are released by natural sources or formed from secondary reactions taking place in the

[51] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the heat escaping, greenhouse gases, like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relative even temperature. Without the greenhouse effect, the Earth would be a froze globe; thus, although an excess of greenhouse gas results in global warming, the naturally occurring greenhouse effect is necessary to keep our planet at a comfortable temperature.

atmosphere, but they are also released from human activities. Some GHGs are entirely new in the atmosphere, like HFCs, PFCs, and SF_6, and the only source of these gases is human activity.

Effects from global climate change may arise from temperature increases, climate-sensitive diseases, sea-level rise, extreme weather events, and reduced air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more heat-related health issues like heat stress and heat stroke. In addition, climate-sensitive diseases may increase, such as those spread by mosquitoes and other disease-carrying insects. Such diseases include malaria, dengue fever, yellow fever, and encephalitis. Global climate change may also contribute to air quality problems from increased frequency of smog and particulate air pollution.[52] Rising temperatures cause ice caps to melt and water to expand, leading to rising sea levels.

5.8.2 Prior Environmental Analysis

The 2011 IS/MND determined that the HMC Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases and would not result in significant operational GHG-related impacts. However, the 2011 IS/MND determined that construction of the HMC Project would generate short-term GHG emissions, totaling approximately 786 tons of CO_2/year. Although the BAAQMD CEQA Guidelines do not include quantitative significance criteria for construction-related GHG emissions, BAAQMD suggests implementation of Best Management Practices (BMPs) to reduce GHG emissions during project construction. Mitigation Measure GHG-1 was identified to reduce potential GHG impacts associated with Project construction to a less-than-significant level:

Mitigation Measure GHG-1 *Construction-Related Greenhouse Gas Best Management Practices.* BART shall ensure implementation of the following mitigation measures during Project construction, in accordance with Bay Area Air Quality Management District (BAAQMD) standard mitigation recommendations which suggest:

- Use alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment for at least 15 percent of the fleet;
- Use local building materials (within 100 miles) of at least 10 percent; and
- Recycle or reuse at least 50 percent of construction waste or demolition materials.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe significant impacts than

52 United States Environmental Protection Agency (USEPA). 2016. Climate Impacts on Human Health. April. Website: 19january2017snapshot.epa.gov/climate-impacts/climate-impacts-human-health_.html, last updated on February 24, 2017 (accessed April 2020).

were identified in the 2011 IS/MND. No change to the previous CEQA determinations were identified.

5.8.3 Impact Analysis

a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? ***(No New Impact)***

This section discusses the Project's impacts related to the release of GHG emissions for both construction and operational phases of the Project.

Construction. Construction activities associated with the proposed Project would produce combustion emissions from various sources. During construction, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, lead agencies are encouraged to quantify and disclose GHG emissions that would occur during construction. Using CalEEMod, it is estimated that construction of the proposed Project would generate a total of approximately 4,995.4 metric tons of CO_2e during construction of the proposed Project. California Emissions Estimator Model (CalEEMod) output sheets are provided in Appendix B. Implementation of the Mitigation Measures AQ-2 and GHG-1 would further reduce construction-related GHG emissions by reducing the amount of construction vehicle idling and by requiring the use of properly maintained equipment and by implementing BAAQMD-recommended Best Management Practices (BMPs), respectively. With implementation of these mitigation measures, construction-related GHG emissions would be less than significant.

Operation. Long-term GHG emissions are typically generated from mobile and area sources as well as indirect emissions from sources associated with energy consumption. Mobile-source GHG emissions include project-generated vehicle trips to and from a project. Area-source emissions would be associated with activities such as landscaping and maintenance on the Project site. Energy source emissions are typically generated at off-site utility providers as a result of increased electricity demand generated by a project. Waste source emissions generated by the proposed Project include energy generated by land filling and other methods of disposal related to transporting and managing project-generated waste. In addition, water source emissions associated with the proposed Project are generated by water supply and conveyance, water treatment, water distribution, and wastewater treatment.

As discussed above, similar to current operations of the HMC, operation of the HMC2 would occur 24 hours a day. Operations of HMC2 would increase the level of train movement activity in the Project area, as eventually 12 trains could be dispatched from the east side storage tracks and use the Northern Mainline Connector to join the northbound mainline in the morning and return at the end of the operating day. Train movements in the connecting tracks would range from 10 to 30 miles per hour as trains prepared to merge with mainline train traffic. Though designed primarily for train storage, the new storage area would be designed to allow train operations on the west side of the yard (such as train dispatch) to move to the expansion area at some time in the future.

Current operations at the HMC do not involve the use of equipment that emit substantial amounts of GHG emissions (e.g., portable diesel powered equipment like generators, power washers); all the equipment used for train maintenance work is electrically powered. As part of the HMC2 Project, a train wash facility would be constructed south of the vehicle storage facility near the rail storage racks. Although washing and other maintenance activities would increase with Project implementation, the HMC's reliance on electrically powered equipment for this maintenance work would continue. Thus, there would be no increase in GHG emissions from on-site use of equipment that emit substantial amounts of GHG emissions, such as portable powered equipment.

The proposed Project would result in an increase in energy source emissions. Light poles for security lighting would be added along the new trackway. The Project would result in low levels of off-site emissions due to energy generation associated with proposed lighting and operation of the train wash. In addition, since the BART trains are electrically powered, the increased activity of trains would generate energy source emissions. However, these emissions would be minimal and would not exceed GHG thresholds established by the BAAQMD.

As discussed in the Project Description, BART activities are cyclical and the number of employees at the Hayward Yard increases or decreases depending on various BART operations and maintenance activity occurring at the time. Currently, there are approximately 370 BART employees at the Hayward Yard, distributed over 24 hours and several shifts. No new activities or employees are planned for the new storage area. Rather, the new storage area would provide additional BART car storage capacity and increased operational flexibility for existing BART activities. As such, the proposed Project is not expected to generate new employee vehicle trips. Therefore, with implementation of the Project, there would not be an increase in GHG emissions associated with employee vehicle trips.

Therefore, the proposed Project would not result in substantial increase in GHG emissions and would not exceed GHG thresholds established by the BAAQMD. No new impacts or substantially more severe significant impacts would occur. No additional analysis is required.

b. *Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?* ***(No New Impact)***

While there are no adopted federal regulations for the control or reduction of GHG emissions, the United States Environmental Protection Agency (USEPA) commenced several actions in 2009 to implement a regulatory approach to global climate change, including the 2009 USEPA final rule for mandatory reporting of GHGs from large emission sources in the U.S. Additionally, the USEPA Administrator signed an endangerment finding action in 2009 under the federal Clean Air Act, finding that six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to global climate change, leading to national GHG emission standards.

California's major initiative for reducing GHG emissions is Assembly Bill (AB) 32, passed by the State legislature on August 31, 2006. AB 32 is aimed at reducing GHG emissions to 1990 levels by 2020. AB 32 requires the California Air Resources Board (CARB) to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change. The AB 32 Scoping Plan has a range of GHG reduction actions, which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms (e.g., cap-and-trade system), and an AB 32 implementation fee to fund the program.

Executive Order (EO) B-30-15 added the immediate target of reducing GHG emissions to 40 percent below 1990 levels by 2030. CARB released a second update to the Scoping Plan, the 2017 Scoping Plan,[53] to reflect the 2030 target set by EO B-30-15 and codified by Senate Bill (SB) 32. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reduction target of at least 40 percent below 1990 levels by 2030 contained in EO B-30-15. SB 32 builds on AB 32 and keeps us on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels. The companion bill to SB 32 (i.e., AB 197) provides additional direction to the CARB related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 that is intended to provide easier public access to air emissions data collected by the CARB was posted in December 2016.

As identified above, the AB 32 Scoping Plan contains GHG reduction measures that work towards reducing GHG emissions, consistent with the targets set by AB 32, EO B-30-15, and codified by SB 32 and AB 197. The measures applicable to the proposed Project include energy efficiency measures, water conservation and efficiency measures, and transportation and motor vehicle measures, as discussed below.

Energy efficient measures are intended to maximize energy efficiency building and appliance standards, pursue additional efficiency efforts (including new technologies and new policy and implementation mechanisms), and pursue comparable investment in energy efficiency from all retail providers of electricity in California. In addition, these measures are designed to expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings. The proposed Project would result in low levels of off-site emissions due to energy generation associated with the lighting and other electrical-powered activities. In addition, since the BART trains are electrically powered, the increased activity of trains would generate energy source emissions. However, these emissions would be minimal and would not conflict with any of the energy efficient measures, as described in Section 5.6, Energy.

Water conservation and efficiency measures are intended to continue efficiency programs and use cleaner energy sources to move and treat water. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions. The proposed Project would include new maintenance and storage facilities for BART; however, it is not expected to result in significant water usage, as described in Section 5.19, Utilities and Service Systems. Therefore, the proposed Project would not conflict with any of the water conservation and efficiency measures.

53 California Air Resources Board (CARB). 2017, op. cit.

The goal of transportation and motor vehicle measures is to develop regional GHG emission reduction targets for passenger vehicles. Specific regional targets for transportation emissions would not directly apply to the proposed Project. In addition, the proposed Project would be consistent with these strategies as the Project would include new maintenance and storage facilities for BART. The use of BART would help to reduce the demand for travel by single occupancy vehicles. As such, the Project would promote initiatives to reduce vehicle trips and vehicle miles traveled and would increase the use of alternate means of transportation. Therefore, the proposed Project would not conflict with the identified transportation and motor vehicle measures.

In addition, as required by SB 375, all metropolitan regions in California must complete a Sustainable Communities Strategy (SCS) as part of a Regional Transportation Plan. In the Bay Area, the Metropolitan Transportation Commission (MTC), and Association of Bay Area Governments (ABAG) are jointly responsible for developing and adopting an SCS that integrates transportation, land use and housing to meet GHG reduction targets set by the CARB. Developed by MTC and ABAG, Plan Bay Area 2050[54] is a State-mandated, integrated long-range transportation and land use plan. Plan Bay Area 2050 includes 35 strategies covering four elements: housing, the economy, transportation, and the environment. These strategies advance the region toward the adopted vision of a Bay Area that is affordable, connected, diverse, healthy, and vibrant for all residents, with a strong focus on measuring equity outcomes. As discussed above, the proposed Project would promote initiatives to reduce vehicle trips and vehicle miles traveled and would increase the use of alternate means of transportation, consistent with the goals of Plan Bay Area 2050.

The proposed Project would comply with existing State and regional regulations adopted to achieve the overall GHG emissions reduction goals identified in AB 32 and would be consistent with applicable plans and programs designed to reduce GHG emissions. Therefore, the proposed Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. No new impacts or substantially more severe significant impacts would occur.

54 Metropolitan Transportation Commission and Association of Bay Area Governments. 2021. *Plan Bay Area 2050*. October.

5.9 HAZARDS AND HAZARDOUS MATERIALS

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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?	☐	☐	☐	☒

5.9.1 Background

Hazardous materials are chemicals that could potentially cause harm during an accidental release or mishap, and are defined as being toxic, corrosive, flammable, reactive, and irritant, or strong sensitizer.[55] Hazardous substances include all chemicals regulated under the United States Department of Transportation's (USDOT) "hazardous materials" regulations and the United States Environmental Protection Agency's (USEPA) "hazardous waste" regulations. Hazardous wastes require special handling and disposal because of their potential to damage public health and the environment. The probable frequency and severity of consequences from the routine transport, use, or disposal of hazardous materials is affected by the type of substance, the quantity used or managed, and the nature of the activities and operations.

In order to document environmental hazards on the site, including potential Recognized Environmental Conditions (RECs) and Controlled Recognized Environmental Conditions (CRECs), a

55 A "sensitizer" is a chemical that can cause a substantial proportion of people or animals to develop an allergic reaction in normal tissue after repeated exposure to a chemical (U.S. Department of Labor).

Phase I Environmental Site Assessment (ESA) was prepared for the HMC2 Project.[56] The Phase I ESA evaluated the potential for past land uses to have impacted the environmental condition of the site through the review of historical information sources (e.g., historic aerial photos and maps) and government databases that list hazardous materials release sites and facilities that handle hazardous materials. A field reconnaissance survey was conducted to evaluate the existing conditions in and near the Project area.

The Phase I ESA visual inspection of the site resulted in the following findings:

- Railroad ties (treated wood – creosote), heavy metals (lead and arsenic), hydrocarbons (TPH as motor oil, hydraulic oil, and diesel), fossil fuel combustion products (polyaromatic hydrocarbons [PAHs] and semi volatile organic compounds [SVOCs]), transformers (polychlorinated biphenyls [PCBs]) and capacitors (metals); and

- Historical agricultural land use in the surrounding area (organochlorine and organophosphorus pesticides, metals).

Government Code Section 65962.5 states that the California Department of Toxic Substances Control (DTSC) shall compile and maintain annually a list of hazardous waste facilities subject to corrective action as part of the Health and Safety Code. This list is commonly referred to as the Cortese List. Cortese List data resources include EnviroStor, GeoTracker, and the Environmental Data Resources (EDR) search. The Phase I ESA reviewed these resources for all sites within a 1-mile radius of the proposed Project. Table E lists the adjoining properties that were identified in the EDR database and includes a summary of the Contaminants of Concern (COCs) discovered at the site, the remediation action required, the current case status, and a low, medium, high ranking of the potential pollution risk. As shown in Table E, sites within and adjacent to the Project area were listed in some of the federal and State agency databases.

As shown in Table E, a total of 10 sites are located within a 1-mile radius of the proposed Project site. Nine of the sites are listed as having a low potential pollution risk, while one is ranked as having a moderate risk. Six of the sites are listed as case closed or no further action is required. One of the sites is listed as "not applicable" because violations were issued for non-reporting of hazardous materials rather than remedial clean-up measures. Two sites are actively conducting site clean-up. The Sohay site located on Industrial Parkway is 200 feet north of the Project site and has been found to have several hazardous materials as shown in Table E. The Former Holiday Bowl site on Mission Boulevard is located 1,600 feet east of the Project area and was found to also have hazardous materials.

56 WRECO. 2020. *Hayward Maintenance Complex (Phase 2) Project – Phase I Environmental Site Assessment.* Prepared for San Francisco Bay Area Rapid Transit.

Table E: Hazardous Materials Sites Identified within One Mile of the Project Area

Property Address (Location in Relation to Project Area)	Previous Business Name	Database	Current Use	Summary/Pollutant	Case Status	Potential Pollution Risk (Low, Moderate, High)
INDUSTRIAL PARKWAY (between Pacific Street and Dixon Street) HAYWARD, CA 94544 200 feet north of Project site APNs 083-460-010 and 083-460-011	Sohay	EnviroStor	Housing	The currently vacant site is the location of a former railroad embankment. San Francisco Bay Area Rapid Transit District and the Alameda County Flood Control and Water Conservation District used to operate and reside on the property in the mid-1970s. The site is found to have elevated arsenic in soil, suspected to be from weed and pest abatement. Elevated lead and SVOC concentrations have also been identified. The report has sent in a Request for Agency Oversight Application. DTSC was assigned to be the lead agency. The report entered into DTSC in January 2019. Upon review of the submitted Preliminary Endangerment Assessment (PEA) -Equivalent Report, DTSC determined there were data gaps that needed to be resolved. A PEA Workplan will soon be approved, after which point additional sampling work can start. After work is completed, a PEA Report will be submitted. Following submittal of the PEA Report, next steps will be determined for the Site. Updated 08/2019	Voluntary Cleanup, Active as of 10/1/2018	Low
28901, 28937, AND 28953 MISSION BOULEVARD HAYWARD, CA 94544 2,825 feet north of Project site APNs 78C-441-1-16, 78C-441-1-17, and 78C-441-1-28	Perry and Key Body Shop	EnviroStor	Multi-family Housing	The roughly rectangular shaped site is located in Hayward and is bordered by Mission Boulevard to the northeast, and residential land uses to the northwest, southwest, and southeast. Across Mission Boulevard are commercial land uses. The site's southeastern area is occupied by building that has been vacant since September 2006. Prior to this, the building was used by a body shop (Perry and Key), a glass shop, an auto service facility, a muffler and brake repair shop, and an upholstery shop. The northwestern area of the Site was	Voluntary Cleanup, No Further Action as of 11/29/2012	Low

Table E: Hazardous Materials Sites Identified within One Mile of the Project Area

Property Address (Location in Relation to Project Area)	Previous Business Name	Database	Current Use	Summary/Pollutant	Case Status	Potential Pollution Risk (Low, Moderate, High)
				occupied by a car wash. West of the vacant building, the terrain slopes downward, and there is an area that was used for auto storage.		
29318 PACIFIC STREET HAYWARD, CA 94544 1,150 feet north of Project site APN 83-455-5-2	Lew's Diesel Repair	GeoTracker	Junk Yard and Mobile Home Park	Diesel leaking from a UST. Non-drinking groundwater was contaminated.	Completed, Case Closed as of 7/20/2004	Low
29705 MISSION BLVD HAYWARD, CA 94544 1,600 feet east of Project site APN 78G-2651-9-2	Former Holiday Bowl	GeoTracker	Vacant Lot	Site containing a bowling alley and strip mall. Historic Perchloroethylene (PCE) use at dry cleaning shop impacted soil. Former gas station UST leak impacted soil and groundwater with petroleum products. Currently under site assessment to determine extent of PCE contamination.	Open Remediation as of 10/22/2017	Moderate
29705 MISSION BLVD HAYWARD, CA 94544 1,600 feet east of Project site APN 78G-2651-9-2	Beacon Gas Station	GeoTracker	Vacant Lot	The site is located at 29705 Mission Boulevard in Hayward, California. It is on the southern corner of the intersection of Industrial Parkway and Mission Boulevard, approximately 3 miles east of Interstate 880. The site was developed with an automotive service/gas station in 1964 and operated on site until the mid-1980s. It has been vacant since the Beacon Service Station #12546 (3546) was closed. The site is at the north corner of a larger property known as the Holiday Bowl Site (29827-29705 Mission Boulevard and 411-427 Industrial Parkway). (Well Installation Report, August 20, 2015)	Completed, Case Closed as of 4/11/2018	Low

Table E: Hazardous Materials Sites Identified within One Mile of the Project Area

Property Address (Location in Relation to Project Area)	Previous Business Name	Database	Current Use	Summary/Pollutant	Case Status	Potential Pollution Risk (Low, Moderate, High)
29874 MISSION BLVD HAYWARD, CA 94544 2,280 feet east of Project site APN 83-251-84	76 Service Station	GeoTracker	7 Eleven	Diesel and Gasoline spills from a LUST. Non-drinking groundwater was contaminated. Monitoring wells were installed, and soil excavation occurred to mitigate the contaminants.	Completed, Case Closed as of 9/15/2011	Low
29900 MISSION BLVD HAYWARD, CA 94544 2,280 feet east of the Project site APN 83-220-2-3	Arco Gas Station	GeoTracker	Chevron Station	Gasoline was found in the soil and non-drinking groundwater from a LUST. Groundwater and soil were tested and treated through excavation and pump and treat systems.	Completed, Case Closed as of 11/18/2004	Low
29945 MISSION BLVD HAYWARD, CA 94544 Adjoining the Project area APN 78G-2651-17-2	Hayward Golf Course	GeoTracker	Hayward Golf Course	A leak was reported that contaminated the soil on this site. As the site has been cleaned, there is no further action needed.	Completed, Case Closed as of 10/18/1996	Low
150 SANDOVAL WAY HAYWARD, CA 94544 Target Property APN 475-21-7	HMC Yard	EDR	HMC Yard	Various site violations including not informing the proper authorities of on-site materials and some on-site LUSTs.	Not Applicable	Low

Table E: Hazardous Materials Sites Identified within One Mile of the Project Area

Property Address (Location in Relation to Project Area)	Previous Business Name	Database	Current Use	Summary/Pollutant	Case Status	Potential Pollution Risk (Low, Moderate, High)
29234 MISSION BLVD HAYWARD, CA 94544 2,280 feet northeast of Project site APN 78C-455-1-4	Pestana Property	GeoTracker	Vacant Lot	The site is located at 29236 Mission Boulevard in the City of Hayward, California, Alameda County, and historically contained a former automotive service station with a pump island and product dispensers. Fuel hydrocarbons leaked into the soil from former USTs. An asphalt paved parking lot contains a former concrete pad that served as the dispenser islands for the former gas station. The site's main entrance is located on the west side and a gated chain link fence provides vehicle access to the asphalt parking area. To characterize the magnitude and extent of petroleum contamination at the site, numerous soil borings were advanced and multiple groundwater monitoring wells and soil vapor probes were installed, Soil, soil vapor, and groundwater samples collected and analyzed in laboratories revealed concentrations of fuel hydrocarbons and volatile organic compounds above applicable screening levels to protect human health and groundwater. Two excavations conducted at the site identified and removed contaminated soil to over 15 feet below the ground surface. The site is slated for redevelopment with a residential use.	Completed, Case Closed as of 8/15/2019	Low

Source: *Hayward Maintenance Complex (Phase 2) Project – Phase I Environmental Site Assessment.* Prepared for San Francisco Bay Area Rapid Transit (WRECO 2020).
APN = Assessor's Parcel Number
DTSC = Department of Toxic Substances Control
LUST = Leaking Underground Storage Tank
SVOC = Semi-Volatile Organic Compounds
UST = Underground Storage Tanks

Based upon the results of the database searches and visual inspections, the Phase I ESA recommended a Phase II ESA with soil sampling in the proposed Project area to evaluate soil for COCs, confirm the presence or absence of RECs identified during the Phase I ESA, evaluate soil disposal and/or reuse, and provide specific guidance for waste management and worker safety during excavation and construction.

Consistent with the recommendations of the Phase I ESA, a Phase II ESA was performed to verify the presence/absence of RECs, to evaluate the available options for soil disposal or reuse during construction, and to provide specific guidance for waste management and worker safety during construction. Soil sampling was conducted within the northeastern undeveloped area and eastern storage area of the Project site.

A subsurface investigation was conducted on December 3, 5, and 18, 2018, and January 23-24, 2019, involving shallow soil sampling of 28 borings in areas proposed for excavation associated with the HMC2 Project. Each boring was sampled between 0-5 feet below ground surface (bgs), depending on the method of soil sampling. Soil samples were analyzed for various contaminants of concern including: metals (lead and arsenic), heavy metals, pH, oil and grease, PAHs, SVOCs, PCBs, total petroleum hydrocarbons (TPH) and organic and inorganic pesticides and herbicides.

The soil analytical results were reviewed for the listed COCs and screened against the RWQCB Environmental Screening Levels (ESL)[57] and the Office of Environmental Health Hazard Assessment (OEHHA) California Human Health Screen Levels (CHHSL).[58] These screening criteria take into consideration direct exposure human health risk levels and shallow soil exposure to residential, commercial/industrial, and construction workers (any land use/any depth soil exposure). Under most circumstances, the presence of a chemical in soil, soil-gas, or groundwater at concentrations below the corresponding ESL/CHHSL can be assumed to not pose a significant threat to human health, water resources, or the environment. None of the 28 soil samples had metal concentrations exceeding total threshold limit concentrations (TTLC) or exceeding 10 times the soluble threshold limit concentration (STLC) values.

Detectable arsenic concentrations ranged from 3.9 to 15 milligrams per kilogram (mg/kg) in 25 soil samples collected. Widely accepted background levels of arsenic in soil in the Bay Area, range from 1.2 to 22 mg/kg with a mean of 8.2 mg/kg.[59] These values do not exceed 10 times the STLC value of 5 milligrams per liter (mg/L) and may be pre-classified as Non-Hazardous. The arsenic

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[57] San Francisco Bay Regional Water Quality Control Board. January 2019. Environmental Screening Levels. Website: www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.shtml (accessed: March 7, 2019).

[58] United States Environmental Protection Agency (USEPA). 1980, H.R. 7020 — 96th Congress, United States. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, (Superfund) (42 U.S.C. 9601 et seq.) Pub. L 96-510. Website: www.govtrack.us/congress/bills/96/hr7020 (accessed: February 12, 2019.)

[59] Duvergé, Dylan Jacques. 2011. *Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Region.* December.

concentrations were within the widely accepted background levels for the area but above the RWQCB ESLs for arsenic in soil.

Detectable chromium concentrations ranged from 31 to 49 mg/kg in 19 soil samples collected. These values are do not exceed 10 times the STLC value of 5 mg/L and may be pre-classified as Non-Hazardous. These samples did exceed the ESLs and CHHSLs for residential, commercial/industrial, and construction worker exposure limits (Cr VI - cancer risk); however, the concentrations are below ESLs and CHHSLs for Cr III and VI – non-cancer hazard (there are no values for total chromium).

In total, 22 soil samples were analyzed for pH, which ranged from 6.85 to 8.84. These concentrations are within the threshold (greater than 2 and less than 12.5) for State and federal waste criteria for reuse (for soil that does not exceed other STLC concentrations). Laboratory analyses indicated that detectable concentrations of pesticides were identified in four borings at the Project site. Soil from these sample locations (S-8, S-9, and S-11) had dieldrin and/or endrin (chemicals found in organophosphorous pesticides aka insecticides) concentrations exceeding the ESLs. Soil from the sample location S-24 had a Benzo[a]pyrene concentration above the ESLs.

5.9.2 Prior Environmental Analysis

The 2011 IS/MND determined that impacts related to the routine transport, use or disposal of hazardous materials; emission of hazardous materials within 0.25 mile of an existing or proposed school; and impacts to emergency response would be less than significant. No impacts related to airport safety hazards or wildland fire were identified. However, the 2011 IS/MND determined that excavation activities associated with implementation of the HMC Project could expose contaminated soils and/or groundwater associated with known hazardous materials release on a neighboring site, as well as potentially unreported releases associated with existing activities at the HMC Yard. If found, contamination would potentially pose a health risk to construction workers at the Project site and may require special soil management and disposal procedures to ensure that contaminated soil and/or groundwater are managed in accordance with applicable laws and regulations. Exposing workers and employees during construction to any contaminated materials would be a potentially significant impact. Mitigation measures were identified to reduce potential impacts to a less-than-significant level. The following mitigation measures would apply to the proposed Project:

Mitigation Measure HAZ-1 *File Review and a Phase I ESA Prior to Construction.* Prior to construction, BART shall conduct an environmental site assessment (ESA) to further analyze potential hazardous materials and waste sites around the Project site. BART shall ensure that additional research, including a file review with the Alameda County Department of Environmental Health and the Regional Water Quality Control Board (RWQCB) and a Phase I ESA for the west side expansion area, is performed. If the file review reveals no potential impact from environmental contamination, no further action to remedy soil or groundwater contamination would be necessary.

Mitigation Measure HAZ-2 *Further Soil and Groundwater Investigations Prior to any Construction Activities.* If the file review under Mitigation Measure HAZ-1 above reveals potential environmental contamination along or beneath the proposed Project's footprint or other facilities, BART shall evaluate the sites to determine the level of investigation appropriate to evaluate the possible presence of hazardous chemicals in soil and groundwater. In the event soil and/or groundwater testing is deemed appropriate, BART shall ensure that a Phase II soil and groundwater investigation is conducted in the affected areas, including field sampling and laboratory analysis, to evaluate conditions where excavation and grading will take place. The Phase II investigation shall be completed prior to any construction or excavation work, and a schedule shall be developed in the pre-design phase of the Project to ensure that a sufficient amount of time is allotted prior to site development to identify and implement actions to investigate the presence of hazardous substances in soil and groundwater, and to identify design and contingency measures in the event that the results of the investigation indicate the need for further testing, site controls, or remediation.

The number, location of field samples, and constituents tested would depend on the size of the impacted site, site activities, and possible transport or migration routes. Field samples may include soil, soil gas, or groundwater, depending on the nature of the contaminants suspected to be present. The sampling plan shall specify that all soil and groundwater chemical analyses shall be performed by a California-certified laboratory, using standard United States Environmental Protection Agency (USEPA) and California chemical testing methods. The investigation results shall, if necessary, lead to preparation of a:

- Remedial Action Plan for soil and groundwater treatment and disposal;
- Health and Safety Risk Assessment; and
- Soil management plan with criteria for impacted soils, in consultation with the Department of Toxic Substances Control (DTSC) and RWQCB.

If necessary, a Remedial Action Plan shall be prepared to identify options for remediation of the contaminated site. If the proposed remedial approach does not involve complete source removal, a Health and Safety Risk Assessment shall be completed. Work in impacted areas will be conducted in accordance with applicable

California Occupational Safety and Health Administration (Cal OSHA) requirements.

Mitigation Measure HAZ-3 *Remediation of Contaminated Sites Prior to Construction.* If hazardous materials are identified in soil and groundwater at levels that present a risk to the public, to construction workers, or to the environment, based on the investigations described in Mitigation Measure HAZ-2 above, BART shall ensure that remediation is conducted at contaminated sites pursuant to applicable laws and regulations. A Remedial Action Plan may be developed if warranted to address potential air and health impacts from soil excavation activities, potential transportation impacts from the removal of remedial activities, and potential risks of public upset should there be an accident at excavation sites. During excavation activities, construction workers or the public may be exposed to contaminants in the soil through ingestion, dermal contact, inhalation of fugitive dust, and inhalation of volatile emissions. The Site-Specific Health and Safety Plan will include measures to mitigate these potential impacts, such as cordoning off excavation sites to prevent public access, water misting to control dust during removal activities, perimeter air monitoring for dust along the site boundaries both upwind and immediately downwind of site excavation and stockpiling activities, and air monitoring of volatile organic compounds (VOC). All exposed contaminated materials shall be covered at the end of each day. Excavation work shall be performed in compliance with all United States Department of Labor) Occupational Safety and Health Administration (OSHA) rules and regulations.

Mitigation Measure HAZ-4 *Discovered Environmental Contamination During Construction.* In the event that soil, groundwater, or other environmental medium with suspected contamination is encountered unexpectedly during construction activities after implementation of Mitigation Measure HAZ-3, BART's contractor shall cease work in the vicinity of the suspect material, the area shall be secured as necessary, and the contractor shall take all appropriate measures to protect human health and the environment. Appropriate measures shall include notification of the applicable regulatory agency(ies) as necessary, to identify the nature and extent of contamination. Work shall not resume in the area(s) affected until the measures have been implemented under the oversight of the corresponding regulatory agency(ies), as appropriate.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe significant impacts than were identified in the 2011 IS/MND with implementation of the mitigation measures identified in the 2011 IS/MND. No change to the previous CEQA determinations were identified.

5.9.3 Impact Analysis

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? ***(No New Impact)***

Day-to-day operations at the HMC facility would include train and track maintenance, overhaul activities, storage, and cleaning cars and equipment. Currently, BART stores chemicals associated with day-to-day maintenance and train-washing and cleaning operations, including hydraulic/motor oil, solvents, lubricant grease, chemicals (such as sodium hydroxide, sulfuric acid, tri-phenyl phosphate, monoethanolamine, and molybdenum disulfide, among others), train batteries, oxygen and compressed nitrogen, and paints and varnishes at the HMC facility.

Operations at the East Storage Yard would be limited to car storage and car interior cleaning. Therefore, it is anticipated that operations would include storage of cleaning compounds and solvents used to wash interiors and equipment. Hazardous materials (e.g., oil, grease, fuels, solvents, and paints) also would be transported and used on site during proposed construction activities. The routine transport, use, or disposal of these hazardous materials could pose a potential hazard to construction workers and future employees working at the Project site as they would be handling the hazardous materials and could, therefore, be exposed through inhalation of vapors, direct contact with skin, or accidental ingestion. The routine transport, use, or disposal of these hazardous materials would not pose a significant hazard to the public or environment unless the hazardous materials were accidentally spilled or released into the environment, as discussed in Section 5.9.3(b) below.

The Hayward Fire Department was designated as the Certified Unified Program Agency (CUPA) that coordinates and enforces numerous local, State, and federal hazardous materials management and environmental protection programs for the City through the following programs:

- Hazardous Materials Business Plan Program and hazardous materials reporting through the California Environmental Reporting System (CERS)
- Hazardous waste generator and/or treatment permitting
- Underground storage tank (UST) program
- Aboveground storage tanks (AST) program
- California Accidental Release Prevention (CalARP)

The role of a CUPA is to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities associated with the regulation of hazardous materials and hazardous wastes. Businesses that store or use hazardous materials in Alameda County are required to submit chemical and facility information on the CERS, which is a statewide web-based system to support CUPAs in electronically collecting and reporting various hazardous materials-related data as mandated by the California Health and Safety Code and 2008 legislation (AB 2286). Chapter 6.95 of Division 20 of the California Health and Safety Code requires that a Hazardous Materials Business Plan (HMBP) must be submitted to the local CUPA if on-site hazardous materials exceed in aggregate any of the following: 55 gallons for liquids; 500 pounds for solids; or 200 cubic feet of gases at standard temperature and pressure. HMBPs are required to be submitted electronically to the CERS and must include facility information, a Hazardous Materials Inventory Statement, an Emergency Response Plan, and an Emergency Response Training Plan. The HMBP has to be re-certified for completeness and accuracy every year, or updated and revised as necessary. Operational activities associated with the HMC2 Project would be similar to those that already occur at the HMC site. As with current operations, operation of the proposed HMC2 Project would adhere to and comply with the existing HMBP for the entire HMC facility.

The Oil Pollution Prevention regulation promulgated under the authority of Section 311 of the Clean Water Act (CWA) sets forth requirements for prevention of, preparedness for, and response to oil discharges at specific non-transportation related facilities. To prevent oil from reaching navigable waters or adjoining shorelines, and to contain discharges of oil, the regulation requires these facilities to develop and implement Spill Prevention, Control, and Countermeasure (SPCC) Plans and establishes procedures, methods, and equipment requirements. In compliance with these requirements, BART implemented an SPCC Plan for the entire HMC Yard,[60] which identifies emergency procedures in the event of a hazardous materials spill, and ways to contain any potential contamination. Specifically, the SPCC Plan calls for protecting all storm drain and sewer inlets in and near the release site using plugs or spill booms; isolating the spill by placing booms or absorbent material around the edges of the spill to prevent further spread; stopping the source of the release by plugging the leak; placing the leaking container on or in secondary containment, or transferring the material to a new container; absorbing the release material using spill booms or diatomaceous earth; and containing the spill clean-up waste in appropriate containers for disposal. Consistent with current operations at the HMC facility, operation of the HMC2 Project would adhere to the existing SPCC Plan.

Worker health and safety is regulated at the federal level by the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). OSHA regulations include training requirements for construction workers and a requirement that hazardous materials are accompanied by manufacturer’s Safety Data Sheets (SDSs). The Federal Occupational Safety and Health Act of 1970 authorizes states to establish their own safety and health programs with OSHA approval. Worker health and safety protections in California are regulated by the California Department of Industrial Relations (DIR). The DIR includes the Division of Occupational Safety and Health (DOSH), which acts to protect workers from safety hazards through its California OSHA (Cal/OSHA) program. Cal/OSHA regulations include requirements for protective clothing, training, and limits on exposure to hazardous materials. California standards for workers dealing with hazardous materials are contained in California Code of Regulations (CCR) Title 8 and include practices for all industries (General Industrial Safety Orders), and specific practices for construction, and other industries. The routine transport, use, and disposal of hazardous materials at the Project

60 San Francisco Bay Area Rapid Transit (BART). 2020. *Hayward Yard Facility - Spill Prevention, Control, and Countermeasure Plan.*

site during operation and construction activities would be required to comply with a Project Health and Safety Plan (HASP) prepared in accordance with CCR Title 8, which would mitigate potential health hazards for workers related to the routine transport, use, or disposal of hazardous materials to a less-than-significant level.

By adhering to the existing HMBP, SPCC Plan, and HASP, future accidental spills or releases from day-to-day operations associated with the proposed Project would be contained, recycled, and disposed of properly in compliance with federal, State, and local regulations. Therefore, potential hazards associated with routine use of hazardous materials would be less than significant.

Additionally, operations associated with the proposed Project would not involve the routine transport of hazardous materials. Disposal of chemicals and any hazardous materials used in day-to-day operations of the HMC2 Project would adhere to hazardous materials handling and disposal regulations set forth under the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the California Hazardous Waste Control Law. Overall, the proposed Project is not expected to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

During Project construction, hazardous materials such as fuel, lubricants, paint, sealants, and adhesives would be transported and used at the Project site. The proposed Project would be required to comply with federal, State, and local regulations regarding the transportation, use, and disposal of hazardous materials, including preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) that requires implementation of control measures for hazardous material storage and soil stockpiles, inspections, maintenance, and training, and containment of releases to prevent runoff into existing storm collection systems or waterways. Compliance with existing regulations and implementation of the SWPPP during construction would ensure that potential impacts associated with hazardous material use, transport, and disposal are considered less than significant. Therefore, no new impacts or substantially more severe significant impacts would occur.

b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? ***(No New Impact)***

As discussed in Section 5.9.3(a) above, during construction and operation of the proposed Project, compliance with the existing hazardous materials regulations and programs described above, including requirements for HMBPs and Risk Management Plans(RMPs) for facilities handling significant quantities of hazardous materials, OSHA and Cal/OSHA regulations, CCR Title 8; and the USDOT, RCRA, and State regulations, would reduce the potential for releases of hazardous materials that would be routinely transported, used, disposed of during construction and operation of the proposed Project.

Past releases of hazardous materials on and adjacent to the Project site have resulted in contamination of soil and groundwater, as described above. The public and/or the environment could be affected by the past releases of hazardous materials by exposing the environment, workers, and/or the public to potentially contaminated soil, and/or groundwater during construction and/or operation activities, which involve excavation and site grading to accommodate proposed Project components. If found, contamination could potentially pose a health risk to construction workers at the Project site and may require special soil management and disposal procedures to ensure that contaminated soil and/or groundwater are managed in accordance with applicable laws and regulations.

As described above, in compliance with Mitigation Measure HAZ-2 identified in the 2011 IS/MND, a Phase II ESA was performed to verify the presence/absence of RECs, to evaluate the available options for soil disposal or reuse during construction, and to provide specific guidance for waste management and worker safety during construction. Soil sampling was conducted within the northeastern undeveloped area and eastern storage area of the Project site.

Soils were analyzed for COCs, and the results were screened pursuant to RCRA and California hazardous waste criteria, and Tier 1 ESLs from the RWQCB. Together, the total lead and California Wet Extraction Testing (CA WET) results indicate that shallow soils at the Project site are not contaminated soil and reuse of these soils on the Project site is unrestricted.

None of the samples exceeded the STLC limit; therefore, soil from the Project site may be pre-classified for disposal as non-hazardous or reused on site during construction. Consistent with CCR Title 22 disposal unit classification system, excavated soil can be reused as inert soil.

Some of the boring samples tested from the Project site for arsenic and chromium had detectable arsenic concentrations from 3.9 to 15 mg/kg, which are above all the RWQCB ESLs. In addition, the samples also had detectable chromium concentrations from 31 to 49 mg/kg, which are above all the RWQCB ESLs. The arsenic and chromium levels do not exceed the TTLC/STLC limits. Soil from these sample locations should be managed for worker safety during construction. As required in Mitigation Measure HAZ-3, a Remedial Action Plan and Site-Specific Health and Safety Plan would be prepared to mitigate potential impacts related to excavation of these site soils. Implementation of Mitigation Measures HAZ-3, and HAZ-4, identified in the 2011 IS/MND would ensure that potential impacts associated with encountering contaminated groundwater, and/or disturbance/re-use of soil impacted with hazardous materials would be less than significant. No new impacts or substantially more severe significant impacts would occur.

c. *Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?* ***(No New Impact)***

The Bidwell Elementary School, located at 175 Fairway Street in Hayward is approximately 300 feet east of the Project site. Other schools in the vicinity of the Project site, include Treeview Elementary School, approximately 0.5 mile to the east, Conley Caraballo High School, located approximately 0.5 mile to the east, Northstar School, approximately 0.35 mile to the east, and Mission Hills Middle School, located approximately 0.35 mile to the east. As described in Sections 5.8(a) and 5.8(b), BART would be required to comply with all applicable local, State, and federal regulations and standards related to hazardous emissions and materials, including implementation of the existing SPCC Plan and HMBP for the HMC facility. In addition, Mitigation Measures HAZ-1 through HAZ-4, identified in the 2011 IS/MND would apply to the proposed Project. With implementation of the mitigation measures identified in the 2011 IS/MND and compliance with regulatory requirements, impacts associated with the emission or handling of hazardous materials within 0.25 mile of an existing or proposed school would be less than significant. No new impacts or substantially more severe significant impacts would occur.

d. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? ***(No New Impact)***

Government Code Section 65962.5 states that the California Department of Toxic Substances shall compile and maintain annually a list of hazardous waste facilities subject to corrective action as part of the Health and Safety Code. This list is commonly referred to as the Cortese List. Cortese List data resources include EnviroStor, GeoTracker, and the EDR search. As described in Section 5.9.1, the Phase I ESA reviewed these resources for all sites within a 1-mile radius of the proposed Project. The existing HMC facility is listed on the EDR database; however, the area proposed for the HMC2 Project is not included on lists of hazardous materials release sites compiled pursuant to Government Code Section 65962.5. As discussed above, the disturbance of soil impacted with hazardous materials could result in a release of hazardous materials into the environment. Implementation of Mitigation Measures HAZ-1 through HAZ-4 would reduce potential impacts associated with the release of hazardous materials to less than significant. Therefore, no new impact or substantially more severe significant impact related to being located on a list of hazardous materials site compiled pursuant to Government Code Section 65962.5 would occur.

e. Would the project be located within an airport land use plan or, where such a plan has not been adopted, within 2 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 New Impact)***

The proposed Project site is not in the vicinity of a public or private airport. The closest airport to the Project site is the Hayward Executive Airport, which is located approximately 5 miles northwest of the Project site. No other public or private airstrips are in the vicinity of the proposed Project. Therefore, there would be no impact to people residing or working within 2 miles of a public airport or public use airport.

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? ***(No New Impact)***

The proposed Project site is located within an undeveloped portion of the existing HMC property. Fire and emergency vehicle access to the Project site would be from the main entrance at 951 Whipple Road and via a new paved roadway that would extend the length of the proposed Project and terminate at the north end of the Project site. The existing exterior streets that would be used to access the Project site are built to City of Hayward and City of Union City standards and would not be modified. Interior access roads in the developed portion of the HMC Yard are constructed to the BART Facilities Standards, thereby ensuring that emergency vehicles can readily and easily access the Project site. Therefore, the proposed Project would not impair the implementation of, or interfere with, an adopted emergency response plan or emergency evacuation plan. No new impacts or substantially more severe significant impacts related to implementation of an adopted emergency response plan or emergency evacuation plan would occur.

g. *Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?* ***(No New Impact)***

The proposed Project site is in an urbanized area within the City of Hayward and is not adjacent to wildlands. As such, the proposed Project would not be subject to wildland fire risks. Therefore, no new or substantially more severe significant impacts related to wildland fires would occur.

5.10 HYDROLOGY AND WATER QUALITY

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

5.10.1 Background

A Water Quality Assessment Report (WQAR)[61] was prepared for the proposed Project, which provides data on surface water and groundwater resources within the Project area and the water quality of these waters, describes water quality impairments and beneficial uses, and identifies potential water quality impacts/benefits associated with the proposed Project, and recommends Project features for potential impacts. The findings of the WQAR are summarized below.

5.10.1.1 Hydrology

A majority of the proposed Project area lies within the Old Alameda Creek Watershed that drains the Hayward hills and a large area of the East Bay plain into the historical channel of Alameda Creek and ultimately into Lower San Francisco Bay. The southern tip of the Project area is within the Dry Creek subwatershed of the Alameda Creek Watershed, which drains Walpert Ridge in the East Bay hills and flows southwest into the Alameda Creek Flood Control (ACFC) Channel.

[61] WRECO. 2022b. *San Francisco Bay Area Rapid Transit District Hayward Maintenance Complex (Phase 2) Project Water Quality Assessment Report*. Prepared for San Francisco Bay Area Rapid Transit District. June.

The Project's three receiving water bodies are two engineered channels designated by the Alameda County Flood Control and Water Conservation District (ACFCWCD) as Zone 3A, Line N and Zone 3A, Line D, and Dry Creek; these features are shown on Figure 20. Zone 3A, Line N begins at around 170 feet southwest of the Carroll Ave/Geneva Avenue intersection and runs almost parallel to the eastern boundary of the proposed Project area. This channel collects and conveys runoff from the golf course and other surrounding landscape sources. The Zone 3A, Line N channel flows into the Zone 3A, Line D channel near the northern portion of the proposed Project area. The Zone 3A, Line D channel originates in the Hayward hills approximately 1.2 miles east of the north portion of the proposed Project area, and runs perpendicular to the proposed Project area, crossing the Project site at Industrial Parkway. The Zone 3A, Line D storm drain system receives stormwater discharges from the northern portion and a part of the southern portion of the Project site. The Zone 3A, Line D channel is diverted through underground storm drain systems as it approaches lower elevations along the SR 238 corridor and residential areas between the proposed Project area and SR 238. The Zone 3A, Line D channel flows into Ward Creek approximately 1.5 miles southwest of the proposed Project. Ward Creek then connects to the Old ACFC Channel, which eventually outfalls into Lower San Francisco Bay.

Existing drainage facilities within the HMC2 Project site includes drainage inlets, pipes, drainage ditches, and berms to contain and direct runoff from the BART tracks, known as the TL track, the HMC storage area, and access road. The local drainage pattern within the proposed Project site consists of runoff that sheet flows to roadside ditches, underdrain systems, or existing grate inlets to a piped storm drainage system. This runoff accumulates in a drainage ditch and flows to the wetlands at the northern end of the site. Ponded stormwater within the wetland eventually discharges into Zone 3A, Line N through a 24-inch corrugated metal pipe (CMP) in the UPRR embankment. However, the existing 24-inch CMP is not adequate to handle accumulated flow and may be non-functional.[62] During a 100-year flow event, the accumulated flow of 63.50 cubic feet per second (cfs) creates ponding in the wetlands and pools up to an elevation of 19.3 feet on the site.

5.10.1.2 Groundwater

The proposed Project is located within the Santa Clara Valley-Niles Cone Subbasin of the Santa Clara Valley Groundwater Basin. Depth to groundwater near the Project study area ranges from approximately 5 to 10 feet below ground surface at the northern portion and from approximately 18 to 19 feet below ground surface at the southern portion of the Project site. Groundwater flow direction is typically to the south-southwest.

The Alameda County Water District (ACWD) is the Groundwater Sustainability Agency for the Niles Cone Subbasin. The ACWD's Groundwater Management Policy, adopted January 26, 1989, and amended March 22, 2001, describes the groundwater management and protection policies for the subbasin. The ACWD submitted an Alternative to a Groundwater Sustainability Plan for the Niles Cone Subbasin to the California Department of Water Resources (DWR) in 2019 and will submit an updated version in 2022.

62 WRECO. 2021b. op. cit.

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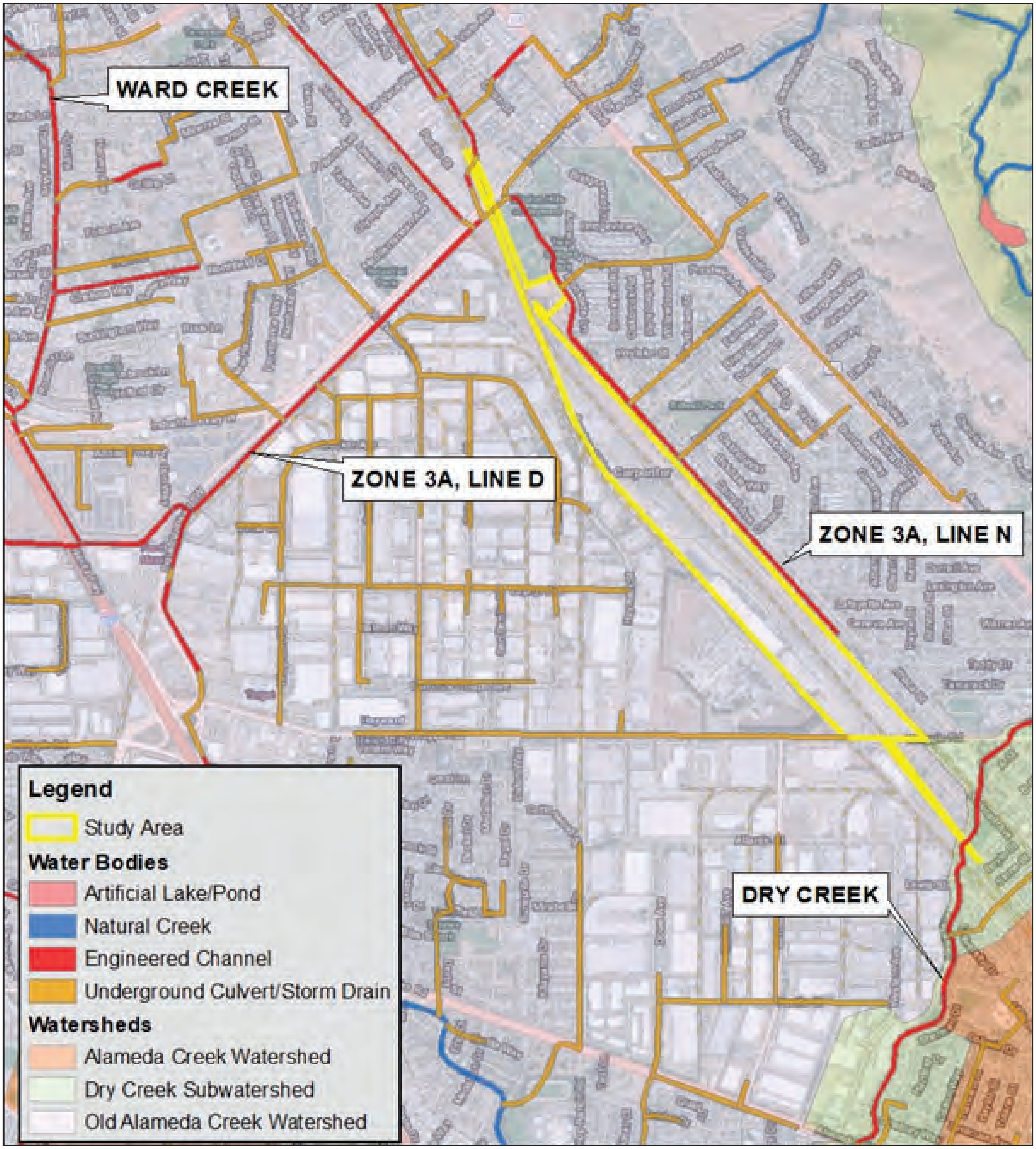

FIGURE 20

LSA

N

0 0.15 0.3

MILES

SOURCE: WRECO, 2021

BART HMC2 Project Supplemental IS/MND

Watershed Map

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5.10.1.3 Floodplains

The Federal Emergency Management Agency (FEMA) is the lead federal agency responsible for flood hazard assessment and mitigation and is the nationwide administrator of the National Flood Insurance Act of 1968 enacted to protect lives and property, and to reduce the financial burden of providing disaster assistance. FEMA has adopted the 100-year floodplain as the base flood standard for the National Flood Insurance Program (NFIP). FEMA issues the Flood Insurance Rate Maps (FIRMs) for communities that participate in the NFIP. These FIRMs present delineations of flood hazard zones.

In California, nearly all the State's flood-prone communities participate in the NFIP, which is locally administered by the DWR's Division of Flood Management. Under California's NFIP, communities have a mutual agreement with the State and federal government to regulate floodplain development according to certain criteria and standards set by the NFIP. As part of the NFIP, typically, each county (or community) has a Flood Insurance Study (FIS) that is used to locally develop FIRMS and Base Flood Elevations.

According to the Project Floodplain Evaluation Report, the proposed Project is located within FEMA FIRMS 06001C0293G and 06001C0431G (see Figure 21). Floodplains designated Zone AE are located along Zone 3A, Line D, and floodplains designated Zone X are associated with Zone 3A, Line D and Zone 3A, Line N (see Figure 21).

5.10.1.4 Water Quality Regulations

Clean Water Act. The USEPA adopted the Clean Water Act (CWA) in 1977 to set a framework for establishing regulations to protect the chemical, physical, and biological integrity of the nation's waters. Section 401 of the federal CWA requires an applicant for a federal license or permit to conduct any activity, which may result in a discharge to Waters of the U.S., to obtain certification from the State that the discharge will comply with other provisions of the act. A Section 401 Water Quality Certification is also required under the State Porter-Cologne Act which predates the CWA and regulates discharges to Waters of the State. Waters of the State include more than just Waters of the U.S., like groundwater and surface waters not considered Waters of the U.S. Additionally, it prohibits discharges of "waste" as defined and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA. The applicable waste discharge requirements for the Hayward Yard are contained in the National Pollutant Discharge Elimination System (NPDES) *General Permit for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities*[63] (Industrial General Permit) and *the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities*[64] (Construction General Permit), which are described further below.

63 State Water Resources Control Board (SWRCB). 2020. Order No. 2014-0057-DWQ as amended by Order 2014-0057-DWQ and Order 2015-0122-DWQ. Industrial General Permit Order 2014-0057-DWQ as amended in 2015 and 2018 (EFFECTIVE July 1, 2020).

64 State Water Resources Control Board (SWRCB). 2009. Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ.

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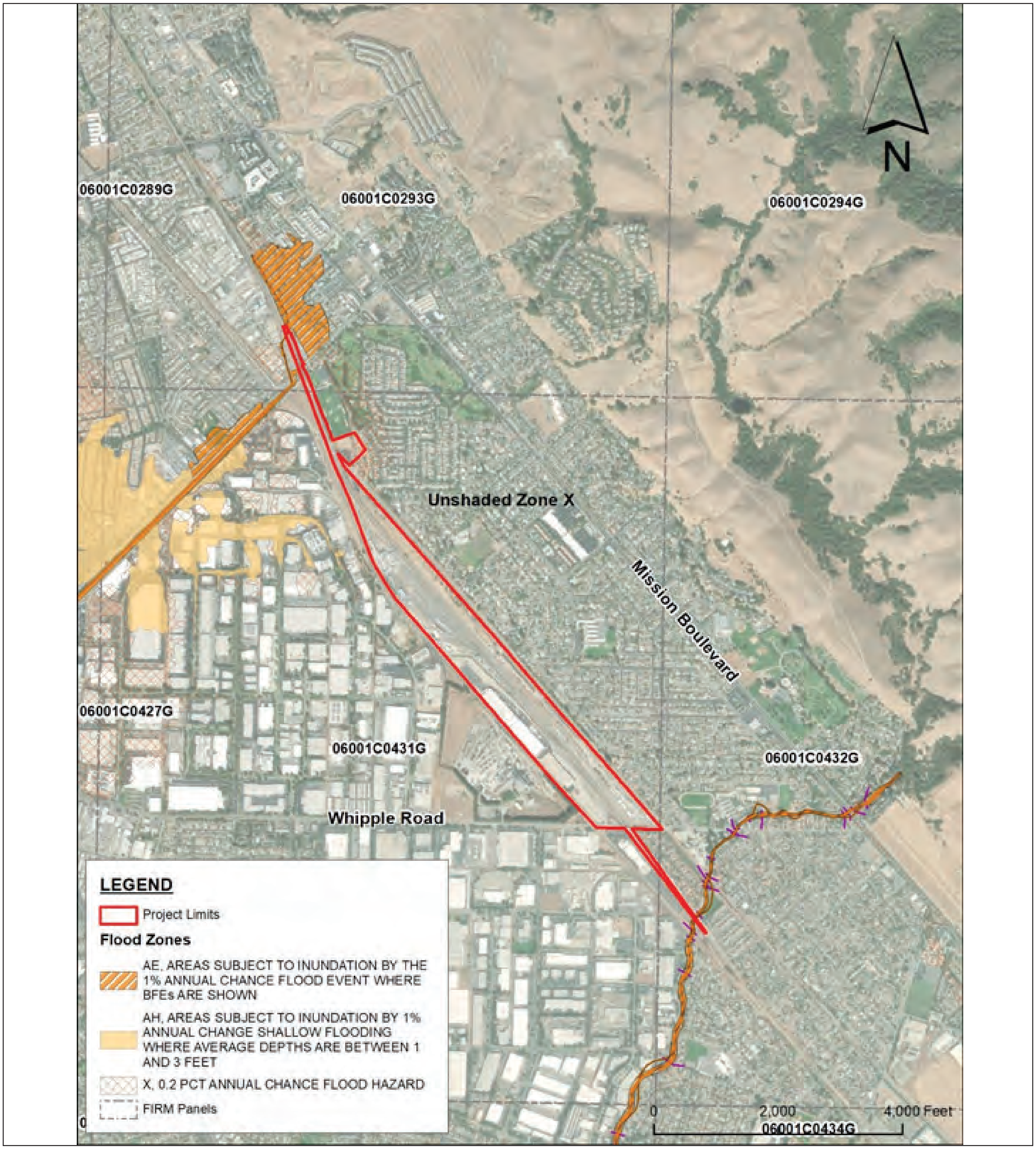

LSA

FIGURE 21

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BART HMC2 Project Supplemental IS/MND
FEMA Floodplains

SOURCE: WRECO, 2021

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The NPDES under Section 402(p) of the CWA aims to reduce the direct discharge of pollutants into waterways and manage additional pollution runoff. The San Francisco Bay RWQCB has the authority to administer permits within its jurisdiction including the cities of Hayward and Union City.

Section 303(d) of the CWA requires that each state identify "impaired" water bodies or segments of water bodies that do not meet at least one of the listed state water-quality standards. When the water body or segment is listed as impaired, the state institutes a Total Maximum Daily Load (TMDL) for the pollutant found to be creating the impairment. The TMDL is the maximum amount of a pollutant that a water body can receive and still meet water-quality standards and is usually calculated based on the total amount of allowable loads generated by a single pollutant deriving from all of its originating point and non-point sources. The 303(d) list identifies water bodies that will need to establish a TMDL in the future in order to abide by water-quality standards. As per 303(d), the RWQCB has identified impaired water bodies within its authority as well as the associated pollutants causing the impairment.

National Pollutant Discharge Elimination System. As described above, the NPDES was established under the CWA to regulate municipal, industrial, and stormwater discharges to the surface Waters of the United States (Waters of the U.S.), including discharges from municipal separate storm sewer systems (MS4s). All entities that discharge pollutants into an identified waterbody of the United States are required to obtain an NPDES permit.

The SWRCB has identified BART as a non-traditional permittee of the NPDES Phase II Small MS4 Permit (Order 2013-0001-DWQ, NPDES No. CAS000004), an MS4 pursuant to federal regulations. The stormwater treatment and low-impact development (LID) measures are described in the permit.

In addition, the SWRCB adopted the NPDES Municipal Regional Stormwater Permit (MRP) in 2009 that consolidated individual municipal stormwater permits into one regional Bay Area permit to ensure a consistent level of implementation and reporting of stormwater runoff control and management. The Project improvements involve work within the City of Hayward, including the Hayward Area Recreation and Park District (HARD). The Project would comply with the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (MRP).[65] The City is a member agency of the Alameda Countywide Clean Water Program (ACCWP). The ACCWP developed the *C.3 Stormwater Technical Guidance* to summarize the requirements of the MRP and provide guidance for low-impact development design strategies and specific Best Management Practices (BMP) selection criteria. This manual provides technical guidance for project designs that require the preparation and submittal of a Stormwater Control Plan (SCP) describing permanent stormwater BMPs and hydromodification assessment, susceptibility, and management measures throughout Alameda County. Selection, placement, and design of stormwater treatment BMPs within the Project area would adhere to the guidance document.

65 San Francisco Bay Regional Water Quality Control Board (San Francisco Bay RWQCB). 2015. California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Stormwater NPDES Permit Order No. R2-2015-0049, NPDES Permit No. CAS612008. November 19.

The Project also involves improvements within the UPRR's jurisdiction. The UPRR does not have an MS4 permit and would comply with the City's MRP.

Porter Cologne Water Quality Act. California adopted the Porter-Cologne Water Quality Act in 1969, giving the SWRCB and Regional Water Quality Control Boards the authority over State water rights and policies in relation to managing and enforcing water quality. The RWQCBs adopt Water Quality Control Plans (Basin Plans) that outline their region's water quality conditions and standards as well as beneficial uses of the region's ground and surface water. The Project site lies within the boundaries of Region 2 governed by the San Francisco Bay RWQCB. The most recent Basin Plan[66] for the San Francisco Bay Watershed was updated by the RWQCB in 2015 and is revised periodically to reflect relevant ecological, technological, and political changes. The Basin Plan also includes water quality standards for groundwater.

The Basin Plan lists the following narrative and numeric water quality objectives for the region's surface waters: bacteria, bioaccumulation, bio-stimulatory substances, color, dissolved oxygen, floating material, oil and grease, population and community ecology, pH, radioactivity, salinity, sediment, settle-able material, suspended material, sulfide, taste and odors, temperature, toxicity, turbidity, and un-ionized ammonia.

Alameda Creek beneficial uses listed in the Basin Plan include agricultural supply, groundwater recharge, warm and cold freshwater habitat, fish migration and spawning, wildlife habitat, and water contact and non-contact water recreation. Lower San Francisco Bay beneficial uses listed in the Basin Plan include industrial service supply, commercial fishing, shellfish harvesting, estuarine habitat, fish migration, wildlife habitat, water contact and non-contact recreation, and navigation. The Lower San Francisco Bay is also listed as potentially supporting fish spawning. The Zone 3A, Line N and Zone 3A, Line D channels do not have listed beneficial uses in the Basin Plan. Based on the tributary rule, the Zone 3A, Line D channel would have the same beneficial uses as those designated for Ward Creek, which include warm freshwater habitat, wildlife habitat, water contact recreation, and non-contact water recreation.

The Lower San Francisco Bay is listed as impaired by a number of pollutants from non-point sources including mercury, polychlorinated biphenyls (PCBs), dioxin-like PCBs, and pesticides (dieldrin, chlordane, and dichlorodiphenyltrichloroethane [DDT]).[67] The 2014/2016 California Integrated Report[68] does not list the Zone 3A, Line N channel or the Zone 3A, Line D channel as pollutant impaired.

Statewide Construction General Permit. Construction projects or activities that are one acre or more must obtain a Construction General Permit (CGP) from the SWRCB. The CGP has been developed to be protective of water quality during construction activities and covers any

66 San Francisco Bay Regional Water Quality Control Board. 2019. *Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin*.

67 State Water Resources Control Board (SWRCB). 2021. *Final 2018 California Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report).* Website: www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html (accessed: August 4, 2021)

68 Ibid.

construction or demolition activity, including, but not limited to clearing, grading, grubbing or excavation, or any other activity that results in a land disturbance of equal to or greater than one acre. Prior to construction, the landowner or other applicable entity must submit online Permit Registration Document (PRDs) to the Stormwater Multiple Application and Report Tracking System (SMARTS) website. The PRDs include a Notice of Intent (NOI), Risk Assessment, Post-Construction Calculations, a Site Map, Stormwater Pollution Prevention Plan (SWPPP), a signed certification by the landowner or other applicable entity, and the first annual fee. Landowners are also required develop BMPs in accordance with the development of a SWPPP. The SWPPP maps the boundaries of the Project site, identifying the existing and proposed structures and roads within the vicinity of the site, as well as stormwater collection and discharge points and drainage patterns. These BMPs should address strategies to prevent soil erosion and the proper treatment and discharge of other pollutants generated by construction, which could contaminate waterways on or nearby the site. A SWPPP must also include a visual chemical monitoring program of nonvisible pollutants and a sediment-monitoring program. The RWQCB enforces compliance with the CGP through site inspections and fines. As the Project site is larger than one acre, it is subject to these listed requirements.

5.10.2 Prior Environmental Analysis

The 2011 IS/MND determined that the HMC Project would have less-than-significant impacts related to water quality standards, groundwater recharge, erosion and siltation, stormwater, and inundation by seiche, tsunami or mudflow with compliance with regulatory requirements and implementation of BMPs. No projects related to flood hazards or degradation of water quality were identified. The 2011 IS/MND identified potentially significant impacts related to on-site or off-site flooding and flooding as a result of levee or dam failure. Implementation of the following mitigation measure would require BART to retain or detain the increase in runoff from the 100-year storm event on the site and to adequately size new culverts and pipes to convey 100-year storm flows. Mitigation Measure HYD-1 was determined to reduce flooding impacts to a less-than-significant level and would apply to the proposed Project:

Mitigation Measure HYD-1 *Stormwater Drainage System Design.* Prior to final design of each phase of the proposed Project, BART shall have a licensed professional engineer registered in California prepare a detailed Hydrology and Hydraulics Report that identifies flow contributing areas (catchments), flow pathways, off-site discharge locations, receiving storm drain systems, and proposed on-site flow conveyance structures and conveyance capacities.

The Hydrology and Hydraulics Report shall identify the off-site peak flow rates and flow volumes for the 100-year storm event at all proposed off-site discharge locations, retained existing on-site flow conveyance structures, and proposed on-site flow conveyance structures for both existing conditions and proposed Project conditions. The detailed Hydrology and Hydraulics Report calculations shall be prepared in accordance with *Alameda County*

Flood Control District Hydrology and Hydraulics Manual (June 2003, or later version, as applicable).

Off-Site Runoff. Based on the detailed Hydrology and Hydraulics Report, BART shall design on-site detention (or retention) facilities sufficient to detain increases in 100-year runoff peak flow rates and retain increases in 100-year flow volumes at all off-site discharge locations compared to existing conditions. BART shall submit a preliminary design, along with the Hydrology and Hydraulics Report, to the Alameda Flood Control District and the City of Hayward Public Works Department for review. BART shall incorporate Alameda Flood Control District recommendations into the Project design, where applicable, prior to the beginning of construction activities.

On-Site Runoff. BART shall design on-site drainage in accordance with one of the following, or a combination of the following:

- BART shall design sufficient on-site detention (or retention) to detain increase in flow rates in excess of the conveyance capacity of existing downstream structures; or
- BART shall upgrade existing on-site conveyance structures to provide sufficient conveyance capacity. All proposed on-site conveyance structures shall be designed with adequate capacity to convey the 100-year storm event.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe impacts related to hydrology and water quality as the proposed modifications would be constructed within the same Project site evaluated in the 2011 IS/MND and would comply with regulatory requirements, and mitigation measures identified in the 2011 IS/MND.

5.10.3 Impact Analysis

a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality? ***(No New Impact)***

Impacts to water quality associated with construction and operation of the HMC2 Project are summarized from the WQAR[69] prepared for the proposed Project and described below.

Construction. The Project would have potential short-term water quality impacts during grading and excavation activities as well as from uncovered or improperly covered stockpiles, unstabilized slopes, construction staging areas, unmaintained construction equipment, and accidental spills of

69 WRECO. 2021b. op. cit.

fuels, oils, and other potentially toxic materials. Temporary impacts that the proposed Project could have on water quality during construction would include:

- **Increased turbidity.** Ground-disturbing activities within the proposed Project area could release soil and/or sediment into the storm drain systems of Zone 3A, Line N and Zone 3A, Line D, and Dry Creek. This would increase the turbidity and sediment of the receiving water bodies, which may affect the water bodies' beneficial uses.

- **Increased water pollution**. Ground-disturbing and dewatering activities could increase the concentration of hazardous chemicals discharging into the storm drain systems by adding heavy metals, polychlorinated biphenyls, and dust particles to the water. These chemicals could then flow via the receiving water bodies into Ward Creek, the Old ACFC Channel, the ACFC Channel, and eventually the San Francisco Bay. A preliminary site investigation and soil sampling would determine the locations and concentrations of these hazardous chemicals.

- **Accidental releases of hazardous waste and chemicals**. Construction activities would involve hazardous material storage, use, transport, and/or disposal. Hazardous materials include fuels, lubricants, hydraulic fluids, and other chemicals associated with equipment. Accidental releases would cause substantial risks to water quality through contamination and potential impacts to the receiving water bodies' beneficial uses.

Temporary impacts to water quality during construction can be avoided by implementing BMPs. The proposed Project would disturb approximately 132.95 acres of soil, including staging and work areas. [70] As such, construction of the Project would be subject to the CGP requirements, including implementation of specific minimum BMPs during construction, depending on the Project's sediment risk level, to protect water quality during construction activities. The proposed Project is classified as a Risk Level 2 project, which requires implementation of Rain Event Action Plans and compliance with Numeric Action Level effluent limits for pH and turbidity. Specific minimum BMPs required for all projects, including the proposed Project, include:

- Specific good site management (i.e., "housekeeping") measures for construction materials that could potentially be a threat to water quality if discharged

- Specific good housekeeping measures for waste management, including a spill response and implementation element

- Specific good housekeeping for vehicle storage and maintenance

- Specific good housekeeping for landscape materials

- Specific good housekeeping measures on the construction site to control the air deposition of site materials and from site operations

[70] WRECO. 2021b. op. cit.

- Non-stormwater management BMPs (e.g., measures to control all non-stormwater discharges during construction)
- Erosion control measures
- Sediment controls
- Run-on and runoff controls
- Monitoring and reporting requirements including development and implementation of a written site-specific Construction Site Monitoring Program (CSMP) in accordance with the requirements of the CGP.

Implementation of the required specific BMPs would minimize the potential for pollutants in stormwater runoff and pollutant transport to Old Alameda Creek and the Lower San Francisco Bay during construction activities. Implementation of erosion, sediment, and run-on and runoff controls, as required for coverage under the CGP, would also minimize the potential for on- and off-site erosion and sediment transport.

Furthermore, BART Facilities Standards require implementation of erosion and sediment controls for construction operations, including an Erosion and Sediment Control Plan, and BMPs to minimize pollution potential. Where natural drainage ways may be impacted by construction activities, BART Facilities Standards require that such drainage ways be protected so that runoff from the site or water from construction activities is not allowed to enter the natural drainage way and restored following completion of construction activities, which would result in long-term soil stability and reduce the amount of sediment discharging into the receiving water bodies. Compliance with the requirements of the CGP and the BART Facilities Standards would ensure that the proposed Project would result in less-than-significant impacts to water quality during construction.

Operation. Operations of the proposed Project would be consistent with current uses at the HMC Yard, which include vehicle level overhaul and maintenance, train storage, materials storage, and train maintenance. As proposed, the Project would include additional storage tracks for up to approximately 250 BART cars and tracks to accommodate transfer of cars between facilities.

Similar to the HMC Project, operation of the proposed Project components would also result in the storage and use of cleaning compounds, corrosives, metals, adhesives, and solvents used to wash interiors and equipment. Release of these types of substances could enter the stormwater sewer system or local drainages in the event of a spill or leaking container. Unless properly managed such releases could result in adverse human health or environmental effects. As described in Section 5.9.3(a) above, BART would adhere to and comply with the existing HMBP Hazardous Materials Business Plan and the SPCC Plan for the entire HMC Yard, including proper storage and handling of such materials to prevent release into stormwater and drainage areas.

The proposed Project would result in approximately 514,000 square feet (11.8 acres) of added impervious area and approximately 1,422,000 square feet (32.65 acres) of replaced impervious area.[71] Because it would create and/or replace 5,000 square feet and 10,000 square feet or more of impervious surface, respectively, the proposed Project is considered a regulated project under the Phase II Small MS4 Permit (within BART's right-of-way) and the MRP (outside of BART's right-of-way). The Phase II Small MS4 Permit and the MRP prioritize the use of Low Impact Development (LID) measures for stormwater treatment controls. These measures include harvesting and use, infiltration, evapotranspiration, and biotreatment. Other conventional treatment measures (e.g., basins and vaults) are allowable under special conditions outlined in the permits.

The Phase II Small MS4 Permit and the MRP also require that stormwater quality treatment BMPs are numerically sized in accordance with specific flow rate or volume treatment requirements, depending upon the type of BMP; incorporate hydrograph modification controls[72] where increases in runoff could cause or contribute to bed and bank erosion in susceptible receiving waters; and implement total maximum daily load (TMDL) requirements. Applicable TMDLs would include the San Francisco Bay mercury TMDL, the San Francisco Bay PCB TMDL, and the Urban Creeks Pesticide Toxicity TMDL.

Site design measures would be applied to reduce stormwater runoff within the Project site. As described in Section 3.4.2, the proposed Project would include installation of underground stormwater storage facilities and a bioretention basin. The bioretention basin is sized to treat 100% of the new impervious surface from the proposed Project components. A more detailed presentation of stormwater BMPs, including temporary construction site BMPs, design pollution prevention BMPs, permanent treatment BMPs, and maintenance BMPs is provided in the Stormwater Management Plan.[73] The final drainage design, BMP locations, and amount of impervious area treated would be refined during the design phase when detailed design information is developed. Compliance with the Phase II Small MS4 Permit and the MRP would reduce the potential for pollutants in stormwater runoff to reach receiving waters due to the implementation of site design, source control, and stormwater treatment measures.

In addition, because the proposed Project would include a vehicle maintenance facility, BART would be required to comply with the Industrial General Permit (IGP). Industrial facility operators must comply with all of the conditions of the IGP, including preparation of an operational (SWPPP) emphasizing BMPs. The SWPPP has two major objectives: (1) to help identify the sources of pollution that affect the quality of industrial stormwater discharges and authorized non-stormwater discharges, and (2) to describe and ensure the implementation of BMPs to reduce or prevent pollutants in industrial stormwater discharges and authorized non-stormwater discharges. One of

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71 WRECO. 2021b. op. cit.

72 Hydrograph modification' refers to an alteration in the storm event flow regime of a watercourse such as increases in peak flow rates, longer duration of storm flow, and higher storm flow volume. If runoff to the watercourse increases, or the timing of runoff changes, this could cause a change in the watercourse storm event flow. Hydrograph modification controls are controls designed to maintain the flow regime for small storm events.

73 WRECO. 2021a. *San Francisco Bay Area Rapid Transit District Hayward Maintenance Complex Project Alameda County, California Civil Grading - 100% Storm Water Management Plan*.

the major elements of the SWPPP is the elimination of unauthorized non-stormwater discharges to the facility's storm drain system.

The proposed Project would require a 401 Water Quality Certification (401 WQC) from the SFBRWQCB due to the proposed impacts to the drainage ditch identified as Waters of the State. Portions of the 401 WQC application require information regarding anticipated Waste Discharge. Project-specific Waste Discharge Requirements (WDRs) would be developed for submittal to the San Francisco Bay RWQCB as part of the 401 WQC permit application for review and approval.

In accordance with the BART Facilities Standards, the proposed Project would be required to comply with all applicable federal, state, and local laws, orders, and regulations related to the prevention, control, and abatement of water pollution. The proposed Project would not violate waste discharge requirements or water quality standards from construction and operational impacts by implementing temporary BMPs, site design measures, source control measures, and stormwater treatment measures. Because the proposed Project would be required to comply with applicable State and local regulations, no new impacts or substantially more severe significant impacts related to water quality violations, wastewater discharges, or water quality degradation would occur.

b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? ***(No New Impact)***

In total, 27 bores were conducted in 2017 and 2018 across the HMC2 Project site. Groundwater depths ranged from no groundwater encountered at 10 feet to up to 30 feet deep.[74] These results are consistent with historic groundwater depths within the proposed Project area, which found that the depth to groundwater ranged from about 10 feet in the northwest portion to 40 feet in the southeast portion of the Project site. Groundwater level is anticipated to vary with the passage of time due to seasonal groundwater fluctuations, variations in yearly rainfall, water elevations in the nearby creeks, surface and subsurface flows, ground surface run-off, and other environmental factors that may not have been present at the time of the bore investigations.

Implementation of the proposed Project would create approximately 514,000 square feet (11.8 acres) of additional impervious area at the Project site. An increase in impervious surface area decreases infiltration, which can decrease the amount of water that is able to recharge the aquifer/ groundwater. However, compared to the volume of the groundwater basin (38,000 acre-feet),[75] any reduction in on-site infiltration would not be substantial. Long-term dewatering activities are not needed for the Project, and the proposed bioretention basin and other impervious surface areas throughout the site would allow for continued groundwater infiltration. As such, the groundwater table would remain substantially unchanged by the proposed Project. Therefore, impacts to

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[74] Parikh Consultants, Inc. 2019b. *Draft Foundation Report Hayward Maintenance Complex Phase II – East Storage Project (Rev 2)*. June 19.

[75] California Department of Water Resources (DWR). 2006. San Francisco Bay Hydrologic Region Santa Clara Valley Groundwater Basin, Groundwater Bulletin 118. Website: water.ca.gov/-/media/DWR-Website/ Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/ 2_009_ 01_NilesConeSubbasin.pdf (accessed September 28, 2021)

groundwater supplies and recharge would be less than significant. No new impacts or substantially more severe significant impacts related to groundwater supplies would occur.

c. *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*

   i. *Result in substantial erosion or siltation on- or off-site?* ***(No New Impact)***

Construction. During construction activities, excavated soil would be exposed and disturbed, drainage patterns would be temporarily altered during grading and other construction activities, and there would be an increased potential for soil erosion and the transport of sediment downstream compared with existing conditions. As discussed in Section 5.10.3(a), the Project would comply with the Construction General Permit, which requires preparation of a SWPPP and implementation of construction BMPs to reduce impacts to water quality during construction, including those impacts associated with soil erosion and siltation. Additionally, the Project would be required to comply with BART Facilities Standards, which require implementation of erosion and sediment controls for construction operations, including an Erosion and Sediment Control Plan, and BMPs to minimize pollution potential.

Operation. The proposed Project would increase impervious surface area on the Project site by approximately 11.8 acres and would increase on-site stormwater runoff during a storm event. Consistent with State and local requirements, the proposed Project would include drainage improvements, including new on-site drainage systems, and an appropriately sized bioretention basin to retain and treat stormwater prior to discharge. Grading, filling of wetlands, and conversion of an existing open ditch to an underground culvert system would alter the local drainage patterns; however, the proposed bioretention basin would be appropriately-sized to treat and release stormwater runoff so as not to increase stormwater runoff for the 10-year storm event.

The draft Drainage Report[76] prepared for the HMC2 Project provides an evaluation of the site hydrology and hydraulics and shows that proposed Project components (i.e. access road, cleaning facility, new trackway, conversion of the drainage ditch to an underground culvert, and filling of the wetland) would add approximately 514,000 square feet (11.8 acres) of added impervious area and approximately 1,422,000 square feet (32.65 acres) of replaced imperious area in the Phase 2 site which will in turn increase the site runoff coefficients and reduce the time of concentration. The Project would generate 100-year storm event flows of 68.94 cfs, which is greater than the existing total flow of 65.40 cfs. As shown in Table F, with implementation of the proposed stormwater detention, post-construction flows would be less than existing conditions.

[76] WRECO. 2021b. *San Francisco Bay Area Rapid Transit District Hayward Maintenance Complex Project Drainage Report – Civil Grading*. July.

Table F: 100 Year Pre-Construction Flow Compared to Proposed Post-Construction Flow

Outfall Location	Existing Conditions (cfs)	Post-Construction Conditions (cfs)
Run-on[1]	36.13	36.13
HMC Phase 2	29.27	32.81 (minus 4.11 detained by the basin)
Local Depression	65.40	63.83[2]

Source: *San Francisco Bay Area Rapid Transit District Hayward Maintenance Complex Project Alameda County, California Drainage Report - Civil Grading* **(**WRECO 2021b).

[1] Run-on includes runoff from HMC Phase 1 and off-site areas 21 and 22 identified in the watershed map provided in Appendix D of the Drainage Report (WRECO 2021b).

[2] Total flow after detention.

cfs = cubic feet per second

HMC = Hayward Maintenance Complex

The draft Drainage Report documents the hydrologic and hydraulic design standards used for the drainage design and details the methodology and calculations for the proposed drainage design improvements. The proposed Project is within BART's right-of-way; therefore, the proposed drainage improvements would be designed in accordance with BART Facilities Standards and follow the guidance of Alameda County's *Hydrology & Hydraulic Manual,*[77] consistent with Mitigation Measure HYD-1 identified in the 2011 IS/MND.

The proposed drainage improvements are also designed to meet Phase II Small MS4 Permit and MRP requirements to treat a prescribed amount of stormwater runoff from new impervious surfaces through appropriate BMPs. According to the Alameda County C.3 Stormwater Technical Guidance,[78] the Project is exempt from the hydromodification requirement, because it discharges to two fully engineered channels - Zone 3A, Line N and Zone 3A, Line D.[79]

Because the proposed drainage improvements would maintain and/or reduce drainage flows from the Project site, the proposed Project would not result in substantial erosion on- or off-site, and this impact would be less than significant. No new impacts or substantially more severe significant impacts related to on- or off-site erosion or siltation would occur.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite? ***(No New Impact)***

Construction activities associated with implementation of the proposed Project would temporarily alter on-site drainage patterns and compact soil, which can increase the volume and velocity of stormwater runoff. However, construction activities would be temporary, and the increase in runoff would not be substantial. As discussed in Section 5.10.3(a) above, the Construction General Permit requires the preparation of a SWPPP to identify construction BMPs to be implemented as part of the Project to reduce impacts to water quality during construction, including those impacts associated

[77] Alameda County Flood Control & Water Conservation District. 2018. *Hydrology & Hydraulics Manual.*

[78] Alameda Countywide Clean Water Program. 2017. *C.3 Stormwater Technical Guidance.*

[79] WRECO. 2021b. op. cit.

with flooding. Additionally, the Project would be required to comply with BART Facilities Standards, which require implementation of erosion and sediment controls for construction operations, including an Erosion and Sediment Control Plan, and BMPs to minimize pollution potential. Therefore, adherence to State and local regulations would ensure that construction activities would result in a less-than-significant impact.

Implementation of the proposed Project would result in a significant increase in impervious surface area; however, drainage improvements included as part of the Project design, including the underground stormwater storage facilities and the proposed bioretention basin would retain stormwater prior to discharge into the storm drain system. With implementation of these features, the rate and volume of stormwater runoff post-construction would be similar to or less than the existing conditions. Further no fill would be placed in designated floodplains (see Section 5.10.3(d) below). Therefore, no significant change to the existing drainage pattern that would result in on-site or off-site flooding would occur. This impact would be less than significant. No new impacts or substantially more severe significant impacts related to on- or off-site flooding would occur.

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?* ***(No New Impact)***

Refer to Sections 5.10.3(a) and 5.10.3(c(i)). The proposed Project would not create or contribute runoff that would exceed the existing or planned stormwater drainage systems. The proposed Project could result in additional sources of polluted runoff; however, compliance with State and local requirements for preparation of a SWPPP and development of appropriately-sized drainage improvements would ensure that potential impacts associated with runoff and stormwater drainage systems would be less than significant. Stormwater runoff from the proposed Project would be directed to a proposed bioretention basin prior to discharge to the Zone 3A, Line N channel. Site improvements would not increase stormwater runoff to the Zone 3A, Line N channel due to the proposed on-site increased detention and BMPs. No new impacts or substantially more severe significant impacts related to stormwater drainage systems or polluted runoff would occur.

iv. *Impede or redirect flood flows?* ***(No New Impact)***

Refer to Sections 5.10.3(a) and 5.10.3(d). Although the Project would increase the impervious surface area on the Project site compared to existing conditions, the existing on-site drainage would be maintained with the Project due to the implementation of drainage improvements, including bioretention. The majority of the Project site is located outside of the 100-year floodplain, and no fill would be placed in designated floodplains. Therefore, the Project would not alter the existing drainage pattern in a manner that would impede or redirect flood flows, and this impact would be less than significant. No new impacts or substantially more severe significant impacts related to flood flows would occur.

d. In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation? ***(No New Impact)***

The proposed Project would not place fill in the floodplain or a flood hazard zone, and work within the Zone 3A, Line D base floodplains would be at approximately the existing grade, which is above the base floodplain elevations. Material storage areas and staging areas would be placed outside of the existing 100-year floodplains. Therefore, the proposed Project would not change the 100-year water surface elevations.

The Project is not within an area mapped as a Tsunami Inundation Zone[80] nor is it near a river, reservoir, pond, or lake that could result in seismic seiche waves generated from an earthquake. For these reasons, the Project would have a less-than-significant impact on areas prone to flood hazards, tsunami or seiches. In addition, as described in Section 5.10.3(a). above, BMPs would be implemented, which would reduce the risk of pollutants released during inundation. Therefore, the proposed Project would not result in pollutant discharges from flooding events. No new impacts or substantially more severe significant impacts related to flood hazard, seiche or tsunami would occur.

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? ***(No New Impact)***

As discussed in Section 5.10.3(a), the proposed Project would be required to comply with requirements set forth by the Construction General Permit, the Industrial General Permit, MRP and Phase II MS4 Permit, which require the implementation of construction BMPs to control stormwater runoff and discharge of pollutants as well as, LID BMPs to treat stormwater runoff and reduce impacts to water quality during operation of the proposed Project. With adherence to these regulatory requirements, the Project would not result in water quality impacts that would conflict with the Basin Plan. Therefore, impacts related to conflict with a water quality control plan would be less than significant.

As discussed in Section 5.10.3(b), construction and operation of the proposed Project would not require groundwater extraction. However, the Project would increase impervious surface areas by 11.8 acres (approximately 2.78 acres are associated with maintenance and engineering shop site improvements with the HMC, and the remaining 9.02 acres are associated with the East Storage Yard and Northern Mainline Connector improvements), which would decrease the amount of water that is able to recharge the aquifer/groundwater. However, compared to the volume of the groundwater basin (38,000 acre-feet), any reduction in on-site infiltration would not be substantial. In addition, the proposed bioretention basin and the pervious areas within the Project site would provide infiltration into the groundwater table. Therefore, the proposed Project would not conflict with or obstruct the ACWD's sustainable groundwater management programs for the Niles Cone groundwater sub-basin. This impact would be less than significant. No new impacts or substantially more severe significant impacts related to water quality would occur.

80 California Department of Conservation (DOC). 2020. *Alameda County Tsunami Inundation Maps.* Website: www.conservation.ca.gov/cgs/tsunami/maps/alameda (Last accessed: October 21, 2020).

5.11 LAND USE AND PLANNING

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
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?	☐	☐	☐	☒

5.11.1 Background

The HMC2 Project site consists of the East Storage Yard, which is located on approximately 22 acres of undeveloped land in the northeast quadrant of the HMC property and the Northern Mainline Connector, which would extend northward from the storage yard between the BART High Speed Test Track and the golf course driving range. The East Storage Yard would store approximately 250 BART vehicles and would feature ancillary wayside and maintenance facilities needed for a fully functional, electrified, storage yard. The undeveloped portion of the Project site consists of grasslands, with sparse patches of trees and bushes, low-lying wetland areas, a linear man-made drainage ditch, and a narrow corridor adjacent to the existing BART test track. The Project site also includes a portion of the Mission Hills of Hayward Golf Course driving range.

The Hayward Yard is bordered on the west by industrial and warehouse development and a Union Pacific Railroad (UPRR) line (Oakland subdivision). A second UPRR line borders the yard to the east (Niles subdivision).[81] In the Project vicinity, industrial uses are generally located west of the UPRR corridor and residential uses are located east of the UPRR corridor. Surrounding uses include industrial businesses and warehouses to the west, residential development to the north and east, the Mission Hills of Hayward Golf Course and driving range to the north, and Whipple Road to the south. Two public parks, Bidwell Park and Twin Bridges Park, are located further to the east within the adjacent residential development.

5.11.2 Prior Environmental Analysis

The 2011 IS/MND, 2013 Addendum and the 2017 Second Addendum identified no impacts related to on-site land uses, surrounding land uses, and consistency with applicable land use and planning requirements.

5.11.3 Impact Analysis

a. Would the project physically divide an established community? ***(No New Impact)***

The physical division of an established community typically refers to the construction of a feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local

81 Two sets of Union Pacific tracks run north-south in the Project vicinity. One set is immediately adjacent to the Hayward Yard on the east and the second set is approximately 1,100 feet to the west of the first.

road or bridge) that would impair mobility within an existing community, or between a community and outlying areas. For instance, the construction of an interstate highway through an existing community may constrain travel from one side of the community to another; similarly, such construction may also impair travel to areas outside of the community.

As described above, the proposed Project is located in an urban setting, surrounded by residential neighborhoods to the north and east and commercial/industrial properties to the south and west. Although the proposed Project would include installation of the Northern Mainline Connector, which would consist of a new trackway connection between the East Storage Yard and the BART mainline trackway, the Project would not introduce a new physical barrier that would divide an established community because the Project area is already divided by the BART mainline tracks, the HMC facility, and the existing UPRR tracks. Therefore, the proposed Project would not physically divide an established community. This impact would not result in new significant or substantially more severe significant impacts beyond those analyzed in the prior environmental documents.

b. *Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?* ***(No New Impact)***

California Government Code Section 53090 exempts rapid transit districts such as BART from complying with local land use plans, policies, and zoning ordinances. Information related to the land use and planning policies for the City of Hayward is provided for informational purposes only.

The Project site is located in the City of Hayward and is designated as Industrial Technology and Innovation Corridor (IC) and Parks and Recreation (PR) in the City of Hayward General Plan.[82] The IC designation applies to the large crescent-shaped industrial area located along Hayward's western Urban Limit Line and southwestern city limits. Typical building types include warehouses, office buildings, research and development facilities, manufacturing plants, business parks, and corporate campus buildings. The PR designation generally includes regional parks, community and neighborhood parks, and special use facilities, such as golf courses, historic homes and gardens, linear parks, and trails. The portion of the Project site that includes the golf course driving range is designated PR; the remainder of the site is designated IC.

The site is zoned Industrial Park (IP) and Agriculture (A) in the City's Zoning Ordinance.[83] The IP district applies to areas with generally larger parcel sizes and uniform streetscapes, as well as areas with existing or potential industrial park development, and is intended to provide areas for high technology, research and development, and industrial activities in an industrial park or campus-like atmosphere. A variety of industrial, manufacturing, and high technology uses are allowed. Primary uses within the A district are associated with agriculture; however, some residential uses and public facilities are permitted. Golf course facilities and other recreation uses are conditionally permitted by the City of Hayward.

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[82] Hayward, City of. 2014. op. cit.

[83] Hayward, City of, 2019. City of Hayward Municipal Code (current through March 26, 2019).

Proposed improvements associated with the HMC2 Project, including maintenance and vehicle storage areas within the East Storage Yard and trackwork and ancillary facilities associated with the Northern Mainline Connector, would be consistent with the IC and IP land use plan designations and zoning, respectively.

As described above, a small portion of the Project site is designated PR and zoned A. Proposed improvements within this area include the embankment, trackwork, and retaining wall for the Northern Mainline Connector. This component of the proposed Project would require the relocation of the western fence of the driving range to allow for construction of the new trackway. The fence would be relocated a maximum of approximately 50 feet to the east along the entire length of the driving range. The property is owned by BART, but Hayward Area Recreation and Park District (HARD) has a permanent operating easement for the property that allows HARD to operate the driving range. As described above, public facilities are permitted in the A zoning district and implementation of the proposed Project would not affect ongoing use of the driving range for recreation purposes. Therefore, the proposed Project would not conflict with an adopted land use plan, policy, or regulation. No new impacts or substantially more severe significant impacts related to conformity with land use plans would occur.

5.12 MINERAL RESOURCES

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
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?	☐	☐	☐	☒

5.12.1 Background

Minerals are any naturally occurring chemical element or compound, or groups of elements and compounds, formed from inorganic processes and organic substances including, but not limited to, coal, peat and oil bearing rock, but excluding geothermal resources, natural gas, and petroleum.

The California Department of Conservation, Geological Survey (CGS) and the California State Mining and Geology Board are required by the Surface Mining and Reclamation Act of 1974 (SMARA) to categorize lands into four Aggregate and Mineral Resource Zones (MRZs), described below. These MRZs classify lands that contain significant regional or Statewide mineral deposits. Lead Agencies are mandated by the State to incorporate MRZs into their General Plans.

MRZs are classified on the basis of geologic factors without regard to existing land use and land ownership. The four MRZs are categorized as follows:

- **MRZ-1:** An area where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- **MRZ-2:** An area where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- **MRZ-3:** An area containing mineral deposits, the significance of which cannot be evaluated.
- **MRZ-4:** An area where available information is inadequate for assignment to any other MRZ zone.

Of the four categories, lands classified as MRZ-2 are of the greatest importance because such areas are underlain by demonstrated mineral resources or are located where geologic data indicate that significant measured or indicated resources are present. MRZ-2 areas are designated by the State Mining and Geology Board as being “regionally significant.” Such designations require that a Lead Agency make land use decisions involving designated areas in accordance with its mineral resource management policies and that it consider the importance of the mineral resource to the region or the State as a whole, not just to the Lead Agency’s jurisdiction.

5.12.2 Prior Environmental Analysis

None of the prior environmental documents indicate that significant mineral resource deposits exist on the Project site. Therefore, no impacts related to mineral resources were identified.

5.12.3 Impact Analysis

a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? ***(No New Impact)***

Per the California Division of Mines and Geology,[84] the Project site has been classified as Mineral Resource Zone (MRZ)-1. In addition, the closest aggregate mine is the La Vista Quarry, located approximately 1.14 miles from the Project site in the unincorporated area east of Mission Boulevard and Tennyson Road. Therefore, the Project would not result in the loss of availability of known mineral resources that would be of value to the region and residents of the state or the loss of availability of any known locally important mineral resource recovery site. Therefore, no new or substantially more severe significant impacts related to mineral resources would occur. No additional analysis is required.

b. Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? ***(No New Impact)***

See Section 5.12.3(a) above.

84 California Department of Conservation – Division of Mines and Geology. (1996). Update of Mineral Land Classification: Aggregate Materials in the South San Francisco Bay Production-Consumption Region. C:/Users/jada_golland/Downloads/OFR_96-03_Text.pdf (Last accessed: October 23, 2020).

5.13 NOISE

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
Would the project result in:				
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 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?	☐	☐	☐	☒

5.13.1 Background

The following analysis was prepared using background information obtained from the *Noise and Vibration Impact Assessment, BART Hayward Maintenance Complex Phase 2 Northern Mainline Connector*.[85]

5.13.1.1 Noise and Vibration Fundamentals

Characteristics of Sound. Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units, such as inches or pounds, decibels are measured on a logarithmic scale representing points on a sharply rising curve. For example, 10 decibels (dB) are 10 times more intense than 1 dB, 20 dB are 100 times more intense, and 30 dB are 1,000 times more intense. Thirty dB represents 1,000 times as much acoustic energy as one decibel. A sound as soft as human breathing is about 10 times greater than 0 dB. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 dB (very quiet) to 100 dB (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source, such as highway traffic or railroad

85 LSA. 2022d. *Noise and Vibration Impact Assessment, BART Hayward Maintenance Complex Phase 2 Northern Mainline Connector.* June.

operations, the sound decreases 3 dB for each doubling of distance in a hard site (urban) environment. Line source noise in a relatively flat environment with absorptive vegetation, decreases 4.5 dB for each doubling of distance.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and community noise equivalent level (CNEL) or the day-night average level (DNL or L_{dn}) based on A-weighted decibels (dBA). CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and 10 dBA weighting factor applied to noise occurring from 10:00 p.m.–7:00 a.m. (defined as sleeping hours). DNL is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and DNL are within 1 dBA of each other and are normally exchangeable. The City of Hayward uses the CNEL noise scale for long-term noise impact assessment.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max}, which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first is audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dB or greater because this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise levels of less than 1.0 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Physiological Effects of Noise. Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 160–165 dBA will result in dizziness or loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying less developed areas.

Fundamentals of Vibration. Vibration refers to ground-borne noise and perceptible motion. Ground-borne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be indiscernible. Typically, there is more adverse reaction to effects associated with the shaking of a building. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 dB or less.

Typical sources of ground-borne vibration are construction activities (e.g., blasting, pile driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with both ground-borne vibration and noise from these sources are usually localized to areas within approximately 100 feet from the vibration source.

Ground-borne vibration has the potential to disturb people and damage buildings. Although it is very rare for typical construction activities to cause even cosmetic building damage, it is not uncommon for construction processes such as blasting and pile driving to cause vibration of sufficient amplitudes to damage nearby buildings. Ground-borne vibration is usually measured in terms of vibration velocity, either the root-mean-square (RMS) velocity or peak particle velocity (PPV). The RMS is best for characterizing human response to building vibration, and PPV is used to characterize potential for damage.

5.13.1.2 Regulatory Framework

The Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment Manual* (FTA Manual)[86] provides the policies and standards applicable to rail transit projects. A summary of these policies and standards is provided below.

Train Operation Noise Impact Criteria. The land use categories (1, 2, and 3) for sensitive uses surrounding a transit project are defined in Table G, below. The noise impact criteria for rail projects and their associated fixed facilities, such as storage and maintenance yards, and substations are shown graphically on Figure 22, below.

For noise exposures below the lower of the two curves on Figure 22, the proposed Project is considered to have no noise impact because, on average, the introduction of the Project would result in an insignificant increase in the number of people highly annoyed by the new noise. The curve defining the onset of noise effects stops increasing at 65 dBA for Category 1 and Category 2 land uses, a standard limit for an acceptable living environment defined by a number of federal, State, and local agencies. Project noise above the upper curve is considered to cause a severe impact because a substantial percentage of people would be highly annoyed by the new noise.

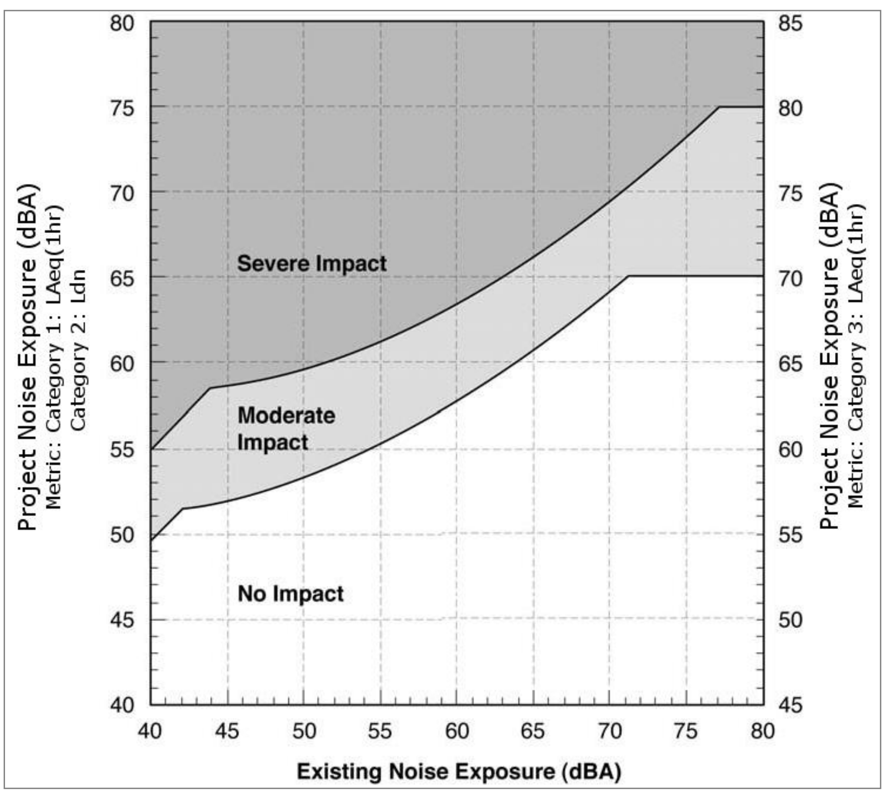
[86] Federal Transit Administration (FTA). September 2018. *Transit Noise and Vibration Impact Assessment Manual*. Office of Planning and Environment. Report No. 0123.

Table G: Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use Category	Noise Metric (dBA)	Land Uses
1	Outdoor $L_{eq}(h)^1$	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with substantial outdoor use.
2	Outdoor L_{dn}	Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq}(h)^1$	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios, and concert halls, fall into this category, as well as places for meditation or study associated with cemeteries, monuments, and museums. Certain historical sites, parks, and recreational facilities are also included.

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.
dBA = A-weighted decibels
FTA = Federal Transit Administration
L_{dn} = day-night sound level
L_{eq} = equivalent sound level
$L_{eq}(h)$ = hourly equivalent sound level

Figure 22: Noise Impact Criteria for Transit Projects



Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

The upper curve on Figure 22 flattens out at 75 dBA for Category 1 and Category 2 land uses, a level associated with an unacceptable living environment. As indicated by the right-hand scale, the noise criteria are 5 dB higher for Category 3 land uses because these types of land uses are considered to be slightly less sensitive to noise than the types of land uses in Category 1 and Category 2. This is clearer from the examples given in Table H, which indicate the level of transit noise allowed for different existing levels of exposure.

Table H: Noise Impact Criteria: Effect on Cumulative Noise Exposure[1]

Existing Noise Exposure	Allowable Project Noise Exposure	Allowable Combined Total Noise Exposure	Allowable Noise Exposure Increase
45	51	52	7
50	53	55	5
55	55	58	3
60	57	62	2
65	60	66	1
70	64	71	1
75	65	75	0

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] L_{dn} or L_{eq} in dBA (rounded to nearest whole decibel)
dBA = A-weighted decibels
FTA = Federal Transit Administration
L_{dn} = day-night sound level
L_{eq} = equivalent sound level

Between the two curves, a project is judged to have a moderate effect. The change in the cumulative noise level is noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the effect and the need for mitigation, such as the existing noise level, predicted level of increase over existing noise levels, and the types and numbers of noise-sensitive land uses affected.

Construction Noise Standards. The criteria BART utilizes for assessing noise impacts from construction activities are based on the FTA guidelines. FTA guideline criteria are specified in terms of the 8-hour equivalent noise level (L_{eq}) for residential, commercial, and industrial land uses as presented in Table I. The criterion for most land uses near the proposed Project would be 80 dBA for daytime construction and 70 dBA for nighttime construction.

Table I: FTA Construction Noise Impact Criteria

Land Use	8-hour L_{eq} (dBA)	
	Daytime	Nighttime
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
dBA = A-weighted decibels
FTA = Federal Transit Administration
L_{eq} = equivalent sound level

Vibration Impact Criteria. The criteria for environmental impact from ground-borne vibration and noise are based on the maximum levels for a single event. Table J lists the potential vibration building damage criteria associated with construction activities, as suggested in the FTA Manual.

Table J: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
Reinforced concrete, steel, or timber (no plaster)	0.50
Engineered concrete and masonry (no plaster)	0.30
Non-engineered timber and masonry buildings	0.20
Buildings extremely susceptible to vibration damage	0.12

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
FTA = Federal Transit Administration
in/sec = inch/inches per second
PPV = peak particle velocity

FTA guidelines shows that a vibration level of up to 0.5 inches per second (in/sec) in PPV (FTA 2018) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster) and would not result in any construction vibration damage. For a non-engineered timber and masonry building, the construction building vibration damage criterion is 0.2 in/sec PPV.

In addition to damage potential, vibration impacts have the potential to annoy surrounding uses. To provide numerical thresholds related to ground-borne vibration impacts, criteria included in the FTA Manual for human annoyance are shown in Table K. The criteria account for the variation in project types as well as the frequency of events, which differ widely among projects. It is logical that when there will be fewer events per day, it should take higher vibration levels to evoke the same community response. The variation in project times and the frequency of events is accounted for in the criteria by distinguishing between projects with frequent and infrequent events, in which the term “frequent events” is defined as more than 70 events per day.

5.13.1.3 Existing Noise Environment

This section describes the existing noise environment in the Project site vicinity. Noise monitoring results were used to quantify existing and future noise levels at the Project site, specifically from current BART operations and freight train pass-bys. Other significant local noise sources include airport noise, industrial noise, and construction noise. Additionally, this section presents previous vibration measurements gathered to support the *BART – Hayward Maintenance Complex Noise and Vibration Technical Report.*[87]

[87] Wilson Ihrig & Associates (WIA). 2011. *BART – Hayward Maintenance Complex Noise and Vibration Technical Report.* May.

Table K: Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Assessment

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

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018), Table 8-1.

1 Frequent events are defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

2 Occasional events are defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.

3 Infrequent events are defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

4 This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

µin/sec = micro-inches per second
dB = decibels
dBA = A-weighted decibels
FTA = Federal Transit Administration
HVAC = heating, ventilation, and air-conditioning
VdB = vibration velocity decibels

Existing Noise Level Measurements. To assess existing noise levels, four long-term noise measurements were made in the vicinity of the Project site. The long-term noise measurements were recorded from March 3 through March 6, 2020. The long-term noise measurements captured data in order to calculate the hourly L_{eq} and L_{dn} at each location, which incorporate the nighttime hours. Sources that dominate the existing noise environment include operations on the existing BART tracks, existing UPRR tracks, BART HMC operations, and occasional aircraft. Noise measurement data collected during the long-term noise monitoring are summarized in Table L.

Reference Ground Vibration Measurements. Measurements of ground vibration were performed at the Hayward Yard on September 17, 2009, near the interlock switch 77 connecting the mainline with the test track in support of the 2011 IS/MND. Five geophones were set at 40, 70, 80, 120, and 180 feet from the crossover frog. The pass-bys of eight northbound trains at 70 mph were recorded and later analyzed to obtain the frequency spectra and overall vibration level; the overall vibration was then used in a regression analysis. The measurements indicate that vibration levels at close distances of approximately 20 feet were about 15 VdB higher than pass-bys over tracks without a crossover present. However, the results also indicated at 100 feet, increases were 8 VdB higher than non-crossover conditions, and at 200 feet, the vibration levels were the same or slightly lower than typical pass-bys.

Table L: Existing Noise Level Measurements

Location	Description	Date	Daytime Noise Levels[1] (dBA L_{eq})	Nighttime Noise Levels[2] (dBA L_{eq})	Daily Noise Levels (dBA L_{dn})	Average Daily Noise Level (dBA L_{dn})	Average Peak Noise Level (dBA L_{eq})
LT-1	30351 St. Anne Street – Adjacent to existing single-family homes	3/3/2020	50.5–61.3	41.9–53.3	57.9	58	61
		3/4/2020	48.8–56.4	41.9–53.3	55.8		
		3/5/2020	46.7–65.0	37.4–50.5	58.7		
LT-2	Southeast corner of existing driving range, west of existing community park	3/3/2020	51.6–61.8	46.7–56.1	59.6	59	62
		3/4/2020	51.8–58.8	46.7–56.1	58.0		
		3/5/2020	48.9–64.4	40.4–53.7	59.1		
LT-3	Eastern edge of golf course adjacent to 261 Arrowhead Way	3/3/2020	52.1–65.2	45.8–56.2	59.9	58	61
		3/4/2020	51.6–59.0	45.8–56.2	57.4		
		3/5/2020	49.2–58.2	41.6–54.8	57.6		
LT-4	200 ft south of Industrial Parkway centerline near practice facility at existing golf course	3/3/2020	59.1–62.9	51.0–61.7	64.6	65	64
		3/4/2020	59.4–64.4	49.9–62.2	64.9		
		3/5/2020	58.2–63.4	50.4–62.4	64.9		

Source: Compiled by LSA Associates, Inc. (March 3–6, 2020).
1 Daytime Noise Levels = noise levels during the hours from 7:00 a.m. to 10:00 p.m.
2 Nighttime Noise Levels = noise levels during the hours from 10:00 p.m. to 7:00 a.m.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = foot/feet
L_{dn} = day-night sound level
L_{eq} = equivalent continuous sound level

5.13.2 Prior Environmental Analysis

The 2011 IS/MND determined that the HMC Project would result in significant impacts due to increases in ambient noise levels during construction and operation of the HMC Project. The 2011 IS/MND also determined that vibration levels associated with trains crossing the proposed crossover (P100B) would result in a significant vibration impacts for sensitive receptors located in proximity to the proposed crossover. Vibration associated with construction activities for the HMC Project were determined to be less-than-significant. In addition, no impacts related to a public or private use airport were identified. The following mitigation measures were identified in the 2011 IS/MND to reduce noise and vibration impacts to a less-than-significant level. These measures would apply to the HMC2 Project:

Mitigation Measure NO-1 *Construction of Sound Walls.* BART shall incorporate sound walls at the BART right-of-way line or other locations that mitigate the noise impacts (indicated in Table 13 and Table 14 of the prior 2011 IS/MND). Implementation of sound walls will provide an approximately 10 A-weighted decibel (dBA) reduction in overall noise levels. Concrete block masonry, poured-in-place, or pre-cast concrete walls would be acceptable as construction materials provided they have a minimum surface density of 4 pounds per square foot (lbs/ft^2). The specific location of sound walls will be addressed in final design. Sound walls will be constructed in phases as necessary to reduce noise as components of the Project are constructed.

Mitigation Measure NO-2 *Installation of Building Sound Insulation Features.* For those receptors where the outdoor wayside noise from the train operations at ground level can be mitigated to achieve the Federal Transit Administration (FTA) criteria, but the sound walls provided by Mitigation Measure NO-1 are not sufficient to mitigate noise levels at upper stories, BART will measure operational noise levels on a case-by-case basis following Project implementation. Where the existing building construction does not provide interior noise levels of day-night sound level (L_{dn}) 45 dBA or lower, BART will quantitatively evaluate individual structures and implement a formal program of building sound insulation improvement as necessary to meet this criterion.

Mitigation Measure NO-3 *Construction Noise Best Management Practices.* BART shall incorporate the following practices into the construction documents to be implemented by the Project contractor. Such practices include, but are not limited to, the following measures:

- Where feasible, BART shall require that the contractor complies with a Performance Standard of 80 dBA 8-hour equivalent continuous sound level (L_{eq}) during the daytime (7:00 a.m. to 10:00 p.m.) and 70 dBA 8-hour L_{eq} during the nighttime (10:00 p.m. to 7:00 a.m.) at the property line of the sensitive receptor.

- Prior to construction, BART shall ensure that a Noise Control and Monitoring Report is prepared. The report shall include expected construction noise levels and noise control measures, and shall explain how the contractor intends to monitor and document construction noise and complaints.

- Locate noisy equipment as far as possible from noise sensitive receptors. In addition, the use of temporary barriers should be employed around the equipment.

- Where construction noise impacts have been identified, use temporary noise barriers along the working area and/or Project right-of-way. Barriers/curtains must achieve a Sound Transmission Class (STC) of 30 or greater in accordance with American Society for Testing and Materials (ASTM) Test Method E90 and be constructed from material having a surface density of at least 4 lbs/ft^2, to ensure adequate transmission loss.

- When nighttime or 24-hour construction will be required, coordinate with residents to ensure that the affected residents are fully informed about the upcoming construction. Residents will be given the option of sleeping in hotel rooms at BART expense for the duration of the nighttime construction in areas where construction is expected to exceed the FTA criterion. Residents that work nights and sleep days in locations where construction noise is expected to exceed the FTA criterion will be given the same option.

- Require ambient sensitive ("smart") backup alarms, SAE Class D, or limit to SAE Class C (97 dB) for vehicles over 2.5 cubic yards haulage capacity, or California Occupational Safety and Health Administration/Division of Occupational Safety and Health (Cal/OSHA/DOSH)-approved methods that avoid backup alarm noise for vehicles under 2.5 cubic yards haulage capacity.

- Fit silencers to combustion engines. Ensure that equipment has effective, quality mufflers installed, in good working condition.

- Switch off engines or reduce to idle when not in use.

- Lubricate and maintain equipment regularly.

- Route construction-related truck traffic along roadways that result in the least disturbance to sensitive receptors.

Mitigation Measure NO-4 *Vibration Reducing Technology.* BART shall incorporate vibration mitigation measures such as tire-derived aggregate (TDA) or floating slab track (FST) under the track, or other technology that may be developed to attain the FTA groundborne vibration operational criterion of 72 vibration velocity decibels (VdB). The general location of the mitigation measures under the track is presented in Table 22 of the prior 2011 IS/MND. However, the actual extent of the mitigation control would be determined during final design.

Mitigation Measure NO-5 *Construction Vibration Best Management Practices.* Where potential construction vibration impacts have been identified, the contractor shall be required to select equipment and methods that would reduce potential annoyance to nearby residents. Such practices include, but are not limited to, the following measures:

- Comply with a Performance Standard of 0.3 inch/second peak particle velocity (PPV) at any building at any time.

- Minimize vibration annoyance by maintaining vibration levels at 80 VdB or less at any building at any time.
- Prior to construction, BART shall prepare a Vibration Control and Monitoring Report, in which the contractor indicates what vibration levels they expect to generate, vibration control measures they intend to implement, and how they intend to monitor and document construction vibration and complaints.
- Avoid the use of impact pile drivers, and use instead sonic or vibratory impact drivers. It is also encouraged that "quiet" or "silent" piling technologies be used, if feasible.
- When nighttime or 24-hour construction is necessary, coordinate with residents to ensure that the affected residents are fully informed about the upcoming construction. Residents will be given the option of sleeping in hotel rooms at BART expense for the duration of the nighttime construction in areas where construction is expected to exceed the FTA criterion. Residents that work nights and sleep days in locations where construction vibration is expected to exceed the FTA criterion will be given the same option.
- Monitor vibration during construction to ensure compliance with the criterion for building damage for buildings within 40 feet from construction activities. Conduct a pre-construction crack survey at these structures.
- Plan routes for hauling material out of the Project site that would cause the least impact (annoyance).
- Restrict high amplitude vibration methods such as vibratory pile driving and soil compaction using large truck-mounted compactors to areas beyond 50 feet and 20 feet, respectively, of residential structures or wood-framed buildings. Otherwise, temporary accommodations away from construction shall be coordinated between BART and the residents.

The 2013 Addendum determined that because the noise and vibration analyses included in the 2011 IS/MND evaluated activities in the west side expansion area, which includes Building 3. Therefore, the 2013 Addendum determined that reconstruction of Building 3 would not result in new or substantially more severe significant impacts related to noise or vibration.

The 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe significant impacts than were identified in the

2011 IS/MND with implementation of the mitigation measures identified in the 2011 IS/MND. No change to the previous CEQA determinations were identified.

5.13.3 Impact Analysis

a. *Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?* ***(New Mitigation Required)***

The following section addresses the short-term construction and long-term operational noise impacts of the proposed Project.

Construction. Three types of short-term noise impacts would occur during Project construction: (1) equipment delivery and construction worker commutes; (2) Project construction operations, and (3) staging area activities.

Construction Traffic Noise. The first type of short-term construction noise would result from transport of construction equipment and materials to the Project site and construction worker commutes. The pieces of heavy equipment for grading and construction activities would be moved on site just one time and would remain on site for the duration of each construction phase. This one-time trip, when heavy construction equipment is moved on- and off-site, would not add to the daily traffic noise in the Project vicinity. Equipment transport noise and construction-related worker commute impacts would be short term and limited during the construction period. During the peak haul operations for the clearing, grubbing and site grading phase, the Project would generate an estimated total of 11,300 hauling truck trips over a 110-day period resulting in 102 trips per day. These transportation activities would incrementally raise noise levels on access roads leading to the site. Based on assumptions of the anticipated distribution of haul trips, during the clearing, grubbing and site grading phase, up to 30 trucks per day have the potential to access the Project site via Gresel Street passing single-family homes.

Construction Equipment Noise. The single-event noise from equipment trucks passing at a distance of 50 feet from a sensitive noise receptor would reach a maximum level of 84 dBA L_{max}. Based on the methodology presented in the FTA Manual, daily noise levels associated with haul truck activities are expected to approach 48.4 dBA L_{dn}. Therefore, noise associated with equipment transport and worker commutes would result in no impact to off-site uses.

The greatest effect associated with short-term noise impact is related to noise generated during building construction and track installation. Construction is undertaken in discrete steps, each of which has its own mix of equipment, and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the Project site. Therefore, the noise levels vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table M lists the maximum noise levels recommended for noise impact assessments for the project-specific construction equipment list based on a distance of 50 feet between the equipment and a noise receptor.

Table M: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)	Maximum Noise Level (L_{max}) at 50 Feet[1]
Ballast Equalizer	50	82
Ballast Tamper	50	83
Compressor	40	80
Cranes	16	85
Dozers	40	85
Drill Rig	20	84
Flat Bed Trucks	40	84
Forklift	20	85
Front-end Loaders	40	80
Generator	50	82
Man-lift	20	85
Impact Pile Driver	20	101
Rollers	20	85
Water Truck	40	84
Welder	40	73

Sources: Roadway Construction Noise Model (FHWA 2006); *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
Note: Noise levels reported in this table are rounded to the nearest whole number.
[1] Maximum noise levels were developed based on Specification 721.560 from the Central Artery/Tunnel program to be consistent with the City of Boston's Noise Code for the "Big Dig" project.
FHWA = Federal Highway Administration
FTA = Federal Transit Administration
L_{max} = maximum instantaneous sound level

Typical operating cycles for these types of construction equipment may involve 1 to 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. In addition to the reference maximum noise level, the usage factor I is used to calculate the hourly noise level impact for each piece of equipment based on the following equation:

$$L_{eq}(equip) = E.L. + 10\log(U.F.) - 20\log\left(\frac{D}{50}\right)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period.

E.L. = noise emission level of the particular piece of equipment at a reference distance of 50 ft.

U.F. = usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time.

D = distance from the receiver to the piece of equipment.

Each piece of construction equipment operates as an individual point source. Using the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

$$Leq\ (composite) = 10 * \log_{10}\left(\sum_{1}^{n} 10^{\frac{Ln}{10}}\right)$$

Using the equations from the methodology above, the reference information in Table M, and the construction equipment list within the *Air Quality and Greenhouse Gas Impact Analysis,*[88] the composite noise level of the two loudest pieces of equipment, consistent with the direction within the FTA Manual for a general assessment, was calculated. Assuming the combination of a dozer and forklift, the composite construction noise level at a distance of 50 feet would be 83 dBA L_{eq}. Because construction was assumed to occur for a minimum of eight hours a day, the calculated L_{eq} would be the same as an 8-hour L_{eq}.

Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

$$Leq\ (at\ distance\ X) = Leq\ (at\ 50\ feet) - 20 * \log_{10}\left(\frac{X}{50}\right)$$

In general, this equation shows that doubling the distance would decrease noise levels by 6 dBA while halving the distance would increase noise levels by 6 dBA. Based on the reference noise level of 83 dBA L_{eq} at a distance of 50 feet, the daytime noise standard of 80 dBA L_{eq} and nighttime noise standard of 70 dBA L_{eq} would be exceeded when sensitive uses are within 70 feet and 210 feet, respectively. In addition to traditional heavy equipment, track installation would include the operation of a ballast equalizer and ballast tamper. Impacts from this equipment would be nearly identical as the estimates for heavy equipment operations.

As determined by the Project engineer, there is potential that pile driving may be necessary for the structure abutments near Industrial Parkway and would occur during daytime hours. Based on the reference noise level of 101 dBA L_{max} with a usage factor of 20 percent at a distance of 50 feet, the daytime noise standard of 80 dBA L_{eq} would be exceeded when sensitive uses are within 250 feet.

Additionally, based on direction from the Project engineer, all construction within the maintenance yard and tie-in track installation outside of the mainline would occur during daytime hours. Nighttime construction work would be necessary for tie-in trackwork installation on the BART mainline tracks near Industrial Parkway. These activities would occur continuously for the durations of a 2-day or 3-day holiday weekend in order for shutdowns of the BART mainline track to occur.

It is expected that composite noise levels during typical construction at the nearest residential land uses to the east including single-family homes along Carroll Avenue, St. Anne's Place,

88 LSA. 2022b. op. cit.

Brookview Way, Brookside Lane, and Industrial Parkway would reach 79 dBA L_{eq} during the daytime heavy equipment and track installation operations. This level would be below the 80 dBA L_{eq} daytime noise standard, thus no impact would occur.

During the nighttime track installation activities as described above, sensitive receptors within 210 feet of the construction areas would potentially experience noise levels above the 70 dBA L_{eq} nighttime standard. Implementation of Mitigation Measure NO-3, identified in the 2011 IS/MND, would require BART to implement construction noise control measures to reduce noise impacts to surrounding uses. Due to the compressed schedule of track installation during holiday weekends, it is not feasible to erect temporary barriers or blankets near track installation areas. With implementation of Mitigation Measure NO-3, noise impacts associated with nighttime construction would be less than significant.

Staging Area Noise Impacts. The third type of short-term noise impact relates to noise generated at the proposed staging areas for construction equipment. Impacts at proposed staging areas would be consistent with those identified for heavy equipment such that sensitive uses within 70 feet of an active staging area have the potential to experience noise levels in excess of 80 dBA L_{eq} and have the potential to experience noise levels above 70 dBA L_{eq} when located within 210 feet of the staging areas.

When equipment and materials are moving around and in operation during nighttime hours, single-family homes along Carroll Avenue, St. Anne's Place, Brookview Way, and Brookside Lane as well as multi-family residences at the northeast corner of the BART mainline tracks and Industrial Parkway would experience noise levels above 70 dBA L_{eq}. Implementation of Mitigation Measure NO-3 would reduce noise impacts to surrounding uses.

While construction-related short-term noise levels have the potential to be higher than existing ambient noise levels in the Project area, the noise impacts would no longer occur once Project construction is completed. With implementation of Mitigation Measure NO-3, the proposed Project would not result in any new or more severe impacts compared to those identified in the prior environmental documents.

Operation. While the proposed HMC2 Project would incorporate some new or differing components within the existing HMC Yard, such as control houses, traction power substation, and washing facilities, as compared to the facilities evaluated in the 2011 IS/MND, the 2013 Addendum and the 2017 Second Addendum, the overall noise generated would be similar. The noise analyses in the prior environmental documents utilized standard assumptions for noise levels associated with HMC Yard operations, as presented in the FTA Manual and determined that no impact would occur. Because the proposed Project would include components that are typical in maintenance yard operations, no new operational noise impacts associated with these facilities would occur.

The following assessment of wayside noise impacts from operations of BART trains along the proposed Northern Mainline Connector and tie-in to the existing BART mainline was done in accordance with the FTA Manual. The assessment of potential noise impacts due to BART operations as part of the proposed Project is based on the FTA's General Assessment requirements within the FTA Manual. The FTA Criteria are based on the relative change in the cumulative noise exposure that would occur, using the “day- night” noise level descriptor (L_{dn}) for residential or other buildings with nighttime occupancy and peak hour L_{eq} for community parks. The existing ambient noise levels presented in Table L represent the existing noise levels north of the existing HMC facility.

Cumulative noise levels due to the proposed Project depend on quantity of operations (e.g., number of trains), time of operations, train length, speed, distance from the tracks to the buildings, and adjustments due to the presence of crossovers. The projected wayside noise levels also account for the operational noise from the proposed gap breaker stations. Cumulative noise levels were estimated based a conservative approach for the proposed Project. Per the FTA Manual, sensitive receptors are grouped in clusters based on similar distance to the proposed track centerline and ambient noise levels. The following is a list of the receptor clusters and the locations that they represent:

- R1 – Single family homes
  - Carrol Avenue, north of St. Andrews Place
  - St. Anne’s Place
  - Brookside Lane, Brookview Way to Brookdale Way
- R2 – Single family homes
  - Brookside Lane, north of Brookdale Way
- R3 – Recreational uses
  - Twin Bridges Park
  - Mission Hills of Hayward Golf Course
- R4 – Single-family homes
  - Arrowhead Way, north of Brookside Lane
- R5 – Recreational use
  - Driving range and practice facility at Mission Hills of Hayward Golf Course
- R6 – Multi-family homes
  - Northeast corner of Cue Way and Spectrum Lane

Table N shows a summary of the modeling of projected impacts. Impacts to all receptors would result in a No Impact determination for the impacts associated with trains leaving the HMC Yard and approaching the existing BART mainline.

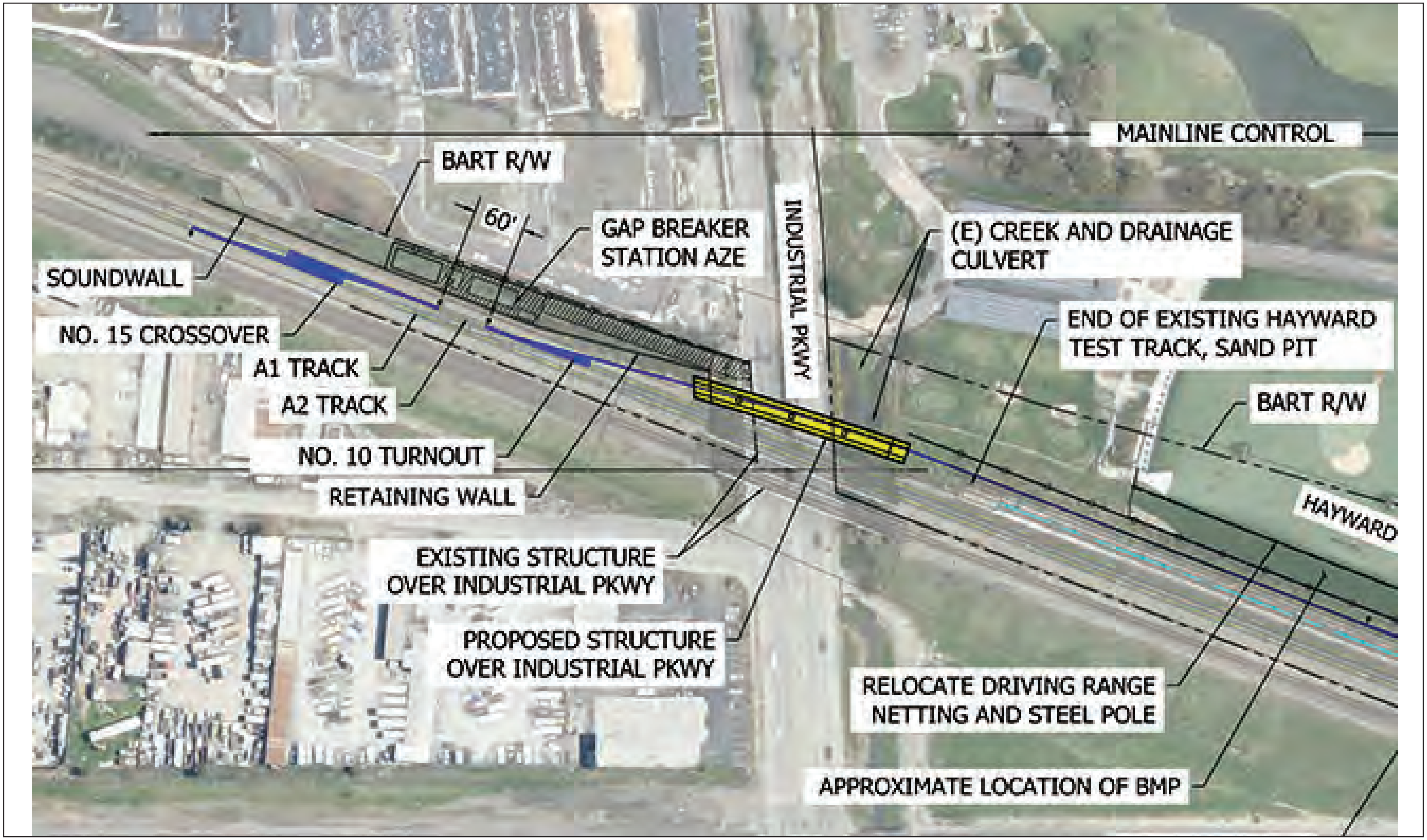
Table N: Projected Cumulative Noise Impact Assessment from BART Train Operations

Receptor Cluster	Distance to Nearest Track Centerline (feet)	Ambient Noise Level (dBA L_{dn})	Project Noise Level (dBA L_{dn})	Cumulative Noise Level (dBA L_{dn})	Noise Level Increase (dBA)	Allowable Increase Before Moderate Impact (dBA)	Impact Determination
R1	205	63	57	64	1	2	No Impact
R2	545	59	52	60	1	2	No Impact
R3	585	62[1]	54[1]	63[1]	1	2	No Impact
R4	800	58	54	59	1	2	No Impact
R5	175	64[1]	59[1]	65[1]	1	1	No Impact
R6	125	67	62	68	1	1	No Impact

Sources: LSA (2020); *BART – Hayward Maintenance Complex Noise and Vibration Technical Report* (WIA 2011).
[1] Represents peak-hour L_{eq} levels appropriate for the Category 3 land uses
BART = San Francisco Bay Area Rapid Transit District
dBA = A-weighted decibels
L_{dn} = day-night sound level
L_{eq} = equivalent sound level

In addition to the noise generated by the new tie-in track operations, the proposed Project would install a crossover north of Industrial Parkway to connect to the BART mainline track. As shown in Table N, the noise generated from the additional 24 trips that will pass-by the multi-family residences at receptor R6 at speed of 30 miles per hour (mph) is negligible compared to the 271 daytime and 44 nighttime trains at a speed of 70 mph on the mainline during typical future operations. However, the installation of a crossover would generate an approximate 5 dBA noise level increase associated with the daily trips along the BART mainline tracks to the residents represented by receptor R6 resulting in a severe impact. In order to eliminate noise levels associated with the increase due to crossover installation, a new mitigation measure, Mitigation Measure NO-6 (to follow Mitigation Measure NO-5 as described in Section 5.13.2 above), will be implemented. See also Figure 23, below, for further details.

Mitigation Measure NO-6 *Construction of Sound Wall at the Crossover for the Northern Mainline Connector.* BART shall construct a 5-foot-high barrier (above top of rail) that extends 150 feet south and 150 feet north of the crossover associated with the Northern Mainline Connector. The barrier shall be installed such that a reduction of approximately 7 dBA can be expected based on the methodology presented in the FTA Manual. This noise level reduction will cancel out the increase generated by the trains on the mainline passing through the crossover. The sound barrier must have a minimum surface density of 4 lb/ft^2 or be appropriately sound rated to be considered effective. Concrete block masonry, poured-in-place, or pre-cast concrete walls would be acceptable as construction materials.



LSA

FIGURE 23

NOT TO SCALE

BART HMC2 Project Supplemental IS/MND

Proposed Noise Barrier Location

SOURCES: BART, WE, Inc., 2020

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With implementation of Mitigation Measure NO-6, no new impacts or increase in the severity of impacts would occur. Due to the increased elevation of the BART mainline track and recommended barrier relative to the multi-family uses, the barrier will be effective for second floor receptors as well.

Trains would sound their horns when approaching the Car Cleaning Platform as part of a BART safety requirement. When calculating the daily horn noise levels based on the provided assumptions, the trains approaching the Car Cleaning Platform would produce a noise level of approximately 58 dBA L_{dn}. As shown in Table L, existing daily noise levels at the residences to the east of the Car Cleaning Platform average 58 dBA L_{dn}. Utilizing the impact criteria in Figure 22 above, the introduction of noise associated with train horns sounding would result in no impact; therefore, mitigation is not required.

b. *Would the project result in generation of excessive groundborne vibration or groundborne noise levels?* ***(No New Impact)***

The following section addresses the short-term construction and long-term operational vibration impacts of the proposed Project.

Construction. Ground-borne noise and vibration from construction activity would be mostly low to moderate. While there is currently limited information regarding vibration source levels, to provide a comparison of vibration levels expected for a project of this size, as shown in Table O, a large bulldozer would generate approximately 0.089 PPV in/sec of ground borne vibration when measured at 25 feet, based on the FTA Manual. A reference level of 0.089 PPV in/sec is assumed as a worst-case scenario for all equipment during normal construction activities and a level of 1.081 PPV in/sec is assumed during pile driving activities based on an average of typical and upper range conditions.

Table O: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)[1]
Impact Pile Driver (upper range)	1.518	112
Impact Pile Driver (typical)	0.644	104
Hoe Ram	0.089	87
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] RMS VdB re 1 µin/sec.
µin/sec = microinches per second
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity in decibels

The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the Project boundary (assuming the construction equipment would be used at or near the Project boundary) because vibration impacts occur normally within the buildings. The formulae for vibration transmission are provided below.

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

$$L_v dB\ (D) = L_v dB\ (25\ ft) - 30\ Log\ (D/25)$$

As shown above in Table J, it would take a minimum of 0.12 in/sec PPV to cause any potential building damage for extremely susceptible buildings, a minimum of 0.2 in/sec PPV for a non-engineered timber and masonry building, and a minimum of 0.3 in/sec PPV for an engineered concrete or masonry building.

The closest structures to the Project site and staging areas are the existing single-family homes to the east along Brookside Lane north of Brookdale Way, approximately 85 feet from the proposed construction staging activities. These buildings are assumed to be non-engineered timber and masonry. Using the equations above, the operation of a large bulldozer would generate ground-borne vibration levels of 0.014 in/sec PPV, which would not exceed the 0.2 in/sec PPV guideline that is considered safe for a non-engineered timber or masonry building and, therefore, would result in no impact. Similarly, the operation of a large bulldozer or similar heavy equipment would generate ground-borne vibration levels of 72.7 VdB, which would not exceed the 80 VdB guideline that is considered the threshold for annoyance to residential uses.

The closest structures to the proposed retaining wall that may include pile driving are the multi-family homes under construction at Spectrum Lane and Cue Way to the east, approximately 90 feet from the proposed construction activities. These buildings are assumed to be non-engineered timber and masonry. Using the equations above, the operation of an impact pile driver would generate ground-borne vibration levels of 0.158 in/sec PPV, which would not exceed the 0.2 in/sec PPV guideline that is considered safe for a non-engineered timber or masonry building and, therefore, would result in no impact.

Should it be determined that impact pile driving be necessary, based on the equations above, vibration noise levels at the nearest residences north of Industrial Parkway could approach 87.3 VdB and would exceed the 80 VdB guideline that is considered the threshold for annoyance to residential uses. Residences within 160 feet of impact pile driving would be exposed to vibration levels that may exceed the 80 VdB guideline that is considered the threshold for annoyance to residential uses.

While no vibration impacts associated with damage have been indicated, construction utilizing pile driving is likely to cause temporary annoyance during construction activities when occurring within 160 feet of construction activities. However, implementation of Mitigation Measure NO-5, identified in the 2011 IS/MND would reduce this impact to a less-than-significant level. With implementation of Mitigation Measure NO-5, the proposed Project would not result in any new or more severe impacts related to construction vibration.

Operation. To assess the potential ground-borne vibration impacts, ground vibration measurements were utilized to project vibration levels at the surrounding sensitive uses as compared to the FTA criteria presented in Table J above. The methodology used to assess the potential for vibration impacts for the proposed Project is identical to the General Assessment presented in the FTA Manual. The General Assessment method uses only an overall level and applies adjustments to account for different vibration factors. The vibration level projections include adjustments to account for train speed and increases due to building vibration response (BVR), which generally amplifies ground-borne vibration for residential buildings. In order to present a conservative analysis, the reduction due to elevation change was omitted.

To establish interior vibration levels, an adjustment of +3 VdB was applied to account for the general response of wood-framed residential structures such as those observed at all receptors in the area of the Project. This adjustment is sometimes referred to as the building vibration response (BVR) and is described further in the FTA Manual.

Because the reference vibration measurements were of a train traveling at 70 mph, speed adjustments are necessary to accurately assess the expected vibration impacts. The following equation is utilized such that $Speed_{ref}$ is 70 mph and Speed is adjusted as necessary:

$$\text{Change in VdB} = 20 * \text{Log}(\text{Speed}/\text{Speed}_{ref})$$

Vibration is assessed for receptors within 300 feet of the proposed trackwork. Due to the 24 pass-bys associated with the proposed Project, defined as infrequent (less than 30 per day) in Table K, the criteria for assessing potential annoyance would be 80 VdB for receptor clusters R1 and R2 as presented in Table P. Because R6 is affected by the addition of the crossover on the BART mainline track, which includes more than 70 events in a day (categorized as frequent events in Table K), 72 VdB is used as the criterion.

Table P: Projected Vibration Assessment from BART Train Operations

Receptor Cluster	Distance to Nearest Track Centerline (ft)	Vibration Criterion (VdB)	Project Vibration Level (VdB)	Impact Determination
R1	205	80	52	No Impact
R5	175	80	55	No Impact
R6	125	72	71	No Impact

Sources: LSA 2020; *BART – Hayward Maintenance Complex Noise and Vibration Technical Report* (WIA 2011).
BART = San Francisco Bay Area Rapid Transit District
ft = foot/feet
VdB = vibration decibels

As presented in Table P, no vibration impacts are expected from train movements from the HMC Yard to the BART mainline or as a result of the crossover installation near receptor cluster R6. No mitigation is required. The proposed Project would not result in any new or more severe vibration impacts related to operation of the HMC2 Project as compared to the impacts identified in the prior environmental documents.

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 2 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 New Impact)***

As previously stated, the Project site is not in the vicinity of a private airstrip or an airport land use plan, or within 2 miles of a public airport or public use airport. The closest airport to the Project site is the Hayward Executive Airport, which is located approximately 5 miles northwest of the Project site. Therefore, the proposed Project would not result in the exposure of on-site workers to excessive aircraft noise levels, and no impact would occur. As such, the proposed Project would not result in any new or more severe impacts compared to those previously identified in the prior environmental documents.

5.14 POPULATION AND HOUSING

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
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?	☐	☐	☐	☒

5.14.1 Background

The estimated 2020 population for the City of Hayward was 159,203 people and 47,666 households.[89] The Project site consists of approximately 22 acres of undeveloped land in the northernmost portion of the HMC facility. No residential units currently exist at the Project site.

5.14.2 Prior Environmental Analysis

No impacts related to population and housing were identified in the prior environmental documents.

5.14.3 Impact Analysis

a. Would the project 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 New Impact)***

The proposed Project would not include the construction of residential units or new businesses, and thus, would not directly induce population growth. The Project would expand the existing BART storage yard so additional BART vehicles could be accommodated on the maintenance and storage track facilities. Currently, there are approximately 370 BART employees at the Hayward Yard, and the proposed Project would not result in the need for additional employees to work in the new storage area. Rather, the new storage area would provide additional car storage capacity and increase operational flexibility for existing activities. The construction of the Northern Mainline Connector would enhance the operational flexibility of the East Storage Yard yet would not increase planned operations or employment at the storage yard. Therefore, the proposed Project would not directly or indirectly induce population growth. No new or substantially more significant impacts related to population growth would occur.

89 United States Census Bureau. 2021. Quick Facts, Hayward, California. Website: www.census.gov/quickfacts/haywardcitycalifornia (accessed November 16, 2021).

b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? ***(No New Impact)***

The proposed Project would not displace any existing housing or people, and no replacement housing would need to be constructed elsewhere, as the site is currently developed with the existing BART HMC facility. No impact would occur. Therefore, the proposed Project would not result in new significant or substantially more severe significant housing impacts than were analyzed in the prior environmental documents.

5.15 PUBLIC SERVICES

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i. Fire protection?	☐	☐	☐	☒
ii. Police protection?	☐	☐	☐	☒
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒

5.15.1 Background

The Hayward Maintenance Complex is located within the City of Hayward and the City of Union City and is served by the following existing public services.

Fire Protection. The Hayward Fire Department provides fire protection, paramedic advanced life support/emergency medical, and emergency services to all areas within the City limits, and to the Fairview Fire Protection District on a contract basis. The Hayward Fire Department operates nine stations, seven within the City and two within the Fairview area. The Fire Department currently employs approximately 146.5 staff members.[90] As of 2012, the Hayward Fire Department maintains a staffing ratio of 0.73 firefighters per 1,000 residents, less than its goal of one firefighter per 1,000 residents.[91] The Hayward Fire Department is in the process of conducting a community-driven strategic planning process to assess the Department's operational needs.[92] The closest fire department in the City of Hayward is Hayward Fire Station 3, located at 31982 Medinah Street.

Police Protection. BART has its own police department that investigates and responds to crimes on BART properties; however, local police departments respond to calls in surrounding areas and occasionally support BART police by responding to calls on BART properties. Local police departments in the vicinity include the Hayward Police Department, located at 300 Winton Avenue in the City of Hayward and the Union City Police Department, located at 34009 Alvarado-Niles Road in the City of Union City. In addition, BART maintains a secure facility with perimeter fencing and security lighting.

[90] Hayward, City of. 2021b. Adopted Budget, Fiscal Year 2022. Website: www.hayward-ca.gov/your-government/documents/budget-documents (accessed November 16, 2021).
[91] Hayward, City of. 2013. Hayward General Plan Update Background Report. November.
[92] Hayward, City of. 2021c. City of Hayward Fire Department website: www.hayward-ca.gov/fire-department/about-hfd/special-projects (accessed November 16, 2021)

Schools. The Hayward Unified School District (HUSD) provides educational services to the City and operates 22 elementary, five middle, and four high schools within the planning area. In addition, Chabot College and CSU East Bay are located within the City.[93]

Parks. The Hayward Area Recreation and Park District (HARD) and the East Bay Regional Park District (EBRPD) provide parks and recreation services within the City. HARD operates 57 parks within the City and provides recreational activities to residents.[94] EBRPD operates four recreational areas within the City.[95]

5.15.2 Prior Environmental Analysis

The 2011 IS/MND determined that impacts related to fire and police protection services would be less than significant. No impacts were identified to schools, parks, or other public facilities.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe significant impacts than were identified in the 2011 IS/MND. No change to the previous CEQA determinations were identified.

5.15.3 Impact Analysis

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

i. Fire protection? ***(No New Impact)***

The proposed Project would implement upgrades to BART's electrical system and would construct a paved service road suitable for fire truck access. The road would extend from Whipple Road through the entire length of the HMC Yard. The proposed Project would also include a new water distribution system for firefighting, which would cover fire protection through the East Storage Yard. These upgrades would contribute to fire safety at the Project site. Adherence to applicable BART procedures and implementation of proposed Project improvements would decrease the demand for fire services and ensure that there is adequate emergency access on site. Therefore, Project implementation would not trigger the need for new or physically altered fire protection facilities or result in substantial adverse physical impacts associated with the provision of, or 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 fire protection. Therefore, impacts to fire protection would be less than

93 Hayward, City of. 2013. op. cit.
94 Ibid.
95 East Bay Regional Park District (EBRPD). 2018. Parks by City. Website: www.ebparks.org/parks/Parks_by_City (accessed February 5, 2018).

significant. No new significant or substantially more severe significant impacts related to fire protection would occur.

ii. Police protection? ***(No New Impact)***

The proposed Project would not increase employment or result in additional residents; therefore, the Project would have no impact on the ratio of police officers per residents and would not contribute to delayed response times for police services provided by BART or the City of Hayward. Therefore, Project implementation would not trigger the need for new or physically altered police facilities. As described above, BART maintains a secure facility with perimeter fencing and security lighting. As part of the proposed Project, additional lighting and security fencing would be installed. These security improvements would ensure safety on and adjacent to the site. The proposed Project would not result in substantial adverse physical impacts associated with the provision of or 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 police protection. Therefore, the proposed Project would not result in new significant or substantially more severe significant impacts.

iii. Schools? ***(No New Impact)***

The proposed Project does not include any residential uses that would increase population growth, generate an increased demand for school facilities, or require the construction of school facilities. As previously stated, implementation of the Project is not anticipated to increase employment on the site and, as such, would not generate an increase in school-aged children that would require the need for new or expanded public school services within the HUSD. Therefore, the Project would not impact school services and facilities. Therefore, the proposed Project would not result in new significant or substantially more severe significant impacts related to schools.

iv. Parks? ***(No New Impact)***

As discussed in Section 5.14, Population and Housing, the Project would not significantly increase employment within the City or result in the construction of residential uses. As such, implementation of the proposed Project would not result in the increased the use of existing parks or other recreation uses and would not require the expansion of parks within the City. Therefore, the proposed Project would not result in new significant or substantially more severe significant impacts related to parks.

v. Other public facilities? ***(No New Impact)***

Development of the proposed Project would not increase demand for other public services including libraries, community centers, and public health care facilities. As previously discussed, the Project does not include development of residential uses or an increase in employment at the Project site and would, therefore, not result in increased demand for other public facilities. Therefore, the proposed Project would not result in new significant or substantially more severe significant impacts related to other public facilities.

5.16 RECREATION

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

5.16.1 Background

As of 2012, the parks and recreation land use cover approximately 6.5 percent (2,960 acres) of the City of Hayward planning area. Most of the parkland is located within Garin Regional Park, located in the southeastern portion of the City, and public and private golf courses. In addition, neighborhood and community parks through the City are accessible for everyday use by City residents.[96]

Several recreational facilities and regional parks are within close proximity to the proposed Project location including: Mission Hills of Hayward Golf Course, Twin Bridges Park, Silver Star Veterans Park, Fairway Greens Park, Bidwell Park, Mission Boulevard Greenway, and El Rancho Verde Park.

5.16.2 Prior Environmental Analysis

No impacts related to recreation were identified in the prior environmental documents.

5.16.3 Impact Analysis

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? ***(No New Impact)***

The proposed Project would not increase the number of employees at the existing HMC facility and there would be no new housing associated with the Project. Because the proposed Project would not substantially increase the population directly, indirectly, temporarily, or permanently, the Project would not generate any new demand for recreational facilities. Therefore, the Project would not increase the use of existing recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Therefore, no new significant or substantially more severe significant impacts related to existing recreation facilities would result from the proposed Project.

96 Hayward, City of. 2013. op. cit.

b. *Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?* ***(No New Impact)***

The proposed Project does not include the construction or expansion of recreational facilities; however, implementation of the proposed Project would result in temporary and permanent impacts to the existing golf course driving range, located just east of the proposed Northern Mainline Connector. Permanent and temporary impacts to the golf course driving range are described further below.

Permanent Impacts. Construction of the track for the Northern Mainline Connector would require the relocation of the boundary fence between the golf course driving range and the existing BART facility. The boundary fence consists of black safety netting strung between steel poles that extend approximately 120 feet above ground level. The property where the fence is located is owned by BART, but HARD has an existing operating easement for the property for operation of the driving range. The relocation would shift the boundary fence approximately 50 feet to the east along 1,310 feet (the full length of the driving range). Approximately 61,544 square feet (1.41 acres) of property would be permanently affected. The boundary shift would require BART and HARD to extinguish a portion of the existing operating easement. The area represents approximately 9.5 percent of the driving range area, which would be permanently affected; however, following construction, the driving range would re-open and would operate as it does under existing conditions. Although the acquisition area would minimally reduce the overall size of the driving range, it would not inhibit existing recreational activities within the golf course/driving range. The reduction in area of the driving range would not change the number of users the driving range can accommodate or the hours the driving range can operate.

In addition, approximately 2.24 acres of the undeveloped open space area south of the driving range is being considered for conversion to a permanent wetland area as mitigation for the loss of wetlands on site. Development of wetlands would follow use of this area as the Secondary Staging Area during construction. Conversion of this area to permanent wetland would entail establishment of a conservation easement over this portion of HARD's property, to preserve the created wetlands in perpetuity. BART would provide HARD compensation for any permanent impacts. The details of the proposed compensation would be negotiated as part of real estate negotiations between the two agencies. This area is currently undeveloped open space but has historically been used by HARD for various purposes and has been considered for various other uses. This area is not currently accessible/open to the public or developed with recreational facilities. Because this area is not used for recreation, permanent impacts to this area south of the driving range would have no impact on recreation facilities.

Temporary Impacts. Construction of the embankment, retaining wall, and trackway for the Northern Mainline Connector would require a temporary construction easement and staging area adjacent to the current BART embankment. Two staging area locations would be provided: one on the HARD driving range immediately adjacent to the existing trackway, and the second on HARD property just south of the driving range. Construction access would be required from Industrial Parkway and the driving range parking lot and service road, which would require the temporary removal of the solar panels in the eastern portion of the driving range parking lot to provide the space for a safe path for large trucks. Typical vehicles would include pickup trucks, cement trucks, and semi-trucks. Following construction, the driving range would be restored with a relocated western fence, the turf would be replaced, and the solar panels would be reinstalled. The golf course driving range would be closed throughout the approximately 14-month construction period.

Prior to the proposed closure, notices would be provided to inform the public of the dates, times, and duration of the proposed closure. BART would coordinate with HARD regarding the appropriate methods for notifying the public; however, it is anticipated that notification would include, but not be limited to, a notice posted at the golf course clubhouse, and posted updates on the HARD website. The proposed closure would be temporary and use of the golf course driving range would resume once construction activities are complete. HARD would experience a loss of revenue from the closure of the driving range during construction; BART would compensate HARD for the temporary revenue loss and temporary impacts during construction as part of real estate negotiations between the two agencies.

The portion of the golf course driving range and staging areas included in the Project area have been evaluated in this Initial Study checklist and the technical studies (e.g., noise, biological resources, visual, etc.) prepared for the proposed Project. The physical impacts resulting from the construction of facilities within and use of the golf course driving range for construction staging have been evaluated in this Initial Study checklist. Therefore, no new significant or substantially more severe significant impacts related to new recreation facilities would result from the proposed Project.

A portion of the funding for the HMC Project, and for the East Storage Yard and the Northern Mainline Connector in particular, is being provided by the FTA. Due to the federal funding, the proposed Project will require an environmental evaluation consistent with the National Environmental Policy Act (NEPA), and BART expects to request a Categorical Exclusion from FTA for that purpose. Pursuant to federal requirements, a Section 4(f) analysis of the proposed Project has been completed and is provided as Appendix D of this Supplemental IS/MND.

5.17 TRANSPORTATION

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
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 §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?	☐	☐	☐	☒

5.17.1 Background

Major highways in the vicinity of Hayward include Interstate 880 (I-880), approximately 1.5 miles west of the Project site, and State Route 238 (SR 238), approximately 0.5 mile to the east of the Project site. The HMC Yard is situated on 116 acres in the City of Hayward just north of Whipple Avenue and south of Industrial Parkway, both of which are major arterial roadways near the proposed Project. Existing vehicle access to the HMC Yard is from Sandoval Way and Whipple Road. Vehicle access from the north to the main BART shop area and the portion of the HMC Yard west of the mainline tracks is from Sandoval Way, which connects to Huntwood Avenue just south of Industrial Parkway. The main shop and warehouse area are accessible from the south via a BART driveway from Whipple Road. Access to the portion of the HMC Yard east of the mainline is from a BART access road on the north side of Whipple Road; this is the only vehicular access to the portion of the HMC Yard located east of the BART mainline.

5.17.2 Prior Environmental Analysis

The 2011 IS/MND determined that the HMC Project would have less-than-significant impacts related to conflicts with a congestion management agency. No impacts related to air traffic patterns, emergency access, or pedestrian, bicycle or transit facilities were identified. Potentially significant impacts related to the circulation system and design hazards were identified, due to the increase in vehicles/construction equipment accessing the site during the construction period and the reconfiguration of the Whipple Road intersection to mitigate sight distance safety hazards. Mitigation measures TR-1 and TR-2 were identified to reduce these impacts to a less-than-significant level. These mitigation measures would apply to the proposed Project:

Mitigation Measure TR-1 *Construction Phasing and Traffic Management Plan.* BART will ensure that a Construction Phasing and Traffic Management Plan is developed and implemented by the contractor. The plan shall define how traffic operations, including construction equipment and worker traffic, are managed and maintained during each phase of construction. The plan shall be developed in consultation with the cities of Union City and Hayward, BART, and Union City Transit Bus Lines. To the maximum practical extent, the plan shall include the following measures:

a. Specify predetermined haul routes from staging areas to construction sites and disposal areas by agreement with the cities of Union City and Hayward prior to construction. The routes shall follow streets and highways that provide the safest route and avoid congested intersections to the extent feasible.

b. Identify construction activities that, due to concerns regarding traffic safety or congestion, must take place during off-peak hours.

c. Identify a telephone number that the public can call for information on construction scheduling, phasing, and duration, as well as for complaints. Such information shall also be posted on BART's website.

Mitigation Measure TR-2 *Reconfiguration of Southbound Approach of the West Side Expansion Area Driveway.* BART will reconfigure the approach to Whipple Road for the west side expansion area driveway by narrowing the mouth of the intersection and channeling southbound traffic to approach Whipple Road at a more perpendicular angle. In addition, shrubbery/vegetation that impedes vehicle line of sight to the east will be removed.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe significant impacts than were identified in the 2011 IS/MND with implementation of the mitigation measures identified in the 2011 IS/MND. No change to the previous CEQA determinations were identified.

The topic of the Project's contribution to vehicle miles traveled (VMT) was not analyzed in the 2011 IS/MND, the 2013 Addendum, or the 2017 Second Addendum.

5.17.3 Impact Analysis

a. Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? ***(No New Impact)***

Section 21099(b)(2) of the California Public Resources Code (PRC) (certified 28, 2018) states that vehicle delay and level of service (LOS) have been removed from consideration under CEQA. Per *State CEQA Guidelines* Section 15064.3, Determining the Significance of Transportation Impacts, CEQA now requires evaluating a project's transportation impacts as measured by VMT.[97] The

[97] Vehicle miles traveled refers to the amount and distance of automobile travel attributable to a project.

consistency of the proposed Project with applicable transportation plan standards, including bicycle and pedestrian facilities is described below.

Project Operation. Operation of the HMC Phase 2 Project would not generate additional traffic. Operations of the East Storage Yard would allow BART vehicle storage and operations now located west of the mainline tracks to move to the east of the tracks, allowing more car storage and flexibility for operations within the HMC facility. The Northern Mainline Connector would provide an improved and more efficient connection for BART vehicles to and from the northbound mainline. No additional non-transit trips would be generated, and the proposed Project would have no impact on non-BART transit services. No change to local sidewalks or bikeways would be required, so there would be no impact to pedestrian or bicycle facilities. The proposed Project would provide a long-term benefit to public transit through improved maintenance facilities for BART.

Project Construction. Construction of the proposed Project would result in additional vehicle trips related to heavy construction equipment and construction worker trips during the construction phase. Construction activities would include site grading, and construction of embankment and retaining walls, overcrossing, drainage improvements, underground utilities, access roads, new railroad track, gap breaker stations, a substation, miscellaneous train operator and car cleaner facilities, a train wash, and system components such as signals. During the grading phase of construction, BART anticipates approximately 84,700 cubic yards of import material would be required, resulting in 11,300 truck trips. The grading phase would span 110 working days, resulting in approximately 102 truck trips per day. This phase would generate the highest number of trips per day of any construction phase.

Construction of underground stormwater storage would require delivery of precast parts resulting in 160 truck trips over 30 working days. Assuming the proposed bridge over Industrial Parkway would consist of reinforced and post-tensioned concrete, installation of the proposed overcrossing would require delivery of concrete, resulting in 142 truck trips over 165 working days. Installation of retaining walls would require 326 truckloads (652 truck trips) of concrete over 100 working days. Construction of access roadways would require 180 truckloads (360 truck trips) of aggregate and asphalt over 30 working days. Installation of new railroad track would require 400 truckloads (800 truck trips) of ballast material over 305 working days. Installation of the bioretention basin would require 350 truckloads (700 truck trips) of biofiltration soil mix and drainage aggregate over 20 working days. Overall, the construction period and period of elevated truck trips would be approximately 24 months.

Construction related impacts would result from the movement of construction equipment and construction workers' vehicles on and off the Project site. Traffic construction effects would mostly occur when construction related vehicles enter and exit the site from public roadways including Whipple Road, Mission Boulevard, Gresel Street, and Industrial Boulevard. These effects would occur on a daily basis during construction but ultimately, would be temporary. It is likely that large construction equipment would be transported to the site and remain there for the duration of construction.

As described in Section 3.4.5.10, Construction Access and Staging, construction access would be accomplished through four possible routes:

1. Through the existing HMC gate located at 951 Whipple Road. This route would be utilized for the duration of the Project construction.

2. From Mission Boulevard to Gresel Street, a local neighborhood roadway to access the site through a gate to UPRR owned property. This route would be utilized for approximately 13 months.

3. By way of Industrial Parkway through the Golf Course driving range parking area. This route would be utilized for approximately 13 months.

4. By way of an access gate at the end of Valle Vista Avenue. This route would be utilized for approximately 3 months.

The Project does not include any characteristics (e.g., permanent road closure or long-term blocking of road access) that would physically impair or otherwise interfere with transit, roadways, bicycle facilities, and/or pedestrian facilities in the Project vicinity during Project construction. Construction activities may require temporary sidewalk closures for construction (e.g., at Industrial Parkway, gap breaker station) and bicyclists and pedestrians could be temporarily impacted by additional traffic turning into and out of the proposed Project site via proposed access routes during Project construction. During Project construction, the contractor would be responsible for providing a temporary sidewalk and/or pedestrian routing plan, as part of the Construction Phasing and Traffic Management Plan required by Mitigation Measure TRA-1.

Consistent with Mitigation Measure TRA-1, identified in the 2011 IS/MND, BART would ensure that a Construction Phasing and Traffic Management Plan is developed and implemented by the contractor. The Construction Phasing and Traffic Management Plan would be prepared in consultation with the City of Hayward and the City of Union City and would identify heavy vehicle routes and hours of operation, including activities that, due to concerns regarding traffic safety or congestion, would take place during off-peak hours. Consistent with the BART Facilities Standards, traffic control would also include, as needed, pedestrian handling plans for each phase of the work requiring different pedestrian diversion patterns and methods of control, as well as the use of qualified flaggers to direct construction traffic at access points. Implementation of Mitigation Measure TRA-1 would ensure that hazards are limited, and emergency access is preserved during the construction period. No new impacts or substantially more severe significant impacts would occur.

b. Would the project conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)? ***(No New Impact)***

Effective December 28, 2018, the *State CEQA Guidelines* were updated and require the evaluation of vehicle miles traveled (VMT) as the criteria for analyzing transportation impacts for land use projects. *State CEQA Guidelines* Section 15064.3, Determining the Significance of Transportation Impacts, describes specific considerations for evaluating a project's transportation impacts. Generally, VMT is the appropriate measure of transportation impacts. Details of guidelines for potential transportation impacts are explored further in the Governor's Office of Planning and Research (OPR) released its *Technical Advisory on Evaluating Transportation Impacts in CEQA*

(Technical Advisory)[98]. This State document provides sufficient guidance to permit the evaluation of Project transportation impacts for compliance with CEQA.

Section 15064.3(b)(2) (Transportation Projects) acknowledges that "Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less-than-significant transportation impact."

The proposed Project would facilitate the maintenance and operation of passenger rail service. No additional automobile VMT would be generated. As such, the proposed Project is consistent with Section 15064.3(b)(2). Therefore, the OPR Technical Advisory identifies that, upon completion, the proposed Project is unlikely to result in a substantial or measurable increase in VMT, and the transportation impact for the purposes of CEQA would be less than significant.

Construction of the proposed Project would temporarily generate additional truck and auto traffic. The Technical Advisory specifies that automobile travel analyzed under Section 15064.3 applies specifically to cars and light trucks. Heavy trucks are not included under this section. Therefore, only the new daily vehicle trips generated by construction workers would be considered. As part of these screening criteria, projects attracting fewer than 110 trips per day would be assumed to have a less-than-significant impact.

Based upon the Project Construction scenario described above in Section 5.17.1, a maximum of approximately 40 construction workers per day are anticipated during the busiest construction phase. If all of these workers commute by single-occupant vehicle to and from the proposed Project site, a maximum total of 80 new daily trips would be added to the roadway network during Project construction, which is fewer less than the 110 trips per day screening criteria. Therefore, the OPR Technical Advisory identifies that construction of the proposed Project is unlikely to result in a substantial or measurable increase in VMT, and the transportation impact for the purposes of CEQA would be less than significant.

c. *Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?* ***(No New Impact)***

The proposed Project would not reconfigure existing off-site roadways or driveways nor would it introduce new uses that would be incompatible with the existing uses (e.g., warehousing and industrial) at the HMC facility. proposed Project improvements would be designed and constructed in compliance with the BART Facilities Standards, as well as standard engineering practices. Therefore, the proposed Project would not substantially increase hazards due to a geometric design feature or incompatible uses.

During construction, construction vehicles would be staged within the off-roadway staging areas and additional heavy vehicles would travel along major arterials and roadways in proximity to the Project site. Heavy construction equipment can have a greater effect on intersection and roadway

98 Governor's Office of Planning and Research (OPR). 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA.* December.

performance than passenger vehicles. To ensure that hazards are limited and emergency access is preserved, the contractor would prepare and implement a Construction Phasing and Traffic Management Plan, as required by Mitigation Measure TR-1 identified in the 2011 IS/MND. The Construction Phasing and Traffic Management Plan would be prepared in consultation with the Cities of Hayward and Union City and would identify heavy vehicle routes and hours of operation, including activities that, due to concerns regarding traffic safety or congestion, would take place during off-peak hours. Implementation of Mitigation Measure TR-1 would reduce the possibility of hazards during Project construction to less than significant. No new impacts or substantially more severe significant impacts would occur.

d. Would the project result in inadequate emergency access? ***(No New Impact)***

The proposed Project would use existing driveways for access to the site through Sandoval Way and from Whipple Road. These driveways currently provide fire and emergency access to the existing HMC facility and would continue to meet all applicable regulations and requirements for fire and emergency access under future conditions. In addition, the proposed Project would include construction of a paved road, extending from Whipple Road north along the length of the Project site to, and adjacent to, the Northern Mainline Connector trackway. This road would improve emergency access to all BART operations within the HMC facility, east of the BART mainline. Therefore, the proposed Project would not result in inadequate emergency access. No new impacts or substantially more severe significant impacts would occur.

5.18 TRIBAL CULTURAL RESOURCES

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)? Or	☐	☐	☐	☒
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

5.18.1 Background

Chapter 532, Statutes of 2014 (i.e., Assembly Bill [AB] 52), requires that Lead Agencies evaluate a project's potential to impact "tribal cultural resources," which are:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe and are one of the following:
  - Included or determined to be eligible for inclusion in the California Register of Historical Resources.
  - Included in a local register of historical resources as defined in subdivisions (k) of Public Resources Code (PRC) Section 5020.1.
  - A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivisions (c) of PRC Section 5024.1. In applying the criteria set forth in subdivisions (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

A "historical resource" (PRC Section 21084.1), a "unique archaeological resource" (PRC Section 21083.2(g)), or a "nonunique archaeological resource" (PRC Section 21083.2 (h)) may also be a tribal cultural resource if it is included or determined to be eligible for inclusion in the California Register of Historical Resources. AB 52 also gives Lead Agencies the discretion to determine, supported by substantial evidence, whether a resource qualifies as a "tribal cultural resource."

The consultation provisions of the law require that a public agency consult with local Native American tribes that have requested placement on that agency's notification list for CEQA projects. Within 14 days of determining that a project application is complete, or a decision by a public agency to undertake a project, the Lead Agency must notify tribes of the opportunity to consult on the Project, should a tribe have previously requested to be on the agency's notification list. California Native American tribes must be recognized by the California Native American Heritage Commission (NAHC) as traditionally and culturally affiliated with the Project site and must have previously requested that the Lead Agency notify them of projects. Tribes have 30 days following notification of a project to request consultation with the Lead Agency.

The purpose of the consultation is to inform the Lead Agency in its identification and determination of the significance of tribal cultural resources. If a project is determined to result in a significant impact on an identified tribal cultural resource, the consultation process must occur and conclude prior to the adoption of a Negative Declaration or Mitigated Negative Declaration, or certification of an Environmental Impact Report (PRC Sections 21080.3.1., 21080.3.2, and 21080.3).

5.18.2 Prior Environmental Analysis

The topic of the Project's potential impacts to tribal cultural resources was not specifically analyzed in the 2011 IS/MND, the 2013 Addendum, or the 2017 Second Addendum. However, the prior environmental documents analyzed prehistoric and historic resources and included mitigation measures related to archaeological resources and human remains. These measures are listed in Section 5.5, Cultural Resources, of this Initial Study checklist.

5.18.3 Impact Analysis

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

   i. *Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?* ***(No New Impact)***

   Or

   ii. *A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.* ***(No New Impact)***

Native American Heritage Commission. As part of the Cultural Resources Study prepared for the proposed Project, a review of the NAHC Sacred Lands File was requested on June 9, 2020, for any Native American cultural resources located within the Project area. The NAHC is a State agency that maintains the Sacred Lands File, an official list of sites that are of cultural and religious importance to California Native American tribes.

A response was received on June 10, 2020, from Sarah Fonseca, Cultural Resources Analyst at the NAHC, stating that "A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced Project. The results were positive. Please contact the Ohlone Indian Tribe on the attached list for more information." A list of eight tribes and their contact information was also provided with the NAHC's response.

Tribal Consultation. On August 31, 2020, BART sent AB 52 outreach letters to the tribes listed in the contact list provided by the NAHC on June 10, 2020. The letters, sent via certified mail to the individuals listed in Table Q, described the Project, provided maps of the Project site, and invited the tribes to request consultation should they have any concerns.

Table Q: AB 52 Tribal Outreach Recipients

Recipient	Contact Information
Muwekma Ohlone Indian Tribe of the San Francisco Bay Area Monica Arellano	20885 Redwood Road, Suite 232 Castro Valley, CA 94546
Costanoan Rumsen Carmel Tribe Tony Cerda, Chairperson	244 E. 1st Street Pomona, CA 91766
The Ohlone Indian Tribe Andrew Galvan	P.O. Box 3388 Fremont, CA 94539
The Confederated Villages of Lisjan Corrina Gould, Chairperson	10926 Edes Avenue Oakland, CA 94603
North Valley Yokuts Tribe Katherine Perez, Chairperson	P.O. Box 717 Linden, CA 95236
Indian Canyon Mutsun Band of Costanoan Ann Marie Sayers, Chairperson	P.O. Box 28 Hollister, CA 95024
North Valley Yokuts Tribe Timothy Perez, MLD Contact	P.O. Box 717 Linden, CA 95236
Amah Mutsun Tribal Band of Mission San Juan Bautista Irenne Zwierlein, Chairperson	789 Canada Road Woodside, CA 94062

AB = Assembly Bill
MLD = Most Likely Descendant

Delivery receipts indicate that seven of the eight individuals received the AB 52 outreach letters, while one recipient's letter (Ann Marie Sayers, Chairperson of the Indian Canyon Mutsun Band of Costanoan) was returned as "undeliverable."

No responses were received from the seven individuals documented as receiving the AB 52 outreach letters. BART Project Manager Aidin Sarabi sent a follow-up email to Ms. Sayers (10/19/20) and left a voicemail (10/29/20) to ensure that she was notified of the opportunity to consult. BART also sent a follow-up email (10/16/20) to Ms. Gould to ensure that she was notified of the opportunity to consult. Ms. Gould responded via email (11/4/20) to request more information about the Project, and BART transmitted the requested information via email (11/5/20). To date, no response to these emails or voicemail has been received.

On December 15, 2021, BART sent follow-up letters via email to the same tribal contacts to provide supplemental information regarding modifications to the proposed Project, which resulted in adjustments to the proposed Area of Potential Effects (APE) map prepared for the Project. To date, one tribal contact responded to confirm receipt of the notification; however, no requests for consultation have been received.

As discussed previously in Section 5.5, Cultural Resources, of this Supplemental IS/MND, the Northwest Information Center (NWIC) records search and the archaeological survey completed for the Project did not identify evidence of Native American archaeological deposits or ancestral remains. The proposed Project would not impact known tribal cultural resources that are listed or eligible for listing in the California Register of Historical Resources or a local register of historical resources, nor has BART identified a tribal cultural resource at the Project site. As noted in Section 5.5, Cultural Resources, implementation of Mitigation Measures CR-1 and CR-2 would ensure that potential impacts related to previously undiscovered historic or archaeological resources and human remains, including tribal cultural resources, would be less than significant. Therefore, the proposed Project would not result in a significant impact to tribal cultural resources.

5.19 UTILITIES AND SERVICE SYSTEMS

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
Would the project:				
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

5.19.1 Background

Wastewater Treatment. The City of Hayward is responsible for collection and treatment of wastewater within the community and the East Bay Dischargers Authority (EBDA) is responsible for disposal of the treated wastewater. Wastewater is collected and transported via underground sewer lines to the City of Hayward Water Pollution Control Facility (WPCF) located at the terminus of Enterprise Avenue in western Hayward. Hayward also delivers secondary treated wastewater from the WPCF to the Russell City Energy Center (RCEC), located adjacent to the WPCF. The RCEC further treats the wastewater to tertiary standards and uses it as cooling water in its energy production process.[99] The City's wastewater collection system includes about 350 miles of sewer mains, nine sewage lift stations, and 2.5 miles of force mains.

Wastewater from the proposed Project would be treated at the WPCF in accordance with the existing National Pollutant Discharge Elimination System (NPDES) permit. The City of Hayward 2020 Urban Water Management Plan (UWMP) estimates that in 2020, Hayward collected and treated 3,922 million gallons of wastewater (approximately 10.8 million gallons per day [mgd]).[100] The Hayward WPCF is permitted to provide treatment for up to 18.5 mgd.

Water Service and Supply. Water supply to the Project site is provided by the City of Hayward.

The City of Hayward provides water service for residential, commercial, industrial, governmental, and fire suppression uses. The City owns and operates its own water distribution system. The water

99 Hayward, City of. 2021d. *City of Hayward 2020 Urban Management Plan*. June.
100 Ibid.

supplied to Hayward is predominantly from the Sierra Nevada mountains, delivered through the Hetch-Hetchy aqueducts, but also includes some treated water produced by the San Francisco Public Utilities Commission (SFPUC) from its local watershed and facilities in Alameda County. The City's agreement with SFPUC allows the City of Hayward to buy sufficient water to serve its needs. However, during drought years, the City must reduce water use based on a formula established by SFPUC. The City has emergency water supplies through connections with the Alameda County Water District (ACWD) and the East Bay Municipal Utility District (EBMUD), and short-term use emergency wells, in case of disruption of delivery from SFPUC.

The City is required to prepare an UWMP every five years to provide long-term water resource planning and to ensure adequate water supplies are available to meet existing and future water demands, in accordance with the UWMP Act. The 2020 UWMP was adopted by the City in June 2021.[101]

In normal years, the City anticipates being able to deliver sufficient water supplies to the proposed Project, as reflected in the 2020 UWMP. For single and multiple dry years, the City considers that its Water Shortage Contingency Plan,[102] which was adopted in June 2021, would allow the City to supply water to the proposed Project area in accordance with required reductions. For the purpose of projecting water use, the City of Hayward conservatively assumed normal economic and climate conditions would exist during the UWMP planning period; however, unpredictable weather conditions and continued economic development ultimately influence water supply.

Stormwater. The major storm drainage facilities in Hayward are owned and maintained by the ACFCWCD, which designs and constructs drainage facilities to meet the existing and projected flood control needs. Storm drain pipes smaller than 30 inches are typically owned by the City of Hayward and are generally provided within local streets and easements. The storm drain system consists of gravity pipelines predominantly made of reinforced concrete, which discharge to underground storm drain lines or open channels owned by the ACFCWCD. The City of Hayward has five pump stations that pump stormwater into stormwater collection systems and/or dry creeks immediately downstream. Stormwater flows eventually drain into Mt. Eden Creek and Old Alameda Creek and into San Francisco Bay.

The City of Hayward spans across flood protection Zones 2, 3A, and 4. Zone 2 includes the northernmost area of Hayward, Zone 4 is located in the northwest area of Hayward, and the remaining areas of Hayward are located in Zone 3A.[103] As discussed in Section 5.10, Hydrology and Water Quality, stormwater runoff from the Project site is conveyed to two engineered channels designated by the ACFCWCD as Zone 3A, Line N and Zone 3A, Line D, and Dry Creek.

Solid Waste. The City of Hayward Department of Public Works, Utilities and Environmental Services Division, provides weekly garbage collection and disposal services through a Franchise Agreement with Waste Management, Inc. (WMI), a private company. WMI subcontracts with a local non-profit, Tri-CED Community Recycling, for residential collection of recyclables. The Hayward area is served

[101] Hayward, City of. 2021d. op. cit.
[102] Hayward, City of. 2021e. *City of Hayward 2020 Water Shortage Contingency Plan*. June.
[103] Hayward, City of. 2014. *Hayward 2040 General Plan Background Report*. January.

by the Davis Street Transfer Station, which is located in San Leandro and owned and operated by WMI.

WMI disposes of solid waste from the city of Hayward at Altamont Landfill, which is also owned and operated by WMI and located in the eastern part of the County near Greenville Road. Altamont Landfill is a Class II facility that accepts municipal solid waste from the following Alameda County municipalities: Alameda, Albany, Berkeley, Castro Valley, Dublin, Emeryville, Fremont, Hayward, Newark, Oakland, the Oro Loma Sanitary District, and unincorporated Alameda County, as well as wastes imported from the city and county of San Francisco and San Ramon. The Altamont Landfill Resource Recovery Facility has a maximum daily permitted throughput of 11,150 tons per day and a remaining capacity of approximately 65.4 million cubic yards.[104] The Altamont Landfill's estimated closure date is currently December 2070. Vasco Road Landfill is the other disposal site located in Alameda County with remaining capacity.

5.19.2 Prior Environmental Analysis

The 2011 IS/MND determined that impacts related to utilities and service systems would be less than significant. No mitigation measures were identified for this environmental topic.

The 2013 Addendum determined that the demolition and reconstruction of Building 3 would not change the uses within the Component Repair Shop and would not change the less-than-significant impact on utilities and systems.

The 2017 Second Addendum determined that modifications to the HMC Project would result in an increased number of employees that would generate a corresponding increase in the demand for utilities and service systems. However, the 2017 Second Addendum determined that the City's waste supply and wastewater facilities have sufficient capacity to accommodate the additional demand. No new impacts or increase in the severity of impacts would occur.

5.19.3 Impact Analysis

a. *Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?* ***(No New Impact)***

The Project site would be developed with infrastructure to support the Project components including water, storm drains, bioretention and other drainage facilities, electrical power, sewer, and communication systems. Impacts to the environment associated with the construction of these Project elements are described throughout this document, including Section 5.2, Air Quality; Section 5.3, Biological Resources; and Section 5.10, Hydrology and Water Quality. The proposed Project has been designed to minimize impacts to the environment. Where impacts have been identified, mitigation measures have been provided to reduce potential impacts to a less-than-significant level.

[104] California Department of Resources Recycling and Recovery (CalRecycle). 2019. Facility/Site Summary Details: Altamont Landfill & Resource Recovery (01-AA-0009). Website: www2.calrecycle.ca.gov/Solid Waste/SiteActivity/Details/7?siteID=7 (accessed September 28, 2021).

The proposed Project would not require the off-site relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities. Impacts to the environment related to the construction of water, wastewater treatment, drainage, electrical, natural gas, and telecommunication facilities would be less than significant. No new impacts or substantially more severe significant impacts would occur.

b. *Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?* ***(No New Impact)***

Short-term demand for water may occur during construction activities on site. Water demand for soil watering (fugitive dust control), cleanup, masonry, painting, and other activities would be temporary and would cease at Project build out. Overall, demolition and construction activities would require minimal water use and are not expected to have any adverse impacts on the existing water system or available water supplies. Therefore, potential Project impacts associated with short-term construction activities would be less than significant.

The HMC Yard currently draws water from approximately 16 metered connections scattered throughout the HMC site that draw water from the City of Hayward. Construction of the proposed Project would require installation of two to three new points of connection to draw domestic water into the site to serve proposed HMC2 Project improvements, and upgrades to existing HMC Yard facilities would require additional water usage. Based upon calculations of Project components that would require the use of domestic water and the upgrade of the existing facilities, the Average Daily Demand (ADD)[105] for water would be 23,440 gallons per day (0.02 million gallons per day [mgd]). The Peak Hourly Demand (PHD)[106] would be 272 gallons per minute.

According to the City of Hayward 2020 UWMP, in 2020, the City had an annual water supply of 5,259 million gallons.[107] The additional water demand associated with the HMC2 Project would account for approximately 0.16 percent of the City's daily water capacity. Therefore, the City would not require new or expanded water entitlements to serve the proposed Project.

As outlined in the City's 2020 UWMP, water supplies are estimated to be sufficient during the planning period (2020–2040) in normal and single dry years. Therefore, the City would have adequate water supply to provide water service to the proposed Project and the impact related to sufficient water supplies would be less than significant. No new significant or substantially more severe impacts related to water supply would occur.

c. *Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?* ***(No New Impact)***

The HMC Yard has existing facilities that produce, collect, and convey sanitary wastewater. Sanitary wastewater is conveyed by an existing BART-owned, 10-inch Vitrified Clay Pipe (VCP) trunk sewer

105 Defined as the average daily water usage by a facility, building, or parcel.
106 Estimated by analyzing the individual plumbing fixtures demands and assuming maximum usage.
107 Hayward, City of. 2021d. op. cit.

system that runs northwest along the west side of the HMC facility for approximately 3,800 linear feet, collecting sanitary waste from BART facilities along the way, before converging with a 6-inch sewer from the HMC Main Repair Shop. These two lines converge in a manhole south of the Main Repair Shop, where a 12-inch VCP sewer exits the site to the southwest. The 12-inch sewer crosses through UPRR's right-of-way, before discharging into a City of Hayward 12-inch VCP sewer in San Antonio Street, just north of Hayman Street. The proposed Project components would require the installation of a new sanitary sewer connection that would connect to the City sewer main. The average dry weather flows associated with the proposed Project components are projected to be 23,140 gallons per day, and peak hourly flows are projected to be 109 gallons per minute. These flows would be conducted from the site to the City's sewer system via the new sewer main. As described above, the City's WPCF is permitted to provide treatment for up to 18.5 mgd. The additional wastewater generated by the proposed Project would be approximately 0.1 percent of the maximum treatment capacity at the WPCF. Therefore, the increase in demand for wastewater treatment with the proposed Project would be within the available capacity of the existing WPCF. Therefore, there would be a less-than-significant impact to wastewater treatment capacity. No new significant or substantially more severe impacts related to wastewater treatment would occur.

d. *Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?* ***(No New Impact)***

Construction waste is anticipated to be minimal compared to waste generated throughout the lifetime of the Project during Project operation. The proposed Project would generate approximately 30 cubic yards (approximately 12 tons) of solid waste per week or approximately 1.7 tons per day. The incremental increase of solid waste generated by the proposed Project would constitute approximately 0.015 percent of the existing daily disposal (11,150 tons per day) at the Altamont Landfill. Furthermore, permitted maximum tonnage is 124,400,000 tons.[108] Therefore, solid waste generated by the proposed Project would not cause the capacity of the Altamont Landfill to be exceeded. The proposed Project would result in a less-than-significant impact to the generation of 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. Therefore, the proposed Project would not result in any new significant or substantially more severe significant impacts as compared to those impacts analyzed in the prior environmental documents.

e. *Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?* ***(No New Impact)***

The California Integrated Waste Management Act of 1989 (AB 939) reorganized solid waste disposal planning within the State of California. The legislation required every county to adopt a Countywide Integrated Waste Management Plan (CoIWMP) describing local waste diversion and disposal conditions as well as create programs to meet State goals for diverting waste from landfills. A mandatory diversion goal was established diverting 25 percent of waste from landfills by 1995 and 50 percent by 2000 and maintaining 50 percent thereafter.

[108] CalRecycle. 2019. op. cit.

Alameda County is a member agency of the Alameda County Waste Management Authority Board, a public agency that is responsible for preparation of the Alameda County ColWMP. First adopted in 1997, the ColWMP was most recently updated in April 2020 and established a countywide goal of 75 percent waste diversion from landfills compared to 1990 and a 75 percent reduction in organics from landfills compared to 2014.[109] The proposed Project would comply with all regulations outlined in the ColWMP, as well as any other federal, State, and local statutes and regulations related to solid wastes, including waste diversion programs. No impact related to this topic would occur as a result of implementation of the proposed Project. Please refer to Section 5.19(d). Therefore, the proposed Project would not result in any new significant or substantially more severe significant impacts as compared to those impacts analyzed in the prior environmental documents.

[109] Alameda County Waste Management Authority. 2020. *Alameda County Integrated Waste Management Plan*. April.

5.20 WILDFIRE

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

5.20.1 Background

The Project site and the surrounding areas are developed with urban and suburban uses and do not include brush- and grass-covered areas typically found in areas susceptible to wildfires. Wildland fires occur in geographic areas that contain the types and conditions of vegetation, topography, weather, and structure density susceptible to risks associated with uncontrolled fires that can be started by lightning, improperly managed campfires, cigarettes, sparks from automobiles, and other ignition sources. According to mapping by the California Department of Forestry and Fire Protection (CAL FIRE), the Project site is not located within a Very High Fire Hazard Severity Zone (VHFHSZ), in a State Responsibility Area (SRA), or a Local Responsibility Area (LRA).[110] However, the hills to the east, approximately 0.65 mile from the Project site have been designated as an SRA within a moderate fire hazard severity zone.[111]

5.20.2 Prior Environmental Analysis

The 2011 IS/MND was adopted prior to the mandatory analysis of wildfire impacts. However, wildfire risks were discussed in Section 8(h), Hazards and Hazardous Materials. The 2011 IS/MND determined that the HMC Project would have no impact related to wildland fire risk.

The 2013 Addendum and 2017 Second Addendum determined that proposed modifications to the HMC Project would not result in new impacts or substantially more severe significant impacts than were identified in the 2011 IS/MND.

[110] California Department of Forestry and Fire Protection (CAL FIRE). 2021. California Fire Hazard Severity Zone Viewer. Website: egis.fire.ca.gov/FHSZ/ (accessed September 27, 2021).

[111] Ibid.

5.20.3 Impact Analysis

*a. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan? **(No New Impact)***

The Project site is not located in a SRA for fire hazards, as mapped by CAL FIRE. Additionally, as noted in Section 5.9, Hazards and Hazardous Materials, the Project site is not located within an area identified by CAL FIRE as a community at risk for wildland fire (see Section 5.9.3(g)).

The Alameda County Emergency Operations Center (EOC) is coordinated and maintained by the Alameda County Sheriff's Office of Emergency Services (OES). Alameda County OES coordinates countywide emergency response efforts including the preparation and implementation of the *Alameda County Emergency Operations Plan* (EOP)[112] and the Alameda County Local Hazard Mitigation Plan.[113] However, the EOP does not indicate the specific emergency evacuation routes within Alameda County. The proposed Project is not located along an identified evacuation route, nor would it affect local roadways. As described in Section 5.9.3(f), because the proposed Project would not substantially alter or block the adjacent roadways, the proposed Project would not be expected to impair the function of nearby emergency evacuation routes. Therefore, the proposed Project would have a less-than-significant impact on implementation of an adopted emergency response plan or emergency evacuation plan. No new or substantially more significant impacts related to emergency response or evacuation would occur.

*b. Would the project, 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 New Impact)***

The proposed Project site is generally flat, and it not located within or near any sloped areas, except for the BART embankment, which is itself a sloped area. Prevailing winds in the Project area are generally from the west to the east. The proposed Project site consists of the northernmost portion of the existing HMC Yard, which is developed, and approximately 22 acres of undeveloped land, consisting primarily of grasslands. The Project would convert this undeveloped land to developed areas consisting of steel rails, stone ballast, asphalt pavement, and concrete, which are largely non-flammable materials. Thus, there are no substantial fuel loads at the proposed Project site that would exacerbate wildfire risks due to construction and operation. Proposed improvements would include new trackwork and associated ancillary facilities (e.g., car cleaning platform, gap breaker station, fencing, embankment, retaining walls), which would not be likely to produce sources of wildfire ignition that would spread by prevailing winds into residential areas to the east, causing flaming embers to be carried over long distances and ignite other fires. As noted in Section 5.9, Hazards and Hazardous Materials, the proposed Project does not involve construction of residential or commercial structures or any other structures for human occupation (Section 5.9.3(g)), with the exception of the Tram Operator Facility, which includes work and break rooms. Therefore, the

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112 Alameda County Sheriff's Office of Homeland Security and Emergency Services. 2012. *Emergency Operations Plan.* Website: www.acgov.org/ready/documents/EmergencyOperationsPlan.pdf (accessed September 27, 2021)

113 Alameda, County of. 2016. *County of Alameda 2016 Local Hazard Mitigation Plan.* October.

proposed Project would not expose occupants or nearby residents to pollutants from a wildfire or the uncontrolled spread of wildfire. No new or substantially more significant impacts would occur.

c. *Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?* ***(No New Impact)***

Utility and infrastructure improvements included as part of the Project are described in Section 3.0, Project Description. Utility installations and improvements at the Project site would not exacerbate fire risk due to the location of the Project site in an urban area outside of a designated fire hazard zone. Further, fire suppression and firefighting infrastructure already exists at the Project site and surrounding areas. BART maintains fire hydrants within the existing HMC facility to enhance firefighting capabilities in the vicinity. The proposed Project would not require the installation or additional infrastructure that would exacerbate fire risk or result in ongoing impacts to the environment. Following Project construction, this area of the HMC facility would be largely developed with non-flammable materials, including concrete, steel, and rock ballast. Therefore, the proposed Project would not require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that would exacerbate fire risk or result in temporary or ongoing impacts to the environment. No new or substantially more significant impacts would occur.

d. *Would the project 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 New Impact)***

Landslides and other forms of mass wasting, including mud flows, debris flows, and soil slips, occur as soil moves downslope under the influence of gravity. Landslides are frequently triggered by intense rainfall or seismic shaking but can also occur as a result of erosion and downslope runoff caused by rain following a fire. As previously discussed in Section 5.7, Geology and Soils, Section 5.7.3(a(iv))., landslides or other forms of natural slope instability do not represent a significant hazard to the Project because the site is located in a relatively flat area, and there is no evidence of landslides in the Project vicinity. Additionally, the Project site does not lie within a designated Landslide Hazard Zone. Further, as stated previously, the Project site is not located in or near a VHFHSZ nor is it located in an SRA. Drainage changes that are included as a component of the Project include the conversion of a drainage ditch to an underground culvert system and construction of a bioretention basin. These local drainage improvements would not result in the exposure of people or structures to flooding or landslides. Therefore, the proposed Project would not 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 new or substantially more significant impacts would occur.

5.21 MANDATORY FINDINGS OF SIGNIFICANCE

	New Potentially Significant Impact	New Mitigation Required	Reduced Impact	No New Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☐	☒
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

5.21.1 Impact Analysis

a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? ***(New Mitigation Required)***

The 2011 IS/MND determined that impacts to biological and cultural resources would be less than significant with implementation of the mitigation measures previously identified in Section 4, Biological Resources, and Section 5, Cultural Resources, of the 2011 IS/MND.

As discussed in Section 5.4, Biological Resources, of this Supplemental IS/MND, the proposed Project has the potential to result in impacts to biological resources. The proposed Project has the potential to adversely impact special-status species including white-tailed kite, western burrowing owl, pallid, roosting bats, and nesting birds protected under the MBTA. With implementation of Mitigation Measures BIO-2 and BIO-3, identified in the 2011 IS/MND and new Mitigation Measures BIO-5 through BIO-7, no new impacts or substantially more severe impacts to special-status wildlife species would occur. Additionally, the proposed Project has the potential to impact riparian habitat within CDFW's jurisdiction and wetlands and drainages within the jurisdiction of the USACE and the RWQCB. With implementation of Mitigation Measures BIO-8 and BIO-9, potential impacts to riparian communities and wetlands would be reduced to a less-than-significant level. Furthermore, the proposed Project would require removal of protected trees. Implementation of Mitigation Measure

BIO-4, identified in the 2011 IS/MND and described above, would reduce potential impacts related to tree removal to a less-than-significant level.

As discussed in Section 5.5, Cultural Resources of this Supplemental IS/MND, the proposed Project is not expected to result in any significant impacts to any examples of the major periods of California history or prehistory. No historic cultural or archaeological resources as defined by CEQA were identified in the APE. However, because the proposed Project includes excavation, it has the potential to impact unknown buried archaeological resources and human remains. With implementation of Mitigation Measures CR-1 and CR-2, identified in the 2011 IS/MND, potential impacts to previously undiscovered archaeological resources or human remains would be reduced to a less-than-significant level.

Therefore, with implementation of Mitigation Measures BIO-1 through BIO-4, CR-1 and CR-2 as identified in the 2011 IS/MND, and HMC2 Project-specific Mitigation Measures BIO-5 through BIO-9, the potential for the proposed Project to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of rare or endangered plants or animals, or eliminate important examples of the major periods of California history or prehistory would be less than significant. With implementation of these mitigation measures, no new impacts or substantially more severe significant impacts would occur.

b. *Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)* ***(No New Impact)***

The 2011 IS/MND determined that although the HMC Project would incrementally increase the use of hazardous materials, contribute to stormwater runoff, remove vegetation, and potentially disturb cultural resources, existing regulations and permits governing these hazards and resources would apply to development in the area and would reduce the contribution from each to less than cumulatively considerable. Therefore, cumulative impacts were found to be less than significant.

Section 15065(a)(3) of the *State CEQA Guidelines* states that a project's cumulative impacts are the possible environmental effects that may be cumulatively considerable when considered with other reasonably foreseeable projects. Cumulatively considerable impacts occur when the incremental effects of a particular project or program are significant when viewed in connection with the effects of other past, current, or reasonably foreseeable future projects. Section 15355 of the *State CEQA Guidelines* defines a cumulative impact as an impact which is created as a result of the combination of the Project evaluated in the CEQA document together with other projects causing related impacts.

All of the impacts associated with the proposed Project would be individually limited and not cumulatively considerable, because these impacts are either temporary in nature (i.e., limited to the construction period) or are limited to the Project site (i.e., potential discovery of unknown cultural or paleontological resources). The potentially significant impacts that can be reduced to a less-than-significant level with implementation of mitigation measures identified in the prior environmental documents or new mitigation measures described herein, include the topics of air quality, biological resources, cultural resources, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, and transportation. These impacts would primarily be related to construction-period activities, would be temporary in nature, and would not substantially contribute to any potential cumulative impacts associated with these topics. For all other topics, the Project would have no new impacts, and therefore, the Project would not substantially contribute to any potential cumulative impacts for these topics. All environmental impacts that could occur as a result of the proposed Project would be reduced to a less-than-significant level through the implementation of the mitigation measures identified in this document.

According to the City's list of projects currently under review, several projects are currently proposed in the vicinity of the Project site. Like the HMC2 Project, these projects have undergone or would undergo environmental review pursuant to CEQA, and when necessary, mitigation measures would be adopted as appropriate. In most cases, this environmental review and compliance with conditions of approval, relevant policies and mitigation measures, and the General Plan, and compliance with applicable regulations would ensure that significant impacts would be avoided or otherwise mitigated to less-than-significant levels. No other construction projects are anticipated in the immediate area of the Project within this time frame. Implementation of these measures would ensure that the impacts of the Project and other projects within the vicinity would be below established thresholds of significance and that these impacts would not combine with the impacts of other cumulative projects to result in a cumulatively considerable impact on the environment as a result of Project development.

As shown in the discussion above, environmental impacts associated with the proposed Project can be reduced to less than significant through implementation of mitigation measures identified in the 2011 IS/MND or HMC2 Project-specific mitigation measures, identified herein. Furthermore, the impacts relevant to the proposed Project are localized and confined to the immediate Project area. Given that the potential Project-related impacts are less than significant and geographically limited and there are no current or future projects scheduled for development within the Project area, implementation of the proposed Project would not result in impacts that are cumulatively considerable when evaluated with the impacts of other current projects, or the effects of probable future projects. No new impacts or substantially more severe significant impacts would occur.

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? ***(New Mitigation Required)***

The 2011 IS/MND determined that the HMC Project's potential to adversely affect human beings would be less than significant with implementation of mitigation measures identified in Section 8, Hazards and Hazardous Materials; Section 3, Air Quality: and Section 12, Noise, of the 2011 IS/MND.

As shown in the discussion above, environmental impacts, including those that may have a direct or indirect adverse effect on humans (i.e., air quality and greenhouse gas emissions, noise, hazardous materials), that are associated with the proposed Project can be reduced to less-than-significant levels through the implementation of mitigation measures identified in the 2011 IS/MND or HMC2 Project-specific mitigation measures, identified herein. Refer to Mitigation Measures AQ-1 and

AQ-2, under Section 5.3, Air Quality; Mitigation Measures BIO-1 through BIO-8, under Section 5.4, Biological Resources; Mitigation Measure CR-1 and CR-2, under Section 5.5, Cultural Resources; Mitigation Measure GHG-1 under Section 5.8, Greenhouse Gas Emissions; Mitigation Measures HAZ-1 through HAZ-4 under Section 5.9, Hazards and Hazardous Materials; Mitigation Measure HYD-1, under Section 5.10, Hydrology and Water Quality; Mitigation Measures NO-1 through NO-6, under Section 5.13, Noise; and Mitigation Measures TR-1 and TR-2, under Section 5.17, Transportation. Therefore, the proposed Project would not result in environmental effects which would cause a substantial adverse effect on human beings either directly or indirectly. With implementation of these mitigation measures, no new impacts or substantially more severe significant impacts would occur.

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APPENDIX A

2011 MITIGATION MONITORING AND REPORTING PLAN

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For Consideration by BART Board on May 26, 2011

Hayward Maintenance Complex Project Mitigation Monitoring and Reporting Plan

San Francisco Bay Area Rapid Transit District

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2 PROJECT MITIGATION MEASURES

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Section 1
Introduction

1.1 PURPOSE AND NEED FOR MONITORING

Pursuant to the California Environmental Quality Act (CEQA), an Initial Study/Mitigated Negative Declaration (IS/MND) was prepared by the San Francisco Bay Area Rapid Transit District (BART) to address the potential environmental effects of the Hayward Maintenance Complex (HMC) Project (proposed project). The Draft IS/MND was issued for a public review period that began on December 3, 2010 and ended on February 11, 2011. A Final IS/MND has been prepared that provides all comments on the proposed project and responds to those comments. The environmental analyses for the proposed project identified potential impacts and measures to mitigate those impacts wherever feasible. Impacts and mitigation measures were identified in the following areas:

- Visual Quality
- Air Quality
- Biological Resources
- Cultural Resources
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise and Vibration
- Transportation/Traffic

This Mitigation Monitoring and Reporting Plan (MMRP) identifies the mitigation actions that will be performed by BART to compensate for, reduce, minimize, or eliminate the effect of impacts resulting from construction and operation of the proposed project. The MMRP was prepared pursuant to the requirements of California Public Resources Code Section 21081.6, which requires a public agency to adopt a monitoring and/or reporting program to ensure compliance with mitigation measures during project implementation. This MMRP identifies and clarifies the mitigation measures to be implemented by BART for the proposed project and identifies the parties responsible for implementation and monitoring. This MMRP incorporates all mitigation measures identified.

1.2 PROJECT DESCRIPTION

The San Francisco Bay Area Rapid Transit District (BART) operates and maintains 104 miles of track in revenue service and 43 stations, serving an average of 360,000 passenger trips every weekday in the counties of San Francisco, Alameda, Contra Costa, and San Mateo. The Hayward Yard is one of four

BART maintenance facilities serving the BART system. Over the next 30 years, BART will require additional vehicles to meet future demand associated with regional population growth, system expansions for the Warm Springs and Silicon Valley/San Jose Extension projects, and additional riders from the Oakland Airport Connector and eBART projects. Accordingly, BART requires expanded maintenance and storage facilities to serve the expanded fleet. The proposed Hayward Maintenance Complex project (proposed project) would consist of acquisition and improvement to three properties on the west side of the existing Hayward Yard and the construction of additional storage tracks for a maximum of 250 vehicles on undeveloped BART property on the east side of the Hayward Yard.

1.3 MITIGATION MONITORING PROGRAM

This MMRP has been prepared for the Hayward Maintenance Complex Project in accordance with the California Public Resources Code Section 21081.6, which specifies that when a public agency makes findings required by paragraph (1) of subdivision (a) of Section 21081, it "…shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment." Public Resources Code 21081.6 further specifies that the MMRP will "…ensure compliance during project implementation." This MMRP is intended to ensure the effective implementation of mitigation measures that are within the authority of BART to implement, including monitoring where identified, throughout all phases of development and operation of the Project.

1.4 MITIGATION ACTIONS

The HMC Project Manager will be responsible for oversight of mitigation actions and reporting on compliance with the measures in this plan. Mitigation actions will be performed by BART staff, by consultants to BART, and/or by contractors to BART.

1.5 PROCEDURES FOR MONITORING AND REPORTING

Monitoring and reporting procedures will conform to the following steps prior to and during project construction and operations.

Step 1 – Monitoring

This step will be executed by the Monitor, who will be designated by the Transit System Development Project Manager (PM). Monitoring activities may be performed by BART staff or the Monitor may be a consultant or contractor to BART. The Monitor shall report to the PM and shall perform monitoring and reporting tasks in consultation, as needed, with the BART System Safety Department Manager and other BART staff with relevant expertise.

The Monitor will have the following responsibilities:

- Prepare an implementation plan prior to the commencement of construction to augment and detail the monitoring actions and compliance requirements listed in this MMRP.
- Be knowledgeable in the mitigation that is to be monitored.
- Verify implementation of mitigation by:
  - ensuring prior to advertisement for contract bids that bid documents, contracts, and other plans and specifications include requirements to implement identified mitigation measures;
  - conducting site visits in the field to ensure that required implementation has been properly executed during and after construction; and
  - contacting the Project Manager and requesting that the situation be remedied if mitigation is not being implemented or executed properly. This action will be accomplished with formal notification via an Environmental Non Conformance Report (ENCR) process, which requires formal response.
- Prepare Mitigation Status Forms and submit to appropriate BART management.

Step 2 – Action

This step will be executed by the PM. The PM will be appointed by the Executive Manager of TSD.

The PM will have the following responsibilities:

- Review the Mitigation Status Forms and any other information presented by the Monitor as monitoring occurs.
- Review and approve any amendments to the MMRP that may be proposed by the Monitor, BART staff or contractors. The MMRP may be amended if changes in monitoring activities are deemed necessary, so long as such changes provide equivalent mitigation measures and maintain conformance with goals of the plan.
- Coordinate with other BART Divisions, as necessary.
- Ensure that the mitigation measures in the MMRP are undertaken, via staff, contractors, or consultants.
- Ensure that penalties to contractors for noncompliance and for ongoing noncompliance are incorporated into contracts.
- Verify monthly that mitigation actions are properly undertaken. This may include designation of a BART staff person or consultant to enforce effective and timely compliance with regard to specific mitigation measures outlined in this MMRP or required permits.
- Ensure that procedures and assignments to implement the MMRP are in place in the event that the BART structure is reorganized prior to completion of the MMRP actions.

Step 3 – Reporting

This step will be executed by the Monitor.

The Monitor will have the following responsibilities:

- Convey the status and any recommendations to the PM. Recommendations may include updating the frequency of monitoring, changing the type of monitoring, and suggesting better ways to implement mitigation.
- Assist the PM in reviewing contractor's response to ENCRs, and preparing details of corrective action and time of completion to resolve the issues. If the Monitor deems mitigation is satisfactorily completed, the noncompliance situation will expire. If the Monitor deems mitigation to be unsatisfactorily addressed, Monitor will document the non-compliance in a report. The reports will be submitted to the PM and the General Manager or the General Manager's designee.
- Verify that the ENCR is enforced, that the contractor has taken corrective action and submitted a formal response to the ENCR, and the contractor will incur appropriate penalties as specified in the contracts. The Monitor will report corrective actions taken to remedy noncompliance or ongoing noncompliance to the PM and the General Manager or the General Manager's designee.
- Report to the PM on MMRP issues on a monthly basis.
- Compile all Mitigation Status Forms into a Compliance Report on a quarterly basis.
- Submit Compliance Reports through the PM to the General Manager or the General Manager's designee every 12 months.

1.6 GENERAL MITIGATION AND MONITORING EFFORTS

In general, BART staff will be responsible for implementing or ensuring that the mitigation actions listed in the MMRP are undertaken for this project. Mitigation measures may be implemented by BART staff, consultants to BART, and/or by the contractors who will construct the proposed project under the oversight of BART staff. Implementation includes ensuring that any required actions are included in bid documents and contracts as part of the design and construction process for the proposed project and ensuring that the consultants and contractors include specified mitigation activities in plans and specifications for construction. BART staff responsibility includes designation of certain mitigation responsibility to, and continued oversight of, the contractors and consultants.

The Monitor will investigate noncompliance allegations and identify how BART staff or its designees, contractors, or consultants should correct implementation of the measure. The recipient of the ENCR has 30 days to respond with plans for corrective action, unless another timeframe is required by state or federal regulatory agencies or as specified in contracts. Otherwise, BART staff is responsible for enforcing contracts to bring ENCRs into conformance; contractors or consultants are responsible for correcting actions in nonconformance, as indicated in contracts. If a measure is under control of another agency, the Monitor will inform the agency of the Monitor's determination and request improved implementation. All actions taken as part of this MMRP will be documented and reported to the PM monthly, Compliance Reports generated quarterly, and reported every twelve months to the General Manager or the General Manager's designee. This MMRP will be available for public review at the HMC Project office, currently at 300 Lakeside Drive, Oakland, California 94612. For the extent of the mitigation monitoring period, as listed in each mitigation measure, individuals and public agencies may notify the Monitor in writing if mitigation measures are not implemented or being executed properly.

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Section 2
Project Mitigation Measures

2.1 INTRODUCTION

This section describes the mitigation measures for each of the impacts identified in the Hayward Maintenance Complex IS/MND and identifies the parties responsible for implementation and monitoring of each measure. Mitigation measures are numbered using a prefix to link them with the impact they address. ("Mitigation Measure TR-1" refers to the first mitigation measure identified in the Transportation section.) For ease of reference, the impacts and mitigation measures in this MMRP are numbered as they were described in the environmental analysis. The resource topics are discussed in the same order as presented in the IS/MND.

2.2 PROJECT MITIGATION MEASURES

The following impacts and mitigation measures apply to the proposed project.

Visual Quality

Visual Character. Construction of the proposed crossover switches south of Whipple Road could require the removal of trees to the west of the BART mainline to provide track access. These trees currently screen views from residents east of the BART mainline toward the existing industrial buildings to the west. The removal of these trees could alter views from the residential area and increase the visibility of the industrial uses to the west; this would be a potentially significant impact of the project.

Mitigation Measure VQ-1 Replacement of Trees that Screen Views of Industrial Buildings. If construction activities south of Whipple Road require removal of the existing trees near the industrial buildings west of the BART mainline, BART shall plant replacement trees at a 1:1 ratio in the area of removal, after construction activities are complete.

Monitoring:

1. Prior to construction of the proposed project, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications include all requirements to plant replacement trees at a 1:1 ratio.

2. The Monitor will verify in the field that the BART contractor is replacing all removed trees at the ratio identified in the IS/MND.

Air Quality

Construction NO_X. There would be a potential for an exceedance of the NO_X threshold if the clearing, grubbing, grading, and fill transport activities planned for Phase 2 of the proposed project are conducted simultaneously with other project construction activities.

Mitigation Measure AQ-1 Construction Phasing to Reduce Air Emissions. For construction of the storage tracks in Phase 2, BART shall ensure that all work involving clearing, grubbing, grading, and fill transport associated with work on the project site north of Whipple Road not be conducted concurrently with construction work south of Whipple Road to assure that the BAAQMD NO_X construction equipment emission threshold would not be exceeded.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications incorporate the requirements set forth in Mitigation Measure AQ-1 above.

2. During construction, the Monitor will verify in the field that the BART contractor is conducting construction activities according to the requirements set forth in Mitigation Measure AQ-1 above.

Construction Dust. PM_{10} and $PM_{2.5}$ would be generated from soil-disturbing activities. These dust emissions could impact sensitive residential receptors to the north, northeast, and east of the project site by increasing local ambient PM_{10} concentrations there.

Mitigation Measure AQ-2 Dust Control during Construction. BART shall ensure implementation of the following mitigation measures during project construction, in accordance with Bay Area Air Quality Management District (BAAQMD) standard mitigation requirements:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day, or as necessary to control dust.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as practical.
- Building pads shall be laid as soon as practical after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control

measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage stating the regulations shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications incorporate the requirements set forth in the list above and require that the contractor use control measures set forth by the BAAQMD for construction activities to minimize fugitive dust.
2. During construction, the Monitor will verify in the field that the BART contractor is implementing the BAAQMD air quality construction control measures to minimize air emissions according to the plans and specifications.

Biological Resources

Wetland Disturbances. Construction and operation of the proposed project may result in the filling or adverse modification of jurisdictional wetlands, other "waters of the U.S.," or "waters of the State."

Mitigation Measure BIO-1 Wetland Avoidance and Protection. BART shall ensure that the wetlands adjacent to the east side expansion area of the project site are not affected during construction by installing orange exclusionary fence to alert construction crews that the areas are to be avoided during construction, and through compliance with applicable statewide NPDES general permits.

In addition, BART shall ensure that post installation conditions shall not cause significant changes to the pre-project hydrology, water quality, or water quantity in any wetland or other water of the U.S. that is affected by the project. This shall be accomplished through implementation of Mitigation Measures HYD-1 and HYD-2 from the Hydrology section, *Stormwater Drainage System Design*, and through compliance with applicable statewide NPDES general permits.

Monitoring:

1. Prior to approval of the final design of the proposed project, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications incorporate the above requirements to mitigate impacts to wetlands, other "waters of the U.S.," or "waters of the State," and that the applicable NPDES permit will be obtained.

2. BART staff will ensure and the Monitor will verify that BART retains a qualified biologist to confirm that the proposed project will not impact wetlands, "waters of the U.S.," or "waters of the State," and that the applicable NPDES permit has been obtained.

Nesting Habitat. Trees and shrubs found within both the east side and west side expansion areas could provide nesting habitat for a wide variety of native birds. Removal of these trees and shrubs during the nesting season (March 1 to September 15) could result in the loss of active bird nests, the loss of which would be a significant impact.

Mitigation Measure BIO-2 Restrictions on Tree or Shrub Removal to Avoid Nesting Birds. Tree or shrub removal or pruning shall be avoided from March 1 through September 15, the bird nesting period, to the extent feasible. If no tree or shrub removal or pruning is proposed during the nesting period, no surveys or further mitigation measures are required.

Monitoring:

1. Prior to construction, BART staff will ensure and the Monitor will verify that plan specifications and construction bid documents include restrictions on tree and shrub removal during the bird nesting period to the extent feasible.

Mitigation Measure BIO-3 Pre-construction Nesting Bird Survey and Measures to Reduce Harm to Nesting Birds. If tree and shrub removal is unavoidable during the nesting season, BART shall hire a qualified biologist to conduct a survey for nesting raptors and other birds covered by the Migratory Bird Treaty Act (MBTA). BART shall have a qualified biologist conduct nest surveys no more than 30 days prior to any demolition/construction or ground-disturbing activities that are within 500 feet of potential nest trees or suitable nesting habitat (i.e., trees, tule, cattails, grassland). A pre-construction survey report shall be submitted to CDFG that includes, at a minimum: (1) a description of the methodology including dates of field visits, the names of survey personnel with resumes, and a list of references cited and persons contacted; and (2) a map showing the location(s) of any bird nests observed on the project site. If no active nests of MBTA-covered species are identified, then no further mitigation is required.

If active nests of protected bird species are identified in the focused nest surveys, BART will consult with the appropriate regulatory agencies to identify project-level mitigation requirements, based on the agencies standards and policies as then in effect. Mitigation may include the following, based on current agency standards and policies:

a) BART, in consultation with CDFG, would delay construction in the vicinity of active nest sites during the breeding season (March 1 through September 15) while the nest is occupied with adults and/or young. A qualified biologist would monitor any occupied nest to determine when the nest is no longer used. If the construction cannot be delayed, avoidance measures would include the establishment of a non-disturbance buffer zone around the nest site. The size of the buffer zone would be determined in consultation with the CDFG, but will be a minimum of 100 feet. The buffer zone would be delineated with highly visible temporary construction fencing.

b) No intensive disturbance (e.g., heavy equipment operation associated with construction, or use of cranes) or other project-related activities that could cause nest abandonment or forced fledging would be initiated within the established buffer zone of an active nest between March 1 and September 15.

c) If construction activities are unavoidable within the buffer zone, BART would retain a qualified biologist to monitor the nest site to determine if construction activities are disturbing the adult or young birds. If abandonment occurs, the biologist would consult with CDFG or USFWS (who monitor compliance with the MBTA) for the appropriate salvage measures (e.g., remove abandoned nestlings to an agency approved wildlife care group). BART would be required to fund the full costs of the salvage measures.

d) If fully protected species are found to be nesting near the construction area, their nests would be completely avoided until the birds fledge. Avoidance would include the establishment of a non-disturbance buffer zone of 250 feet, or as determined in consultation with the CDFG.

Monitoring:

1. Prior to construction, BART staff will ensure and the Monitor will verify that bid documents, contracts, and other plans and specifications require a preconstruction survey for nesting raptors and other birds covered by the MBTA to be conducted 30 days prior to the initiation of any ground-disturbing or vegetation clearing activities that occur between March 1 and September 15, as described above.

2. BART staff will ensure and the Monitor will verify that BART, in consultation with CDFG, will retain a qualified biologist to conduct the preconstruction survey.

3. If no active nests of MBTA-covered species are identified, then no further mitigation is required.

4. If active nests of protected bird species are identified in the focused nest surveys, BART will ensure and the Monitor will verify that the appropriate regulatory agencies are consulted to identify project-level mitigation requirements, based on the agencies' standards and policies as then in effect.

Protected Trees. Removal of coast redwood trees, considered protected trees under the City of Hayward's Tree Preservation Ordinance, located in the west side expansion area would constitute a significant impact.

Mitigation Measure BIO-4 Tree Survey and Replacement of Protected Trees to be Removed. Prior to construction, BART shall retain a certified arborist to survey trees in the project area, including potential access roads and staging areas, to identify and evaluate trees that shall be removed. A report shall be prepared and submitted to BART to document the trees that are to be removed. Mitigation shall be required for impacts to trees designated as "protected trees" in the cities of Hayward or Union City. Replacement trees will be a native tree species. Each removed tree meeting the above classifications will be replaced at a 1:1 ratio. Trees will be planted in locations suitable for the replacement species. Selection of the replacement sites and installation of replacement plantings will be supervised by a qualified botanist. Trees will be replaced as soon as practical after construction is completed. A qualified botanist will monitor newly planted trees at least once a year for 5 years. Each year during that period, any trees that do not survive will be replaced. Any trees planted as remediation for failed plantings will be planted as stipulated here for original plantings, and will be monitored for a period of 5 years following installation.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that a tree survey is conducted by a certified arborist to identify and evaluate trees that shall be removed, including identification of "protected trees" in the cities of Hayward or Union City.

2. BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications require that replacement trees be planted to compensate for removal of any specially-designated tree.

3. The Monitor will verify in the field that the tree replacement plan is implemented and that the replacement plantings are supervised by a qualified botanist.

4. Monitor will verify that replacement trees are monitored for 5 years and failed plantings are replaced.

Cultural Resources

Archaeological Resources. If any prehistoric resources are located subsurface within the project area, project-related ground-disturbing activities could potentially cause a significant impact to those resources.

Mitigation Measure CR-1 Avoidance of Discovered Cultural Resources and Measures to Reduce Harm. If evidence of an archaeological site or other suspected historic resource is encountered during construction, including darkened soil representing past human activity ("midden") that could conceal material remains (e.g., worked stone, faunal bone, hearths, or storage pit), all ground-disturbing activity within 100 feet of the find shall be halted and BART notified. BART will hire an archaeologist meeting the Secretary of the Interior's Standards for Professional Archaeologist to assess the find. Impacts to any significant resources may be mitigated through avoidance, data recovery, or other methods determined adequate by the qualified archaeologist and that are consistent with the Secretary of the Interior's Standards for Archeological Documentation. Any mitigation plan developed by the qualified archaeologist shall be approved by BART prior to implementation. Project-related ground-disturbing activities shall not be continued in the vicinity of any discovered resource until the significance of the resource is resolved and mitigation action (if any) is completed.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications include provisions for the response to the discovery of archeological artifacts.

2. If unknown potential historical or unique archaeological resources are discovered during construction, BART staff will ensure and the monitor will verify that all work in the immediate vicinity be suspended and alteration of the materials and their context shall be avoided pending site investigation by a qualified archaeologist.

3. BART staff will ensure and the Monitor will verify that, if a historical or unique archeological site is identified, BART will retain a qualified archeologist to develop and implement a plan for investigation and avoidance, if feasible.

Human Remains. Project-related ground-disturbing activities (in both the west side and east side portions of the project site) could disturb or destroy any human remains that are present within the project area, causing a significant impact.

Mitigation Measure CR-2 Avoidance of Discovered Human Remains and Measures to Reduce Harm. If human remains, including disarticulated or cremated remains, are discovered during any phase of construction, all ground-disturbing activities in the vicinity and Hayward any nearby area reasonably suspected to overlie adjacent human remains shall be immediately halted. BART and the Alameda County Coroner shall be notified immediately, according to Section 5097.98 of the State Public Resources Code and Section 7050.05 of California's Health and Safety Code. If the remains are determined by the county coroner to be Native American, it is the responsibility of the county coroner to inform the Native American Heritage Commission (NAHC) within 24 hours. The guidelines of the NAHC should be adhered to in the treatment and disposition of the remains. BART shall retain a qualified archaeologist who meets the Secretary of the Interior's Standards for Professional Archaeologist and with Native American burial experience to conduct a field investigation of the specific site and consult with the person identified as the Most Likely Descendent, if any, identified by the NAHC. BART shall approve any mitigation recommended by the qualified archaeologist prior to implementation, taking account of the provisions of State law as set forth in the California Environmental Quality Act (CEQA) Guidelines Section 15064.5(e) and Public Resources Code Section 5097.98. Approved mitigation must be implemented before resumption of ground disturbing activities in the vicinity of where the remains were discovered.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications include all requirements that if human remains are discovered, construction shall cease and follow protocol and procedures, as described above.

2. The Monitor will verify in the field that protocol and procedures are being implemented.

Greenhouse Gas Emissions

Construction GHG Emissions. Construction of the proposed project would generate short-term GHG emissions.

Mitigation Measure GHG-1 Construction-Related Greenhouse Gas Best Management Practices. BART shall ensure implementation of the following mitigation measures during project construction, in accordance with Bay Area Air Quality Management District (BAAQMD) standard mitigation recommendations which suggest:

- Use alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment for at least 15 percent of the fleet;
- Use local building materials (within 100 miles) of at least 10 percent; and
- Recycle or reuse at least 50 percent of construction waste or demolition materials.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications incorporate the requirements set forth in the list above and require that the contractor use mitigation measures set forth by the BAAQMD for construction activities to minimize GHG emissions.

2. During construction, the Monitor will verify in the field that the BART contractor is implementing the BAAQMD standard mitigation measures to minimize GHG emissions according to the plans and specifications.

Hazards and Hazardous Materials

Hazardous Materials. Construction of the proposed project could potentially expose workers and employees to contaminated materials, resulting in a significant impact.

Mitigation Measure HAZ-1 File Review and a Phase I ESA Prior to Construction. Prior to construction BART shall conduct an environmental site assessment (ESA) to further analyze potential hazardous materials and waste sites around the project site. BART shall ensure that additional research, including a file review with the Alameda County Department of

Environmental Health and the RWQCB and a Phase I ESA for the west side expansion area, is performed. If the file review reveals no potential impact from environmental contamination, no further action to remedy soil or groundwater contamination would be necessary.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that an additional file review and a Phase I ESA are conducted, as described above.

Mitigation Measure HAZ-2 Further Soil and Groundwater Investigations Prior to any Construction Activities. If the file review under Mitigation Measure HAZ-1 above reveals potential environmental contamination along or beneath the proposed project's footprint or other facilities, BART shall evaluate the sites to determine the level of investigation appropriate to evaluate the possible presence of hazardous chemicals in soil and groundwater. In the event soil and/or groundwater testing is deemed appropriate, BART shall ensure that a Phase II soil and groundwater investigation is conducted in the affected areas, including field sampling and laboratory analysis, to evaluate conditions where excavation and grading will take place. The Phase II investigation shall be completed prior to any construction or excavation work, and a schedule shall be developed in the pre-design phase of the project to ensure that a sufficient amount of time is allotted prior to site development to identify and implement actions to investigate the presence of hazardous substances in soil and groundwater, and to identify design and contingency measures in the event that the results of the investigation indicate the need for further testing, site controls, or remediation. The number, location of field samples, and constituents tested would depend on the size of the impacted site, site activities, and possible transport or migration routes. Field samples may include soil, soil gas, or groundwater, depending on the nature of the contaminants suspected to be present. The sampling plan shall specify that all soil and groundwater chemical analyses shall be performed by a California certified laboratory, using standard EPA and California chemical testing methods. The investigation results shall, if necessary, lead to preparation of a:

- Remedial Action Plan for soil and groundwater treatment and disposal;
- Health and Safety Risk Assessment; and
- Soil management plan with criteria for impacted soils, in consultation with DTSC and RWQCB.

If necessary, a Remedial Action Plan shall be prepared to identify options for remediation of the contaminated site. If the proposed remedial approach does not involve complete source removal, a Health and Safety Risk Assessment shall be completed. Work in impacted areas will be conducted in accordance with applicable Cal OSHA requirements.

Monitoring:

1. If contaminated sites are found, BART staff will ensure and the Monitor will verify that further soil and groundwater investigations are conducted, and if necessary, a Remedial

Action Plan, a Health and Safety Risk Assessment, and a soil management plan will be prepared prior to construction activities.

2. During project construction, the Monitor will inspect and verify in the field that the BART contractor is adhering to the Remedial Action Plan, the Health and Safety Risk Assessment, and the soil management plan.

Mitigation Measure HAZ-3 Remediation of Contaminated Sites Prior to Construction. If hazardous materials are identified in soil and groundwater at levels that present a risk to the public, to construction workers, or to the environment, based on the investigations described in Mitigation Measure HAZ-2 above, BART shall ensure that remediation is conducted at contaminated sites pursuant to applicable laws and regulations.

A Remedial Action Plan may be developed if warranted to address potential air and health impacts from soil excavation activities, potential transportation impacts from the removal of remedial activities, and potential risks of public upset should there be an accident at excavation sites. During excavation activities, construction workers or the public may be exposed to contaminants in the soil through ingestion, dermal contact, inhalation of fugitive dust, and inhalation of volatile emissions. The Site-Specific Health and Safety Plan will include measures to mitigate these potential impacts, such as cordoning off excavation sites to prevent public access, water misting to control dust during removal activities, perimeter air monitoring for dust along the site boundaries both upwind and immediately downwind of site excavation and stockpiling activities, and air monitoring of volatile organic compounds (VOC). All exposed contaminated materials shall be covered at the end of each day. Excavation work shall be performed in compliance with all OSHA rules and regulations.

Monitoring:

1. If hazardous materials are identified in soil and groundwater at levels that present a risk, BART staff will ensure and the Monitor will verify that remediation is conducted at contaminated sites pursuant to applicable laws and regulations.

2. During project construction, the Monitor will inspect and verify in the field that the BART contractor is conducting remediation pursuant to applicable laws and regulations.

Mitigation Measure HAZ-4 Discovered Environmental Contamination During Construction. In the event that soil, groundwater, or other environmental medium with suspected contamination is encountered unexpectedly during construction activities after implementation of Mitigation Measure HAZ-3, BART's contractor shall cease work in the vicinity of the suspect material, the area shall be secured as necessary, and contractor shall take all appropriate measures to protect human health and the environment. Appropriate measures shall include notification of the applicable regulatory agency(ies) as necessary, to identify the nature and extent of contamination. Work shall not resume in the area(s) affected until the measures have been implemented under the oversight of the corresponding regulatory agency(ies), as appropriate.

Monitoring:

1. If hazardous materials are identified in soil, or other environmental medium unexpectedly during construction activities, BART staff will ensure and the Monitor will verify that all construction activities shall cease until all measures identified above have been implemented under the applicable oversight agency(ies).

Hydrology and Water Quality

On-Site Drainage Pattern. The proposed project could result in off-site and on-site flooding as a result of an increased impervious surface cover at the project site.

Mitigation Measure HYD-1 Stormwater Drainage System Design. Prior to final design of each phase of the proposed project, BART shall have a licensed professional engineer registered in California prepare a detailed Hydrology and Hydraulics Report that identifies flow contributing areas (catchments), flow pathways, off-site discharge locations, receiving storm drain systems, and proposed on-site flow conveyance structures and conveyance capacities.

The Hydrology and Hydraulics Report shall identify the off-site peak flow rates and flow volumes for the 100-year storm event at all proposed off-site discharge locations, retained existing on-site flow conveyance structures, and proposed onsite flow conveyance structures for both existing conditions and proposed project conditions. The detailed Hydrology and Hydraulics Report calculations shall be prepared in accordance with Alameda County Flood Control District Hydrology and Hydraulics Manual (June 2003, or later version, as applicable).

Off-site Runoff. Based on the detailed Hydrology and Hydraulics Report, BART shall design on-site detention (or retention) facilities sufficient to detain increases in 100-year runoff peak flow rates and retain increases in 100-year flow volumes at all off-site discharge locations compared to existing conditions. BART shall submit a preliminary design, along with the Hydrology and Hydraulics Report, to the Alameda Flood Control District and City of Hayward Public Works Department for review. BART shall incorporate Alameda Flood Control District recommendations into the project design, where applicable, prior to the beginning of construction activities.

On-site Runoff. BART shall design on-site drainage in accordance with one of the following, or a combination of the following:

- BART shall design sufficient on-site detention (or retention) to detain increase in flow rates in excess of the conveyance capacity of existing downstream structures; or
- BART shall upgrade existing on-site conveyance structures to provide sufficient conveyance capacity. All proposed on-site conveyance structures shall be designed with adequate capacity to convey the 100-year storm event.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications require that the contractor develop a detailed Hydrology and Hydraulics Report and incorporate recommendations of the report into the project design. In addition, BART contractors shall incorporate Alameda Flood Control District recommendations into the project design, where applicable.

2. BART staff will ensure and the Monitor will verify that prior to construction activities, a preliminary design, along with the Hydrology and Hydraulics Report is submitted to the Alameda Flood Control District and City of Hayward Publics Works Department for review.

Noise and Vibration

Noise. Operation and construction of the proposed project would result in significant noise impacts to residents adjacent to the project site.

Mitigation Measure NO-1 Construction of Sound Walls. BART shall incorporate sound walls at the BART right-of-way line or other locations that mitigate the noise impacts indicated in Table 13 and Table 14 of the IS/MND. Implementation of sound walls will provide approximately 10 dBA reduction in overall noise levels. Concrete block masonry, poured-in-place, or pre-cast concrete walls would be acceptable as construction materials provided they have a minimum surface density of 4 lbs/ft2. The specific location of sound walls will be addressed in final design. Sound walls will be constructed in phases as necessary to reduce noise as components of the project are constructed.

Monitoring:

1. Prior to final design plans, BART staff will ensure and the Monitor will verify that the recommended noise attenuation measures would satisfy the standards defined by the Federal Transit Administration.

2. BART staff will ensure and the Monitor will verify that the plan specifications and construction bid documents include the recommended noise attenuation measures that would reduce train noise so that noise levels indicated in Table 13 and Table 14 of the IS/MND are not exceeded.

Mitigation Measure NO-2 Installation of Building Sound Insulation Features. For those receptors where the outdoor wayside noise from the train operations at ground level can be mitigated to achieve the FTA criteria, but the sound walls provided by Mitigation Measure NO-1 are not sufficient to mitigate noise levels at upper stories, BART will measure operational noise levels on a case-by-case basis following project implementation. Where the existing building construction does not provide interior noise levels of Ldn 45 dBA or lower, BART will quantitatively evaluate individual structures and implement a formal program of building sound insulation improvement as necessary to meet this criterion.

Monitoring:

1. Following project implementation, BART staff will ensure and the Monitor will verify that a quantitative analysis of individual residences is conducted on a case-by-case basis to determine if the recommended noise attenuation measures would satisfy the standards defined by the Federal Transit Administration.

2. Where sound walls provided by Mitigation Measure NO-1 are not sufficient to mitigate noise for the upper stories, as determined under Monitoring Item 1 above, BART staff will ensure and the Monitor will verify that a formal program of building sound insulation improvements is implemented, as necessary, in order to meet the FTA criterion.

Mitigation Measure NO-3 Construction Noise Best Management Practices. BART shall incorporate the following practices into the construction documents to be implemented by the project contractor. Such practices include, but are not limited to, the following measures:

- Where feasible, BART shall require that the contractor complies with a Performance Standard of 80 dBA 8-hour Leq during the daytime (7 a.m. to 10 p.m.) and 70 dBA 8-hour Leq during the nighttime (10 p.m. to 7 a.m.) at the property line of the sensitive receptor.

- Prior to construction, BART shall ensure that a Noise Control and Monitoring Report is prepared. The report shall include expected construction noise levels, noise control measures, and explain how the contractor intends to monitor and document construction noise and complaints.

- Locate noisy equipment as far as possible from noise sensitive receptors. In addition, the use of temporary barriers should be employed around the equipment.

- Where construction noise impacts have been identified, use temporary noise barriers along the working area and/or project right-of-way. Barriers/curtains must achieve a Sound Transmission Class (STC) of 30 or greater in accordance with ASTM Test Method E90 and be constructed from material having a surface density of at least 4 pounds/square foot, to ensure adequate transmission loss.

- When nighttime or 24-hour construction will be required, coordinate with residents to ensure that the affected residents are fully informed about the upcoming construction. Residents will be given the option of sleeping in hotel rooms at BART expense for the duration of the nighttime construction in areas where construction is expected to exceed the FTA criterion. Residents that work nights and sleep days in locations where construction noise is expected to exceed the FTA criterion will be given the same option.

- Require ambient sensitive ("smart") backup alarms, SAE Class D, or limit to SAE Class C (97 dB) for vehicles over 2.5 cubic yards haulage capacity, or Cal-OSHA/DOSH-approved methods that avoid backup alarm noise for vehicles under 2.5 cubic yards haulage capacity.
- Fit silencers to combustion engines. Ensure that equipment has effective, quality mufflers installed, in good working condition.
- Switch off engines or reduce to idle when not in use.
- Lubricate and maintain equipment regularly.
- Route construction-related truck traffic along roadways that result in the least disturbance to sensitive receptors.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications include requirements to use noise-reducing construction practices and to measure noise levels before beginning construction and periodically during construction, as described above.

2. BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications include requirements for the use of noise barriers between equipment and residential areas, as listed above, to meet BART's construction noise thresholds in the vicinity of sensitive receptors.

3. During project construction, the Monitor will verify through periodic spot checks in the field that all noise-reduction measures as described above are used to reduce noise near sensitive receptors, and that the construction noise criteria are met.

Vibration. Operation and construction of the proposed project would result in significant vibration impacts to residents adjacent to the project site.

Mitigation Measure NO-4 Vibration Reducing Technology. BART shall incorporate vibration mitigation measures such as tire-derived aggregate (TDA) or floating slab track (FST) under the track, or other technology that may be developed to attain the FTA groundborne vibration operational criterion of 72 VdB. The general location of the mitigation measures under the track is presented in Table 22. However, the actual extent of the mitigation control would be determined during final design.

Table 22
Vibration Mitigation

Crossover #	Mitigation Required for Phase 1	Mitigation Required for Phase 2
P100B	No	Yes[1]
P100	No	No
P101	No	Yes [1]
P102	Yes[1]	No
P103	No	No
P104	No	No

Source: WIA 2010

Notes:

1. Mitigation extent will be determined during final design.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications include requirements to incorporate vibration-reducing technologies in the final project design.

2. During project construction, the Monitor will inspect and verify in the field that the BART contractor is incorporating the vibration-reducing technologies identified in the final project design.

Mitigation Measure NO-5 Construction Vibration Best Management Practices. Where potential construction vibration impacts have been identified, the contractor shall be required to select equipment and methods that would reduce potential annoyance to nearby residents. Such practices include, but are not limited to, the following measures:

- Comply with a Performance Standard of 0.3 in/sec PPV at any building at anytime.
- Minimize vibration annoyance by maintaining vibration levels at 80 VdB or less at any building at any time.
- Prior to construction, BART shall prepare a Vibration Control and Monitoring Report, in which the contractor indicates what vibration levels they expect to generate, vibration control measures they intend to implement, and how they intend to monitor and document construction vibration and complaints.
- Avoid the use of impact pile drivers, and use instead sonic or vibratory impact drivers. It is also encouraged that "quiet" or "silent" piling technologies be used, if feasible.
- When nighttime or 24-hour construction is necessary, coordinate with residents to ensure that the affected residents are fully informed about the upcoming construction. Residents will be given the option of sleeping in hotel rooms at BART expense for the duration of the nighttime

construction in areas where construction is expected to exceed the FTA criterion. Residents that work nights and sleep days in locations where construction vibration is expected to exceed the FTA criterion will be given the same option.

- Monitor vibration during construction to ensure compliance with the criterion for building damage for buildings within 40 feet from construction activities. Conduct a pre-construction crack survey at these structures.
- Plan routes for hauling material out of the project site that would cause the least impact (annoyance).
- Restrict high amplitude vibration methods such as vibratory pile driving and soil compaction using large truck-mounted compactors to areas beyond 50 feet and 20 feet, respectively, of residential structures or wood-framed buildings. Otherwise, temporary accommodations away from construction shall be coordinated between BART and the residents.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications include requirements for the contractor to use vibration-reducing practices and construction methods, as described above.
2. During project construction, the Monitor will verify through periodic spot checks in the field that appropriate vibration-reducing techniques are used and that BART's noise and vibration criteria are met.

Transportation/Traffic

Construction-Related Traffic Impacts. Construction of the proposed project could result in construction-related traffic impacts that would be potentially significant.

Mitigation Measure TR-1 Construction Phasing and Traffic Management Plan. BART will ensure that a Construction Phasing and Traffic Management Plan is developed and implemented by the contractor. The plan shall define how traffic operations, including construction equipment and worker traffic, are managed and maintained during each phase of construction. The plan shall be developed in consultation with the cities of Union City and Hayward, BART, and Union City Transit Bus Lines. To the maximum practical extent, the plan shall include the following measures:

a) Specify predetermined haul routes from staging areas to construction sites and disposal areas by agreement with the cities of Union City and Hayward prior to construction. The routes shall follow streets and highways that provide the safest route and avoid congested intersections to the extent feasible.

b) Identify construction activities that, due to concerns regarding traffic safety or congestion, must take place during off-peak hours.

c) Identify a telephone number that the public can call for information on construction scheduling, phasing, and duration, as well as for complaints. Such information shall also be posted on BART's website.

Monitoring:

1. Prior to project construction, BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications include a requirement that the contractor develop and implement a construction phasing and traffic management plan, as described above.

2. BART staff will ensure coordination with the cities of Union City and Hayward, BART, and Union City Transit Bus Lines, in developing and implementing the construction phasing and traffic management plan.

3. The Monitor will verify that the construction phasing and traffic management plan is being properly implemented in the field.

Traffic Safety. The proposed project may need reconfiguration at the intersection of Whipple Road in order to mitigate sight distance safety hazards, which would constitute as a significant impact.

Mitigation Measure TR-2 Reconfiguration of Southbound Approach of the West Side Expansion Area Driveway. BART will reconfigure the approach to Whipple Road for the west side expansion area driveway by narrowing the mouth of the intersection and channeling southbound traffic to approach Whipple Road at a more perpendicular angle. In addition, shrubbery/vegetation that impedes vehicle line of sight to the east will be removed.

Monitoring:

1. Prior to project operation, BART staff will ensure that an appropriate driveway design will be implemented as described above.

2. BART staff will ensure and the Monitor will verify that bid documents and contracts, and other plans and specifications include the intersection modifications required to implement the mitigation measures.

3. The Monitor will verify in the field that, the intersections modifications are being constructed according to the construction plans.

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APPENDIX B

AIR QUALITY MODELING RESULTS

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BART Hayward Maintenance Complex Phase 2

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-Rail	5.80	1000sqft	0.13	5,800.00	0
Other Asphalt Surfaces	6.00	Acre	5.87	261,360.00	0
Other Non-Asphalt Surfaces	10.00	Acre	10.00	435,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2028
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	328.8	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity based on 5-year average (PG&E 2015)

Land Use - The Phase 2 project site consists of approximately 16 acres of undeveloped land in the northeast quadrant of the HMC property. The northernmost 6 acres of the Phase 2 area would be developed as the site of the Northern Mainline Connector.

Construction Phase - Based on Construction Scenario as described in the Project Description.

Off-road Equipment - Default grading equipment.

Off-road Equipment - Default Grading Equipment.

Off-road Equipment - Default grading equipment

Off-road Equipment - Default paving equipment.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Trips and VMT - Based on Construction Scenario as described in the Project Description.

Grading - Based on Construction Scenario as described in the Project Description.

Vehicle Trips - The proposed project would not generate new vehicle trips.

Energy Use - Based on energy usage provided to LSA.

Construction Off-road Equipment Mitigation - Assuming compliance with BAAQMD Basic Construction Mitigation Measures.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	165.00
tblConstructionPhase	NumDays	300.00	100.00
tblConstructionPhase	NumDays	300.00	60.00
tblConstructionPhase	NumDays	300.00	60.00
tblConstructionPhase	NumDays	30.00	110.00
tblConstructionPhase	NumDays	30.00	305.00

BART Hayward Maintenance Complex Phase 2 - Alameda County, Annual

tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	20.00	30.00
tblEnergyUse	LightingElect	2.17	30.00
tblEnergyUse	NT24E	1.38	18.80
tblEnergyUse	NT24NG	0.21	0.00
tblEnergyUse	T24E	0.24	3.00
tblEnergyUse	T24NG	1.18	0.00
tblGrading	AcresOfGrading	412.50	16.00
tblGrading	AcresOfGrading	1,143.75	16.00
tblGrading	AcresOfGrading	75.00	16.00
tblGrading	MaterialImported	0.00	84,700.00
tblGrading	MaterialImported	0.00	5,800.00
tblGrading	MaterialImported	0.00	3,150.00
tblLandUse	LotAcreage	6.00	5.87
tblOffRoadEquipment	HorsePower	402.00	46.00
tblOffRoadEquipment	LoadFactor	0.38	0.45
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00

tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	328.8
tblTripsAndVMT	HaulingTripNumber	10,588.00	11,300.00
tblTripsAndVMT	HaulingTripNumber	0.00	160.00
tblTripsAndVMT	HaulingTripNumber	0.00	142.00
tblTripsAndVMT	HaulingTripNumber	0.00	652.00
tblTripsAndVMT	HaulingTripNumber	0.00	360.00
tblTripsAndVMT	HaulingTripNumber	725.00	800.00
tblTripsAndVMT	HaulingTripNumber	394.00	700.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	80.00
tblTripsAndVMT	WorkerTripNumber	20.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	15.00	80.00
tblTripsAndVMT	WorkerTripNumber	48.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	20.00	80.00
tblVehicleTrips	ST_TR	1.68	0.00

tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	1.68	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.2969	3.5047	2.5385	9.3200e-003	0.6254	0.1089	0.7344	0.3024	0.1003	0.4027	0.0000	854.7779	854.7779	0.1588	0.0000	858.7476
2025	0.3468	2.9685	3.3148	8.2600e-003	0.1891	0.1188	0.3079	0.0509	0.1121	0.1629	0.0000	724.1631	724.1631	0.1532	0.0000	727.9940
2026	0.9213	7.8614	8.0724	0.0207	0.9814	0.3148	1.2962	0.5082	0.2945	0.8027	0.0000	1,813.9960	1,813.9960	0.4696	0.0000	1,825.7353
2027	0.7747	6.4097	6.4915	0.0180	0.7001	0.2517	0.9518	0.3514	0.2351	0.5865	0.0000	1,572.5235	1,572.5235	0.4163	0.0000	1,582.9299
Maximum	**0.9213**	**7.8614**	**8.0724**	**0.0207**	**0.9814**	**0.3148**	**1.2962**	**0.5082**	**0.2945**	**0.8027**	**0.0000**	**1,813.9960**	**1,813.9960**	**0.4696**	**0.0000**	**1,825.7353**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.2969	3.5047	2.5385	9.3200e-003	0.3523	0.1089	0.4613	0.1554	0.1003	0.2557	0.0000	854.7774	854.7774	0.1588	0.0000	858.7471
2025	0.3468	2.9684	3.3148	8.2600e-003	0.1743	0.1188	0.2931	0.0459	0.1121	0.1579	0.0000	724.1624	724.1624	0.1532	0.0000	727.9932
2026	0.9213	7.8614	8.0724	0.0207	0.4947	0.3148	0.8095	0.2428	0.2945	0.5373	0.0000	1,813.9940	1,813.9940	0.4696	0.0000	1,825.7332
2027	0.7747	6.4097	6.4915	0.0180	0.3651	0.2517	0.6168	0.1714	0.2351	0.4065	0.0000	1,572.5218	1,572.5218	0.4163	0.0000	1,582.9281
Maximum	**0.9213**	**7.8614**	**8.0724**	**0.0207**	**0.4947**	**0.3148**	**0.8095**	**0.2428**	**0.2945**	**0.5373**	**0.0000**	**1,813.9940**	**1,813.9940**	**0.4696**	**0.0000**	**1,825.7332**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.46**	**0.00**	**33.73**	**49.25**	**0.00**	**30.56**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-5-2024**	**11-4-2024**	2.3303	2.3303
2	**11-5-2024**	**2-4-2025**	1.8403	1.8403
3	**2-5-2025**	**5-4-2025**	0.8410	0.8410
4	**5-5-2025**	**8-4-2025**	0.8750	0.8750
5	**8-5-2025**	**11-4-2025**	0.7645	0.7645
6	**11-5-2025**	**2-4-2026**	0.5940	0.5940
7	**2-5-2026**	**5-4-2026**	1.2213	1.2213
8	**5-5-2026**	**8-4-2026**	2.7754	2.7754

9	**8-5-2026**	**11-4-2026**	2.7759	2.7759
10	**11-5-2026**	**2-4-2027**	2.7763	2.7763
11	**2-5-2027**	**5-4-2027**	2.6848	2.6848
12	**5-5-2027**	**8-4-2027**	1.5834	1.5834
13	**8-5-2027**	**9-30-2027**	0.6538	0.6538
		Highest	2.7763	2.7763

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	0.0853	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	44.8080	44.8080	3.9500e-003	8.2000e-004	45.1504
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	1.1063	0.0000	1.1063	0.0654	0.0000	2.7408
Water						0.0000	0.0000		0.0000	0.0000	0.4255	1.0824	1.5079	0.0438	1.0500e-003	2.9163
Total	**0.0853**	**0.0000**	**2.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.5318**	**45.8908**	**47.4226**	**0.1131**	**1.8700e-003**	**50.8080**

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	0.0853	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	44.8080	44.8080	3.9500e-003	8.2000e-004	45.1504
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	1.1063	0.0000	1.1063	0.0654	0.0000	2.7408
Water						0.0000	0.0000		0.0000	0.0000	0.4255	1.0824	1.5079	0.0438	1.0500e-003	2.9163
Total	**0.0853**	**0.0000**	**2.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.5318**	**45.8908**	**47.4226**	**0.1131**	**1.8700e-003**	**50.8080**

	ROG	NOx	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	Clearing, Grubbing, and Site Grading	Grading	8/5/2024	1/3/2025	5	110	
2	Installation of Underground Stormwater Storage	Trenching	1/6/2025	2/14/2025	5	30	
3	Installation of Industrial Parkway Structure	Building Construction	2/17/2025	10/3/2025	5	165	
4	Installation of Retaining Walls	Building Construction	10/6/2025	2/20/2026	5	100	
5	Installation of Access Roadway and Cart Paths	Paving	2/23/2026	4/3/2026	5	30	
6	Installation of Trackwork	Grading	4/6/2026	6/4/2027	5	305	
7	Installation of Gap Breaker Stations	Building Construction	6/7/2027	8/27/2027	5	60	
8	Installation of Train Control House	Building Construction	8/30/2027	11/19/2027	5	60	
9	Bio Retention Basin	Grading	11/22/2027	12/17/2027	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 15.87

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
Clearing, Grubbing, and Site Grading	Excavators	2	12.00	158	0.38
Clearing, Grubbing, and Site Grading	Graders	1	12.00	187	0.41
Clearing, Grubbing, and Site Grading	Rubber Tired Dozers	1	12.00	247	0.40
Clearing, Grubbing, and Site Grading	Scrapers	2	12.00	367	0.48
Clearing, Grubbing, and Site Grading	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Underground Stormwater Storage	Cranes	2	12.00	231	0.29

Installation of Underground Stormwater Storage	Excavators	2	12.00	158	0.38
Installation of Underground Stormwater Storage	Off-Highway Trucks	2	12.00	402	0.38
Installation of Underground Stormwater Storage	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Industrial Parkway Structure	Air Compressors	1	12.00	78	0.48
Installation of Industrial Parkway Structure	Cement and Mortar Mixers	1	12.00	9	0.56
Installation of Industrial Parkway Structure	Cranes	2	12.00	231	0.29
Installation of Industrial Parkway Structure	Forklifts	0	8.00	89	0.20
Installation of Industrial Parkway Structure	Generator Sets	1	12.00	84	0.74
Installation of Industrial Parkway Structure	Off-Highway Trucks	2	12.00	46	0.45
Installation of Industrial Parkway Structure	Pumps	1	12.00	84	0.74
Installation of Industrial Parkway Structure	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Industrial Parkway Structure	Welders	0	8.00	46	0.45
Installation of Retaining Walls	Bore/Drill Rigs	2	12.00	221	0.50
Installation of Retaining Walls	Cranes	2	12.00	231	0.29
Installation of Retaining Walls	Forklifts	0	8.00	89	0.20
Installation of Retaining Walls	Generator Sets	0	8.00	84	0.74
Installation of Retaining Walls	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Installation of Retaining Walls	Welders	0	8.00	46	0.45
Installation of Access Roadway and Cart Paths	Pavers	2	12.00	130	0.42
Installation of Access Roadway and Cart Paths	Paving Equipment	2	12.00	132	0.36
Installation of Access Roadway and Cart Paths	Rollers	2	12.00	80	0.38
Installation of Trackwork	Air Compressors	1	12.00	78	0.48
Installation of Trackwork	Cement and Mortar Mixers	1	12.00	9	0.56
Installation of Trackwork	Cranes	2	12.00	231	0.29

Installation of Trackwork	Dumpers/Tenders	2	12.00	16	0.38
Installation of Trackwork	Excavators	2	12.00	158	0.38
Installation of Trackwork	Generator Sets	1	12.00	84	0.74
Installation of Trackwork	Graders	1	12.00	187	0.41
Installation of Trackwork	Off-Highway Trucks	2	12.00	402	0.38
Installation of Trackwork	Pumps	2	12.00	84	0.74
Installation of Trackwork	Rubber Tired Dozers	1	12.00	247	0.40
Installation of Trackwork	Scrapers	2	12.00	367	0.48
Installation of Trackwork	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Gap Breaker Stations	Cranes	2	12.00	231	0.29
Installation of Gap Breaker Stations	Forklifts	0	8.00	89	0.20
Installation of Gap Breaker Stations	Generator Sets	0	8.00	84	0.74
Installation of Gap Breaker Stations	Off-Highway Trucks	4	12.00	402	0.38
Installation of Gap Breaker Stations	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Installation of Gap Breaker Stations	Welders	0	8.00	46	0.45
Installation of Train Control House	Cement and Mortar Mixers	1	12.00	9	0.56
Installation of Train Control House	Cranes	1	12.00	231	0.29
Installation of Train Control House	Dumpers/Tenders	1	12.00	16	0.38
Installation of Train Control House	Forklifts	0	8.00	89	0.20
Installation of Train Control House	Generator Sets	1	12.00	84	0.74
Installation of Train Control House	Graders	1	12.00	187	0.41
Installation of Train Control House	Off-Highway Trucks	2	12.00	402	0.38
Installation of Train Control House	Pumps	1	12.00	84	0.74
Installation of Train Control House	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Train Control House	Welders	0	8.00	46	0.45
Bio Retention Basin	Excavators	2	12.00	158	0.38
Bio Retention Basin	Graders	1	12.00	187	0.41

Bio Retention Basin	Rubber Tired Dozers		1	12.00	247	0.40
Bio Retention Basin	Scrapers		2	12.00	367	0.48
Bio Retention Basin	Tractors/Loaders/Backhoes		2	12.00	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
Clearing, Grubbing, and Site Grading	8	80.00	0.00	11,300.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Underground Stormwa	8	80.00	0.00	160.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Industrial Parkway Str	10	80.00	0.00	142.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Retaining Walls	4	80.00	0.00	652.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Access Roadway and Cart Pat	6	80.00	0.00	360.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Trackwork	19	80.00	0.00	800.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Gap Breaker Stations	6	80.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Train Control House	10	80.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Bio Retention Basin	8	80.00	0.00	700.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Clearing, Grubbing, and Site Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4966	0.0000	0.4966	0.2673	0.0000	0.2673	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2583	2.5983	2.2248	4.9800e-003		0.1072	0.1072		0.0986	0.0986	0.0000	437.5192	437.5192	0.1415	0.0000	441.0567
Total	**0.2583**	**2.5983**	**2.2248**	**4.9800e-003**	**0.4966**	**0.1072**	**0.6037**	**0.2673**	**0.0986**	**0.3659**	**0.0000**	**437.5192**	**437.5192**	**0.1415**	**0.0000**	**441.0567**

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	0.0276	0.8994	0.2348	4.0500e-003	0.0951	1.5600e-003	0.0966	0.0261	1.4900e-003	0.0276	0.0000	391.4151	391.4151	0.0168	0.0000	391.8347
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0111	7.0500e-003	0.0789	2.9000e-004	0.0338	2.1000e-004	0.0341	9.0000e-003	2.0000e-004	9.2000e-003	0.0000	25.8436	25.8436	5.0000e-004	0.0000	25.8561
Total	**0.0387**	**0.9065**	**0.3137**	**4.3400e-003**	**0.1289**	**1.7700e-003**	**0.1307**	**0.0351**	**1.6900e-003**	**0.0368**	**0.0000**	**417.2588**	**417.2588**	**0.0173**	**0.0000**	**417.6909**

3.2 Clearing, Grubbing, and Site Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2235	0.0000	0.2235	0.1203	0.0000	0.1203	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2583	2.5983	2.2248	4.9800e-003		0.1072	0.1072		0.0986	0.0986	0.0000	437.5187	437.5187	0.1415	0.0000	441.0562
Total	**0.2583**	**2.5983**	**2.2248**	**4.9800e-003**	**0.2235**	**0.1072**	**0.3306**	**0.1203**	**0.0986**	**0.2189**	**0.0000**	**437.5187**	**437.5187**	**0.1415**	**0.0000**	**441.0562**

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	0.0276	0.8994	0.2348	4.0500e-003	0.0951	1.5600e-003	0.0966	0.0261	1.4900e-003	0.0276	0.0000	391.4151	391.4151	0.0168	0.0000	391.8347
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0111	7.0500e-003	0.0789	2.9000e-004	0.0338	2.1000e-004	0.0341	9.0000e-003	2.0000e-004	9.2000e-003	0.0000	25.8436	25.8436	5.0000e-004	0.0000	25.8561
Total	**0.0387**	**0.9065**	**0.3137**	**4.3400e-003**	**0.1289**	**1.7700e-003**	**0.1307**	**0.0351**	**1.6900e-003**	**0.0368**	**0.0000**	**417.2588**	**417.2588**	**0.0173**	**0.0000**	**417.6909**

3.2 Clearing, Grubbing, and Site Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0268	0.0000	0.0268	9.0900e-003	0.0000	9.0900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.5300e-003	0.0629	0.0592	1.4000e-004		2.5400e-003	2.5400e-003		2.3400e-003	2.3400e-003	0.0000	12.2639	12.2639	3.9700e-003	0.0000	12.3631
Total	**6.5300e-003**	**0.0629**	**0.0592**	**1.4000e-004**	**0.0268**	**2.5400e-003**	**0.0294**	**9.0900e-003**	**2.3400e-003**	**0.0114**	**0.0000**	**12.2639**	**12.2639**	**3.9700e-003**	**0.0000**	**12.3631**

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	7.7000e-004	0.0248	6.5600e-003	1.1000e-004	0.0721	4.0000e-005	0.0722	0.0178	4.0000e-005	0.0178	0.0000	10.8972	10.8972	4.7000e-004	0.0000	10.9089
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	1.8000e-004	2.0400e-003	1.0000e-005	9.5000e-004	1.0000e-005	9.5000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.6950	0.6950	1.0000e-005	0.0000	0.6953
Total	**1.0600e-003**	**0.0249**	**8.6000e-003**	**1.2000e-004**	**0.0731**	**5.0000e-005**	**0.0731**	**0.0180**	**5.0000e-005**	**0.0181**	**0.0000**	**11.5922**	**11.5922**	**4.8000e-004**	**0.0000**	**11.6042**

3.2 Clearing, Grubbing, and Site Grading - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0121	0.0000	0.0121	4.0900e-003	0.0000	4.0900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.5300e-003	0.0629	0.0592	1.4000e-004		2.5400e-003	2.5400e-003		2.3400e-003	2.3400e-003	0.0000	12.2639	12.2639	3.9700e-003	0.0000	12.3630
Total	**6.5300e-003**	**0.0629**	**0.0592**	**1.4000e-004**	**0.0121**	**2.5400e-003**	**0.0146**	**4.0900e-003**	**2.3400e-003**	**6.4300e-003**	**0.0000**	**12.2639**	**12.2639**	**3.9700e-003**	**0.0000**	**12.3630**

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	7.7000e-004	0.0248	6.5600e-003	1.1000e-004	0.0721	4.0000e-005	0.0722	0.0178	4.0000e-005	0.0178	0.0000	10.8972	10.8972	4.7000e-004	0.0000	10.9089
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	1.8000e-004	2.0400e-003	1.0000e-005	9.5000e-004	1.0000e-005	9.5000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.6950	0.6950	1.0000e-005	0.0000	0.6953
Total	**1.0600e-003**	**0.0249**	**8.6000e-003**	**1.2000e-004**	**0.0731**	**5.0000e-005**	**0.0731**	**0.0180**	**5.0000e-005**	**0.0181**	**0.0000**	**11.5922**	**11.5922**	**4.8000e-004**	**0.0000**	**11.6042**

3.3 Installation of Underground Stormwater Storage - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0490	0.3866	0.4685	1.2300e-003		0.0158	0.0158		0.0145	0.0145	0.0000	107.8101	107.8101	0.0349	0.0000	108.6818
Total	**0.0490**	**0.3866**	**0.4685**	**1.2300e-003**		**0.0158**	**0.0158**		**0.0145**	**0.0145**	**0.0000**	**107.8101**	**107.8101**	**0.0349**	**0.0000**	**108.6818**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-004	0.0129	3.4000e-003	6.0000e-005	1.3600e-003	2.0000e-005	1.3800e-003	3.7000e-004	2.0000e-005	3.9000e-004	0.0000	5.6575	5.6575	2.4000e-004	0.0000	5.6636
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9200e-003	1.7900e-003	0.0205	8.0000e-005	9.4900e-003	6.0000e-005	9.5500e-003	2.5200e-003	5.0000e-005	2.5800e-003	0.0000	6.9501	6.9501	1.3000e-004	0.0000	6.9532
Total	**3.3200e-003**	**0.0146**	**0.0239**	**1.4000e-004**	**0.0109**	**8.0000e-005**	**0.0109**	**2.8900e-003**	**7.0000e-005**	**2.9700e-003**	**0.0000**	**12.6076**	**12.6076**	**3.7000e-004**	**0.0000**	**12.6169**

3.3 Installation of Underground Stormwater Storage - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0490	0.3866	0.4685	1.2300e-003		0.0158	0.0158		0.0145	0.0145	0.0000	107.8100	107.8100	0.0349	0.0000	108.6817
Total	**0.0490**	**0.3866**	**0.4685**	**1.2300e-003**		**0.0158**	**0.0158**		**0.0145**	**0.0145**	**0.0000**	**107.8100**	**107.8100**	**0.0349**	**0.0000**	**108.6817**

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	4.0000e-004	0.0129	3.4000e-003	6.0000e-005	1.3600e-003	2.0000e-005	1.3800e-003	3.7000e-004	2.0000e-005	3.9000e-004	0.0000	5.6575	5.6575	2.4000e-004	0.0000	5.6636
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9200e-003	1.7900e-003	0.0205	8.0000e-005	9.4900e-003	6.0000e-005	9.5500e-003	2.5200e-003	5.0000e-005	2.5800e-003	0.0000	6.9501	6.9501	1.3000e-004	0.0000	6.9532
Total	**3.3200e-003**	**0.0146**	**0.0239**	**1.4000e-004**	**0.0109**	**8.0000e-005**	**0.0109**	**2.8900e-003**	**7.0000e-005**	**2.9700e-003**	**0.0000**	**12.6076**	**12.6076**	**3.7000e-004**	**0.0000**	**12.6169**

3.4 Installation of Industrial Parkway Structure - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2140	1.9457	2.2309	4.4100e-003		0.0813	0.0813		0.0775	0.0775	0.0000	380.9810	380.9810	0.0708	0.0000	382.7515
Total	**0.2140**	**1.9457**	**2.2309**	**4.4100e-003**		**0.0813**	**0.0813**		**0.0775**	**0.0775**	**0.0000**	**380.9810**	**380.9810**	**0.0708**	**0.0000**	**382.7515**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5000e-004	0.0114	3.0200e-003	5.0000e-005	1.2000e-003	2.0000e-005	1.2200e-003	3.3000e-004	2.0000e-005	3.5000e-004	0.0000	5.0211	5.0211	2.2000e-004	0.0000	5.0265
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0160	9.8600e-003	0.1125	4.2000e-004	0.0522	3.2000e-004	0.0525	0.0139	3.0000e-004	0.0142	0.0000	38.2253	38.2253	7.0000e-004	0.0000	38.2427
Total	**0.0164**	**0.0213**	**0.1155**	**4.7000e-004**	**0.0534**	**3.4000e-004**	**0.0537**	**0.0142**	**3.2000e-004**	**0.0145**	**0.0000**	**43.2464**	**43.2464**	**9.2000e-004**	**0.0000**	**43.2692**

3.4 Installation of Industrial Parkway Structure - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2140	1.9457	2.2309	4.4100e-003		0.0813	0.0813		0.0775	0.0775	0.0000	380.9806	380.9806	0.0708	0.0000	382.7510
Total	**0.2140**	**1.9457**	**2.2309**	**4.4100e-003**		**0.0813**	**0.0813**		**0.0775**	**0.0775**	**0.0000**	**380.9806**	**380.9806**	**0.0708**	**0.0000**	**382.7510**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5000e-004	0.0114	3.0200e-003	5.0000e-005	1.2000e-003	2.0000e-005	1.2200e-003	3.3000e-004	2.0000e-005	3.5000e-004	0.0000	5.0211	5.0211	2.2000e-004	0.0000	5.0265
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0160	9.8600e-003	0.1125	4.2000e-004	0.0522	3.2000e-004	0.0525	0.0139	3.0000e-004	0.0142	0.0000	38.2253	38.2253	7.0000e-004	0.0000	38.2427
Total	**0.0164**	**0.0213**	**0.1155**	**4.7000e-004**	**0.0534**	**3.4000e-004**	**0.0537**	**0.0142**	**3.2000e-004**	**0.0145**	**0.0000**	**43.2464**	**43.2464**	**9.2000e-004**	**0.0000**	**43.2692**

3.5 Installation of Retaining Walls - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0493	0.4757	0.3565	1.4400e-003		0.0185	0.0185		0.0170	0.0170	0.0000	126.5425	126.5425	0.0409	0.0000	127.5657
Total	**0.0493**	**0.4757**	**0.3565**	**1.4400e-003**		**0.0185**	**0.0185**		**0.0170**	**0.0170**	**0.0000**	**126.5425**	**126.5425**	**0.0409**	**0.0000**	**127.5657**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0200e-003	0.0330	8.7400e-003	1.5000e-004	5.0100e-003	6.0000e-005	5.0600e-003	1.3300e-003	5.0000e-005	1.3900e-003	0.0000	14.5243	14.5243	6.2000e-004	0.0000	14.5400
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1300e-003	3.7700e-003	0.0429	1.6000e-004	0.0199	1.2000e-004	0.0201	5.3000e-003	1.1000e-004	5.4100e-003	0.0000	14.5951	14.5951	2.7000e-004	0.0000	14.6018
Total	**7.1500e-003**	**0.0368**	**0.0517**	**3.1000e-004**	**0.0249**	**1.8000e-004**	**0.0251**	**6.6300e-003**	**1.6000e-004**	**6.8000e-003**	**0.0000**	**29.1194**	**29.1194**	**8.9000e-004**	**0.0000**	**29.1417**

3.5 Installation of Retaining Walls - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0493	0.4757	0.3565	1.4400e-003		0.0185	0.0185		0.0170	0.0170	0.0000	126.5423	126.5423	0.0409	0.0000	127.5655
Total	**0.0493**	**0.4757**	**0.3565**	**1.4400e-003**		**0.0185**	**0.0185**		**0.0170**	**0.0170**	**0.0000**	**126.5423**	**126.5423**	**0.0409**	**0.0000**	**127.5655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0200e-003	0.0330	8.7400e-003	1.5000e-004	5.0100e-003	6.0000e-005	5.0600e-003	1.3300e-003	5.0000e-005	1.3900e-003	0.0000	14.5243	14.5243	6.2000e-004	0.0000	14.5400
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1300e-003	3.7700e-003	0.0429	1.6000e-004	0.0199	1.2000e-004	0.0201	5.3000e-003	1.1000e-004	5.4100e-003	0.0000	14.5951	14.5951	2.7000e-004	0.0000	14.6018
Total	**7.1500e-003**	**0.0368**	**0.0517**	**3.1000e-004**	**0.0249**	**1.8000e-004**	**0.0251**	**6.6300e-003**	**1.6000e-004**	**6.8000e-003**	**0.0000**	**29.1194**	**29.1194**	**8.9000e-004**	**0.0000**	**29.1417**

3.5 Installation of Retaining Walls - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0290	0.2794	0.2094	8.5000e-004		0.0109	0.0109		0.0100	0.0100	0.0000	74.3186	74.3186	0.0240	0.0000	74.9195
Total	**0.0290**	**0.2794**	**0.2094**	**8.5000e-004**		**0.0109**	**0.0109**		**0.0100**	**0.0100**	**0.0000**	**74.3186**	**74.3186**	**0.0240**	**0.0000**	**74.9195**

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	6.0000e-004	0.0190	5.1100e-003	9.0000e-005	4.6400e-003	3.0000e-005	4.6700e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	8.4762	8.4762	3.7000e-004	0.0000	8.4853
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4100e-003	2.0200e-003	0.0235	9.0000e-005	0.0117	7.0000e-005	0.0118	3.1100e-003	6.0000e-005	3.1800e-003	0.0000	8.2528	8.2528	1.4000e-004	0.0000	8.2563
Total	**4.0100e-003**	**0.0211**	**0.0286**	**1.8000e-004**	**0.0163**	**1.0000e-004**	**0.0164**	**4.3100e-003**	**9.0000e-005**	**4.4100e-003**	**0.0000**	**16.7289**	**16.7289**	**5.1000e-004**	**0.0000**	**16.7416**

3.5 Installation of Retaining Walls - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0290	0.2794	0.2094	8.5000e-004		0.0109	0.0109		0.0100	0.0100	0.0000	74.3185	74.3185	0.0240	0.0000	74.9194
Total	**0.0290**	**0.2794**	**0.2094**	**8.5000e-004**		**0.0109**	**0.0109**		**0.0100**	**0.0100**	**0.0000**	**74.3185**	**74.3185**	**0.0240**	**0.0000**	**74.9194**

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	6.0000e-004	0.0190	5.1100e-003	9.0000e-005	4.6400e-003	3.0000e-005	4.6700e-003	1.2000e-003	3.0000e-005	1.2300e-003	0.0000	8.4762	8.4762	3.7000e-004	0.0000	8.4853
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4100e-003	2.0200e-003	0.0235	9.0000e-005	0.0117	7.0000e-005	0.0118	3.1100e-003	6.0000e-005	3.1800e-003	0.0000	8.2528	8.2528	1.4000e-004	0.0000	8.2563
Total	**4.0100e-003**	**0.0211**	**0.0286**	**1.8000e-004**	**0.0163**	**1.0000e-004**	**0.0164**	**4.3100e-003**	**9.0000e-005**	**4.4100e-003**	**0.0000**	**16.7289**	**16.7289**	**5.1000e-004**	**0.0000**	**16.7416**

3.6 Installation of Access Roadway and Cart Paths - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0206	0.1931	0.3280	5.1000e-004		9.4200e-003	9.4200e-003		8.6600e-003	8.6600e-003	0.0000	45.0433	45.0433	0.0146	0.0000	45.4075
Paving	7.6900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0283**	**0.1931**	**0.3280**	**5.1000e-004**		**9.4200e-003**	**9.4200e-003**		**8.6600e-003**	**8.6600e-003**	**0.0000**	**45.0433**	**45.0433**	**0.0146**	**0.0000**	**45.4075**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.9000e-004	0.0284	7.6300e-003	1.3000e-004	3.0500e-003	5.0000e-005	3.1000e-003	8.4000e-004	5.0000e-005	8.9000e-004	0.0000	12.6489	12.6489	5.5000e-004	0.0000	12.6626
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7600e-003	1.6400e-003	0.0190	7.0000e-005	9.4900e-003	6.0000e-005	9.5400e-003	2.5200e-003	5.0000e-005	2.5800e-003	0.0000	6.6914	6.6914	1.2000e-004	0.0000	6.6943
Total	**3.6500e-003**	**0.0301**	**0.0267**	**2.0000e-004**	**0.0125**	**1.1000e-004**	**0.0126**	**3.3600e-003**	**1.0000e-004**	**3.4700e-003**	**0.0000**	**19.3403**	**19.3403**	**6.7000e-004**	**0.0000**	**19.3569**

3.6 Installation of Access Roadway and Cart Paths - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0206	0.1931	0.3280	5.1000e-004		9.4200e-003	9.4200e-003		8.6600e-003	8.6600e-003	0.0000	45.0433	45.0433	0.0146	0.0000	45.4075
Paving	7.6900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0283**	**0.1931**	**0.3280**	**5.1000e-004**		**9.4200e-003**	**9.4200e-003**		**8.6600e-003**	**8.6600e-003**	**0.0000**	**45.0433**	**45.0433**	**0.0146**	**0.0000**	**45.4075**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.9000e-004	0.0284	7.6300e-003	1.3000e-004	3.0500e-003	5.0000e-005	3.1000e-003	8.4000e-004	5.0000e-005	8.9000e-004	0.0000	12.6489	12.6489	5.5000e-004	0.0000	12.6626
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7600e-003	1.6400e-003	0.0190	7.0000e-005	9.4900e-003	6.0000e-005	9.5400e-003	2.5200e-003	5.0000e-005	2.5800e-003	0.0000	6.6914	6.6914	1.2000e-004	0.0000	6.6943
Total	**3.6500e-003**	**0.0301**	**0.0267**	**2.0000e-004**	**0.0125**	**1.1000e-004**	**0.0126**	**3.3600e-003**	**1.0000e-004**	**3.4700e-003**	**0.0000**	**19.3403**	**19.3403**	**6.7000e-004**	**0.0000**	**19.3569**

3.7 Installation of Trackwork - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.8850	0.0000	0.8850	0.4826	0.0000	0.4826	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.8372	7.2871	7.3459	0.0183		0.2939	0.2939		0.2752	0.2752	0.0000	1,597.414 6	1,597.414 6	0.4283	0.0000	1,608.121 7
Total	**0.8372**	**7.2871**	**7.3459**	**0.0183**	**0.8850**	**0.2939**	**1.1789**	**0.4826**	**0.2752**	**0.7578**	**0.0000**	**1,597.414 6**	**1,597.414 6**	**0.4283**	**0.0000**	**1,608.121 7**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2600e-003	0.0402	0.0108	1.8000e-004	6.1500e-003	7.0000e-005	6.2200e-003	1.6400e-003	7.0000e-005	1.7100e-003	0.0000	17.8790	17.8790	7.7000e-004	0.0000	17.8982
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0179	0.0106	0.1230	4.8000e-004	0.0614	3.7000e-004	0.0617	0.0163	3.4000e-004	0.0167	0.0000	43.2712	43.2712	7.5000e-004	0.0000	43.2899
Total	**0.0191**	**0.0508**	**0.1338**	**6.6000e-004**	**0.0675**	**4.4000e-004**	**0.0679**	**0.0180**	**4.1000e-004**	**0.0184**	**0.0000**	**61.1502**	**61.1502**	**1.5200e-003**	**0.0000**	**61.1881**

3.7 Installation of Trackwork - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3983	0.0000	0.3983	0.2172	0.0000	0.2172	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.8372	7.2871	7.3459	0.0183		0.2939	0.2939		0.2752	0.2752	0.0000	1,597.4127	1,597.4127	0.4283	0.0000	1,608.1197
Total	**0.8372**	**7.2871**	**7.3459**	**0.0183**	**0.3983**	**0.2939**	**0.6921**	**0.2172**	**0.2752**	**0.4924**	**0.0000**	**1,597.4127**	**1,597.4127**	**0.4283**	**0.0000**	**1,608.1197**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2600e-003	0.0402	0.0108	1.8000e-004	6.1500e-003	7.0000e-005	6.2200e-003	1.6400e-003	7.0000e-005	1.7100e-003	0.0000	17.8790	17.8790	7.7000e-004	0.0000	17.8982
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0179	0.0106	0.1230	4.8000e-004	0.0614	3.7000e-004	0.0617	0.0163	3.4000e-004	0.0167	0.0000	43.2712	43.2712	7.5000e-004	0.0000	43.2899
Total	**0.0191**	**0.0508**	**0.1338**	**6.6000e-004**	**0.0675**	**4.4000e-004**	**0.0679**	**0.0180**	**4.1000e-004**	**0.0184**	**0.0000**	**61.1502**	**61.1502**	**1.5200e-003**	**0.0000**	**61.1881**

3.7 Installation of Trackwork - 2027

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					0.5102	0.0000	0.5102	0.2765	0.0000	0.2765	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4790	4.1694	4.2031	0.0105		0.1681	0.1681		0.1575	0.1575	0.0000	913.9847	913.9847	0.2451	0.0000	920.1108
Total	**0.4790**	**4.1694**	**4.2031**	**0.0105**	**0.5102**	**0.1681**	**0.6783**	**0.2765**	**0.1575**	**0.4340**	**0.0000**	**913.9847**	**913.9847**	**0.2451**	**0.0000**	**920.1108**

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	7.1000e-004	0.0226	6.1600e-003	1.1000e-004	5.6900e-003	4.0000e-005	5.7200e-003	1.4700e-003	4.0000e-005	1.5100e-003	0.0000	10.1691	10.1691	4.4000e-004	0.0000	10.1801
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.6600e-003	5.5500e-003	0.0657	2.6000e-004	0.0351	2.0000e-004	0.0353	9.3400e-003	1.8000e-004	9.5200e-003	0.0000	23.9074	23.9074	3.9000e-004	0.0000	23.9172
Total	**0.0104**	**0.0281**	**0.0719**	**3.7000e-004**	**0.0408**	**2.4000e-004**	**0.0410**	**0.0108**	**2.2000e-004**	**0.0110**	**0.0000**	**34.0765**	**34.0765**	**8.3000e-004**	**0.0000**	**34.0972**

3.7 Installation of Trackwork - 2027

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					0.2296	0.0000	0.2296	0.1244	0.0000	0.1244	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4790	4.1694	4.2031	0.0105		0.1681	0.1681		0.1575	0.1575	0.0000	913.9836	913.9836	0.2451	0.0000	920.1097
Total	**0.4790**	**4.1694**	**4.2031**	**0.0105**	**0.2296**	**0.1681**	**0.3977**	**0.1244**	**0.1575**	**0.2819**	**0.0000**	**913.9836**	**913.9836**	**0.2451**	**0.0000**	**920.1097**

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	7.1000e-004	0.0226	6.1600e-003	1.1000e-004	5.6900e-003	4.0000e-005	5.7200e-003	1.4700e-003	4.0000e-005	1.5100e-003	0.0000	10.1691	10.1691	4.4000e-004	0.0000	10.1801
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.6600e-003	5.5500e-003	0.0657	2.6000e-004	0.0351	2.0000e-004	0.0353	9.3400e-003	1.8000e-004	9.5200e-003	0.0000	23.9074	23.9074	3.9000e-004	0.0000	23.9172
Total	**0.0104**	**0.0281**	**0.0719**	**3.7000e-004**	**0.0408**	**2.4000e-004**	**0.0410**	**0.0108**	**2.2000e-004**	**0.0110**	**0.0000**	**34.0765**	**34.0765**	**8.3000e-004**	**0.0000**	**34.0972**

3.8 Installation of Gap Breaker Stations - 2027

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	0.1141	0.8010	0.7297	2.9000e-003		0.0306	0.0306		0.0281	0.0281	0.0000	254.5886	254.5886	0.0823	0.0000	256.6471
Total	**0.1141**	**0.8010**	**0.7297**	**2.9000e-003**		**0.0306**	**0.0306**		**0.0281**	**0.0281**	**0.0000**	**254.5886**	**254.5886**	**0.0823**	**0.0000**	**256.6471**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2200e-003	3.0000e-003	0.0355	1.4000e-004	0.0190	1.1000e-004	0.0191	5.0500e-003	1.0000e-004	5.1500e-003	0.0000	12.9229	12.9229	2.1000e-004	0.0000	12.9282
Total	**5.2200e-003**	**3.0000e-003**	**0.0355**	**1.4000e-004**	**0.0190**	**1.1000e-004**	**0.0191**	**5.0500e-003**	**1.0000e-004**	**5.1500e-003**	**0.0000**	**12.9229**	**12.9229**	**2.1000e-004**	**0.0000**	**12.9282**

3.8 Installation of Gap Breaker Stations - 2027

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	0.1141	0.8010	0.7297	2.9000e-003		0.0306	0.0306		0.0281	0.0281	0.0000	254.5883	254.5883	0.0823	0.0000	256.6468
Total	**0.1141**	**0.8010**	**0.7297**	**2.9000e-003**		**0.0306**	**0.0306**		**0.0281**	**0.0281**	**0.0000**	**254.5883**	**254.5883**	**0.0823**	**0.0000**	**256.6468**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2200e-003	3.0000e-003	0.0355	1.4000e-004	0.0190	1.1000e-004	0.0191	5.0500e-003	1.0000e-004	5.1500e-003	0.0000	12.9229	12.9229	2.1000e-004	0.0000	12.9282
Total	**5.2200e-003**	**3.0000e-003**	**0.0355**	**1.4000e-004**	**0.0190**	**1.1000e-004**	**0.0191**	**5.0500e-003**	**1.0000e-004**	**5.1500e-003**	**0.0000**	**12.9229**	**12.9229**	**2.1000e-004**	**0.0000**	**12.9282**

3.9 Installation of Train Control House - 2027

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	0.1138	0.9307	0.9943	2.6900e-003		0.0354	0.0354		0.0334	0.0334	0.0000	233.5116	233.5116	0.0601	0.0000	235.0128
Total	**0.1138**	**0.9307**	**0.9943**	**2.6900e-003**		**0.0354**	**0.0354**		**0.0334**	**0.0334**	**0.0000**	**233.5116**	**233.5116**	**0.0601**	**0.0000**	**235.0128**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2200e-003	3.0000e-003	0.0355	1.4000e-004	0.0190	1.1000e-004	0.0191	5.0500e-003	1.0000e-004	5.1500e-003	0.0000	12.9229	12.9229	2.1000e-004	0.0000	12.9282
Total	**5.2200e-003**	**3.0000e-003**	**0.0355**	**1.4000e-004**	**0.0190**	**1.1000e-004**	**0.0191**	**5.0500e-003**	**1.0000e-004**	**5.1500e-003**	**0.0000**	**12.9229**	**12.9229**	**2.1000e-004**	**0.0000**	**12.9282**

3.9 Installation of Train Control House - 2027

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	0.1138	0.9307	0.9943	2.6900e-003		0.0354	0.0354		0.0334	0.0334	0.0000	233.5113	233.5113	0.0601	0.0000	235.0125
Total	**0.1138**	**0.9307**	**0.9943**	**2.6900e-003**		**0.0354**	**0.0354**		**0.0334**	**0.0334**	**0.0000**	**233.5113**	**233.5113**	**0.0601**	**0.0000**	**235.0125**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2200e-003	3.0000e-003	0.0355	1.4000e-004	0.0190	1.1000e-004	0.0191	5.0500e-003	1.0000e-004	5.1500e-003	0.0000	12.9229	12.9229	2.1000e-004	0.0000	12.9282
Total	**5.2200e-003**	**3.0000e-003**	**0.0355**	**1.4000e-004**	**0.0190**	**1.1000e-004**	**0.0191**	**5.0500e-003**	**1.0000e-004**	**5.1500e-003**	**0.0000**	**12.9229**	**12.9229**	**2.1000e-004**	**0.0000**	**12.9282**

3.10 Bio Retention Basin - 2027

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					0.0990	0.0000	0.0990	0.0506	0.0000	0.0506	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0435	0.4191	0.3950	9.3000e-004		0.0170	0.0170		0.0156	0.0156	0.0000	81.7593	81.7593	0.0264	0.0000	82.4204
Total	**0.0435**	**0.4191**	**0.3950**	**9.3000e-004**	**0.0990**	**0.0170**	**0.1160**	**0.0506**	**0.0156**	**0.0662**	**0.0000**	**81.7593**	**81.7593**	**0.0264**	**0.0000**	**82.4204**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7100e-003	0.0543	0.0148	2.5000e-004	5.9300e-003	9.0000e-005	6.0200e-003	1.6300e-003	9.0000e-005	1.7200e-003	0.0000	24.4493	24.4493	1.0600e-003	0.0000	24.4758
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7400e-003	1.0000e-003	0.0118	5.0000e-005	6.3300e-003	4.0000e-005	6.3600e-003	1.6800e-003	3.0000e-005	1.7200e-003	0.0000	4.3077	4.3077	7.0000e-005	0.0000	4.3094
Total	**3.4500e-003**	**0.0553**	**0.0266**	**3.0000e-004**	**0.0123**	**1.3000e-004**	**0.0124**	**3.3100e-003**	**1.2000e-004**	**3.4400e-003**	**0.0000**	**28.7570**	**28.7570**	**1.1300e-003**	**0.0000**	**28.7852**

3.10 Bio Retention Basin - 2027

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					0.0446	0.0000	0.0446	0.0228	0.0000	0.0228	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0435	0.4191	0.3950	9.3000e-004		0.0170	0.0170		0.0156	0.0156	0.0000	81.7592	81.7592	0.0264	0.0000	82.4203
Total	**0.0435**	**0.4191**	**0.3950**	**9.3000e-004**	**0.0446**	**0.0170**	**0.0615**	**0.0228**	**0.0156**	**0.0384**	**0.0000**	**81.7592**	**81.7592**	**0.0264**	**0.0000**	**82.4203**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7100e-003	0.0543	0.0148	2.5000e-004	5.9300e-003	9.0000e-005	6.0200e-003	1.6300e-003	9.0000e-005	1.7200e-003	0.0000	24.4493	24.4493	1.0600e-003	0.0000	24.4758
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7400e-003	1.0000e-003	0.0118	5.0000e-005	6.3300e-003	4.0000e-005	6.3600e-003	1.6800e-003	3.0000e-005	1.7200e-003	0.0000	4.3077	4.3077	7.0000e-005	0.0000	4.3094
Total	**3.4500e-003**	**0.0553**	**0.0266**	**3.0000e-004**	**0.0123**	**1.3000e-004**	**0.0124**	**3.3100e-003**	**1.2000e-004**	**3.4400e-003**	**0.0000**	**28.7570**	**28.7570**	**1.1300e-003**	**0.0000**	**28.7852**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Unrefrigerated Warehouse-Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.565681	0.036493	0.190146	0.103622	0.013041	0.005087	0.026037	0.049339	0.002262	0.001910	0.005350	0.000375	0.000655
Other Non-Asphalt Surfaces	0.565681	0.036493	0.190146	0.103622	0.013041	0.005087	0.026037	0.049339	0.002262	0.001910	0.005350	0.000375	0.000655
Unrefrigerated Warehouse-Rail	0.565681	0.036493	0.190146	0.103622	0.013041	0.005087	0.026037	0.049339	0.002262	0.001910	0.005350	0.000375	0.000655

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	44.8080	44.8080	3.9500e-003	8.2000e-004	45.1504
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	44.8080	44.8080	3.9500e-003	8.2000e-004	45.1504
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	300440	44.8080	3.9500e-003	8.2000e-004	45.1504
Total		**44.8080**	**3.9500e-003**	**8.2000e-004**	**45.1504**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	300440	44.8080	3.9500e-003	8.2000e-004	45.1504
Total		**44.8080**	**3.9500e-003**	**8.2000e-004**	**45.1504**

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	0.0853	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004
Unmitigated	0.0853	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-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	0.0176					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0677					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004
Total	**0.0853**	**0.0000**	**2.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.9000e-004**	**3.9000e-004**	**0.0000**	**0.0000**	**4.1000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0176					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0677					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004
Total	**0.0853**	**0.0000**	**2.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.9000e-004**	**3.9000e-004**	**0.0000**	**0.0000**	**4.1000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1.5079	0.0438	1.0500e-003	2.9163
Unmitigated	1.5079	0.0438	1.0500e-003	2.9163

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	1.34125 / 0	1.5079	0.0438	1.0500e-003	2.9163
Total		**1.5079**	**0.0438**	**1.0500e-003**	**2.9163**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	1.34125 / 0	1.5079	0.0438	1.0500e-003	2.9163
Total		**1.5079**	**0.0438**	**1.0500e-003**	**2.9163**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.1063	0.0654	0.0000	2.7408
Unmitigated	1.1063	0.0654	0.0000	2.7408

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	5.45	1.1063	0.0654	0.0000	2.7408
Total		**1.1063**	**0.0654**	**0.0000**	**2.7408**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	5.45	1.1063	0.0654	0.0000	2.7408
Total		**1.1063**	**0.0654**	**0.0000**	**2.7408**

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

BART Hayward Maintenance Complex Phase 2

Alameda County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-Rail	5.80	1000sqft	0.13	5,800.00	0
Other Asphalt Surfaces	6.00	Acre	5.87	261,360.00	0
Other Non-Asphalt Surfaces	10.00	Acre	10.00	435,600.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 63

Climate Zone 5 **Operational Year** 2028

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 328.8 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity based on 5-year average (PG&E 2015)

Land Use - The Phase 2 project site consists of approximately 16 acres of undeveloped land in the northeast quadrant of the HMC property. The northernmost 6 acres of the Phase 2 area would be developed as the site of the Northern Mainline Connector.

Construction Phase - Based on Construction Scenario as described in the Project Description.

Off-road Equipment - Default grading equipment.

Off-road Equipment - Default Grading Equipment.

Off-road Equipment - Default grading equipment

Off-road Equipment - Default paving equipment.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Trips and VMT - Based on Construction Scenario as described in the Project Description.

Grading - Based on Construction Scenario as described in the Project Description.

Vehicle Trips - The proposed project would not generate new vehicle trips.

Energy Use - Based on energy usage provided to LSA.

Construction Off-road Equipment Mitigation - Assuming compliance with BAAQMD Basic Construction Mitigation Measures.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	165.00
tblConstructionPhase	NumDays	300.00	100.00
tblConstructionPhase	NumDays	300.00	60.00
tblConstructionPhase	NumDays	300.00	60.00
tblConstructionPhase	NumDays	30.00	110.00
tblConstructionPhase	NumDays	30.00	305.00

BART Hayward Maintenance Complex Phase 2 - Alameda County, Summer

tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	20.00	30.00
tblEnergyUse	LightingElect	2.17	30.00
tblEnergyUse	NT24E	1.38	18.80
tblEnergyUse	NT24NG	0.21	0.00
tblEnergyUse	T24E	0.24	3.00
tblEnergyUse	T24NG	1.18	0.00
tblGrading	AcresOfGrading	412.50	16.00
tblGrading	AcresOfGrading	1,143.75	16.00
tblGrading	AcresOfGrading	75.00	16.00
tblGrading	MaterialImported	0.00	84,700.00
tblGrading	MaterialImported	0.00	5,800.00
tblGrading	MaterialImported	0.00	3,150.00
tblLandUse	LotAcreage	6.00	5.87
tblOffRoadEquipment	HorsePower	402.00	46.00
tblOffRoadEquipment	LoadFactor	0.38	0.45
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00

tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	328.8
tblTripsAndVMT	HaulingTripNumber	10,588.00	11,300.00
tblTripsAndVMT	HaulingTripNumber	0.00	160.00
tblTripsAndVMT	HaulingTripNumber	0.00	142.00
tblTripsAndVMT	HaulingTripNumber	0.00	652.00
tblTripsAndVMT	HaulingTripNumber	0.00	360.00
tblTripsAndVMT	HaulingTripNumber	725.00	800.00
tblTripsAndVMT	HaulingTripNumber	394.00	700.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	80.00
tblTripsAndVMT	WorkerTripNumber	20.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	15.00	80.00
tblTripsAndVMT	WorkerTripNumber	48.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	20.00	80.00
tblVehicleTrips	ST_TR	1.68	0.00

tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	1.68	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	5.5554	65.2496	47.4826	0.1752	11.7685	2.0359	13.8044	5.6721	1.8741	7.5462	0.0000	17,716.4593	17,716.4593	3.2634	0.0000	17,798.0442
2025	5.0623	58.2847	45.2591	0.1743	60.1719	1.7287	61.9006	17.5530	1.5915	19.1444	0.0000	17,633.2492	17,633.2492	3.2606	0.0000	17,714.7631
2026	8.8377	75.6296	77.2409	0.1962	9.8139	3.0341	12.8479	5.1635	2.8411	8.0046	0.0000	18,887.9424	18,887.9424	4.8847	0.0000	19,010.0597
2027	8.8269	75.6145	77.1497	0.1960	11.1695	3.0338	12.8885	5.4021	2.8409	8.0144	0.0000	18,868.5201	18,868.5201	4.8839	0.0000	18,990.6169
Maximum	**8.8377**	**75.6296**	**77.2409**	**0.1962**	**60.1719**	**3.0341**	**61.9006**	**17.5530**	**2.8411**	**19.1444**	**0.0000**	**18,887.9424**	**18,887.9424**	**4.8847**	**0.0000**	**19,010.0597**

2.1 Overall Construction (Maximum Daily Emission)

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					
2024	5.5554	65.2496	47.4826	0.1752	6.6676	2.0359	8.7035	2.9248	1.8741	4.7989	0.0000	17,716.4593	17,716.4593	3.2634	0.0000	17,798.0441
2025	5.0623	58.2847	45.2591	0.1743	55.0709	1.7287	56.7997	14.8056	1.5915	16.3971	0.0000	17,633.2492	17,633.2492	3.2606	0.0000	17,714.7631
2026	8.8377	75.6296	77.2409	0.1962	4.8139	3.0341	7.8479	2.4290	2.8411	5.2701	0.0000	18,887.9424	18,887.9424	4.8847	0.0000	19,010.0597
2027	8.8269	75.6145	77.1497	0.1960	5.7248	3.0338	7.8885	2.6193	2.8409	5.2800	0.0000	18,868.5201	18,868.5201	4.8839	0.0000	18,990.6169
Maximum	**8.8377**	**75.6296**	**77.2409**	**0.1962**	**55.0709**	**3.0341**	**56.7997**	**14.8056**	**2.8411**	**16.3971**	**0.0000**	**18,887.9424**	**18,887.9424**	**4.8847**	**0.0000**	**19,010.0597**

	ROG	NOx	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**	**22.22**	**0.00**	**19.91**	**32.59**	**0.00**	**25.67**	**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	0.4674	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4674**	**2.0000e-005**	**2.2200e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**4.7700e-003**	**4.7700e-003**	**1.0000e-005**	**0.0000**	**5.0800e-003**

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	0.4674	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4674**	**2.0000e-005**	**2.2200e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**4.7700e-003**	**4.7700e-003**	**1.0000e-005**	**0.0000**	**5.0800e-003**

	ROG	NOx	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	Clearing, Grubbing, and Site Grading	Grading	8/5/2024	1/3/2025	5	110	
2	Installation of Underground Stormwater Storage	Trenching	1/6/2025	2/14/2025	5	30	
3	Installation of Industrial Parkway Structure	Building Construction	2/17/2025	10/3/2025	5	165	
4	Installation of Retaining Walls	Building Construction	10/6/2025	2/20/2026	5	100	
5	Installation of Access Roadway and Cart Paths	Paving	2/23/2026	4/3/2026	5	30	
6	Installation of Trackwork	Grading	4/6/2026	6/4/2027	5	305	
7	Installation of Gap Breaker Stations	Building Construction	6/7/2027	8/27/2027	5	60	
8	Installation of Train Control House	Building Construction	8/30/2027	11/19/2027	5	60	
9	Bio Retention Basin	Grading	11/22/2027	12/17/2027	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 15.87

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

OffRoad Equipment

BART Hayward Maintenance Complex Phase 2 - Alameda County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Clearing, Grubbing, and Site Grading	Excavators	2	12.00	158	0.38
Clearing, Grubbing, and Site Grading	Graders	1	12.00	187	0.41
Clearing, Grubbing, and Site Grading	Rubber Tired Dozers	1	12.00	247	0.40
Clearing, Grubbing, and Site Grading	Scrapers	2	12.00	367	0.48
Clearing, Grubbing, and Site Grading	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Underground Stormwater Storage	Cranes	2	12.00	231	0.29
Installation of Underground Stormwater Storage	Excavators	2	12.00	158	0.38
Installation of Underground Stormwater Storage	Off-Highway Trucks	2	12.00	402	0.38
Installation of Underground Stormwater Storage	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Industrial Parkway Structure	Air Compressors	1	12.00	78	0.48
Installation of Industrial Parkway Structure	Cement and Mortar Mixers	1	12.00	9	0.56
Installation of Industrial Parkway Structure	Cranes	2	12.00	231	0.29
Installation of Industrial Parkway Structure	Forklifts	0	8.00	89	0.20
Installation of Industrial Parkway Structure	Generator Sets	1	12.00	84	0.74
Installation of Industrial Parkway Structure	Off-Highway Trucks	2	12.00	46	0.45
Installation of Industrial Parkway Structure	Pumps	1	12.00	84	0.74
Installation of Industrial Parkway Structure	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Industrial Parkway Structure	Welders	0	8.00	46	0.45
Installation of Retaining Walls	Bore/Drill Rigs	2	12.00	221	0.50
Installation of Retaining Walls	Cranes	2	12.00	231	0.29
Installation of Retaining Walls	Forklifts	0	8.00	89	0.20
Installation of Retaining Walls	Generator Sets	0	8.00	84	0.74
Installation of Retaining Walls	Tractors/Loaders/Backhoes	0	7.00	97	0.37

BART Hayward Maintenance Complex Phase 2 - Alameda County, Summer

Installation of Retaining Walls	Welders	0	8.00	46	0.45
Installation of Access Roadway and Cart Paths	Pavers	2	12.00	130	0.42
Installation of Access Roadway and Cart Paths	Paving Equipment	2	12.00	132	0.36
Installation of Access Roadway and Cart Paths	Rollers	2	12.00	80	0.38
Installation of Trackwork	Air Compressors	1	12.00	78	0.48
Installation of Trackwork	Cement and Mortar Mixers	1	12.00	9	0.56
Installation of Trackwork	Cranes	2	12.00	231	0.29
Installation of Trackwork	Dumpers/Tenders	2	12.00	16	0.38
Installation of Trackwork	Excavators	2	12.00	158	0.38
Installation of Trackwork	Generator Sets	1	12.00	84	0.74
Installation of Trackwork	Graders	1	12.00	187	0.41
Installation of Trackwork	Off-Highway Trucks	2	12.00	402	0.38
Installation of Trackwork	Pumps	2	12.00	84	0.74
Installation of Trackwork	Rubber Tired Dozers	1	12.00	247	0.40
Installation of Trackwork	Scrapers	2	12.00	367	0.48
Installation of Trackwork	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Gap Breaker Stations	Cranes	2	12.00	231	0.29
Installation of Gap Breaker Stations	Forklifts	0	8.00	89	0.20
Installation of Gap Breaker Stations	Generator Sets	0	8.00	84	0.74
Installation of Gap Breaker Stations	Off-Highway Trucks	4	12.00	402	0.38
Installation of Gap Breaker Stations	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Installation of Gap Breaker Stations	Welders	0	8.00	46	0.45
Installation of Train Control House	Cement and Mortar Mixers	1	12.00	9	0.56
Installation of Train Control House	Cranes	1	12.00	231	0.29
Installation of Train Control House	Dumpers/Tenders	1	12.00	16	0.38
Installation of Train Control House	Forklifts	0	8.00	89	0.20

Installation of Train Control House	Generator Sets		1	12.00	84	0.74
Installation of Train Control House	Graders		1	12.00	187	0.41
Installation of Train Control House	Off-Highway Trucks		2	12.00	402	0.38
Installation of Train Control House	Pumps		1	12.00	84	0.74
Installation of Train Control House	Tractors/Loaders/Backhoes		2	12.00	97	0.37
Installation of Train Control House	Welders		0	8.00	46	0.45
Bio Retention Basin	Excavators		2	12.00	158	0.38
Bio Retention Basin	Graders		1	12.00	187	0.41
Bio Retention Basin	Rubber Tired Dozers		1	12.00	247	0.40
Bio Retention Basin	Scrapers		2	12.00	367	0.48
Bio Retention Basin	Tractors/Loaders/Backhoes		2	12.00	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
Clearing, Grubbing, and Site Grading	8	80.00	0.00	11,300.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Underground Stormwa	8	80.00	0.00	160.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Industrial Parkway Str	10	80.00	0.00	142.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Retaining Walls	4	80.00	0.00	652.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Access Roadway and Cart Pat	6	80.00	0.00	360.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Trackwork	19	80.00	0.00	800.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Gap Breaker Stations	6	80.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Train Control House	10	80.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Bio Retention Basin	8	80.00	0.00	700.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Clearing, Grubbing, and Site Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2745	0.0000	9.2745	4.9952	0.0000	4.9952			0.0000			0.0000
Off-Road	4.8272	48.5654	41.5842	0.0931		2.0031	2.0031		1.8429	1.8429		9,014.6230	9,014.6230	2.9155		9,087.5108
Total	**4.8272**	**48.5654**	**41.5842**	**0.0931**	**9.2745**	**2.0031**	**11.2776**	**4.9952**	**1.8429**	**6.8380**		**9,014.6230**	**9,014.6230**	**2.9155**		**9,087.5108**

3.2 Clearing, Grubbing, and Site Grading - 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	lb/day										lb/day					
Hauling	0.5102	16.5678	4.2734	0.0763	1.8369	0.0289	1.8657	0.5026	0.0276	0.5302		8,127.761 1	8,127.761 1	0.3368		8,136.181 1
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2180	0.1164	1.6250	5.7600e-003	0.6572	3.9600e-003	0.6611	0.1743	3.6500e-003	0.1780		574.0751	574.0751	0.0111		574.3522
Total	**0.7282**	**16.6842**	**5.8983**	**0.0820**	**2.4941**	**0.0328**	**2.5269**	**0.6769**	**0.0313**	**0.7082**		**8,701.836 3**	**8,701.836 3**	**0.3479**		**8,710.533 3**

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					4.1735	0.0000	4.1735	2.2478	0.0000	2.2478			0.0000			0.0000
Off-Road	4.8272	48.5654	41.5842	0.0931		2.0031	2.0031		1.8429	1.8429	0.0000	9,014.623 0	9,014.623 0	2.9155		9,087.510 8
Total	**4.8272**	**48.5654**	**41.5842**	**0.0931**	**4.1735**	**2.0031**	**6.1766**	**2.2478**	**1.8429**	**4.0907**	**0.0000**	**9,014.623 0**	**9,014.623 0**	**2.9155**		**9,087.510 8**

3.2 Clearing, Grubbing, and Site Grading - 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	lb/day										lb/day					
Hauling	0.5102	16.5678	4.2734	0.0763	1.8369	0.0289	1.8657	0.5026	0.0276	0.5302		8,127.7611	8,127.7611	0.3368		8,136.1811
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2180	0.1164	1.6250	5.7600e-003	0.6572	3.9600e-003	0.6611	0.1743	3.6500e-003	0.1780		574.0751	574.0751	0.0111		574.3522
Total	**0.7282**	**16.6842**	**5.8983**	**0.0820**	**2.4941**	**0.0328**	**2.5269**	**0.6769**	**0.0313**	**0.7082**		**8,701.8363**	**8,701.8363**	**0.3479**		**8,710.5333**

3.2 Clearing, Grubbing, and Site Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2745	0.0000	9.2745	4.9952	0.0000	4.9952			0.0000			0.0000
Off-Road	4.3519	41.9143	39.4966	0.0931		1.6963	1.6963		1.5606	1.5606		9,012.4222	9,012.4222	2.9148		9,085.2922
Total	**4.3519**	**41.9143**	**39.4966**	**0.0931**	**9.2745**	**1.6963**	**10.9708**	**4.9952**	**1.5606**	**6.5558**		**9,012.4222**	**9,012.4222**	**2.9148**		**9,085.2922**

3.2 Clearing, Grubbing, and Site Grading - 2025

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	0.5055	16.2648	4.2585	0.0757	50.2403	0.0285	50.2687	12.3835	0.0272	12.4107		8,070.2095	8,070.2095	0.3357		8,078.6024
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2049	0.1056	1.5039	5.5200e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		550.6175	550.6175	0.0100		550.8686
Total	**0.7104**	**16.3704**	**5.7625**	**0.0812**	**50.8974**	**0.0324**	**50.9298**	**12.5578**	**0.0308**	**12.5886**		**8,620.8270**	**8,620.8270**	**0.3458**		**8,629.4710**

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					4.1735	0.0000	4.1735	2.2478	0.0000	2.2478			0.0000			0.0000
Off-Road	4.3519	41.9143	39.4966	0.0931		1.6963	1.6963		1.5606	1.5606	0.0000	9,012.4222	9,012.4222	2.9148		9,085.2922
Total	**4.3519**	**41.9143**	**39.4966**	**0.0931**	**4.1735**	**1.6963**	**5.8699**	**2.2478**	**1.5606**	**3.8085**	**0.0000**	**9,012.4222**	**9,012.4222**	**2.9148**		**9,085.2922**

3.2 Clearing, Grubbing, and Site Grading - 2025

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	0.5055	16.2648	4.2585	0.0757	50.2403	0.0285	50.2687	12.3835	0.0272	12.4107		8,070.209 5	8,070.209 5	0.3357		8,078.602 4
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2049	0.1056	1.5039	5.5200e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		550.6175	550.6175	0.0100		550.8686
Total	**0.7104**	**16.3704**	**5.7625**	**0.0812**	**50.8974**	**0.0324**	**50.9298**	**12.5578**	**0.0308**	**12.5886**		**8,620.827 0**	**8,620.827 0**	**0.3458**		**8,629.471 0**

3.3 Installation of Underground Stormwater Storage - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.2689	25.7723	31.2329	0.0819		1.0533	1.0533		0.9690	0.9690		7,922.686 2	7,922.686 2	2.5624		7,986.745 1
Total	**3.2689**	**25.7723**	**31.2329**	**0.0819**		**1.0533**	**1.0533**		**0.9690**	**0.9690**		**7,922.686 2**	**7,922.686 2**	**2.5624**		**7,986.745 1**

3.3 Installation of Underground Stormwater Storage - 2025

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	0.0263	0.8444	0.2211	3.9300e-003	0.0934	1.4800e-003	0.0949	0.0256	1.4100e-003	0.0270		418.9843	418.9843	0.0174		419.4201
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2049	0.1056	1.5039	5.5200e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		550.6175	550.6175	0.0100		550.8686
Total	**0.2312**	**0.9501**	**1.7250**	**9.4500e-003**	**0.7506**	**5.3800e-003**	**0.7560**	**0.1999**	**5.0000e-003**	**0.2049**		**969.6019**	**969.6019**	**0.0275**		**970.2887**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.2689	25.7723	31.2329	0.0819		1.0533	1.0533		0.9690	0.9690	0.0000	7,922.6862	7,922.6862	2.5624		7,986.7451
Total	**3.2689**	**25.7723**	**31.2329**	**0.0819**		**1.0533**	**1.0533**		**0.9690**	**0.9690**	**0.0000**	**7,922.6862**	**7,922.6862**	**2.5624**		**7,986.7451**

3.3 Installation of Underground Stormwater Storage - 2025

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	0.0263	0.8444	0.2211	3.9300e-003	0.0934	1.4800e-003	0.0949	0.0256	1.4100e-003	0.0270		418.9843	418.9843	0.0174		419.4201
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2049	0.1056	1.5039	5.5200e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		550.6175	550.6175	0.0100		550.8686
Total	**0.2312**	**0.9501**	**1.7250**	**9.4500e-003**	**0.7506**	**5.3800e-003**	**0.7560**	**0.1999**	**5.0000e-003**	**0.2049**		**969.6019**	**969.6019**	**0.0275**		**970.2887**

3.4 Installation of Industrial Parkway Structure - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5935	23.5848	27.0415	0.0534		0.9851	0.9851		0.9398	0.9398		5,090.4206	5,090.4206	0.9462		5,114.0758
Total	**2.5935**	**23.5848**	**27.0415**	**0.0534**		**0.9851**	**0.9851**		**0.9398**	**0.9398**		**5,090.4206**	**5,090.4206**	**0.9462**		**5,114.0758**

3.4 Installation of Industrial Parkway Structure - 2025

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	4.2400e-003	0.1363	0.0357	6.3000e-004	0.0151	2.4000e-004	0.0153	4.1300e-003	2.3000e-004	4.3600e-003		67.6088	67.6088	2.8100e-003		67.6792
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2049	0.1056	1.5039	5.5200e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		550.6175	550.6175	0.0100		550.8686
Total	**0.2092**	**0.2419**	**1.5396**	**6.1500e-003**	**0.6723**	**4.1400e-003**	**0.6764**	**0.1785**	**3.8200e-003**	**0.1823**		**618.2264**	**618.2264**	**0.0129**		**618.5477**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5935	23.5848	27.0415	0.0534		0.9851	0.9851		0.9398	0.9398	0.0000	5,090.4205	5,090.4205	0.9462		5,114.0758
Total	**2.5935**	**23.5848**	**27.0415**	**0.0534**		**0.9851**	**0.9851**		**0.9398**	**0.9398**	**0.0000**	**5,090.4205**	**5,090.4205**	**0.9462**		**5,114.0758**

3.4 Installation of Industrial Parkway Structure - 2025

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	4.2400e-003	0.1363	0.0357	6.3000e-004	0.0151	2.4000e-004	0.0153	4.1300e-003	2.3000e-004	4.3600e-003		67.6088	67.6088	2.8100e-003		67.6792
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2049	0.1056	1.5039	5.5200e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		550.6175	550.6175	0.0100		550.8686
Total	**0.2092**	**0.2419**	**1.5396**	**6.1500e-003**	**0.6723**	**4.1400e-003**	**0.6764**	**0.1785**	**3.8200e-003**	**0.1823**		**618.2264**	**618.2264**	**0.0129**		**618.5477**

3.5 Installation of Retaining Walls - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5664	15.1001	11.3182	0.0458		0.5877	0.5877		0.5407	0.5407		4,428.2292	4,428.2292	1.4322		4,464.0337
Total	**1.5664**	**15.1001**	**11.3182**	**0.0458**		**0.5877**	**0.5877**		**0.5407**	**0.5407**		**4,428.2292**	**4,428.2292**	**1.4322**		**4,464.0337**

3.5 Installation of Retaining Walls - 2025

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	0.0321	1.0323	0.2703	4.8000e-003	0.1648	1.8100e-003	0.1666	0.0437	1.7300e-003	0.0455		512.2083	512.2083	0.0213		512.7410
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2049	0.1056	1.5039	5.5200e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		550.6175	550.6175	0.0100		550.8686
Total	**0.2370**	**1.1379**	**1.7742**	**0.0103**	**0.8220**	**5.7100e-003**	**0.8277**	**0.2181**	**5.3200e-003**	**0.2234**		**1,062.8259**	**1,062.8259**	**0.0314**		**1,063.6096**

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	1.5664	15.1001	11.3182	0.0458		0.5877	0.5877		0.5407	0.5407	0.0000	4,428.2292	4,428.2292	1.4322		4,464.0337
Total	**1.5664**	**15.1001**	**11.3182**	**0.0458**		**0.5877**	**0.5877**		**0.5407**	**0.5407**	**0.0000**	**4,428.2292**	**4,428.2292**	**1.4322**		**4,464.0337**

3.5 Installation of Retaining Walls - 2025

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	0.0321	1.0323	0.2703	4.8000e-003	0.1648	1.8100e-003	0.1666	0.0437	1.7300e-003	0.0455		512.2083	512.2083	0.0213		512.7410
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2049	0.1056	1.5039	5.5200e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		550.6175	550.6175	0.0100		550.8686
Total	**0.2370**	**1.1379**	**1.7742**	**0.0103**	**0.8220**	**5.7100e-003**	**0.8277**	**0.2181**	**5.3200e-003**	**0.2234**		**1,062.8259**	**1,062.8259**	**0.0314**		**1,063.6096**

3.5 Installation of Retaining Walls - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5664	15.1001	11.3182	0.0458		0.5877	0.5877		0.5407	0.5407		4,428.2292	4,428.2292	1.4322		4,464.0337
Total	**1.5664**	**15.1001**	**11.3182**	**0.0458**		**0.5877**	**0.5877**		**0.5407**	**0.5407**		**4,428.2292**	**4,428.2292**	**1.4322**		**4,464.0337**

3.5 Installation of Retaining Walls - 2026

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	0.0318	1.0147	0.2694	4.7700e-003	0.2610	1.7800e-003	0.2627	0.0673	1.7100e-003	0.0690		508.9425	508.9425	0.0212		509.4733
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1937	0.0965	1.4014	5.3100e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		530.1241	530.1241	9.1500e-003		530.3529
Total	**0.2255**	**1.1112**	**1.6708**	**0.0101**	**0.9181**	**5.5700e-003**	**0.9237**	**0.2417**	**5.1900e-003**	**0.2468**		**1,039.0667**	**1,039.0667**	**0.0304**		**1,039.8262**

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	1.5664	15.1001	11.3182	0.0458		0.5877	0.5877		0.5407	0.5407	0.0000	4,428.2292	4,428.2292	1.4322		4,464.0337
Total	**1.5664**	**15.1001**	**11.3182**	**0.0458**		**0.5877**	**0.5877**		**0.5407**	**0.5407**	**0.0000**	**4,428.2292**	**4,428.2292**	**1.4322**		**4,464.0337**

3.5 Installation of Retaining Walls - 2026

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	0.0318	1.0147	0.2694	4.7700e-003	0.2610	1.7800e-003	0.2627	0.0673	1.7100e-003	0.0690		508.9425	508.9425	0.0212		509.4733
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1937	0.0965	1.4014	5.3100e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		530.1241	530.1241	9.1500e-003		530.3529
Total	**0.2255**	**1.1112**	**1.6708**	**0.0101**	**0.9181**	**5.5700e-003**	**0.9237**	**0.2417**	**5.1900e-003**	**0.2468**		**1,039.066 7**	**1,039.066 7**	**0.0304**		**1,039.826 2**

3.6 Installation of Access Roadway and Cart Paths - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3727	12.8725	21.8670	0.0342		0.6278	0.6278		0.5776	0.5776		3,310.117 7	3,310.117 7	1.0706		3,336.881 7
Paving	0.5127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.8854**	**12.8725**	**21.8670**	**0.0342**		**0.6278**	**0.6278**		**0.5776**	**0.5776**		**3,310.117 7**	**3,310.117 7**	**1.0706**		**3,336.881 7**

3.6 Installation of Access Roadway and Cart Paths - 2026

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	0.0585	1.8676	0.4958	8.7800e-003	0.2101	3.2800e-003	0.2134	0.0576	3.1400e-003	0.0608		936.7041	936.7041	0.0391		937.6810
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1937	0.0965	1.4014	5.3100e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		530.1241	530.1241	9.1500e-003		530.3529
Total	**0.2522**	**1.9641**	**1.8972**	**0.0141**	**0.8673**	**7.0700e-003**	**0.8744**	**0.2320**	**6.6200e-003**	**0.2386**		**1,466.8282**	**1,466.8282**	**0.0482**		**1,468.0339**

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	1.3727	12.8725	21.8670	0.0342		0.6278	0.6278		0.5776	0.5776	0.0000	3,310.1177	3,310.1177	1.0706		3,336.8817
Paving	0.5127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.8854**	**12.8725**	**21.8670**	**0.0342**		**0.6278**	**0.6278**		**0.5776**	**0.5776**	**0.0000**	**3,310.1177**	**3,310.1177**	**1.0706**		**3,336.8817**

3.6 Installation of Access Roadway and Cart Paths - 2026

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	0.0585	1.8676	0.4958	8.7800e-003	0.2101	3.2800e-003	0.2134	0.0576	3.1400e-003	0.0608		936.7041	936.7041	0.0391		937.6810
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1937	0.0965	1.4014	5.3100e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		530.1241	530.1241	9.1500e-003		530.3529
Total	**0.2522**	**1.9641**	**1.8972**	**0.0141**	**0.8673**	**7.0700e-003**	**0.8744**	**0.2320**	**6.6200e-003**	**0.2386**		**1,466.8282**	**1,466.8282**	**0.0482**		**1,468.0339**

3.7 Installation of Trackwork - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.0909	0.0000	9.0909	4.9717	0.0000	4.9717			0.0000			0.0000
Off-Road	8.6313	75.1249	75.7312	0.1889		3.0295	3.0295		2.8369	2.8369		18,153.0742	18,153.0742	4.8670		18,274.7493
Total	**8.6313**	**75.1249**	**75.7312**	**0.1889**	**9.0909**	**3.0295**	**12.1205**	**4.9717**	**2.8369**	**7.8086**		**18,153.0742**	**18,153.0742**	**4.8670**		**18,274.7493**

3.7 Installation of Trackwork - 2026

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	0.0128	0.4082	0.1084	1.9200e-003	0.0658	7.2000e-004	0.0665	0.0175	6.9000e-004	0.0182		204.7441	204.7441	8.5400e-003		204.9576
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1937	0.0965	1.4014	5.3100e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		530.1241	530.1241	9.1500e-003		530.3529
Total	**0.2065**	**0.5047**	**1.5097**	**7.2300e-003**	**0.7230**	**4.5100e-003**	**0.7275**	**0.1918**	**4.1700e-003**	**0.1960**		**734.8682**	**734.8682**	**0.0177**		**735.3105**

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					4.0909	0.0000	4.0909	2.2373	0.0000	2.2373			0.0000			0.0000
Off-Road	8.6313	75.1249	75.7312	0.1889		3.0295	3.0295		2.8369	2.8369	0.0000	18,153.0742	18,153.0742	4.8670		18,274.7493
Total	**8.6313**	**75.1249**	**75.7312**	**0.1889**	**4.0909**	**3.0295**	**7.1205**	**2.2373**	**2.8369**	**5.0742**	**0.0000**	**18,153.0742**	**18,153.0742**	**4.8670**		**18,274.7493**

3.7 Installation of Trackwork - 2026

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	0.0128	0.4082	0.1084	1.9200e-003	0.0658	7.2000e-004	0.0665	0.0175	6.9000e-004	0.0182		204.7441	204.7441	8.5400e-003		204.9576
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1937	0.0965	1.4014	5.3100e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		530.1241	530.1241	9.1500e-003		530.3529
Total	**0.2065**	**0.5047**	**1.5097**	**7.2300e-003**	**0.7230**	**4.5100e-003**	**0.7275**	**0.1918**	**4.1700e-003**	**0.1960**		**734.8682**	**734.8682**	**0.0177**		**735.3105**

3.7 Installation of Trackwork - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.0909	0.0000	9.0909	4.9717	0.0000	4.9717			0.0000			0.0000
Off-Road	8.6313	75.1249	75.7312	0.1889		3.0295	3.0295		2.8369	2.8369		18,153.0742	18,153.0742	4.8670		18,274.7493
Total	**8.6313**	**75.1249**	**75.7312**	**0.1889**	**9.0909**	**3.0295**	**12.1205**	**4.9717**	**2.8369**	**7.8086**		**18,153.0742**	**18,153.0742**	**4.8670**		**18,274.7493**

3.7 Installation of Trackwork - 2027

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	0.0127	0.4012	0.1081	1.9100e-003	0.1065	7.1000e-004	0.1073	0.0275	6.8000e-004	0.0282		203.5245	203.5245	8.5200e-003		203.7374
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1829	0.0884	1.3105	5.1300e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		511.9214	511.9214	8.3500e-003		512.1302
Total	**0.1956**	**0.4896**	**1.4186**	**7.0400e-003**	**0.7637**	**4.3000e-003**	**0.7680**	**0.2018**	**3.9800e-003**	**0.2058**		**715.4459**	**715.4459**	**0.0169**		**715.8676**

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					4.0909	0.0000	4.0909	2.2373	0.0000	2.2373			0.0000			0.0000
Off-Road	8.6313	75.1249	75.7312	0.1889		3.0295	3.0295		2.8369	2.8369	0.0000	18,153.0742	18,153.0742	4.8670		18,274.7493
Total	**8.6313**	**75.1249**	**75.7312**	**0.1889**	**4.0909**	**3.0295**	**7.1205**	**2.2373**	**2.8369**	**5.0742**	**0.0000**	**18,153.0742**	**18,153.0742**	**4.8670**		**18,274.7493**

3.7 Installation of Trackwork - 2027

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	0.0127	0.4012	0.1081	1.9100e-003	0.1065	7.1000e-004	0.1073	0.0275	6.8000e-004	0.0282		203.5245	203.5245	8.5200e-003		203.7374
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1829	0.0884	1.3105	5.1300e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		511.9214	511.9214	8.3500e-003		512.1302
Total	**0.1956**	**0.4896**	**1.4186**	**7.0400e-003**	**0.7637**	**4.3000e-003**	**0.7680**	**0.2018**	**3.9800e-003**	**0.2058**		**715.4459**	**715.4459**	**0.0169**		**715.8676**

3.8 Installation of Gap Breaker Stations - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8039	26.7003	24.3222	0.0967		1.0186	1.0186		0.9371	0.9371		9,354.5313	9,354.5313	3.0254		9,430.1674
Total	**3.8039**	**26.7003**	**24.3222**	**0.0967**		**1.0186**	**1.0186**		**0.9371**	**0.9371**		**9,354.5313**	**9,354.5313**	**3.0254**		**9,430.1674**

3.8 Installation of Gap Breaker Stations - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1829	0.0884	1.3105	5.1300e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		511.9214	511.9214	8.3500e-003		512.1302
Total	**0.1829**	**0.0884**	**1.3105**	**5.1300e-003**	**0.6572**	**3.5900e-003**	**0.6608**	**0.1743**	**3.3000e-003**	**0.1776**		**511.9214**	**511.9214**	**8.3500e-003**		**512.1302**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8039	26.7003	24.3222	0.0967		1.0186	1.0186		0.9371	0.9371	0.0000	9,354.5313	9,354.5313	3.0254		9,430.1674
Total	**3.8039**	**26.7003**	**24.3222**	**0.0967**		**1.0186**	**1.0186**		**0.9371**	**0.9371**	**0.0000**	**9,354.5313**	**9,354.5313**	**3.0254**		**9,430.1674**

3.8 Installation of Gap Breaker Stations - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1829	0.0884	1.3105	5.1300e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		511.9214	511.9214	8.3500e-003		512.1302
Total	**0.1829**	**0.0884**	**1.3105**	**5.1300e-003**	**0.6572**	**3.5900e-003**	**0.6608**	**0.1743**	**3.3000e-003**	**0.1776**		**511.9214**	**511.9214**	**8.3500e-003**		**512.1302**

3.9 Installation of Train Control House - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7921	31.0219	33.1424	0.0895		1.1802	1.1802		1.1131	1.1131		8,580.0813	8,580.0813	2.2064		8,635.2420
Total	**3.7921**	**31.0219**	**33.1424**	**0.0895**		**1.1802**	**1.1802**		**1.1131**	**1.1131**		**8,580.0813**	**8,580.0813**	**2.2064**		**8,635.2420**

3.9 Installation of Train Control House - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1829	0.0884	1.3105	5.1300e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		511.9214	511.9214	8.3500e-003		512.1302
Total	**0.1829**	**0.0884**	**1.3105**	**5.1300e-003**	**0.6572**	**3.5900e-003**	**0.6608**	**0.1743**	**3.3000e-003**	**0.1776**		**511.9214**	**511.9214**	**8.3500e-003**		**512.1302**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7921	31.0219	33.1424	0.0895		1.1802	1.1802		1.1131	1.1131	0.0000	8,580.0813	8,580.0813	2.2064		8,635.2420
Total	**3.7921**	**31.0219**	**33.1424**	**0.0895**		**1.1802**	**1.1802**		**1.1131**	**1.1131**	**0.0000**	**8,580.0813**	**8,580.0813**	**2.2064**		**8,635.2420**

3.9 Installation of Train Control House - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1829	0.0884	1.3105	5.1300e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		511.9214	511.9214	8.3500e-003		512.1302
Total	**0.1829**	**0.0884**	**1.3105**	**5.1300e-003**	**0.6572**	**3.5900e-003**	**0.6608**	**0.1743**	**3.3000e-003**	**0.1776**		**511.9214**	**511.9214**	**8.3500e-003**		**512.1302**

3.10 Bio Retention Basin - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.8993	0.0000	9.8993	5.0597	0.0000	5.0597			0.0000			0.0000
Off-Road	4.3519	41.9143	39.4966	0.0931		1.6963	1.6963		1.5606	1.5606		9,012.4222	9,012.4222	2.9148		9,085.2922
Total	**4.3519**	**41.9143**	**39.4966**	**0.0931**	**9.8993**	**1.6963**	**11.5957**	**5.0597**	**1.5606**	**6.6203**		**9,012.4222**	**9,012.4222**	**2.9148**		**9,085.2922**

3.10 Bio Retention Basin - 2027

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	0.1692	5.3536	1.4423	0.0255	0.6130	9.4400e-003	0.6224	0.1681	9.0300e-003	0.1771		2,715.7803	2,715.7803	0.1136		2,718.6209
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1829	0.0884	1.3105	5.1300e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		511.9214	511.9214	8.3500e-003		512.1302
Total	**0.3522**	**5.4420**	**2.7528**	**0.0306**	**1.2701**	**0.0130**	**1.2832**	**0.3424**	**0.0123**	**0.3547**		**3,227.7017**	**3,227.7017**	**0.1220**		**3,230.7512**

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					4.4547	0.0000	4.4547	2.2768	0.0000	2.2768			0.0000			0.0000
Off-Road	4.3519	41.9143	39.4966	0.0931		1.6963	1.6963		1.5606	1.5606	0.0000	9,012.4222	9,012.4222	2.9148		9,085.2922
Total	**4.3519**	**41.9143**	**39.4966**	**0.0931**	**4.4547**	**1.6963**	**6.1510**	**2.2768**	**1.5606**	**3.8375**	**0.0000**	**9,012.4222**	**9,012.4222**	**2.9148**		**9,085.2922**

3.10 Bio Retention Basin - 2027

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	0.1692	5.3536	1.4423	0.0255	0.6130	9.4400e-003	0.6224	0.1681	9.0300e-003	0.1771		2,715.7803	2,715.7803	0.1136		2,718.6209
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1829	0.0884	1.3105	5.1300e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		511.9214	511.9214	8.3500e-003		512.1302
Total	**0.3522**	**5.4420**	**2.7528**	**0.0306**	**1.2701**	**0.0130**	**1.2832**	**0.3424**	**0.0123**	**0.3547**		**3,227.7017**	**3,227.7017**	**0.1220**		**3,230.7512**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Unrefrigerated Warehouse-Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.565681	0.036493	0.190146	0.103622	0.013041	0.005087	0.026037	0.049339	0.002262	0.001910	0.005350	0.000375	0.000655
Other Non-Asphalt Surfaces	0.565681	0.036493	0.190146	0.103622	0.013041	0.005087	0.026037	0.049339	0.002262	0.001910	0.005350	0.000375	0.000655
Unrefrigerated Warehouse-Rail	0.565681	0.036493	0.190146	0.103622	0.013041	0.005087	0.026037	0.049339	0.002262	0.001910	0.005350	0.000375	0.000655

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.4674	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003
Unmitigated	0.4674	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-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	0.0962					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3710					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-004	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003
Total	**0.4674**	**2.0000e-005**	**2.2200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.7700e-003**	**4.7700e-003**	**1.0000e-005**		**5.0800e-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	0.0962					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3710					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-004	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003
Total	**0.4674**	**2.0000e-005**	**2.2200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.7700e-003**	**4.7700e-003**	**1.0000e-005**		**5.0800e-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

BART Hayward Maintenance Complex Phase 2

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-Rail	5.80	1000sqft	0.13	5,800.00	0
Other Asphalt Surfaces	6.00	Acre	5.87	261,360.00	0
Other Non-Asphalt Surfaces	10.00	Acre	10.00	435,600.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 63

Climate Zone 5 **Operational Year** 2028

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 328.8 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity based on 5-year average (PG&E 2015)

Land Use - The Phase 2 project site consists of approximately 16 acres of undeveloped land in the northeast quadrant of the HMC property. The northernmost 6 acres of the Phase 2 area would be developed as the site of the Northern Mainline Connector.

Construction Phase - Based on Construction Scenario as described in the Project Description.

Off-road Equipment - Default grading equipment.

Off-road Equipment - Default Grading Equipment.

Off-road Equipment - Default grading equipment

Off-road Equipment - Default paving equipment.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Off-road Equipment - Based on Construction Equipment identified in the Project Description.

Trips and VMT - Based on Construction Scenario as described in the Project Description.

Grading - Based on Construction Scenario as described in the Project Description.

Vehicle Trips - The proposed project would not generate new vehicle trips.

Energy Use - Based on energy usage provided to LSA.

Construction Off-road Equipment Mitigation - Assuming compliance with BAAQMD Basic Construction Mitigation Measures.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	165.00
tblConstructionPhase	NumDays	300.00	100.00
tblConstructionPhase	NumDays	300.00	60.00
tblConstructionPhase	NumDays	300.00	60.00
tblConstructionPhase	NumDays	30.00	110.00
tblConstructionPhase	NumDays	30.00	305.00

BART Hayward Maintenance Complex Phase 2 - Alameda County, Winter

tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	20.00	30.00
tblEnergyUse	LightingElect	2.17	30.00
tblEnergyUse	NT24E	1.38	18.80
tblEnergyUse	NT24NG	0.21	0.00
tblEnergyUse	T24E	0.24	3.00
tblEnergyUse	T24NG	1.18	0.00
tblGrading	AcresOfGrading	412.50	16.00
tblGrading	AcresOfGrading	1,143.75	16.00
tblGrading	AcresOfGrading	75.00	16.00
tblGrading	MaterialImported	0.00	84,700.00
tblGrading	MaterialImported	0.00	5,800.00
tblGrading	MaterialImported	0.00	3,150.00
tblLandUse	LotAcreage	6.00	5.87
tblOffRoadEquipment	HorsePower	402.00	46.00
tblOffRoadEquipment	LoadFactor	0.38	0.45
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
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tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00

tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	328.8
tblTripsAndVMT	HaulingTripNumber	10,588.00	11,300.00
tblTripsAndVMT	HaulingTripNumber	0.00	160.00
tblTripsAndVMT	HaulingTripNumber	0.00	142.00
tblTripsAndVMT	HaulingTripNumber	0.00	652.00
tblTripsAndVMT	HaulingTripNumber	0.00	360.00
tblTripsAndVMT	HaulingTripNumber	725.00	800.00
tblTripsAndVMT	HaulingTripNumber	394.00	700.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	VendorTripNumber	115.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	80.00
tblTripsAndVMT	WorkerTripNumber	20.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	15.00	80.00
tblTripsAndVMT	WorkerTripNumber	48.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	295.00	80.00
tblTripsAndVMT	WorkerTripNumber	20.00	80.00
tblVehicleTrips	ST_TR	1.68	0.00

tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	1.68	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	5.5805	65.5360	47.6402	0.1733	11.7685	2.0364	13.8049	5.6721	1.8746	7.5467	0.0000	17,520.5557	17,520.5557	3.2834	0.0000	17,602.6417
2025	5.0871	58.5601	45.4170	0.1725	60.1719	1.7292	61.9011	17.5530	1.5919	19.1448	0.0000	17,441.4333	17,441.4333	3.2803	0.0000	17,523.4402
2026	8.8491	75.6591	77.1432	0.1957	9.8139	3.0341	12.8479	5.1635	2.8411	8.0046	0.0000	18,841.9860	18,841.9860	4.8845	0.0000	18,964.0983
2027	8.8383	75.6418	77.0557	0.1955	11.1695	3.0339	12.8885	5.4021	2.8409	8.0144	0.0000	18,824.0343	18,824.0343	4.8837	0.0000	18,946.1270
Maximum	**8.8491**	**75.6591**	**77.1432**	**0.1957**	**60.1719**	**3.0341**	**61.9011**	**17.5530**	**2.8411**	**19.1448**	**0.0000**	**18,841.9860**	**18,841.9860**	**4.8845**	**0.0000**	**18,964.0983**

2.1 Overall Construction (Maximum Daily Emission)

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					
2024	5.5805	65.5360	47.6402	0.1733	6.6676	2.0364	8.7040	2.9248	1.8746	4.7994	0.0000	17,520.5557	17,520.5557	3.2834	0.0000	17,602.6417
2025	5.0871	58.5601	45.4170	0.1725	55.0709	1.7292	56.8001	14.8056	1.5919	16.3975	0.0000	17,441.4333	17,441.4333	3.2803	0.0000	17,523.4402
2026	8.8491	75.6591	77.1432	0.1957	4.8139	3.0341	7.8479	2.4290	2.8411	5.2701	0.0000	18,841.9860	18,841.9860	4.8845	0.0000	18,964.0983
2027	8.8383	75.6418	77.0557	0.1955	5.7248	3.0339	7.8885	2.6193	2.8409	5.2800	0.0000	18,824.0343	18,824.0343	4.8837	0.0000	18,946.1269
Maximum	**8.8491**	**75.6591**	**77.1432**	**0.1957**	**55.0709**	**3.0341**	**56.8001**	**14.8056**	**2.8411**	**16.3975**	**0.0000**	**18,841.9860**	**18,841.9860**	**4.8845**	**0.0000**	**18,964.0983**

	ROG	**NOx**	**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**	**22.22**	**0.00**	**19.91**	**32.59**	**0.00**	**25.67**	**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	0.4674	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4674**	**2.0000e-005**	**2.2200e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**4.7700e-003**	**4.7700e-003**	**1.0000e-005**	**0.0000**	**5.0800e-003**

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	0.4674	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4674**	**2.0000e-005**	**2.2200e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**4.7700e-003**	**4.7700e-003**	**1.0000e-005**	**0.0000**	**5.0800e-003**

	ROG	NOx	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	Clearing, Grubbing, and Site Grading	Grading	8/5/2024	1/3/2025	5	110	
2	Installation of Underground Stormwater Storage	Trenching	1/6/2025	2/14/2025	5	30	
3	Installation of Industrial Parkway Structure	Building Construction	2/17/2025	10/3/2025	5	165	
4	Installation of Retaining Walls	Building Construction	10/6/2025	2/20/2026	5	100	
5	Installation of Access Roadway and Cart Paths	Paving	2/23/2026	4/3/2026	5	30	
6	Installation of Trackwork	Grading	4/6/2026	6/4/2027	5	305	
7	Installation of Gap Breaker Stations	Building Construction	6/7/2027	8/27/2027	5	60	
8	Installation of Train Control House	Building Construction	8/30/2027	11/19/2027	5	60	
9	Bio Retention Basin	Grading	11/22/2027	12/17/2027	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 15.87

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
Clearing, Grubbing, and Site Grading	Excavators	2	12.00	158	0.38
Clearing, Grubbing, and Site Grading	Graders	1	12.00	187	0.41
Clearing, Grubbing, and Site Grading	Rubber Tired Dozers	1	12.00	247	0.40
Clearing, Grubbing, and Site Grading	Scrapers	2	12.00	367	0.48
Clearing, Grubbing, and Site Grading	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Underground Stormwater Storage	Cranes	2	12.00	231	0.29
Installation of Underground Stormwater Storage	Excavators	2	12.00	158	0.38
Installation of Underground Stormwater Storage	Off-Highway Trucks	2	12.00	402	0.38
Installation of Underground Stormwater Storage	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Industrial Parkway Structure	Air Compressors	1	12.00	78	0.48
Installation of Industrial Parkway Structure	Cement and Mortar Mixers	1	12.00	9	0.56
Installation of Industrial Parkway Structure	Cranes	2	12.00	231	0.29
Installation of Industrial Parkway Structure	Forklifts	0	8.00	89	0.20
Installation of Industrial Parkway Structure	Generator Sets	1	12.00	84	0.74
Installation of Industrial Parkway Structure	Off-Highway Trucks	2	12.00	46	0.45
Installation of Industrial Parkway Structure	Pumps	1	12.00	84	0.74
Installation of Industrial Parkway Structure	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Industrial Parkway Structure	Welders	0	8.00	46	0.45
Installation of Retaining Walls	Bore/Drill Rigs	2	12.00	221	0.50
Installation of Retaining Walls	Cranes	2	12.00	231	0.29
Installation of Retaining Walls	Forklifts	0	8.00	89	0.20
Installation of Retaining Walls	Generator Sets	0	8.00	84	0.74
Installation of Retaining Walls	Tractors/Loaders/Backhoes	0	7.00	97	0.37

Installation of Retaining Walls	Welders	0	8.00	46	0.45
Installation of Access Roadway and Cart Paths	Pavers	2	12.00	130	0.42
Installation of Access Roadway and Cart Paths	Paving Equipment	2	12.00	132	0.36
Installation of Access Roadway and Cart Paths	Rollers	2	12.00	80	0.38
Installation of Trackwork	Air Compressors	1	12.00	78	0.48
Installation of Trackwork	Cement and Mortar Mixers	1	12.00	9	0.56
Installation of Trackwork	Cranes	2	12.00	231	0.29
Installation of Trackwork	Dumpers/Tenders	2	12.00	16	0.38
Installation of Trackwork	Excavators	2	12.00	158	0.38
Installation of Trackwork	Generator Sets	1	12.00	84	0.74
Installation of Trackwork	Graders	1	12.00	187	0.41
Installation of Trackwork	Off-Highway Trucks	2	12.00	402	0.38
Installation of Trackwork	Pumps	2	12.00	84	0.74
Installation of Trackwork	Rubber Tired Dozers	1	12.00	247	0.40
Installation of Trackwork	Scrapers	2	12.00	367	0.48
Installation of Trackwork	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Installation of Gap Breaker Stations	Cranes	2	12.00	231	0.29
Installation of Gap Breaker Stations	Forklifts	0	8.00	89	0.20
Installation of Gap Breaker Stations	Generator Sets	0	8.00	84	0.74
Installation of Gap Breaker Stations	Off-Highway Trucks	4	12.00	402	0.38
Installation of Gap Breaker Stations	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Installation of Gap Breaker Stations	Welders	0	8.00	46	0.45
Installation of Train Control House	Cement and Mortar Mixers	1	12.00	9	0.56
Installation of Train Control House	Cranes	1	12.00	231	0.29
Installation of Train Control House	Dumpers/Tenders	1	12.00	16	0.38
Installation of Train Control House	Forklifts	0	8.00	89	0.20

Installation of Train Control House	Generator Sets		1	12.00	84	0.74
Installation of Train Control House	Graders		1	12.00	187	0.41
Installation of Train Control House	Off-Highway Trucks		2	12.00	402	0.38
Installation of Train Control House	Pumps		1	12.00	84	0.74
Installation of Train Control House	Tractors/Loaders/Backhoes		2	12.00	97	0.37
Installation of Train Control House	Welders		0	8.00	46	0.45
Bio Retention Basin	Excavators		2	12.00	158	0.38
Bio Retention Basin	Graders		1	12.00	187	0.41
Bio Retention Basin	Rubber Tired Dozers		1	12.00	247	0.40
Bio Retention Basin	Scrapers		2	12.00	367	0.48
Bio Retention Basin	Tractors/Loaders/Backhoes		2	12.00	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
Clearing, Grubbing, and Site Grading	8	80.00	0.00	11,300.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Underground Stormwa	8	80.00	0.00	160.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Industrial Parkway Str	10	80.00	0.00	142.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Retaining Walls	4	80.00	0.00	652.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Access Roadway and Cart Pat	6	80.00	0.00	360.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Trackwork	19	80.00	0.00	800.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Gap Breaker Stations	6	80.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Installation of Train Control House	10	80.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Bio Retention Basin	8	80.00	0.00	700.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Clearing, Grubbing, and Site Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2745	0.0000	9.2745	4.9952	0.0000	4.9952			0.0000			0.0000
Off-Road	4.8272	48.5654	41.5842	0.0931		2.0031	2.0031		1.8429	1.8429		9,014.623 0	9,014.623 0	2.9155		9,087.510 8
Total	**4.8272**	**48.5654**	**41.5842**	**0.0931**	**9.2745**	**2.0031**	**11.2776**	**4.9952**	**1.8429**	**6.8380**		**9,014.623 0**	**9,014.623 0**	**2.9155**		**9,087.510 8**

3.2 Clearing, Grubbing, and Site Grading - 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	lb/day										lb/day					
Hauling	0.5244	16.8260	4.5449	0.0749	1.8369	0.0294	1.8662	0.5026	0.0281	0.5307		7,977.6094	7,977.6094	0.3577		7,986.5511
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2289	0.1446	1.5111	5.3000e-003	0.6572	3.9600e-003	0.6611	0.1743	3.6500e-003	0.1780		528.3232	528.3232	0.0103		528.5797
Total	**0.7533**	**16.9706**	**6.0560**	**0.0802**	**2.4941**	**0.0333**	**2.5274**	**0.6769**	**0.0317**	**0.7087**		**8,505.9327**	**8,505.9327**	**0.3679**		**8,515.1309**

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					4.1735	0.0000	4.1735	2.2478	0.0000	2.2478			0.0000			0.0000
Off-Road	4.8272	48.5654	41.5842	0.0931		2.0031	2.0031		1.8429	1.8429	0.0000	9,014.6230	9,014.6230	2.9155		9,087.5108
Total	**4.8272**	**48.5654**	**41.5842**	**0.0931**	**4.1735**	**2.0031**	**6.1766**	**2.2478**	**1.8429**	**4.0907**	**0.0000**	**9,014.6230**	**9,014.6230**	**2.9155**		**9,087.5108**

3.2 Clearing, Grubbing, and Site Grading - 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	lb/day										lb/day					
Hauling	0.5244	16.8260	4.5449	0.0749	1.8369	0.0294	1.8662	0.5026	0.0281	0.5307		7,977.6094	7,977.6094	0.3577		7,986.5511
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2289	0.1446	1.5111	5.3000e-003	0.6572	3.9600e-003	0.6611	0.1743	3.6500e-003	0.1780		528.3232	528.3232	0.0103		528.5797
Total	**0.7533**	**16.9706**	**6.0560**	**0.0802**	**2.4941**	**0.0333**	**2.5274**	**0.6769**	**0.0317**	**0.7087**		**8,505.9327**	**8,505.9327**	**0.3679**		**8,515.1309**

3.2 Clearing, Grubbing, and Site Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2745	0.0000	9.2745	4.9952	0.0000	4.9952			0.0000			0.0000
Off-Road	4.3519	41.9143	39.4966	0.0931		1.6963	1.6963		1.5606	1.5606		9,012.4222	9,012.4222	2.9148		9,085.2922
Total	**4.3519**	**41.9143**	**39.4966**	**0.0931**	**9.2745**	**1.6963**	**10.9708**	**4.9952**	**1.5606**	**6.5558**		**9,012.4222**	**9,012.4222**	**2.9148**		**9,085.2922**

3.2 Clearing, Grubbing, and Site Grading - 2025

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	0.5194	16.5147	4.5252	0.0743	50.2403	0.0289	50.2692	12.3835	0.0277	12.4111		7,922.255 2	7,922.255 2	0.3562		7,931.160 2
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2158	0.1312	1.3952	5.0800e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		506.7559	506.7559	9.2700e-003		506.9878
Total	**0.7352**	**16.6458**	**5.9204**	**0.0794**	**50.8974**	**0.0328**	**50.9303**	**12.5578**	**0.0313**	**12.5890**		**8,429.011 1**	**8,429.011 1**	**0.3655**		**8,438.148 0**

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					4.1735	0.0000	4.1735	2.2478	0.0000	2.2478			0.0000			0.0000
Off-Road	4.3519	41.9143	39.4966	0.0931		1.6963	1.6963		1.5606	1.5606	0.0000	9,012.422 2	9,012.422 2	2.9148		9,085.292 2
Total	**4.3519**	**41.9143**	**39.4966**	**0.0931**	**4.1735**	**1.6963**	**5.8699**	**2.2478**	**1.5606**	**3.8085**	**0.0000**	**9,012.422 2**	**9,012.422 2**	**2.9148**		**9,085.292 2**

3.2 Clearing, Grubbing, and Site Grading - 2025

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	0.5194	16.5147	4.5252	0.0743	50.2403	0.0289	50.2692	12.3835	0.0277	12.4111		7,922.2552	7,922.2552	0.3562		7,931.1602
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2158	0.1312	1.3952	5.0800e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		506.7559	506.7559	9.2700e-003		506.9878
Total	**0.7352**	**16.6458**	**5.9204**	**0.0794**	**50.8974**	**0.0328**	**50.9303**	**12.5578**	**0.0313**	**12.5890**		**8,429.0111**	**8,429.0111**	**0.3655**		**8,438.1480**

3.3 Installation of Underground Stormwater Storage - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.2689	25.7723	31.2329	0.0819		1.0533	1.0533		0.9690	0.9690		7,922.6862	7,922.6862	2.5624		7,986.7451
Total	**3.2689**	**25.7723**	**31.2329**	**0.0819**		**1.0533**	**1.0533**		**0.9690**	**0.9690**		**7,922.6862**	**7,922.6862**	**2.5624**		**7,986.7451**

3.3 Installation of Underground Stormwater Storage - 2025

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	0.0270	0.8574	0.2349	3.8600e-003	0.0934	1.5000e-003	0.0949	0.0256	1.4400e-003	0.0271		411.3029	411.3029	0.0185		411.7653
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2158	0.1312	1.3952	5.0800e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		506.7559	506.7559	9.2700e-003		506.9878
Total	**0.2428**	**0.9886**	**1.6301**	**8.9400e-003**	**0.7506**	**5.4000e-003**	**0.7560**	**0.1999**	**5.0300e-003**	**0.2050**		**918.0589**	**918.0589**	**0.0278**		**918.7531**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.2689	25.7723	31.2329	0.0819		1.0533	1.0533		0.9690	0.9690	0.0000	7,922.686 2	7,922.686 2	2.5624		7,986.745 1
Total	**3.2689**	**25.7723**	**31.2329**	**0.0819**		**1.0533**	**1.0533**		**0.9690**	**0.9690**	**0.0000**	**7,922.686 2**	**7,922.686 2**	**2.5624**		**7,986.745 1**

3.3 Installation of Underground Stormwater Storage - 2025

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	0.0270	0.8574	0.2349	3.8600e-003	0.0934	1.5000e-003	0.0949	0.0256	1.4400e-003	0.0271		411.3029	411.3029	0.0185		411.7653
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2158	0.1312	1.3952	5.0800e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		506.7559	506.7559	9.2700e-003		506.9878
Total	**0.2428**	**0.9886**	**1.6301**	**8.9400e-003**	**0.7506**	**5.4000e-003**	**0.7560**	**0.1999**	**5.0300e-003**	**0.2050**		**918.0589**	**918.0589**	**0.0278**		**918.7531**

3.4 Installation of Industrial Parkway Structure - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5935	23.5848	27.0415	0.0534		0.9851	0.9851		0.9398	0.9398		5,090.4206	5,090.4206	0.9462		5,114.0758
Total	**2.5935**	**23.5848**	**27.0415**	**0.0534**		**0.9851**	**0.9851**		**0.9398**	**0.9398**		**5,090.4206**	**5,090.4206**	**0.9462**		**5,114.0758**

3.4 Installation of Industrial Parkway Structure - 2025

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	4.3500e-003	0.1384	0.0379	6.2000e-004	0.0151	2.4000e-004	0.0153	4.1300e-003	2.3000e-004	4.3600e-003		66.3693	66.3693	2.9800e-003		66.4439
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2158	0.1312	1.3952	5.0800e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		506.7559	506.7559	9.2700e-003		506.9878
Total	**0.2202**	**0.2695**	**1.4331**	**5.7000e-003**	**0.6723**	**4.1400e-003**	**0.6764**	**0.1785**	**3.8200e-003**	**0.1823**		**573.1253**	**573.1253**	**0.0123**		**573.4318**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5935	23.5848	27.0415	0.0534		0.9851	0.9851		0.9398	0.9398	0.0000	5,090.4205	5,090.4205	0.9462		5,114.0758
Total	**2.5935**	**23.5848**	**27.0415**	**0.0534**		**0.9851**	**0.9851**		**0.9398**	**0.9398**	**0.0000**	**5,090.4205**	**5,090.4205**	**0.9462**		**5,114.0758**

3.4 Installation of Industrial Parkway Structure - 2025

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	4.3500e-003	0.1384	0.0379	6.2000e-004	0.0151	2.4000e-004	0.0153	4.1300e-003	2.3000e-004	4.3600e-003		66.3693	66.3693	2.9800e-003		66.4439
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2158	0.1312	1.3952	5.0800e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		506.7559	506.7559	9.2700e-003		506.9878
Total	**0.2202**	**0.2695**	**1.4331**	**5.7000e-003**	**0.6723**	**4.1400e-003**	**0.6764**	**0.1785**	**3.8200e-003**	**0.1823**		**573.1253**	**573.1253**	**0.0123**		**573.4318**

3.5 Installation of Retaining Walls - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5664	15.1001	11.3182	0.0458		0.5877	0.5877		0.5407	0.5407		4,428.2292	4,428.2292	1.4322		4,464.0337
Total	**1.5664**	**15.1001**	**11.3182**	**0.0458**		**0.5877**	**0.5877**		**0.5407**	**0.5407**		**4,428.2292**	**4,428.2292**	**1.4322**		**4,464.0337**

3.5 Installation of Retaining Walls - 2025

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	0.0330	1.0482	0.2872	4.7200e-003	0.1648	1.8400e-003	0.1666	0.0437	1.7600e-003	0.0455		502.8178	502.8178	0.0226		503.3830
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2158	0.1312	1.3952	5.0800e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		506.7559	506.7559	9.2700e-003		506.9878
Total	**0.2488**	**1.1793**	**1.6824**	**9.8000e-003**	**0.8220**	**5.7400e-003**	**0.8277**	**0.2181**	**5.3500e-003**	**0.2234**		**1,009.5738**	**1,009.5738**	**0.0319**		**1,010.3708**

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	1.5664	15.1001	11.3182	0.0458		0.5877	0.5877		0.5407	0.5407	0.0000	4,428.2292	4,428.2292	1.4322		4,464.0337
Total	**1.5664**	**15.1001**	**11.3182**	**0.0458**		**0.5877**	**0.5877**		**0.5407**	**0.5407**	**0.0000**	**4,428.2292**	**4,428.2292**	**1.4322**		**4,464.0337**

3.5 Installation of Retaining Walls - 2025

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	0.0330	1.0482	0.2872	4.7200e-003	0.1648	1.8400e-003	0.1666	0.0437	1.7600e-003	0.0455		502.8178	502.8178	0.0226		503.3830
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2158	0.1312	1.3952	5.0800e-003	0.6572	3.9000e-003	0.6611	0.1743	3.5900e-003	0.1779		506.7559	506.7559	9.2700e-003		506.9878
Total	**0.2488**	**1.1793**	**1.6824**	**9.8000e-003**	**0.8220**	**5.7400e-003**	**0.8277**	**0.2181**	**5.3500e-003**	**0.2234**		**1,009.5738**	**1,009.5738**	**0.0319**		**1,010.3708**

3.5 Installation of Retaining Walls - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5664	15.1001	11.3182	0.0458		0.5877	0.5877		0.5407	0.5407		4,428.2292	4,428.2292	1.4322		4,464.0337
Total	**1.5664**	**15.1001**	**11.3182**	**0.0458**		**0.5877**	**0.5877**		**0.5407**	**0.5407**		**4,428.2292**	**4,428.2292**	**1.4322**		**4,464.0337**

3.5 Installation of Retaining Walls - 2026

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	0.0327	1.0300	0.2861	4.6800e-003	0.2610	1.8100e-003	0.2628	0.0673	1.7300e-003	0.0691		499.6690	499.6690	0.0225		500.2317
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2047	0.1198	1.2969	4.8900e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		487.8984	487.8984	8.4300e-003		488.1093
Total	**0.2374**	**1.1499**	**1.5830**	**9.5700e-003**	**0.9181**	**5.6000e-003**	**0.9237**	**0.2417**	**5.2100e-003**	**0.2469**		**987.5674**	**987.5674**	**0.0309**		**988.3410**

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	1.5664	15.1001	11.3182	0.0458		0.5877	0.5877		0.5407	0.5407	0.0000	4,428.2292	4,428.2292	1.4322		4,464.0337
Total	**1.5664**	**15.1001**	**11.3182**	**0.0458**		**0.5877**	**0.5877**		**0.5407**	**0.5407**	**0.0000**	**4,428.2292**	**4,428.2292**	**1.4322**		**4,464.0337**

3.5 Installation of Retaining Walls - 2026

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	0.0327	1.0300	0.2861	4.6800e-003	0.2610	1.8100e-003	0.2628	0.0673	1.7300e-003	0.0691		499.6690	499.6690	0.0225		500.2317
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2047	0.1198	1.2969	4.8900e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		487.8984	487.8984	8.4300e-003		488.1093
Total	**0.2374**	**1.1499**	**1.5830**	**9.5700e-003**	**0.9181**	**5.6000e-003**	**0.9237**	**0.2417**	**5.2100e-003**	**0.2469**		**987.5674**	**987.5674**	**0.0309**		**988.3410**

3.6 Installation of Access Roadway and Cart Paths - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3727	12.8725	21.8670	0.0342		0.6278	0.6278		0.5776	0.5776		3,310.1177	3,310.1177	1.0706		3,336.8817
Paving	0.5127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.8854**	**12.8725**	**21.8670**	**0.0342**		**0.6278**	**0.6278**		**0.5776**	**0.5776**		**3,310.1177**	**3,310.1177**	**1.0706**		**3,336.8817**

3.6 Installation of Access Roadway and Cart Paths - 2026

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	0.0601	1.8958	0.5266	8.6200e-003	0.2101	3.3300e-003	0.2135	0.0576	3.1800e-003	0.0608		919.6361	919.6361	0.0414		920.6718
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2047	0.1198	1.2969	4.8900e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		487.8984	487.8984	8.4300e-003		488.1093
Total	**0.2648**	**2.0156**	**1.8235**	**0.0135**	**0.8673**	**7.1200e-003**	**0.8744**	**0.2320**	**6.6600e-003**	**0.2386**		**1,407.5345**	**1,407.5345**	**0.0499**		**1,408.7811**

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	1.3727	12.8725	21.8670	0.0342		0.6278	0.6278		0.5776	0.5776	0.0000	3,310.1177	3,310.1177	1.0706		3,336.8817
Paving	0.5127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.8854**	**12.8725**	**21.8670**	**0.0342**		**0.6278**	**0.6278**		**0.5776**	**0.5776**	**0.0000**	**3,310.1177**	**3,310.1177**	**1.0706**		**3,336.8817**

3.6 Installation of Access Roadway and Cart Paths - 2026

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	0.0601	1.8958	0.5266	8.6200e-003	0.2101	3.3300e-003	0.2135	0.0576	3.1800e-003	0.0608		919.6361	919.6361	0.0414		920.6718
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2047	0.1198	1.2969	4.8900e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		487.8984	487.8984	8.4300e-003		488.1093
Total	**0.2648**	**2.0156**	**1.8235**	**0.0135**	**0.8673**	**7.1200e-003**	**0.8744**	**0.2320**	**6.6600e-003**	**0.2386**		**1,407.5345**	**1,407.5345**	**0.0499**		**1,408.7811**

3.7 Installation of Trackwork - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.0909	0.0000	9.0909	4.9717	0.0000	4.9717			0.0000			0.0000
Off-Road	8.6313	75.1249	75.7312	0.1889		3.0295	3.0295		2.8369	2.8369		18,153.0742	18,153.0742	4.8670		18,274.7493
Total	**8.6313**	**75.1249**	**75.7312**	**0.1889**	**9.0909**	**3.0295**	**12.1205**	**4.9717**	**2.8369**	**7.8086**		**18,153.0742**	**18,153.0742**	**4.8670**		**18,274.7493**

3.7 Installation of Trackwork - 2026

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	0.0132	0.4144	0.1151	1.8800e-003	0.0658	7.3000e-004	0.0665	0.0175	7.0000e-004	0.0182		201.0134	201.0134	9.0600e-003		201.2397
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2047	0.1198	1.2969	4.8900e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		487.8984	487.8984	8.4300e-003		488.1093
Total	**0.2179**	**0.5342**	**1.4120**	**6.7700e-003**	**0.7230**	**4.5200e-003**	**0.7275**	**0.1918**	**4.1800e-003**	**0.1960**		**688.9118**	**688.9118**	**0.0175**		**689.3490**

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					4.0909	0.0000	4.0909	2.2373	0.0000	2.2373			0.0000			0.0000
Off-Road	8.6313	75.1249	75.7312	0.1889		3.0295	3.0295		2.8369	2.8369	0.0000	18,153.0742	18,153.0742	4.8670		18,274.7493
Total	**8.6313**	**75.1249**	**75.7312**	**0.1889**	**4.0909**	**3.0295**	**7.1205**	**2.2373**	**2.8369**	**5.0742**	**0.0000**	**18,153.0742**	**18,153.0742**	**4.8670**		**18,274.7493**

3.7 Installation of Trackwork - 2026

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	0.0132	0.4144	0.1151	1.8800e-003	0.0658	7.3000e-004	0.0665	0.0175	7.0000e-004	0.0182		201.0134	201.0134	9.0600e-003		201.2397
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2047	0.1198	1.2969	4.8900e-003	0.6572	3.7900e-003	0.6610	0.1743	3.4800e-003	0.1778		487.8984	487.8984	8.4300e-003		488.1093
Total	**0.2179**	**0.5342**	**1.4120**	**6.7700e-003**	**0.7230**	**4.5200e-003**	**0.7275**	**0.1918**	**4.1800e-003**	**0.1960**		**688.9118**	**688.9118**	**0.0175**		**689.3490**

3.7 Installation of Trackwork - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.0909	0.0000	9.0909	4.9717	0.0000	4.9717			0.0000			0.0000
Off-Road	8.6313	75.1249	75.7312	0.1889		3.0295	3.0295		2.8369	2.8369		18,153.0742	18,153.0742	4.8670		18,274.7493
Total	**8.6313**	**75.1249**	**75.7312**	**0.1889**	**9.0909**	**3.0295**	**12.1205**	**4.9717**	**2.8369**	**7.8086**		**18,153.0742**	**18,153.0742**	**4.8670**		**18,274.7493**

3.7 Installation of Trackwork - 2027

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	0.0130	0.4071	0.1148	1.8700e-003	0.1065	7.2000e-004	0.1073	0.0275	6.9000e-004	0.0282		199.8302	199.8302	9.0200e-003		200.0558
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1940	0.1098	1.2098	4.7200e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		471.1298	471.1298	7.6800e-003		471.3219
Total	**0.2070**	**0.5169**	**1.3246**	**6.5900e-003**	**0.7637**	**4.3100e-003**	**0.7680**	**0.2018**	**3.9900e-003**	**0.2058**		**670.9600**	**670.9600**	**0.0167**		**671.3777**

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					4.0909	0.0000	4.0909	2.2373	0.0000	2.2373			0.0000			0.0000
Off-Road	8.6313	75.1249	75.7312	0.1889		3.0295	3.0295		2.8369	2.8369	0.0000	18,153.0742	18,153.0742	4.8670		18,274.7493
Total	**8.6313**	**75.1249**	**75.7312**	**0.1889**	**4.0909**	**3.0295**	**7.1205**	**2.2373**	**2.8369**	**5.0742**	**0.0000**	**18,153.0742**	**18,153.0742**	**4.8670**		**18,274.7493**

3.7 Installation of Trackwork - 2027

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	0.0130	0.4071	0.1148	1.8700e-003	0.1065	7.2000e-004	0.1073	0.0275	6.9000e-004	0.0282		199.8302	199.8302	9.0200e-003		200.0558
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1940	0.1098	1.2098	4.7200e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		471.1298	471.1298	7.6800e-003		471.3219
Total	**0.2070**	**0.5169**	**1.3246**	**6.5900e-003**	**0.7637**	**4.3100e-003**	**0.7680**	**0.2018**	**3.9900e-003**	**0.2058**		**670.9600**	**670.9600**	**0.0167**		**671.3777**

3.8 Installation of Gap Breaker Stations - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8039	26.7003	24.3222	0.0967		1.0186	1.0186		0.9371	0.9371		9,354.5313	9,354.5313	3.0254		9,430.1674
Total	**3.8039**	**26.7003**	**24.3222**	**0.0967**		**1.0186**	**1.0186**		**0.9371**	**0.9371**		**9,354.5313**	**9,354.5313**	**3.0254**		**9,430.1674**

3.8 Installation of Gap Breaker Stations - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1940	0.1098	1.2098	4.7200e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		471.1298	471.1298	7.6800e-003		471.3219
Total	**0.1940**	**0.1098**	**1.2098**	**4.7200e-003**	**0.6572**	**3.5900e-003**	**0.6608**	**0.1743**	**3.3000e-003**	**0.1776**		**471.1298**	**471.1298**	**7.6800e-003**		**471.3219**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8039	26.7003	24.3222	0.0967		1.0186	1.0186		0.9371	0.9371	0.0000	9,354.5313	9,354.5313	3.0254		9,430.1674
Total	**3.8039**	**26.7003**	**24.3222**	**0.0967**		**1.0186**	**1.0186**		**0.9371**	**0.9371**	**0.0000**	**9,354.5313**	**9,354.5313**	**3.0254**		**9,430.1674**

3.8 Installation of Gap Breaker Stations - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1940	0.1098	1.2098	4.7200e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		471.1298	471.1298	7.6800e-003		471.3219
Total	**0.1940**	**0.1098**	**1.2098**	**4.7200e-003**	**0.6572**	**3.5900e-003**	**0.6608**	**0.1743**	**3.3000e-003**	**0.1776**		**471.1298**	**471.1298**	**7.6800e-003**		**471.3219**

3.9 Installation of Train Control House - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7921	31.0219	33.1424	0.0895		1.1802	1.1802		1.1131	1.1131		8,580.0813	8,580.0813	2.2064		8,635.2420
Total	**3.7921**	**31.0219**	**33.1424**	**0.0895**		**1.1802**	**1.1802**		**1.1131**	**1.1131**		**8,580.0813**	**8,580.0813**	**2.2064**		**8,635.2420**

3.9 Installation of Train Control House - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1940	0.1098	1.2098	4.7200e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		471.1298	471.1298	7.6800e-003		471.3219
Total	**0.1940**	**0.1098**	**1.2098**	**4.7200e-003**	**0.6572**	**3.5900e-003**	**0.6608**	**0.1743**	**3.3000e-003**	**0.1776**		**471.1298**	**471.1298**	**7.6800e-003**		**471.3219**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7921	31.0219	33.1424	0.0895		1.1802	1.1802		1.1131	1.1131	0.0000	8,580.0813	8,580.0813	2.2064		8,635.2420
Total	**3.7921**	**31.0219**	**33.1424**	**0.0895**		**1.1802**	**1.1802**		**1.1131**	**1.1131**	**0.0000**	**8,580.0813**	**8,580.0813**	**2.2064**		**8,635.2420**

3.9 Installation of Train Control House - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1940	0.1098	1.2098	4.7200e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		471.1298	471.1298	7.6800e-003		471.3219
Total	**0.1940**	**0.1098**	**1.2098**	**4.7200e-003**	**0.6572**	**3.5900e-003**	**0.6608**	**0.1743**	**3.3000e-003**	**0.1776**		**471.1298**	**471.1298**	**7.6800e-003**		**471.3219**

3.10 Bio Retention Basin - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.8993	0.0000	9.8993	5.0597	0.0000	5.0597			0.0000			0.0000
Off-Road	4.3519	41.9143	39.4966	0.0931		1.6963	1.6963		1.5606	1.5606		9,012.4222	9,012.4222	2.9148		9,085.2922
Total	**4.3519**	**41.9143**	**39.4966**	**0.0931**	**9.8993**	**1.6963**	**11.5957**	**5.0597**	**1.5606**	**6.6203**		**9,012.4222**	**9,012.4222**	**2.9148**		**9,085.2922**

3.10 Bio Retention Basin - 2027

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	0.1738	5.4326	1.5313	0.0250	0.6130	9.5600e-003	0.6225	0.1681	9.1500e-003	0.1772		2,666.4846	2,666.4846	0.1204		2,669.4942
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1940	0.1098	1.2098	4.7200e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		471.1298	471.1298	7.6800e-003		471.3219
Total	**0.3678**	**5.5424**	**2.7411**	**0.0297**	**1.2701**	**0.0132**	**1.2833**	**0.3424**	**0.0125**	**0.3549**		**3,137.6144**	**3,137.6144**	**0.1281**		**3,140.8161**

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					4.4547	0.0000	4.4547	2.2768	0.0000	2.2768			0.0000			0.0000
Off-Road	4.3519	41.9143	39.4966	0.0931		1.6963	1.6963		1.5606	1.5606	0.0000	9,012.4222	9,012.4222	2.9148		9,085.2922
Total	**4.3519**	**41.9143**	**39.4966**	**0.0931**	**4.4547**	**1.6963**	**6.1510**	**2.2768**	**1.5606**	**3.8375**	**0.0000**	**9,012.4222**	**9,012.4222**	**2.9148**		**9,085.2922**

3.10 Bio Retention Basin - 2027

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	0.1738	5.4326	1.5313	0.0250	0.6130	9.5600e-003	0.6225	0.1681	9.1500e-003	0.1772		2,666.4846	2,666.4846	0.1204		2,669.4942
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1940	0.1098	1.2098	4.7200e-003	0.6572	3.5900e-003	0.6608	0.1743	3.3000e-003	0.1776		471.1298	471.1298	7.6800e-003		471.3219
Total	**0.3678**	**5.5424**	**2.7411**	**0.0297**	**1.2701**	**0.0132**	**1.2833**	**0.3424**	**0.0125**	**0.3549**		**3,137.6144**	**3,137.6144**	**0.1281**		**3,140.8161**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Unrefrigerated Warehouse-Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.565681	0.036493	0.190146	0.103622	0.013041	0.005087	0.026037	0.049339	0.002262	0.001910	0.005350	0.000375	0.000655
Other Non-Asphalt Surfaces	0.565681	0.036493	0.190146	0.103622	0.013041	0.005087	0.026037	0.049339	0.002262	0.001910	0.005350	0.000375	0.000655
Unrefrigerated Warehouse-Rail	0.565681	0.036493	0.190146	0.103622	0.013041	0.005087	0.026037	0.049339	0.002262	0.001910	0.005350	0.000375	0.000655

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.4674	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003
Unmitigated	0.4674	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003

6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	CO	SO2	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	0.0962					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3710					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-004	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003
Total	**0.4674**	**2.0000e-005**	**2.2200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.7700e-003**	**4.7700e-003**	**1.0000e-005**		**5.0800e-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	0.0962					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3710					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-004	2.0000e-005	2.2200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.7700e-003	4.7700e-003	1.0000e-005		5.0800e-003
Total	**0.4674**	**2.0000e-005**	**2.2200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.7700e-003**	**4.7700e-003**	**1.0000e-005**		**5.0800e-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

APPENDIX C

BIOLOGICAL RESOURCES STUDY

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San Francisco Bay Area Rapid Transit District

Hayward Maintenance Complex (Phase 2) Project

Biological Resources Study

San Francisco Bay Area Rapid Transit District

City of Hayward

Alameda County, California

June 2022

Prepared for: BART

Prepared by: WRECO

Summary

The San Francisco Bay Area Rapid Transit District (BART) proposes to construct the Hayward Maintenance Complex Phase 2 Project (HMC2 Project or Project), an element of the HMC Project, which was environmentally evaluated in the 2011 Initial Study/Mitigated Negative Declaration. The HMC2 Project is subdivided into two major components, the East Storage Yard and the Northern Mainline Connector. This *Biological Resources Study* (BRS) provides technical information about potential impacts of the Project on biological resources in compliance with the National Environmental Policy Act (NEPA) and CEQA.

As part of the environmental analysis, a Biological Study Area (BSA) was established around the proposed Project limits and an additional 50-foot buffer zone in order to determine potential indirect impacts, such as noise and air quality issues that may be generated by Project-related activities. Biological resources surveys, including wildlife and botanical surveys, and aquatic resources delineations were conducted in the BSA in 2019, 2020, and 2021.

The BSA consists of annual grassland, the BART facilities, and the Mission Hills of Hayward Golf Course Driving Range surrounded entirely by urban habitat and associated commercial and residential structures, paved roadways, and ornamental landscaped vegetation. Wetlands and waters of the State are also present within the BSA. The total area of the BSA is 170.68 acres (7,434,820 sq ft.).

A total of 40 special-status wildlife species (including federally listed and state listed) and regulated habitats have potential to occur within a 5-mile radius of the BSA. Based on the evaluation conducted for this BRS, the following special-status species have the potential to occur.

Common Name	Scientific Name	Listing Fed/State	Potential for Occurrence
Western burrowing owl	*Athene cunicularia*	--/SSC	Low
White-tailed kite	*Elanus leucurus*	--/FP	High
Migratory Birds	N/A	MBTA/FGC sections 3503 and 3800	High
Pallid Bat	*Antrozous pallidus*	SSC	Low
Roosting Bats	N/A	--/FGC sections 2000, 2002, 2014, 4150 CCR 251.1	Low

Legend:
SCE = State Candidate Endangered
SSC = State Species of Special Concern
FP = State Fully Protected
MBTA = Migratory Bird Treaty Act
FGC = Fish and Game Code
CCR = California Code of Regulations

Several Avoidance and Minimization Measures (AMM) are recommended in order to comply with regulations protecting biological resources. These AMMs include, but are not limited to:

- If Project-related work occurs during the bird nesting season (February 1 – August 31), pre-construction nesting bird surveys will be conducted. If an active bird nest is identified, a protective buffer will be established around the nest. The standard buffer will be 50 feet for passerines (songbirds) and 300 feet for raptors (birds of prey). If it becomes necessary for work to occur in closer proximity to a nest, the Project biologist will develop a nest monitoring plan for submittal to BART. The plan will include continual monitoring of the nest as construction moves closer. If at any time the biologist determines that activities may cause nest abandonment, construction activity in that area will cease.

- Conducting Worker Environmental Awareness Training regarding potential sensitive species that could occur in or near the BSA, such as burrowing owl, white-tailed kite, and migratory birds

The total impacts to wetlands would be 0.652 ac (28,401 sq. ft). No impacts to non-wetland waters of the U.S. are anticipated. Total impacts to waters of the State would be 0.798 ac (34,758 square feet) and 4,991 linear feet. Total impacts to riparian habitat would be 0.009 ac (337 sq. ft) and 18 linear feet. These impacts would require compensatory mitigation. BART is in the process of locating mitigation that would be suitable to the United States Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Wildlife (CDFW).

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List of Abbreviated Terms

ac	acre
AJD	Approved Jurisdictional Determination
AMM	Avoidance and Minimization Measures
AMSL	above mean sea level
BART	Bay Area Rapid Transit
BMPs	best management practices
BRS	Biological Resources Study
BSA	Biological Study Area
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships System
ESA	Environmentally Sensitive Area
FGC/F.G.C.	Fish and Game Code
FP	Fully Protected
FESA	Federal Endangered Species Act
HARD	Hayward Area Recreation District
HMC	Hayward Maintenance Complex
HMC2 Project	Hayward Maintenance Complex (Phase 2) Project
IS/MND	Initial Study/Mitigated Negative Declaration
MBTA	Migratory Bird Treaty Act
MLRA	Major Land Resource Area
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
PJD	Preliminary Jurisdictional Determination
Project	Hayward Maintenance Complex (Phase 2) Project
PW	Potential Wetland
RWQCB	Regional Water Quality Control Board
sq. ft	square feet
SR	State Route
SSC	Species of Special Concern

SUGGRO	Soil Survey Geographic Database
SWPPP	Storm Water Pollution Prevention Plan
TNW	Traditional Navigable Water
TPSS	Traction Power Substation
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WETS	Wetlands Climate Tables
WDR	Waste Discharge Requirements

Chapter 1 Introduction

The San Francisco Bay Area Rapid Transit District (BART) proposes to construct the Hayward Maintenance Complex (HMC) Phase 2 Project (HMC2 Project or Project), an element of the HMC Project, which was environmentally evaluated in the 2011 Initial Study/Mitigated Negative Declaration (IS/MND).

The purpose of this Biological Resources Study (BRS) is to provide technical information and to determine the extent to which the Project may affect special-status species, their habitats, and other natural areas in accordance with the National Environmental Policy Act (NEPA) and CEQA. Avoidance and minimization measures (AMM) are included in this document to demonstrate that BART has given biological resources due consideration while planning the Project.

1.1 Project Location

The Project is located within the City of Hayward and is situated west of State Route (SR) 238 (Mission Blvd). The HMC extends, parallel to the BART tracks between Whipple Road and Industrial Parkway. See Figure 1 for the Project location and Figure 2 for the Project vicinity.

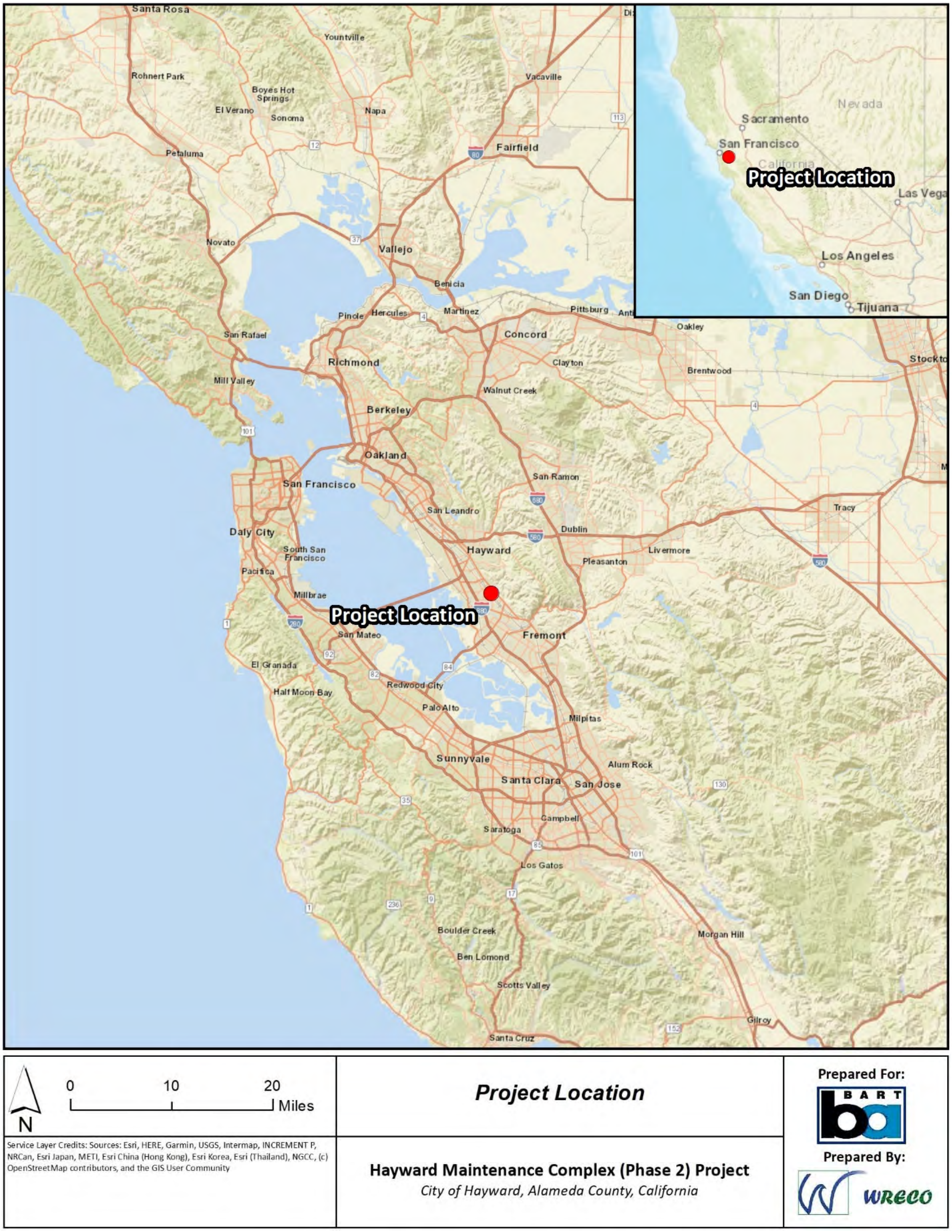

Figure 1. Project Location

Source: WRECO, 2022

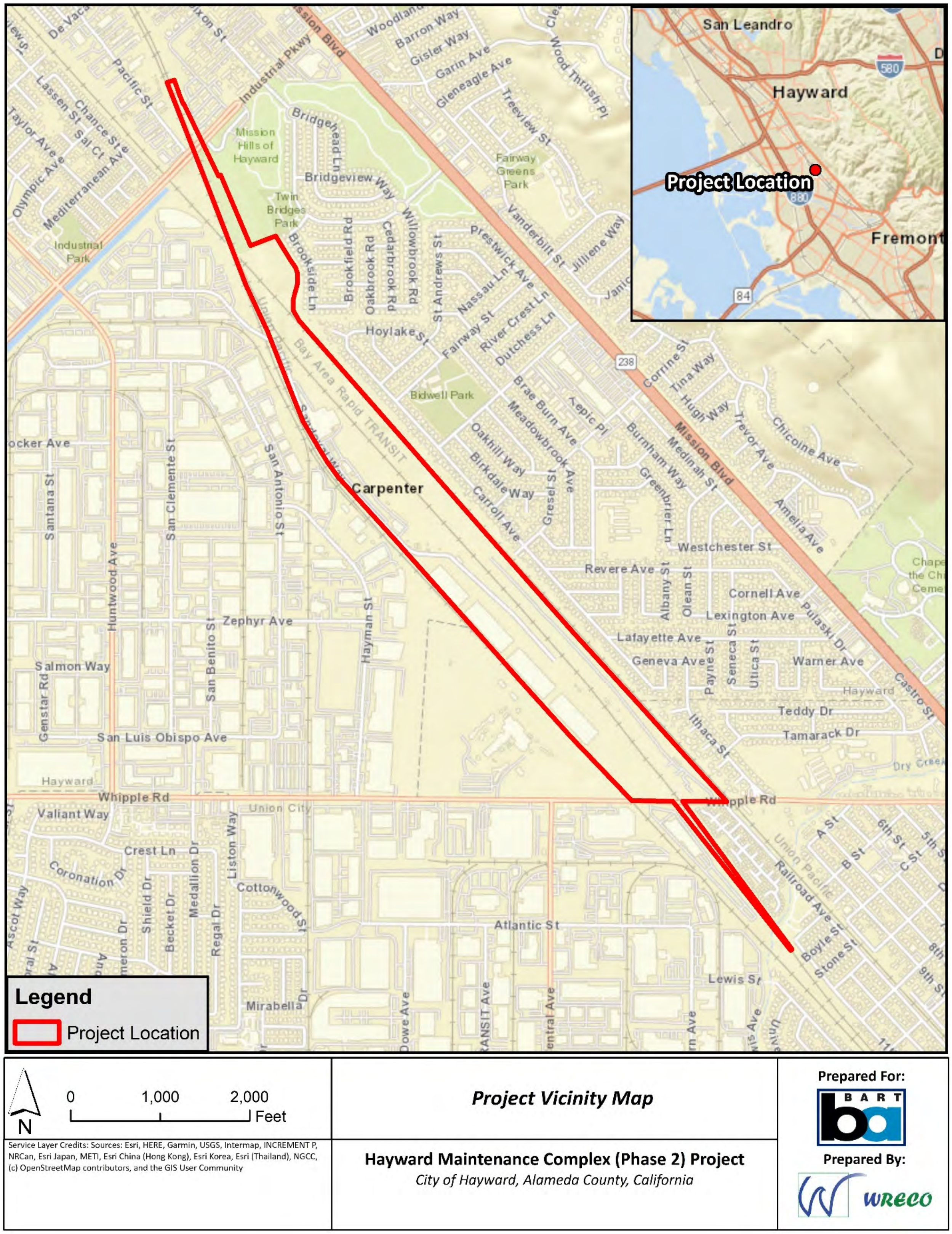

Figure 2. Project Vicinity

Source: WRECO, 2022

1.2 Project Description

The following describes the proposed Hayward Maintenance Complex (Phase 2) Project (HMC2 Project or Project) that would include development of key features within the East Storage Yard and construction of the Northern Mainline Connector to provide a new trackway connection between the East Storage Yard and the Bay Area Rapid Transit (BART) mainline trackway. BART is both the Project proponent and the Lead Agency for review of the proposed Project under CEQA.

1.2.1 Project Purpose and Need

BART has been in operation since 1972 and currently operates in five Bay Area counties. It operates and maintains 131 miles of revenue track and 50 stations serving an average of 405,000 passenger trips on an average weekday (prior to the COVID-19 pandemic). The most recent extension to the BART system was to the Berryessa/North San Jose Station in San Jose, which opened in June 2020.

The BART fleet has 669 legacy revenue vehicles and has ordered 775 "Fleet of the Future" cars. The first Fleet of the Future train carried passengers in January 2018. The size of BART's fleet will be dynamic while new trains are put into service and old trains are retired. The current forecast indicates the balance of new train cars will be delivered by Spring 2022.[1] Approximately 620 vehicles are in service on a typical day.

BART's current fleet of 728 revenue vehicles can all be stored within the four existing yards associated with the four vehicle maintenance shops. As the fleet expands to meet future needs, additional maintenance and storage will be necessary, both to accommodate the expected number of cars and to minimize non-revenue train movements to initiate and end daily service.

Maintenance will also need to be expanded to ensure future reliability and performance. BART has instituted a Strategic Maintenance Program that will provide scheduled maintenance and overhauls for the vehicle fleet. The acquisition of the three properties (with four warehouses) adjacent to Hayward Yard (HMC Phase 1) created an efficient complex that could provide the necessary maintenance and also allow a consolidation of existing BART services.

As part of the Transbay Corridor Core Capacity Program, BART has prioritized three interrelated capital investment initiatives to ensure the system can safely, efficiently, and

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[1] San Francisco Bay Area Rapid Transit District (BART), 2021. "System Facts" website: www.bart.gov/about/history/facts (accessed July 30, 2021).

comfortably serve current and new riders. Collectively these projects are known as the “Big 3” and include the following:

- The Fleet of the Future – Replacement and expansion of its fleet size through procurement of new Fleet of the Future train cars. BART will replace its legacy fleet which consists of 669 cars with 775 new Fleet of the Future cars. This project is currently underway.
- Communications Based Train Control – An improved train control system to enable trains to operate more frequently.
- HMC Phase 2 Project (HMC2 Project) – Expansion of the HMC to provide new train maintenance facilities and a new train storage yard east of the existing yard. The expanded HMC would ensure that BART’s maintenance and repair capacity is sufficient to support the new railcar fleet for both the current system and system expansions.

The “Big 3” together address some key current bottlenecks that hinder BART’s ability to meet pre-pandemic and forecasted future ridership growth. The HMC2 Project consists of both the East Storage Yard and the Northern Mainline Connector. These projects are located on the undeveloped land east of the Hayward Maintenance Complex and would provide an economical means to expand vehicle storage on suitable, vacant land, which BART already owns.

1.2.1.1 Project Objectives

The objectives for the proposed Project are to:

- Provide additional storage tracks for approximately 250 additional BART cars.
- Provide increased flexibility for BART operations by allowing some maintenance operations that now occur on the west side of the mainline to be conducted at the East Storage Yard.
- Increase flexibility for BART operations by providing a direct and efficient rail connection from the East Storage Yard to the BART northbound mainline via the Northern Mainline Connector.

1.2.2 Proposed Project

BART proposes to construct the HMC2 Project, an element of the HMC Project, which was environmentally evaluated in the 2011 IS/MND. The HMC2 Project is subdivided into two major components, the East Storage Yard and the Northern Mainline Connector.

1.2.3 East Storage Yard

The East Storage Yard, the first component of the HMC2 Project, includes a vehicle storage yard capable of storing approximately 250 BART vehicles. The need for the East Storage Yard is driven by BART's plan to increase its fleet size to accommodate a growing demand for reliable and more frequent train service to/from downtown San Francisco and Oakland.

The East Storage Yard also features ancillary wayside and maintenance facilities needed for a fully functional, electrified, storage yard. The East Storage Yard was evaluated under CEQA in 2011; however, several key features were not fully addressed or developed in the 2011 IS/MND. These features, along with the Northern Mainline Connector component, form the basis of the proposed Project. Figure 6 in Appendix A shows the East Storage Yard Project Components. Key features of the East Storage Yard are as follows:

- **Drainage.** An existing open drainage channel that extends the length of the proposed East Storage Yard and the existing rail storage yard and maintenance facilities almost to Whipple Road would be filled. The length of the fill would be approximately 4,781 linear feet, and the surface area of the fill would be approximately 33,102 square feet (0.76 acres). The amount of fill required would be approximately 18,900 cubic yards. Replacement of the drainage channel is needed for the construction of a perimeter access road, which would provide for maintenance and emergency vehicles egress through the storage yard.

  A second drainage ditch, which originates in the middle of the yard and directs flow towards the western boundary of the HMC, would be partially filled to accommodate construction of the pedestrian/golf cart bridge crossing. The length of fill would be approximately 210 linear feet and the surface area of fill would be approximately 1,656 square feet (0.038 acre).

- **Car Cleaning Platform.** A car cleaning platform would be provided within the storage yard. The car cleaning platform would allow car cleaners to access trains at vehicle door height, similar to typical passenger platforms. Canopies, mop sinks, and storage cabinets would also be provided along the cleaning platform. The dimensions of the platform would be approximately 700 feet long by 11 feet wide.

- **Cart Bridge Overcrossing.** An overcrossing structure would provide access for personnel carts and pedestrians to allow workers to traverse between the East Storage Yard and the existing Hayward Yard. The cart bridge overcrossing would be approximately 780 feet long and 20 feet above the ground.

- **Extension of Whistle Stop Structure.** The existing Whistle Stop Structure would be extended to the east to allow Train Operators to cross over the Hayward Test Track and access the East Storage Yard. The Whistle Stop Structure would also allow for additional pedestrian movement between the existing Hayward Yard and the East Storage Yard area. The Whistle Stop Structure would be approximately 100 feet long by 5 feet wide.

- **Traction Power Substation.** A Traction Power Substation (TPSS) would be located in the East Vehicle Storage Yard. The TPSS would provide power to the storage yard. The dimensions of the TPSS would be 180 feet long by 70 feet wide by 12 feet high.

- **Train Operator Facility/Car Cleaner/Cart Charging Facility.** A two-story administrative building would provide work and break facilities for Car Cleaners and Train Operators. The facility would be located on the south end of the East Storage Yard and would also include facilities to allow for the charging of electric carts. The facility would be approximately 8,600 square feet and 12 feet long by 40 feet wide by 32 feet high.

- **Ditch Restoration.** The East Storage Yard component would include a narrow linear area approximately 500 feet long located within the Hayward Maintenance Complex that is bounded by Sandoval Way on the east and the Union Pacific Railroad (UPRR) Oakland Subdivision rail line on the west, which could accommodate proposed restoration of an existing ditch as mitigation for wetland impacts, if needed.

1.2.4 Northern Mainline Connector

The Northern Mainline Connector would consist of a new trackway connection between the East Storage Yard and the BART mainline trackway. The Northern Mainline Connector would be located on approximately 25 acres of undeveloped property located in the northeast corner of the Hayward Yard, extending along the BART right-of-way north of Industrial Parkway.

The Northern Mainline Connector area would be bounded by the UPRR Niles Subdivision rail line and Mission Hills of Hayward Golf Course Driving Range on the east, the BART Mainline and Hayward Test Track to the west, and the East Storage Yard to the south.

The Northern Mainline Connector would also include the relocation of the western fence of the Mission Hills of Hayward Golf Course Driving Range (driving range) to a location further to the east to allow for the construction of new trackway. Key features of the Northern Mainline Connector are shown in Figure 7 in Appendix A and described as follows:

- **Extended Trackway.** The BART tracks would be extended from the vehicle storage area north approximately 3,600 feet, to a point approximately 700 feet north of Industrial

Parkway. A combination of turnouts and crossovers[2] would be installed, including three crossovers and eight turnouts that are north of the vehicle storage yard.

- **Retained Fill Embankment.** A retained fill embankment would be constructed to carry the connecting tracks north from the storage tracks to the UPRR tunnel and from the UPRR tunnel to approximately 700 feet north of Industrial Parkway. The retained fill embankment would be approximately 3,600 feet (0.68 miles) long, 25 to 50 feet wide, and 25 feet at the highest location. Between the UPRR tracks on the east and the BART test track on the west, the embankment would be constructed between two retaining walls and would carry a series of tracks from the East Storage Yard that would converge to just one track connecting to the BART mainline north of Industrial Parkway. The embankment would also carry a service road parallel to the tracks. The embankment would be lighted with shielded security lights 15 to 18-feet high.

- **Bridge over Industrial Parkway.** A new bridge structure would be constructed over Industrial Parkway to carry the new Northern Mainline Connecter trackway. The structure would be approximately 230 feet long, 25 feet wide, and 25 feet high and would be supported by columns placed in the median and either side of the roadway.

- **Soundwall.** A 600-foot long, 10-foot high sound wall (5-feet above track top of rail) would be constructed along the east side the Northern Mainline Connector tracks north of Industrial Parkway as mitigation for noise impacts associated with construction of nearby crossovers (see Section 5.13, Noise).

- **Drainage.** Underground culvert pipes would replace portions of an existing open culvert/linear-ditch along the west side of Northern Mainline Connector site to allow for the construction of a perimeter access road, which will provide access for emergency vehicles throughout the storage yard and to accommodate a Gap Breaker Station and a Train Control House.

- **Bioretention Basin.** A bioretention basin would be located between the retained fill embankment on the east and the BART test tracks on the west. Its dimensions would be approximately 580 feet long by approximately 50 feet wide by 4 feet deep. The bioretention basin would have an area of approximately 29,000 square feet and a capacity of approximately 44,000 cubic feet of stormwater storage. Flows from the Phase 1 (west side of

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[2] A crossover is defined as a pair of switches that connects two parallel rail tracks, allowing a train on one track to cross over to the other. A turnout is a mechanical device used to guide the trains from one rail track to another.

Hayward maintenance yard) and Phase 2 (East Side Storage Area) would be conveyed by gravity into the bioretention basin.

- **Stormwater Storage.** In addition to the bioretention basin, the proposed Project would include stormwater storage to accommodate runoff from the Phase 1 area (west side of the mainline tracks) of the Hayward Yard. Stormwater from the Phase 1 area would be conveyed to storage culverts beneath the proposed bioretention basin. The storage facility would consist of four side-by-side box culverts that would be cross-connected to act as a single storage unit. The combined culvert dimensions would be approximately 40 feet wide by 8 feet deep by 400 feet long and would provide approximately 100,000 cubic feet of storage. Stormwater runoff from the Phase 1 site would flow to a bypass structure on the site, where the Phase 1 flows would be stored in the box culverts and excess storm flows would be conveyed to an existing outfall.[3] Once a storm event has passed and there is capacity in the bioretention basin, a pump station would lift the Phase 1 flows into the bioretention basin for treatment and eventual discharge to an existing outfall on the eastern side of the UPRR tracks. Pump stations and piping for this component would be provided as part of the proposed Project.

- **Jack and Bore 30-Inch Storm Drain**. A 30-inch storm drain culvert would be installed via jack and bore underneath the UPRR Niles Subdivision tracks to connect to an existing culvert east of the UPRR tracks. The existing culvert outlets to an Alameda County Flood Control and Water Conservation District (ACFCWD) channel. Approximately 200 feet of the storm drain would be jacked and bored. The existing drainage outfall to the ACFCWD channel would not be impacted by construction activities.

- **Jack and Bore Sanitary Sewer**. An 8-inch sanitary sewer would be installed via jack and bore underneath the UPRR Oakland Subdivision, BART Hayward Test Track, and BART mainline trackways to connect to provide a connection to an existing sanitary sewer system located on Sandoval Way.

- **Underground Utilities.** Power, water, sanitary sewer, and communications would be extended from the existing connections to the expansion area.

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[3] The Regional Water Quality Control Board requires treatment to the 85th percentile of stormwater volume.

- **Traction Power, Train Control, and Communications Systems.** Embedded electrical conduit for traction power would be provided for power and communications circuits. A third rail to provide power to tracks and to power the vehicles would be installed.

- **Gap Breaker Stations**. Two gap breaker stations, one at the north end of the connecting tracks adjacent to the east side of the BART tracks north of Industrial Parkway and another at the south end of the Northern Mainline Connector tracks would be installed. These facilities would be approximately 1,000 square feet in size and provide for continuity in and the ability to isolate sections of contact rail. The gap breaker stations would be approximately 56 feet long by 20 feet wide by 13 feet high.

- **Train Control House.** A train control house would be located at the south end of the Northern Connector where the storage tracks start to merge. This facility would be approximately 3,800 square feet in size and would house automatic train control equipment. The train control house would be approximately 126 feet long by 30 feet wide by 18 feet high.

- **Access Road.** A new 20-foot-wide paved road would extend along the east side of the storage tracks to a point just north of the current wetlands area. This extension of the planned road would extend from the East Storage Yard towards the northern transfer tracks. It would provide for both BART and fire and emergency access to the proposed Project area.

- **Relocation of Driving Range Fence.** Construction of the track for the Northern Mainline Connector would require the relocation of the boundary fence between the driving range and the BART tracks. The property is owned by BART, but the Hayward Area Recreation and Park District (HARD) has a permanent operating easement for the property for the operation of the driving range. The relocation would shift the boundary fence a maximum of approximately 50 feet to the east along 1,310 feet (the full length of the driving range). Approximately 61,444 square feet (1.41 acres) of property would be affected. The boundary shift would require BART and HARD to extinguish a portion of the existing operating easement.

- **Wetland Mitigation Area.** Approximately 2.24 acres of the undeveloped HARD property south of the driving range is being considered for conversion to a permanent wetland area as mitigation for the loss of wetlands on site. Development of wetlands would follow use of this area as the Secondary Staging Area during construction.

- **Train Wash**. A train wash facility would be constructed at the south end of the Northern Mainline Connector tracks, just north of the vehicle storage area. The train wash would allow BART to clean the exteriors of trains as they enter the storage yard following the completion of revenue service. The train wash would be approximately 200 feet long by 30 feet wide by 14 feet high.

- **Site Lighting.** Light poles for security lighting would be added along the new trackway. Light poles would be 15 to 18 feet high with shielded lamps. The new lights would not include motion detectors.

- **Perimeter Fence.** A 9-foot-high security fence would be provided along the new perimeter of the expansion area topped with razor coil adding 12 inches in height.

1.2.5 Train Activity

With implementation of the proposed Project, an increased level of train activity in the proposed Project area would occur, as many as 12 trains could be dispatched from the east side storage tracks and use the Northern Mainline Connector to join the northbound mainline in the morning and return at the end of the operating day. Train movements in the connecting tracks would range from 5 to 30 miles per hour as trains prepared to merge with mainline train traffic.

1.2.6 Employees

BART activities vary by time of day, and the number of employees at the Hayward Yard increases or decreases depending on various BART operations and maintenance activity occurring at the time. Currently, approximately 370 BART employees work at the Hayward Yard in a given day (24 hours), distributed over several shifts. No new activities are planned at the new storage area. Rather, the new storage area would provide additional car storage capacity and increased operational flexibility for existing activities.

Though designed primarily for train storage, the new storage area is designed to allow train operations on the west side of the yard (such as train dispatch) to expand to the east side expansion area at some time in the future.

1.2.7 Project Construction

It is estimated that construction activities would commence in Summer 2024 and extend through Spring 2028. Typical construction equipment would consist of dump trucks, self-propelled earth-scrapers, water trucks, bulldozers, grade-alls, cranes, loaders, excavators, rollers, lubrication/fueling service trucks, transit-mix concrete trucks, concrete pumps, and diesel-driven generators, specialized truck trailers, and compressed air units for construction power, equipment, and tools. Construction equipment for mainline track tie-in work would consist of excavators, loaders, trucks with high-rail equipment and ballast tamper. Conventional construction equipment can also be brought to the site via BART flat-bed cars.

Construction activities would be phased and include site grading, and construction of embankment and retaining walls, drainage improvements, underground utilities, access roads, new railroad track, gap breaker stations, a substation, miscellaneous train operator and car cleaner facilities, a train wash, and system components such as signals, as described further below. The duration of each phase would vary. Each phase would require different types of construction equipment and result in varying levels of imported/exported material; therefore, the number of vehicle trips associated with Project construction would vary by phase. Overall, the HMC2 Project is anticipated to result in approximately 14,434 truck trips over the approximately 3.5-year construction period.

1.2.7.1 Construction Staging Areas

The primary construction staging area would be located in an area immediately to the south of the Project site, in an area that would become the East Storage Area. This area would be used to stage construction equipment, contractor offices, and construction materials.

A secondary staging area would be included on the east side of the UPRR (Niles Subdivision) trackway and south of the driving range on a parcel that is currently owned by HARD (Figure 10). This 3-acre, secondary staging area is accessible from Mission Boulevard via Gresel Street and the UPRR right-of-way and would provide an area for the contractor to stage materials and construction equipment east of the UPRR trackway.

Construction staging would also occur on the driving range. A temporary construction easement would be established along the westernmost portion of the driving range parallel to the new retained fill embankment. The construction easement would extend approximately 130 feet onto the driving range, occupying approximately 89,500 square feet. The construction easement would be in place for approximately 14 months, while the new embankment and trackway is constructed.

1.2.7.2 Construction Site Access

Construction access to the Project site would be accomplished through 3 possible routes: 1) by way of the existing BART gate at Whipple Road (951 Whipple Road), 2) by way of Industrial Parkway through the driving range parking area, and 3) by way of Mission Blvd through Gresel Street, a local neighborhood roadway. This third route would also traverse through UPRR owned property.

Access Route 1, through Whipple Road, would likely be utilized for the full Project construction duration, estimated at four years. Access Route 2, though Industrial Parkway, would likely be utilized for 13 months. Access Route 3, through Gresel Street and the UPRR owned property, would likely be utilized during construction of the proposed retaining wall, located adjacent to the driving range, estimated at 13 months, as well.

1.2.7.3 Clearing, Grubbing, and Site Grading

As the first order of work, the 6 acres (entire footprint of the Northern Mainline Connector) of undeveloped land for the Northern Mainline Connector would be cleared and grubbed of topsoil material. Approximately 4 to 6 inches of topsoil and organic material would be removed and transported from the Project site. This activity would be followed by site grading where excavation will occur to accommodate below grade stormwater storage and imported fill material will be brought to the site via trucks to build up the trackway embankment.

Roughly 84,700 cubic yards of import material would be needed for this work, including 10 percent additional material to account from shrinkage due to the compaction of soils. Assuming an average truck capacity of 15 cubic yards per truck, approximately 5,650 truckloads (or 11,300 truck trips) would be generated through clearing, grubbing, importation of fill, and grading activities. It is estimated that the clearing, grubbing, fill, and grading activities would take 110 working days to complete. In general, this work would be conducted away from BART's fenced active trackway area. It is expected that the clearing, grubbing, and grading work would generate approximately 51 truckloads (or 102 truck trips) per day. Approximately 70 percent of construction traffic (36 truckloads/72 truck trips) would likely traverse along the main construction access road to Whipple Road, while the remaining traffic (15 truckloads/30 truck trips) would traverse along the secondary construction access road to Gresel Street.

1.2.7.4 Installation of Underground Stormwater Storage Structure

An underground stormwater storage structure would be installed below the bioretention area located between the retained fill trackway and the Hayward Test Track. The underground storage structure would be composed of precast reinforced concrete box culverts connected with an equalizer pipe composed of reinforced concrete pipe segments. A pump station would also be installed adjacent to the underground storage structure to allow stormwater to be pumped up and into the bioretention area. This work would require the use of cranes, excavators, loaders, and flat-bed trucks.

The underground stormwater structure and pump station would be composed of predominantly precast parts which would be manufactured off site. The precast materials would be delivered to site via flatbed trucks. It is anticipated that this work would generate approximately 80 truckloads (or 160 truck trips). This work is anticipated to take roughly 30 days to complete. Construction traffic for this portion of the Project would likely use the main construction access road to Whipple Road.

1.2.7.5 Installation of Industrial Parkway Structure

A new track overcrossing structure would be constructed over Industrial Parkway. The structure type has not been selected. A Type, Size, and Location or preliminary report will be prepared to aid in the selection of the structure.

Should the structure type consist of reinforced and post-tensioned concrete approximately 675 cubic yards of concrete would need to be delivered to the Project site. Assuming an average concrete truck capacity of 9.5 cubic yards per truck, 71 truckloads (or 142 truck trips) would be generated throughout overcrossing structure construction activities. Industrial Parkway Overcrossing construction would take approximately 165 working days to complete. Construction traffic required for this Project component would likely access the site via Industrial Parkway.

Temporary realignments of vehicular traffic lanes on Industrial Parkway may be necessary to allow for the erection of falsework during the construction of the overcrossing structure.

1.2.7.6 Installation of Retaining Walls

Retaining walls would be constructed using two methods depending on location. A proposed retaining wall north of Industrial Parkway (adjacent to Gap Breaker Station AZE) would be a soldier pile-type retaining wall. This work would require the use of impact and/or vibratory pile drivers, cranes, and drilling rigs. Cast-in-place retaining walls would be constructed elsewhere following clearing, grubbing, and grading activities and would take place along the eastern limits of the Project from Industrial Parkway south to the UPRR Niles Subdivision tunnel structure. South of the UPRR tunnel retaining walls would be constructed on either side of the proposed trackway using cast-in-place technology.

Materials needed for the proposed retaining walls would include approximately 3,100 cubic yards of concrete that would need to be delivered to the Project site. Assuming an average concrete truck capacity of 9.5 cubic yards per truck, 326 truckloads (or 652 truck trips) would be generated throughout retaining wall construction activities. Retaining wall construction would take approximately 100 working days to complete. Approximately 60 percent of construction traffic (196 truckloads/392 truck trips) required for this activity would likely utilize the main construction access road to/from Whipple Road, while the remaining traffic (130 truckloads/260 truck trips) would likely utilize the secondary construction access road to/from Gresel Street.

1.2.7.7 Installation of Access Roadway and Cart Paths

Following the installation of retaining walls, construction of the access roadway and cart paths would commence. An access road is proposed along the northern mainline connector trackway and a cart path for maintenance is proposed between the northern transfer tracks. These roadways would consist of aggregate base rock material and hot mix asphalt concrete. The roadway/cart path construction work would require 2,700 cubic yards of asphalt and aggregate base rock material. Bringing this material to the Project site and would generate 180 truckloads (or 360 truck trips) over a period of 30 working days. Construction traffic for this activity would likely utilize the main construction access road to/from Whipple Road.

1.2.7.8 Installation of Trackwork

Installation of rail trackwork would be accomplished following the completion of the access roadway and cart paths. Trackwork construction would include the fine grading and compaction of track subgrade, installation of subballast, ballast, concrete ties, rails, and special trackwork (such as switches for rail turnouts and crossovers).

Trackwork materials would be delivered to the Project site via rail car or truck. Ballast and subballast materials would be delivered to the site by truck. Existing ballast and subgrade materials would be disposed of offsite. Approximately 5,800 cubic yards of ballast material would be needed for this work, which would generate approximately 400 truckloads (or 800 truck trips). Trackwork construction would take approximately 305 working days to complete. Approximately 85 percent of the construction traffic required for this activity (340 truckloads/680 truck trips) would likely utilize the main construction access road to/from Whipple Road, while the remaining traffic (60 truckloads/120 truck trips) would likely utilize the secondary access road to/from Gresel Street.

1.2.7.9 Installation of Gap Breaker Stations

Two Gap Breaker Stations (approximately 1,000 square feet in size) would be installed as the final stage of construction. For gap breaker station foundations, the construction method would be cast-in-place concrete. Thus, the contractor would deliver concrete and other related materials to the site via concrete and flat-bed trucks to facilitate the construction of the foundations.

Gap breaker station housings would be prefabricated structures which would be fabricated off-site and delivered to the Project site in pieces via specialized truck trailers. The housings would be assembled on site and installed over the cast-in-place foundations utilizing cranes. It is estimated that Gap Breaker Station installation work would be completed within a 2-month period. Construction traffic for this activity would likely access the site from Industrial Parkway. This phase of project construction would require approximately 2 truckloads (or four truck trips) per day over the 2-month construction period, for a total of 160 truck trips.

1.2.7.10 Installation of Train Control House

A Train Control House (approximately 3,800 square feet in size) would be installed along with the Gap Breaker Stations as the final stage of construction. The train control house foundations would consist of cast-in-place concrete. The facility would consist of masonry block walls with a metal truss roof deck system. It is estimated that Train Control House installation work would be completed within a 2-month period. Construction traffic for this activity would likely utilize the main construction access road to/from Whipple Road. This phase of project construction would require approximately 2 truckloads (or four truck trips) per day over the 2-month construction period, for a total of 160 truck trips.

1.2.7.11 Bioretention Basin

A bioretention basin would be installed above the underground stormwater storage facility and between the Northern Mainline Connector tracks and the Hayward Test Track. The bioretention basin would consist of an 18-inch-thick biofiltration soil mix layer over 12 inches of drainage aggregate. Perforated plastic underdrains would be installed within the drainage aggregate layer. Approximately 3,150 cubic yards of biofiltration soil mix and drainage aggregate would be delivered to the site for this work, generating 350 truckloads (or 700 truck trips). This work would take approximately 20 days to complete. Construction traffic for this activity would likely utilize the main construction access road to/from Whipple Road.

1.2.7.12 Construction Hours

Most construction activity would take place during typical workday hours 7:00 a.m. through 7:00 p.m. However, trackwork construction near the vicinity of Industrial Parkway, where rail tie-ins between the Northern Mainline Connector and the existing mainline trackwork are proposed would take place during weekends where BART would have a localized shutdown in revenue service (also known as weekend “blanket” work). The weekend blanket work would take place around the clock for two or three-day weekends to minimize disruptions to BART’s revenue train service. This work would be scheduled accordingly, where BART can accommodate localized revenue service shutdowns (between South Hayward and Union City BART stations). Preparation and post construction train control testing work would be accomplished during non-revenue hours (1:30 a.m. through 4:30 a.m.).

1.2.7.13 Construction Employees

Construction of the Northern Mainline Connector would require approximately 200 construction workers over the course of the Project. Although only an estimated 40 would be on site at any one time. BART and the Contractor would make arrangements for on-site of other off-street parking alternative for workers.

1.2.7.14 Project Cost and Funding

The entire HMC2 Project would cost approximately $500 million. The Northern Mainline Connector expansion area would cost $100M. The Project would be funded through a Federal

Transit Administration Full Funding Grant Agreement. Award of the Full Funding Grant Agreement occurred in 2020.

Chapter 2 Study Methods

2.1 Regulatory Requirements

The following federal regulatory requirements and laws apply to the proposed Project:

- NEPA (42 United States Code § 4321)
- Federal Endangered Species Act (FESA) (16 United States Code § 1531)
- Migratory Bird Treaty Act (MBTA) (16 United States Code §§ 703-712)
- Clean Water Act Sections 404 and 401

The following state regulatory requirements and laws apply to the proposed Project:

- CEQA (Public Resources Code, Division 13 § 21000 et seq.)
- California Endangered Species Act of 1984 (CESA) Fish and Game Code § 2050 et seq.
- Protection of Migratory Birds (Fish and Game Code § 3503 and 3800)
- Protection of Bats (Fish and Game Code § 2000,2002,2014 and 4150), and under California Code of Regulations § 251.1.
- California Fish and Game Code Section 1602 Streambed Alteration Agreement

2.2 Studies Required

A biological study area (BSA) was established that encompassed the Project limits and surrounding areas potentially inhabited by regional special-status species that could be affected directly or indirectly by the Project. The BSA is shown in Figure 3. A BSA is defined as the area (land and water) that may be directly, indirectly, temporarily, or permanently impacted by construction and construction-related activities.

Biological surveys and studies were performed to satisfy the requirements of CEQA, to document all special-status species that potentially occur in the BSA, and to identify all potential Project impacts on protected resources or critical habitats. Special-status species include those listed as endangered, threatened, or rare under FESA or CESA; plants listed as rare by California Native Plant Society (CNPS); migratory birds protected under the MBTA; and State Species of Special Concern (SSC).

Figure 3. Biological Study Area

Source: WRECO, 2022

2.2.1 Database and Literature Searches

Information about habitat types and special-status species that can occur in the BSA was obtained from the following sources:

- U. S. Fish and Wildlife Service (USFWS) online database for federally threatened and endangered species (USFWS 2022).
- California Department of Fish and Wildlife (CDFW), California Natural Diversity Database (CDFW 2022).
- CNPS Online Inventory of Rare and Endangered Plants (CNPS 2022).

These databases were queried for all occurrence records within a 5-mile radius for the following six United States Geological Survey (USGS) quadrangles: Hayward, San Leandro, Redwood Point, Newark, Niles, and Dublin.

The USFWS database was utilized to query all federally endangered, threatened, candidate, and proposed animal and plant species as well as designated critical habitat (defined as habitats determined to be essential for the survival of that species) with known occurrences in the BSA. The aquatic features present or in the vicinity of the BSA do not provide suitable habitat for species that fall within the jurisdiction of National Oceanic and Atmospheric Administration (NOAA) Fisheries, therefore, a database list was not obtained from NOAA online resources.

Results from the USFWS and CNDDB databases were refined using available scientific literature, aerial imagery, site visits, and CNPS databases to determine which special-status species have the potential to occur in the BSA and be affected by the proposed Project. If suitable habitat was not present for a sensitive species within the BSA, the species was not given consideration beyond its inclusion on the special-status species tables.

2.2.2 Personnel and Survey Dates

Reconnaissance-level biological resources surveys were conducted to determine potential habitat for special-status species. The BSA was surveyed using the pedestrian method, by walking accessible portions of the BSA, and photo-documenting existing site conditions as well as potential habitat for special-status species. General notes were also collected, including observed plant and wildlife species. Botanical surveys were conducted at the appropriate times coinciding with the blooming period of rare species with potential to occur.

The credentials for survey personnel is:

- Scott Elder, B.A. Geography, 5 years of experience
- Gregory Wattley, B.S., Biology; M.S. Environmental Biology; 13 years of experience
- Sandra Etchell, B.A. Biology; M.S. Environmental Management; 24 years of experience

- Cuyler Stapelmann, B.S. Conservation and Resources Studies; 10 years of experience
- Kevin Fisher, B.S. Environmental health; M.S. Ecology; Professional Wetland Scientist; 21 years of experience
- Jon Cox, B.S. Biology; 1 year of experience

The dates that surveys were conducted, the types of surveys, and personnel conducting the surveys are included in Table 1.

Table 1. Survey Dates, Types, and Personnel

Date	Survey Type	Personnel
June 7, 2019	Wetland Delineation	Scott Elder
February 6, 2020	Wetland Delineation Wildlife Survey Botanical Survey	Greg Wattley, Sandra Etchell
March 10, 2020	Wetland Delineation Botanical Survey Wildlife Survey	Greg Wattley, Sandra Etchell
April 22, 2020	Wetland Delineation	Greg Wattley, Cuyler Stapelmann
May 19, 2020	Botanical Survey Tree Survey	Sandra Etchell
July 1, 2021	Wetland Delineation	Kevin Fisher, Jon Cox

2.3 Agency Coordination

The Project team produced and delivered a presentation including figures, a brief Project description, and aquatic resources found on the Project site to the San Francisco Bay RWQCB and the United States Army Corps of Engineers (USACE). Project impacts and the type of mitigation that may be required was also discussed during the presentation. On-going discussions are in progress with the RWQCB.

The USACE provided an Approved Jurisdictional Delineation (AJD) for non-wetland waters in the BSA and a Preliminary Jurisdictional Determination (PJD) for the wetlands in the BSA.

2.4 Limitations That May Influence Results

Long portion of the drainage ditches designated as waters of the State, described below in Section 4.2.1.1, are fenced and inaccessible by foot, but could be viewed from the fence line. Lack of access to these areas prevented wetlands delineations and botanical surveys from occurring in these locations.

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Chapter 3 Environmental Setting

This section describes the existing physical and biological conditions in the BSA and surrounding region. The total area of the BSA is 170.68 acres (7,434,820 sq ft.).

3.1 Physical Conditions

Generally, the BSA is located in a mixed-use area comprised of industrial, commercial, residential, and recreational uses. The surrounding area is primarily urban with the naturalistic Hayward Hills to the east.

3.1.1 Precipitation and Data Analysis

The BSA has a Mediterranean climate characterized by mild temperatures, dry summers, and wet winters (George, 2018). A climate summary report for the Project vicinity was obtained from the closest Wetlands Climate Tables (WETS) weather station which was the Hayward Air Terminal, CA.

Temperature and precipitation data for the WETS station was reviewed for the years 1971 to 2018. The maximum average temperature reported for the Hayward area was 76.3º F in September, and the lowest average temperature is 58.4º F in January. The Hayward area generally experiences precipitation between mid-October and mid-May. The average annual precipitation is 14.63 inches, with December being the wettest month, with an average of 3.04 inches, and July being the driest month, with an average of 0 inches (Natural Resources Conservation Service [NRCS], 2020).

3.1.2 Hydrology

The Project area lies within the Old Alameda Creek Watershed region which drains the Hayward Hills and a large area of the East Bay plains into the historical Old Alameda Creek. Old Alameda Creek (now known as Old Alameda Creek Flood Control Channel) is located approximately 0.24 miles southwest of the BSA.

There are no natural streams, creeks, or river crossings within the BSA; however, Dry Creek flows along the extreme southeast portion of the Project, south of Whipple Road. Dry Creek flows underneath the BART tracks through a series of box culverts. There is an engineered channel associated with the Alameda Flood Control Channel (designated by the Alameda County Flood Control as Zone 3A, Line N), which runs almost parallel to the eastern boundary of the BSA. The channel conveys flows generated from runoff from the driving range and other surrounding landscape sources. The channel is connected to Zone 3A, Line D that originates from the Hayward Hills approximately 1.2 miles east of the north portion of the BSA. Zone 3A, Line D is diverted through underground storm drain systems as it approaches lower elevation along the State Route 238 (Mission Boulevard) corridor and residential areas between the BSA and State Route 238. Hydrology from the Project outfalls to Ward Creek which connects to Old Alameda Creek Flood Control Channel and eventually into the San Francisco Bay.

Figure 4 shows the National Wetland Inventory Map (USFWS, 2021).

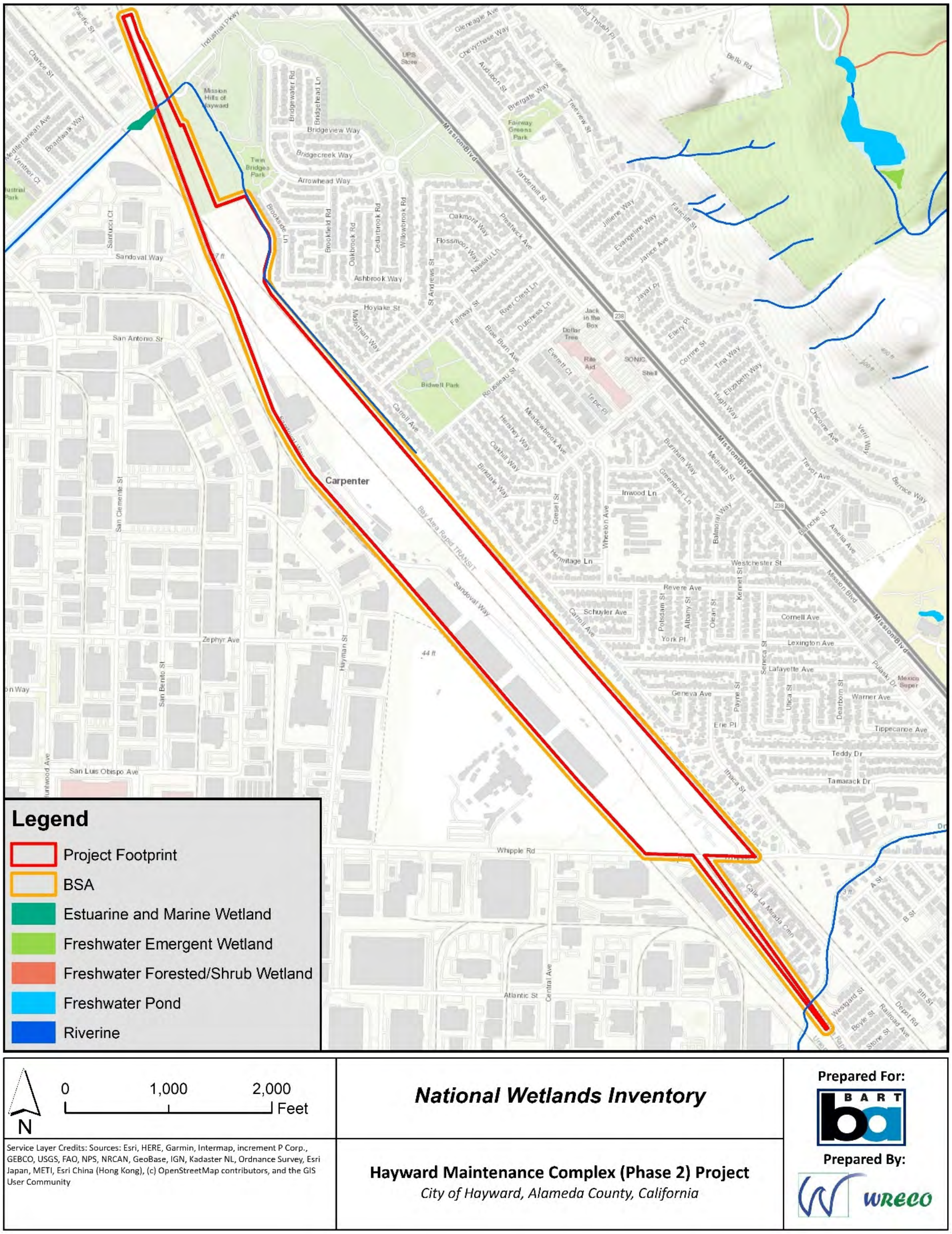

Figure 4. National Wetlands Inventory Map

Source: USFWS, 2021

3.1.3 Topography and Soils

The average elevation of the northern portion of the Project area is approximately 15 feet (ft) above mean sea level (AMSL), and the overall Project elevations range from 11 feet AMSL to 125 feet AMSL. The topography slopes gently to the west. Figure 5 shows the topography for the Project area.

Originally published by the U.S. Department of Agriculture (USDA), soil data for Alameda County was downloaded from the Soil Survey Geographic (SSURGO) database (2019), and the data was imported to ArcGIS, as shown in Figure 6. Additional soil information was obtained from the NRCS *Custom Soil Resources Report for Alameda County, California, Western Part* (USDA, 1981 and 2019). Within the BSA, soil units were identified and are summarized in Table 2.

Table 2. Soil Types

Unit Symbol	Unit Name, Slope	Drainage	Land Form	Hydric Soil
107	Clear Lake clay, drained, 0 to 2 percent slopes, Major Land Resource Area (MLRA) 14	Poorly drained	Basin floors	Yes
131	Omni silty clay loam, drained	Poorly drained	Flood plains	Yes
136	Pleasanton gravelly loam, 0 to 5 percent slopes	Well drained	Fan terraces	No
140	Rincon clay loam, 0 to 2 percent slopes, MLRA 14	Well drained	Alluvial fans, terraces	No

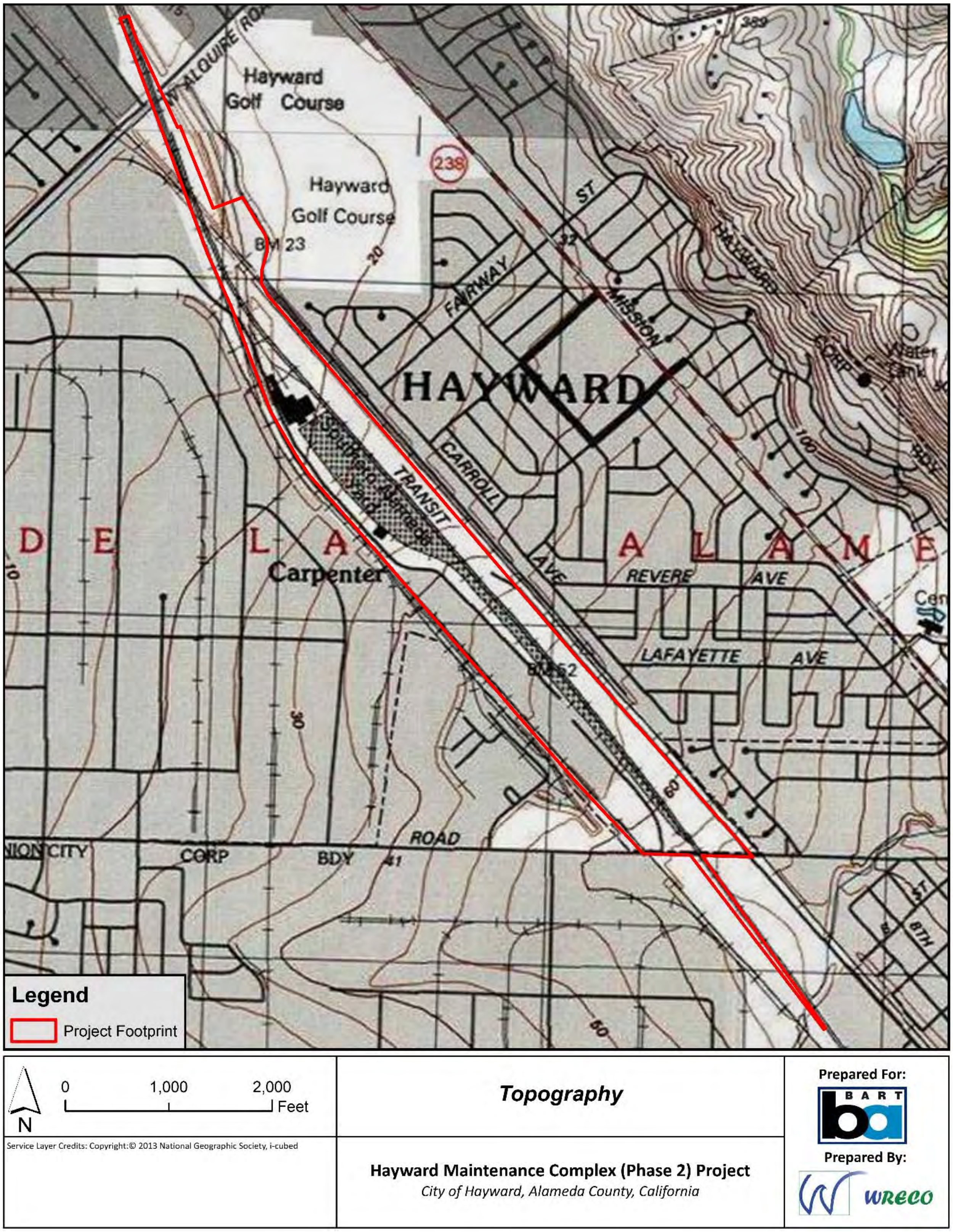

Figure 5. Topographic Map

Source: WRECO, 2022

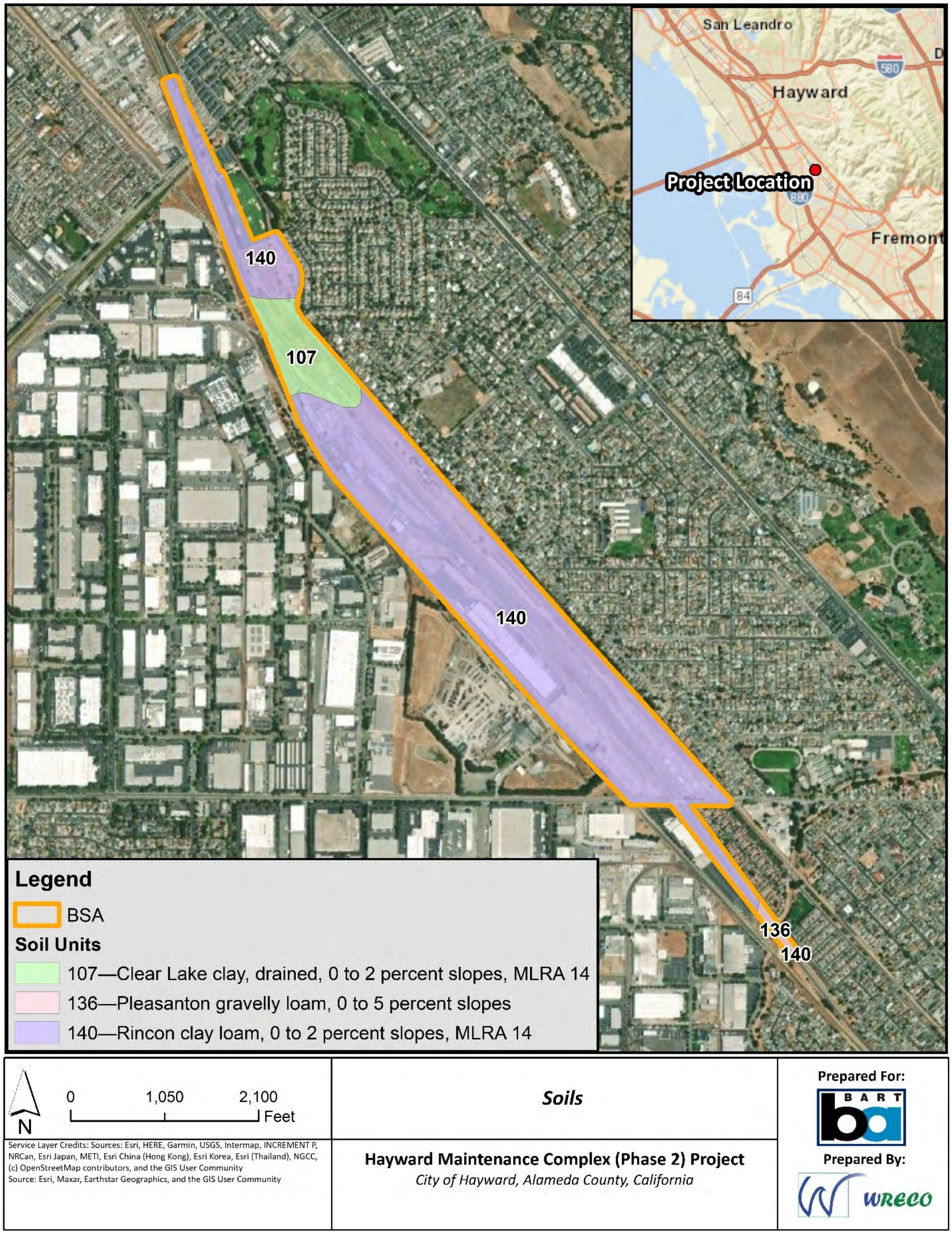

Figure 6. Soils Map

Source: USDA, 2022

3.1.4 Biological Conditions

A majority of the BSA consists of urban land uses including various buildings such as vehicle maintenance facilities serving the BART system with train storage, train washing, and general maintenance facilities for the BART fleet. There is one additional area outside of the Hayward Yard that will be used temporarily as construction staging area located immediately south of the driving range (see Figure 2).

3.1.4.1 Vegetation Communities

The vegetation community descriptions and nomenclature conventions within this analysis referenced the CDFW's California Wildlife Habitat Relationships System (CWHR). This classification system is based on 59 vegetative habitats described in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988). Supplemental information was obtained from *California Vegetation* (Holland and Keil, 1995).

Four vegetation communities, urban and ruderal, fresh emergent wetland, and annual grassland were present in the BSA. These communities are described below. Representative plant and wildlife species observed in the BSA are included in Appendix B.

Urban

The CWHR system classifies urban vegetation into five areas: tree grove, street strip, shade tree/lawn, lawn, and shrub cover. Urban areas typically have a small diversity of trees, shrubs, and grasses, but greater productivity than natural grasslands due to abundant water and fertilizer (McBride and Reid, 1988). Examples include residential landscapes, golf courses, parks, and school grounds. Non-native landscape species and invasive weeds are common in urban habitats. These areas exist throughout the BSA where industrial buildings and minimal landscaped areas occur. The dominant species observed in this community include field bindweed (*Convolvulus arvensis*) and English ivy (*Hedera helix*).

Ruderal

Ruderal plant communities consist of varied, often temporary, collections of mostly non-native plants along roadsides or other disturbed areas. Shallow soils may be underlain by gravel and compacted or hard-pan surfaces, preventing many plants from establishing. Aggressive, invasive weeds such as brome grasses and thistles typically thrive in ruderal habitats (Holland and Keil, 1995). Ruderal communities occur throughout the BSA along the railroad track edges and disturbed areas. The dominant species observed in this community include soft chest brome (*Bromus hordeaceus*), wild oats (*Avena fatua*), wild radish (*Raphanus sativus*), Italian thistle (*Carduus pycnocephalus*), and prickly lettuce (*Lactuca serriola*).

Fresh Emergent Wetland

Fresh emergent wetland is a broad term for depressions on level to gently rolling land that is permanently or seasonally inundated with fresh water. This habitat is found throughout California, most commonly at elevations below 7,500 feet. Roots of fresh emergent wetland vegetation thrive in anaerobic environments; the limits of this habitat occur at the boundary of hydric and non-hydric soils. The composition of the plant community depends on the depth and flow rate of the water, but cattail, bulrush, and redroot nutgrass are characteristic. Fresh emergent wetland provides some of the most productive wildlife habitat in the state (Kramer, 1988). The dominant species observed in this habitat type include bird's foot trefoil (*Lotus corniculatus*), tall flatsedge (*Cyperus eragrostis*), and bristly ox-tongue (*Helminthotheca echioides).*

Annual Grassland

Non-native or naturalized annual grasses and forbs have largely replaced pre-colonial grasslands on rolling hills and flat plains in California. Although a rich variety of native species may be present, grasses such as wild oats and barley, brome species, and soft chess, dominate this habitat (Kie, 2005). The species composition varies widely depending on weather and grazing patterns, but the habitat generally has a water deficit for four to eight months annually (Barbour et al., 2007). Grasses germinate in the fall but do not grow vigorously until temperatures increase. By the summer, fields typically contain a large amount of dead plant material. In the BSA, annual grassland occurred between the fresh emergent wetland and soil stockpiles, between the UPRR and Hayward Yard service tracks. The dominant species include ripgut brome (*Bromus diandrus*) and wild oat (*Avena fatua*).

3.1.4.2 HABITAT CONNECTIVITY

The BSA does not provide habitat connectivity for wildlife due to its the surrounding vast network of city streets, State Route 238, and the BART and UPRR corridors that traverse the site. Wildlife that dwell in urban environments, such as raccoons, skunks, and opossums, typically establish small territories that they seldom venture from.

3.2 Regional Species and Habitats of Concern

Database lists from online sources included in the discussion below are included in Appendix C.

3.2.1 Sensitive Natural Communities

Sensitive natural communities are recurring associations of plants and animals found in particular locations with specific physical conditions. Natural Communities of Special Concern are plants, animals, and natural resources that may have high species diversity, high productivity, limited distribution, decreasing range, or unusual characteristics. Natural Communities of Special Concern as designated by CDFW, may include wetlands and "Waters of the U.S.," "Waters of the State," protected trees, riparian habitats, and federally designated essential fish habitats.

A CNDDB online database search resulted in a total of two sensitive natural community that occur within the six USGS quadrangles within a 5-mile radius of the BSA. The natural communities listed and their proximity to the BSA is included in Table 3.

Table 3. Natural Communities of Special Concern in the BSA

Sensitive Natural Community	Present in BSAs	Proximity to BSA
Northern Coast Salt Marsh	No	There are no CNDDB occurrence for Northern Coast Salt Marsh communities within a 5-mile radius of the BSA.
Valley Needlegrass Grassland	No	There are no CNDDB occurrence for Valley Needlegrass Grassland communities within a 5-mile radius of the BSA.

3.2.2 Special-Status Plant Species

A list of sensitive plant species and habitats potentially occurring within the Project vicinity was developed based on information compiled from CNDDB, USFWS, CNPS, species distribution, and habitat data. Combined, the CNDDB, CNPS, and USFWS databases list a total of 38 special-status plants (including federally listed, state-listed, and/or CNPS List 1B or 2) that could occur within a 5-mile radius of the BSA. The results from all database queries and a map of CNDDB plant occurrences are presented in Appendix C. Table 4 lists the special-status plants generated from these databases and provides explanations for the potential presence or absence of these plants. The table provides the names and listed status of each species, descriptions of their preferred habitats, and their likelihood of occurrence in the BSA.

3.2.3 Special-Status Wildlife Species

A total of 40 special-status wildlife species and protected habitats have the potential to occur within the BSA, as indicated by the CNDDB and USFWS online databases. Table 5 lists the special-status wildlife generated from the database searches and provides descriptions for the potential presence or absence of the wildlife, listed status, required habitats, and their likelihood of occurrence in the BSA. Based on evaluation, it was determined that special-status wildlife species that could occur in the BSA include burrowing owl, pallid bat, white-tailed kite, roosting bats, migratory bird species.

The results from all database queries and a map of CNDDB plant occurrences are presented in Appendix C.

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Table 4. Special-Status Plant Species with Potential to Occur in the Biological Study Area (BSA)

Scientific Name Common Name	Status			Blooming Period	Habitat Requirements (bold if present in BSA)	Potential to Occur/ Rationale
	Fed	State	CNPS			
Amsinckia lunaris Bent-flowered fiddleneck	--	--	1B.2	Mar-Jun	Coastal bluff scrub, cismontane woodland, **valley and foothill grassland**. Elev. 10-1640 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Astragalus tener var. *tener* Alkali milk-vetch	--	--	1B.2	Mar-Jun	**Valley and foothill grassland** in adobe clay soil; playas and vernal pools with alkaline soil. Elev. 0-200 ft.	**None.** While valley and foothill grassland is present, suitable soil conditions are absent from the BSA.
Balsamorhiza macrolepis Big-scale balsamroot	--	--	1B.2	Mar-Jun	Chaparral, cismontane woodland, **valley and foothill grassland** sometimes in serpentinite soil. Elev. 295-5100 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Calochortus umbellatus Oakland star-tulip	--	--	4.2	Mar-May	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, **valley and foothill grassland** often in serpentinite soil. Elev. 325-2300 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Campanula exigua	--	--	1B.2	May-Jun	Chaparral in rocky, usually serpentinite soil. Elev. 900-4100 ft.	**None.** No chaparral habitat is present in the BSA.

Scientific Name **Common Name**	***Status***			**Blooming Period**	**Habitat Requirements (bold if present in BSA)**	**Potential to Occur/ Rationale**
	Fed	**State**	**CNPS**			
Chaparral harebell						
Castilleja ambigua var. ambigua johnny-nip	--	--	4.2	Mar-Aug	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, **valley and foothill grassland**, vernal pools margins. Elev. 0-1430 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	--	--	1B.1	May-Nov	**Valley foothill grassland** in alkaline soil. Elev. 0-755 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Chloropyron maritimum ssp. *palustre* Point Reyes salty bird's-beak	--	--	1B.2	Jun-Oct	Coastal salt marshes and swamps. Elev. 0-35 ft.	**None.** No marshes or swamps are present in the BSA.
Chorizanthe robusta var. robusta Robust spineflower	FE	--	1B.1	Apr-Sep	Maritime chaparral, openings in cismontane woodland, coastal dunes, coastal scrub in sandy or gravelly soil. Elev. 10-985 ft.	**None.** No chaparral, woodland, dune or scrub habitat is present in the BSA.

Scientific Name **Common Name**	***Status***			**Blooming Period**	**Habitat Requirements (bold if present in BSA)**	**Potential to Occur/ Rationale**
	Fed	**State**	**CNPS**			
Clarkia concinna ssp. *automixa* Santa Clara red ribbons	--	--	4.3	Apr-Jun	Chaparral, cismontane woodland. Elev. 295-4920 ft.	**None.** No chaparral or woodland habitat is present in the BSA.
Dirca occidentalis Western leatherwood	--	--	1B.2	Jan-Apr	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland in mesic areas. Elev. 80-1395 ft.	**None.** No forest, chaparral, or woodland habitat is present in the BSA.
Eryngium aristulatum var. *hooveri* Hoover's button-celery	--	--	1B.1	Jun-Aug	Vernal pools and **wetlands**. Elev. 0-165 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Eryngium jepsonii Jepson's coyote thistle	--	--	1B.2	Apr-Aug	**Valley and foothill grassland**, vernal pools in clay soil. Elev. 10-985 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.

Scientific Name Common Name	Status			Blooming Period	Habitat Requirements (bold if present in BSA)	Potential to Occur/ Rationale
	Fed	State	CNPS			
Extriplex joaquinana San Joaquin spearscale	--	--	1B.2	Apr-Oct	Chenopod scrub, meadows and seeps, playas, and **valley and foothill grassland** in alkaline soil. Elev. 0-2740 ft.	**None.** While valley and foothill grassland is present, suitable soil conditions are absent from the BSA.
Fritillaria liliacea Fragrant fritillary	--	--	1B.2	Feb-Apr	Cismontane woodland, coastal prairie, coastal scrub, **valley and foothill grassland** often in serpentinite soil. Elev. 10-1345 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Gilia millefoliata Dark-eyed gilia	--	--	1B.2	Apr-Jul	Coastal dunes. Elev. 5-100 ft.	**None.** No coastal dunes are present in the BSA.
Helianthella castanea Diablo helianthella	--	--	1B.2	Mar-Jun	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and **valley and foothill grassland**. Usually in rocky axonal soil, often in partial shade. Elev. 195-4265 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Hoita strobilina Loma Prieta hoita	--	--	1B.1	May-Oct	Chaparral, cismontane woodland, riparian woodland, usually mesic areas and serpentinite soil. Elev. 95-2825 ft.	**None.** No chaparral or woodland habitat is present in the BSA.

Scientific Name **Common Name**	***Status***			**Blooming Period**	**Habitat Requirements (bold if present in BSA)**	**Potential to Occur/ Rationale**
	Fed	**State**	**CNPS**			
Holocarpha macradenia Santa Cruz tarplant	FT	SE	1B.1	Jun-Oct	Coastal prairie, coastal scrub, **valley and foothill grassland**. Elev. 30-725 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Horkelia cuneata var. *sericea* Kellogg's horkelia	--	--	1B.1	Apr-Sep	Openings in closed-cone coniferous forest, chaparral (maritime), coastal dunes, coastal scrub in sandy or gravelly soil. Elev. 30-660 ft.	**None.** No forest, chaparral, dunes or scrub habitat is present in the BSA.
Lasthenia conjugens Contra Costa goldfields	FE	--	1B.1	Mar-Jun	Cismontane woodland, playas in alkaline soil, mesic valley and foothill grassland, vernal pools in mesic areas. Elev. 0-1545 ft.	**None.** No woodland habitat or mesic conditions are present in the BSA.
Leptosiphon acicularis Bristly leptosiphon	--	--	4.2	Apr-Jul	Chaparral, cismontane woodland, coastal prairie, and **valley and foothill grassland**. Elev. 0-700	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Monardella antonina ssp. Antonina	--	--	4.3	Jun-Aug	Chaparral and wooded slopes. Elev. 22-7057	**None.** This species was not observed during botanical surveys.

Scientific Name **Common Name**	***Status***			**Blooming Period**	**Habitat Requirements (bold if present in BSA)**	**Potential to Occur/ Rationale**
	Fed	**State**	**CNPS**			
San Antonio Hills monardella						
Monolopia gracilens Woodland woolythreads	--	--	1B.2	Feb-Jul	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, north coast coniferous forest (openings), **valley and foothill grassland** in serpentine soil. Elev. 325-3940 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Navarretia myersii ssp. myersii Pincushion navarretia	--	--	1B.1	Apr-May	Vernal pools and **wetland**. Elev. 145-330 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Navarretia paradoxiclara Patterson's navarretia	--	--	1B.3	May-Jun(Jul)	Serpentinite, openings, vernally mesic, often drainages. Meadows and seeps Elev. 490-1410 ft.	**None.** This species was not observed during botanical surveys.
Piperia michaelii Michael's rein orchid	--	--	4.2	Apr-Aug	Coastal bluff scrub, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest. Elev. 10-3005 ft.	**None.** This species was not observed during botanical surveys.

Scientific Name **Common Name**	**Status**			**Blooming Period**	**Habitat Requirements (bold if present in BSA)**	**Potential to Occur/ Rationale**
	Fed	**State**	**CNPS**			
Plagiobothrys glaber Hairless popcornflower	--	--	1A	Mar-May	Meadows and seeps with alkaline soil, coastal salt marshes and swamps. Elev. 15-410 ft.	**None.** This species was not observed during botanical surveys.
Polemonium carneum Oregon polemonium	--	--	2B.2	Apr-Sep	Coastal prairie, coastal scrub, lower montane coniferous forest. Elev. 0-6005 ft.	**None.** This species was not observed during botanical surveys.
Polygonum marinense Marin knotweed	--	--	3.1	Apr-Oct	Coastal salt or brackish marshes and swamps. Elev. 0-35 ft.	**None.** This species was not observed during botanical surveys.
Ranunculus lobbii Lobb's aquatic buttercup	--	--	4.2	Feb-May	Cismontane woodland, **valley and foothill grassland**, vernal pools, north coast coniferous forest. Elev. 50-1545 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Sanicula maritima Adobe sanicle	--	SR	1B.1	Feb-May	Chaparral, coastal prairie Meadows and seeps, **valley and foothill grassland** in clay or serpentinite soil. Elev. 95-790 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.

Scientific Name **Common Name**	***Status***			**Blooming Period**	**Habitat Requirements (bold if present in BSA)**	**Potential to Occur/ Rationale**
	Fed	**State**	**CNPS**			
Senecio aphanactis Chaparral ragwort	--	--	2B.2	Jan-May	Chaparral, cismontane woodland, coastal scrub, sometimes in alkaline soil. Elev. 45-2625 ft.	**None.** This species was not observed during botanical surveys.
Spergularia macrotheca var. *longistyla* Long-styled sand-spurry	--	--	1B.2	Feb-May	Meadows and seeps, marshes and swamps in alkaline soils. Elev. 0-840 ft.	**None.** This species was not observed during botanical surveys.
Streptanthus albidus ssp. *peramoenus* Most beautiful jewelflower	--	--	1B.2	Mar-Oct	Chaparral, cismontane woodland, **valley and foothill grassland** in serpentinite soil. Elev. 310-3280 ft.	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly disturbed soils and conditions at the site.
Stuckenia filiformis ssp. *alpina* Slender-leaved pondweed	--	--	2B.2	May-Jul	Assorted shallow freshwater marshes and swamps. Elev. 980-7055 ft.	**None.** This species was not observed during botanical surveys.
Suaeda californica California seablite	FE	--	1B.1	Jul-Oct	Coastal salt marshes and swamps. Elev. 0-50 ft.	**None.** This species was not observed during botanical surveys.
Trifolium hydrophilum Saline clover	--	--	1B.2	Apr-Jun	Marshes and swamps, **valley and foothill grassland** in mesic areas with	**None.** This species was not observed during botanical surveys and is not expected to occur due to the highly

Scientific Name Common Name	*Status*			Blooming Period	Habitat Requirements (bold if present in BSA)	Potential to Occur/ Rationale
	Fed	State	CNPS			
					alkaline soil, vernal pools. Elev. 0-985 ft.	disturbed soils and conditions at the site.

Notes:

General Habitat Descriptions are based upon definitions utilized by the CNPS online Inventory of Rare and Endangered Plants (2020). Habitats present within the study area are emphasized with bold print.

BSA = Biological Study Area
CNPS = California Native Plant Society

Status Legend
-- = No status, or not applicable
FE = Listed as endangered under the Federal Endangered Species Act (FESA)
FT = Listed as threatened under FESA
SE = Listed as endangered under the California Endangered Species Act (CESA)
SR = Listed as rare under CESA
ST = Listed as threatened under CESA
CE = Listed as candidate endangered CESA

CNPS Ranking
1A = Presumed extinct in California and either rare or extinct elsewhere.
1B = Rare, threatened, or endangered in California and elsewhere.
2A = Presumed extinct in California but common elsewhere.
2B = Rare, threatened, or endangered in California but more common elsewhere.

Threat Ranks
0.1 = Seriously threatened in California (more than 80% of occurrences threatened/high degree and immediacy of threat).
0.2 = Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat).

Potential to Occur Definitions
None = No possibility for occurrence.
Low = Suitable habitat present; not likely to occur due to environmental constraints, but cannot be ruled as absent.
Moderate = Potential to occur based on habitat suitability and documented records in the study area region.
High = Species has been document within the study area.

Table 5. Special-Status Wildlife Species with Potential to Occur in BSA or Vicinity

Scientific Name Common Name	Status Federal/State		Habitat Description	Potential to Occur in Project Area
Invertebrates				
Lepidurus packardi Vernal pool tadpole shrimp	FE	--	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass-bottomed swales of unplowed grasslands.	**None.** There are no vernal pools or swales within or near the BSA.
Branchinecta lynchi Vernal pool fairy shrimp	FT	--	Endemic to the grasslands of the Central Valley, Central Coast, and South Coast mountains, in astatic rain-filled pools. Inhabits small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**None.** There are no clear water depressions or pools within or near the BSA.
Callophrys mossii bayensis San Bruno elfin butterfly	FE	--	Found in coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on steep, north-facing slopes. Larval host plant is *Sedum spathulifolium*.	**None.** The BSA is outside of the range of this species.
Danaus plexippus pop. 1 Monarch - California overwintering population	Candidat e	--	Winter roost sites in closed-cone coniferous forests along the coast from northern Mendocino to Baja California, Mexico. Roosts are located in wind-protected tree groves	**None.** There are no forest habitats in the BSA.

Scientific Name Common Name	Status Federal/State		Habitat Description	Potential to Occur in Project Area
			(eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	
Fish				
Oncorhynchus mykiss irideus pop. 8 Steelhead – central California coast DPS	FT	--	From Russian River, south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay basins.	**None.** There is no suitable aquatic habitat present in the BSA.
Hypomesus transpacificus Delta smelt	FT	SE	Inhabits Sacramento-San Joaquin Delta, seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay. Seldom found at salinities greater than 10 ppt. Most often at salinities less than 2 ppt.	**None.** There is no suitable aquatic habitat present in the BSA.
Spirinchus thaleichthys Longfin smelt	Candidat e	ST, SSC	Found in open waters of estuaries, mostly in middle or bottom of water column. During summer, found in mid- to low-water column in deep cool water in the central San Francisco Bay. During fall, migrates into low salinity or freshwater reaches of coastal rivers and tributary streams to spawn. Prefer salinities of 15-30 parts per thousand but can be found in completely freshwater to almost pure seawater.	**None.** There is no suitable aquatic habitat present in the BSA.

Scientific Name **Common Name**	**Status Federal/State**		**Habitat Description**	**Potential to Occur in Project Area**
Amphibians				
Ambystoma californiense California tiger salamander	FE/FT	ST	Central Valley DPS federally listed as threatened. Santa Barbara County and Sonoma County DPS federally listed as endangered. Needs underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	**None.** There are no vernal pools or seasonal water features suitable for breeding within or near the BSA.
Rana draytonii California red-legged frog	FT	SSC	Found in lowlands and foothills in or near-permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Needs access to rodent burrows, cracks, and crevices in the ground for refugia. Water salinity must be less than 7 ppt for adults and larvae[4].	**None.** The nearest CNDDB occurrence (34) is for a frog found in a pond in Garin Regional Park in the hills 1.9 miles east of the BSA and frogs would have to cross barriers including I-680, and commercial and residential areas to travel over land to the site. The pond has connectivity to the Dry Creek Watershed which does not have connectivity to the drainage in the BSA. An engineered channel associated with Ward Creek runs roughly parallel to the eastern boundary of the BSA. The channel conducts shallow flows generated from runoff from the golf course and other landscape sources. Frogs would

Scientific Name **Common Name**	**Status Federal/State**		**Habitat Description**	**Potential to Occur in Project Area**
				not be likely to pass through culvert systems or unvegetated open channels to get to the BSA since there are no aquatic resources south of the BSA.
Rana boylii Foothill yellow-legged frog	--	SE	Inhabits partly-shaded, shallow freshwater streams and riffles with a rocky substrate in a variety of habitats. Needs cobble-sized substrate for egg-laying and at least 15 weeks of water to attain metamorphosis.	**None.** There is no suitable breeding habitat nor are there CNDDB records for this species within a five-mile radius of the BSA.
Emys marmorata Western pond turtle	--	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation, below 6000 feet elevation. Needs basking sites and sandy banks or grassy open fields for egg-laying.	**None.** There are no CNDDB records for this species within a five-mile radius of the BSA. Pond turtles would have difficulty entering the BSA since there is are no unculverted or open drainages with access to the site.
Masticophis lateralis euryxanthus Alameda whipsnake	FT	ST	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna, and woodland habitats. Mostly in south-facing slopes and ravines, with rock outcrops, deep crevices, or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.	**None.** There are 15 CNDDB records for this species within a five-mile radius of the BSA. The nearest record (137) is for a snake found 1.2 miles north near CSU Hayward in 1991. The remaining 14 occurrences are for snakes found at various locations in the Hayward Hill east of the BSA including Garin Park (EBRPD) and on private land on Walpert Ridge. Although there are relatively nearby records for this species, there are none west of State Route 238. It would be difficult for

Scientific Name Common Name	Status Federal/State		Habitat Description	Potential to Occur in Project Area
				whipsnakes to traverse SR 238, the residential areas, the UPRR tracks to safely enter the BSA.
Birds				
Coturnicops noveboracensis Yellow rail	--	SSC	For breeding it prefers freshwater grass or sedge marshes and wet meadows, but also may use brackish wetlands, particularly the drier margins, that are dominated by *Carex*. Summer resident in eastern Sierra Nevada in Mono County.	**None.** The BSA is outside of the breeding range for this species.
Laterallus jamaicensis coturniculus California black rail	--	ST	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	**None.** There are no marshes or wet meadows within or near the BSA.
Rallus obsoletus obsoletus Ridgway's rail	FE	SE, FP	Found in salt and brackish marshes traversed by a network of well-developed tidal sloughs in the vicinity of San Francisco Bay.	**None.** There are no marshes or tidal sloughs within or near the BSA.
Charadrius nivosus nivosus Western snowy plover	FT	SSC	Needs sandy, gravelly or friable soils for nesting. Nesting sites include sand spits, dune-backed beaches, beaches at creek and river	**None.** There are no sandy spits, dunes, beaches, lagoons or estuaries, within or near the BSA.

Scientific Name Common Name	Status Federal/State		Habitat Description	Potential to Occur in Project Area
			mouths, and salt pans at lagoons and estuaries. Less common nesting habitats include bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars.	
Sternula antillarum browni California least tern	FE	SE, FP	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	**None.** The BSA is not along the shoreline where this species prefers to nest.
Rynchops niger Black skimmer	--	SSC	Nests on gravel bars, low islets, and sandy beaches in unvegetated sites. Nesting colonies usually have fewer than 200 pairs.	**None.** The BSA is not along the shoreline where this species prefers to nest.
Elanus leucurus White-tailed kite	--	FP	Found in rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Forages in open grasslands, meadows, or marshes close to isolated, dense-topped trees for nesting and perching.	**High.** A pair of kites were observed nesting in 2020 in a tall tree in the back yard of a residence immediately east of the BSA.
Circus hudsonius Northern harrier	--	SSC	Found in coastal salt and freshwater marsh. Nests and forages in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh	**None.** There is no suitable marsh nesting habitat within or near the BSA.

Scientific Name Common Name	Status Federal/State		Habitat Description	Potential to Occur in Project Area
			edge; nests built of a large mound of sticks in wet areas.	
Aquila chrysaetos Golden eagle	--	FP	Found in rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	**None.** This species could nest in the Hayward Hills east of the BSA but there is no nesting suitable habitat in or near the BSA.
Athene cunicularia Burrowing owl	--	SSC	Occurs in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**Low.** Though there are no CNDDB records for this species within a five-mile radius of the BSA, the grasslands provide suitable habitat. No suitably sized burrows were present during biological surveys however this species should be included in preconstruction nesting bird surveys.
Asio flammeus Short-eared owl	--	SSC	Found in swamp lands, both fresh and salt; lowland meadows; and irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	**None.** There are no swamplands, meadows, or similar aquatic features nearby that provide suitable nesting habitat for this species.
Riparia riparia Bank swallow	--	ST	Colonial nester, primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	**None.** There are no riparian or aquatic habitats with vertical banks or cliffs in or near the BSA.

Scientific Name Common Name	Status Federal/State		Habitat Description	Potential to Occur in Project Area
Geothlypis trichas sinuosa San Francisco (saltmarsh) common yellowthroat	--	SSC	Resides in fresh and saltwater marshes and creeks of the San Francisco Bay region. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**None.** The BSA is outside of the nesting range of this species.
Melospiza melodia pusillula Alameda song sparrow	--	SSC	Inhabits salt marshes bordering south arm of San Francisco Bay. Found in *Salicornia* marshes; nests low in *Grindelia* bushes (high enough to escape high tides) and in *Salicornia*.	**None.** The BSA is outside of the nesting range of this species.
Scetophaga petechia Yellow warbler	--	SSC	Nests and forages in thickets of riparian vegetation consisting of willows, cottonwood, sycamores, ash, or alders.	**None.** There are no riparian thickets present in the BSA.
Agelaius tricolor Tricolored blackbird	--	SSC, Candidate	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey near the colony.	**None.** There is no open water habitat or other suitable nesting habitat for this species within or near the BSA.
Mammals				
Sorex vagrans halicoetes Salt-marsh wandering shrew	--	SSC	Confined to small remnant stands of salt marsh found around the southern arm of the San Francisco Bay. Found in medium-high marsh, 6	**None.** There is no salt marsh habitat within or near the BSA.

Scientific Name **Common Name**	**Status Federal/State**		**Habitat Description**	**Potential to Occur in Project Area**
			to 8 feet above sea level, where abundant driftwood is scattered among *Salicornia*.	
Myotis yumanensis Yuma myotis	--	F.G.C.§2124,§2126	Forages for insects in open forests and woodlands with nearby water bodies. Forms maternity colonies in caves, mines, buildings, and crevices.	**Low.** There is a low potential for bats to roost in the existing overpass crossing Industrial Parkway.
Lasiurus cinereus Hoary bat	--	F.G.C.§2124, §2126	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Requires water.	**Low.** There are numerous trees within the BSA along the UPRR tracks that will be removed. Preconstruction surveys are recommended for roosting bats.
Corynorhinus townsendii Townsend's big-eared bat	--	SSC	Roosts in man-made structures such as old buildings and bridge crevices.	**None.** This species is known to be especially sensitive to human activity and noise. BART Trains crossing Industrial Parkway on the overpass produce too much noise for Townsend's big-eared bat to roost.
Antrozous pallidus Pallid bat	--	SSC	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting.	**Low.** There is a low potential for bats to roost in the existing overpass crossing Industrial Parkway.
Eumops perotis californicus Western Mastiff bat	--	SSC	Found in a variety of habitats including chaparral, cismontane woodland, coastal scrub, and valley and foothill grasslands. Roosts in	**Low.** There is a low potential for bats to roost in the existing overpass crossing Industrial Parkway.

Scientific Name Common Name	Status Federal/State		Habitat Description	Potential to Occur in Project Area
			crevices in cliff faces, high buildings, and tunnels.	
Vulpes macrotis mutica San Joaquin kit fox	FE	ST	Found in annual grasslands or grassy open stages with scattered shrubby vegetation. Needs loose-textured sandy soils for burrowing, and suitable prey base.	**None.** The BSA is outside of the range for this species.
Reithrodontomys raviventris Salt-marsh harvest mouse	FE	SE, FP	Primary habitat is pickleweed in the saline emergent wetlands of San Francisco Bay and its tributaries. Suitability of saltmarsh habitat is limited by small size, fragmentation, and lack refugial habitat[5].	**None.** There are no saline emergent wetlands within or near the BSA.
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	--	SSC	Occurs in forest habitats of moderate canopy and moderate-to-dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves, and other material.	**None.** There are no suitable thickets for nesting for this species within the BSA. No nests were observed during biological resource surveys.
Scapanus latimanus parvus Alameda Island mole		SSC	Only known from Alameda Island. Found in a variety of habitats, especially annual and	**None.** The BSA is outside of the range for this species.

Scientific Name Common Name	Status Federal/State		Habitat Description	Potential to Occur in Project Area
			perennial grasslands. Prefers moist, friable soils.	
Taxidea taxus American badger	--	SSC	Most abundant in drier, open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**None.** No dens for this species were observed during 2019 and 2020 biological resources surveys.

Notes:

- In this report, evaluation of potential presence is based upon the types of habitat that each listed species occupies and on observations made during site surveys.
- General Habitat Description taken from the California Natural Diversity Database (CDFW 2020) unless otherwise noted.
- Bats are protected under nongame mammal provisions in the California Fish and Game Code.

Status Legend

FE = Listed as endangered under the Federal Endangered Species Act (FESA)

FT = Listed as threatened under FESA

SE = Listed as endangered under the California Endangered Species Act (CESA)

ST = Listed as threatened under CESA

SSC = Species of special concern under CESA

FP = Fully Protected under CESA Fish and Game Code §2124 and 2126

Candidate = Candidate under consideration for threatened or endangered status

Rationale Definitions

None = No possibility for occurrence.

Low = Suitable habitat present; not likely to occur due to environmental constraints, but cannot be ruled as absent.

Moderate = Potential to occur based on habitat suitability and documented records in the BSA region.

High = Species has been documented within the BSA.

Chapter 4 Results: Biological Resources, Discussion of Impacts, and Mitigation

Project biologists conducted site surveys on June 7, 2019; and on February 6, March 10, April 22, May 19, 2020; and July 1, 2021. Various databases searches, and resource evaluations to determine the presence of special-status species, and their likelihood of occurrence within the BSA. Biological evaluations were also performed to determine whether critical habitats were present or had the potential to occur in the BSA. This chapter discusses these issues. Representative photos from the site visits are included in Appendix D.

4.1 Natural Communities of Special Concern

As described in Section 3.2.1, Natural Communities of Special Concern are recurring associations of plants and animals found in particular locations with specific physical conditions. These communities may have high species diversity, high productivity, limited distribution, decreasing range, or unusual characteristics. The following section identifies potential impacts on natural communities of special concern within the BSA.

4.1.1 Survey Results

As shown in Table 3 above, two natural communities of special concern (Northern coast salt marsh and valley needlegrass grassland) were listed in the six quadrant CNDDB search. However, neither of these natural communities have records of occurring within 5 miles of the BSA. Therefore, there will be no impacts to these communities, so no impacts discussion or AMMs are included.

4.2 Potential Wetlands and Other Waters of the U.S. and Waters of the State

This section provides discussion of potential wetlands and "Other Waters of the U.S." that would be subject to USACE jurisdiction under Section 404 of the Clean Water Act (CWA).

4.2.1 Wetlands and Other Waters of the U.S. and Waters of the State

According to the USACE (Federal Register 1986) wetlands are transitional areas (i.e., inundated for a long enough period of time to support vegetation adapted for life in saturated conditions) between aquatic resources and upland areas. These include swamps, marshes, bogs, and fens. Under 33 Code of Federal Regulations (CFR) Part 328.3(a) and 40 (CFR) part 230.3(s), Waters of the U.S. are defined as:

> All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.

The USACE has primary federal responsibility for administering regulations that concern waters and wetlands. The USACE acts under two statutory authorities. Wetlands and other water resources (e.g., rivers, streams, and natural basins) are a subset of Waters of the U.S. and receive protection under Section 404 of the federal CWA. Additionally, the Rivers and Harbors Act (Sections 9 and 10) govern specified activities in Waters of the U.S. including wetlands.

The California Water Code defines Waters of the State as “any surface water or groundwater, including saline waters, within the boundaries of the State” (Water Code Section 13050[e]). Waters of the State include all Waters of the U.S. as well as isolated wetlands, disjunct streams, and stream areas above the Ordinary High Water Mark either to the top of bank or farthest extent of riparian vegetation. The RWQCB and CDFW may exercise jurisdiction over impacts to Waters of the State and the RWQCB may also regulate discharges into the Waters of the State.

4.2.1.1 SURVEY RESULTS

Three wetlands were delineated within the BSA and were determined to be potentially jurisdictional under Section 404 and 401 of the CWA and thus subject to regulation under the USACE and RWQCB. These wetlands, designated as Potential Wetland (PW) 1, PW 2, and PW 3 (Figure 7), satisfy the three-parameter definition of a wetland as defined by the USACE. The combined area of these wetlands is 0.652 acres (ac) (28,401 square feet [sq. ft]). Refer to Appendix E for maps of delineated aquatic resources within the BSA.

A drainage feature towards the north end of the BSA adjacent to Industrial Parkway was determined to be potentially jurisdictional under Section 404 and 401 of the CWA. This feature was delineated on July 1, 2021 and still had flow despite drought conditions.

Another drainage feature runs through the center of the HMC yard for considerable length. This drainage feature was designated as waters of the State (WS) 1 (Figure 8) and is segmented by three culverts along its length. This ditch was determined to be non-jurisdictional by USACE (see Aquatic Resources Delineation attachments in Appendix E).

The final delineated feature is another drainage designated as WS 2 (Figure 8). This drainage is shorter than WS 1 and originates in the middle of the yard and directs flow towards the western boundary of the HMC.

Table 6 provides a list of the potential USACE, RWQCB, and CDFW jurisdictional areas that were delineated within the BSA.

Figure 7. Aquatic Resources Delineation (1 of 2)

Source: WRECO, 2022

Figure 8. Aquatic Resources Delineation (2 of 2)

Source: WRECO, 2022

Table 6. Potential Jurisdictional Wetlands and Waters in the BSA

Feature ID	USACE Jurisdictional Area	RWQCB Jurisdictional Area
Potential Wetlands of the U.S. (PW)		
PW 1	24,045 sq. ft 0.552 ac	24,045 sq. ft 0.552 ac
PW 2	2,701 sq. ft 0.062 ac	2,701 sq. ft 0.062 ac
PW 3	1,655 sq. ft 0.038 ac	1,655 sq. ft 0.038 ac
Potential Other Waters of the U.S. (OWUS)		
OWUS 2	3,348 sq. ft 0.077 ac 106 linear ft	3,348 sq. ft 0.077 ac 106 linear ft
Potential Non-Federal Waters of the State (WS)		
WS 1 (non-federal)	N/A	35,464 sq. ft 0.814 ac 5,542 linear ft
WS 2 (non-federal)	N/A	8,022 sq. ft 0.184 ac 997 linear ft
Riparian Habitat (RIP)		
RIP 1 (riparian habitat above OWUS 2)	N/A	3,715 sq. ft 0.085 ac 129 linear ft
Totals		
Total Wetlands.	*28,401 sq. ft* *0.652 ac*	*28,401 sq. ft* *0.652 ac*
Total Other Waters of the U.S.	*3,348 sq. ft* *0.077 ac* *106 linear ft*	*3,348 sq. ft* *0.077 ac* *106 linear ft*
Total Non-Federal Waters of the State	*0 sq. ft* *0 ac* *0 linear ft*	*3,715 sq. ft* *0.085 ac* *6,797linear ft*
Total Riparian Habitat	N/A	*3,715 sq. ft* *0.085 ac* *129 linear ft*

4.2.1.2 Project Impacts

The construction of the bioretention basin would impact the entire PW 1 wetland area, and the proposed wetland mitigation area would impact the entire PW 3 wetland area. The conversion of the drainage to an underground culvert system, which comprises jurisdictional areas PW 2.

BART has received an Approved Jurisdictional Determination (AJD) from the USACE for portions of the drainage designated as Ditch 1 and Ditch (culverted). These two portions, accounting for 4,301 linear feet of the drainage, were determined to not fall under USACE jurisdiction.

Feature Other Waters of the U.S. (OWUS) 2 falls under USACE and RWQCB jurisdiction, and is within RWQCB and CDFW jurisdiction. Impacts to OWUS 2 are not expected to occur, but 0.009 ac (377 sq. ft) of the riparian habitat is expected to temporarily impacted by the construction of a track overpass crossing Industrial Parkway.

The entirety of the 5,542 linear feet drainage designated as WS 1 is subject to regulation under the RWQCB and CDFW. The vast majority of WS 1 will be converted to an underground culvert system, which would result in 0.760 ac (33,102 sq. ft) and 4,991 linear feet of impacts to the drainage. An additional drainage within RWQWCB jurisdiction designated as WS 2 would have 0.038 ac (1,656 sq. ft) and 210 linear feet of permanent impacts associated with the construction of a pedestrian/golf cart bridge crossing.

Table 7 below describes the impacts to each aquatic feature as well as the USACE and RWQCB jurisdictional areas.

Table 7. Potential Wetlands and Other Waters within the BSA and Proposed Impacts

Feature ID	USACE Jurisdictional Area	RWQCB Jurisdictional Area	Impacts to USACE Jurisdictional Area	Impacts to RWQCB Jurisdictional Area
Potential Wetlands of the U.S. (PW)				
PW 1	24,045 sq. ft 0.552 ac	24,045 sq. ft 0.552 ac	24,045 sq. ft 0.552 ac	24,045 sq. ft 0.552 ac
PW 2	2,701 sq. ft 0.062 ac	2,701 sq. ft 0.062 ac	2,701 sq. ft 0.062 ac	2,701 sq. ft 0.062 ac
PW 3	1,655 sq. ft 0.038 ac	1,655 sq. ft 0.038 ac	1,655 sq. ft 0.038 ac	1,655 sq. ft 0.038 ac
Potential Other Waters of the U.S. (OWUS)				
OWUS 2	3,348 sq. ft 0.077 ac 106 linear ft	3,348 sq. ft 0.077 ac 106 linear ft	None	None
Potential Non-Federal Waters of the State (WS)				
WS 1 (non-federal)	N/A	35,464 sq. ft 0.814 ac 5,542 linear ft	N/A	33,102 sq. ft 0.760 ac 4,991 linear ft
WS 2 (non-federal)	N/A	8,022 sq. ft 0.184 ac 997 linear ft	N/A	1,656 sq. ft 0.038 ac 210 linear ft
Riparian Habitat (RIP)				
RIP 1 (riparian habitat above OWUS 2)	N/A	3,715 sq. ft 0.085 ac 129 linear ft	N/A	377 sq. ft 0.009 ac 18 linear ft
Totals				
Total Wetlands	*28,401 sq. ft* *0.652 ac*	*28,401 sq. ft* *0.652 ac*	*28,401 sq. ft* *0.652 ac*	*28,401 sq. ft* *0.652 ac*
Total Other Waters of the U.S.	*3,348 sq. ft* *0.077 ac* *106 linear ft*	*3,348 sq. ft* *0.077 ac* *106 linear ft*	None	None
Total Non-Federal Waters of the State	*N/A*	*43,486 sq. ft* *0.998 ac* *6,539 linear ft*	*N/A*	*34,758 sq. ft* *0.798 ac* *5,201 linear ft*
Total Riparian Habitat	*N/A*	*3,715 sq. ft* *0.085 ac* *129 linear ft*	*N/A*	*377 sq. ft* *0.009 ac* *18 linear ft*

4.2.2 Avoidance and Minimization Measures/Compensatory Mitigation

The total impacts to wetlands would be 0.652 ac (28,401 sq. ft). No impacts to non-wetland waters of the U.S. are anticipated. Total impacts to waters of the State would be 0.798 ac (34,758 square feet) and 5,201 linear feet. Total impacts to riparian habitat under CDFW jurisdiction would be 0.009 ac (337 sq. ft) and 18 linear feet. These impacts would require compensatory mitigation. BART is in the process of locating mitigation that would be suitable to the USACE, RWQCB, and CDFW.

4.3 Special-Status Plant Species

Thirty-eight (38) special-status plant species that resulted from the combined USFWS, CNPS, and CDFW database lists for the BSA quadrangles were evaluated for potential occurrence. Reconnaissance level botanical surveys were conducted at the site on February 6, March 10, and May 19, 2020. No special-status plant species were observed in the BSA. This is likely due to the high degree of disturbance associated with the development of the UPRR tracks, BART tracks, and HMC yard.

Biologists determined it is highly unlikely special-status plants would occur in the BSA based upon the types of habitat that each listed species occupies, historical records, and observations made during focused botanical surveys. In general, historical and ongoing disturbance within the BSA has degraded the integrity of the historical vegetation communities, limiting the potential for many special-status plants to occur in the BSA.

4.4 Special-Status Wildlife

Forty (40) special-status wildlife species that resulted from the combined USFWS, and CNDDB database lists for the BSA quadrangles were evaluated for potential presence. Reconnaissance surveys were conducted during the site visits on February 6, March 10, and May 19, 2020. Based upon observations made in the field, and habitats present, there is potential for two special status species to occur; these include burrowing owl and white-tailed kite.

4.4.1 Burrowing Owl

The western burrowing owl (*Athene cunicularia*) is a California SSC (breeding) and has no federal listing status. This small owl has sandy coloring on the head, back, and upper parts of the wings and white-to-cream with barring on the breast and belly. Burrowing owls live year-round in several parts of the state, including the Central Valley. The burrowing owl lives in grassland habitat but has adapted well to some agricultural and developed areas that have suitable burrows for roosting and nesting in relatively short vegetation. Nesting habitat consists of open areas with mammal burrows, typically created by ground squirrels, but the owls can dig their own burrows in soft soil (Shuford and Gardali, 2008).

While there are no CNDDB records for burrowing owl within a 5-mile radius of the BSA, this species is highly transient and given the suitable habitat within the BSA, its potential to nest in the grasslands at the site cannot be ruled out entirely.

With the implementation of AMMs described below, the proposed Project will have no impact on burrowing owl.

4.4.1.1 Avoidance and Minimization Measures

In addition to the AMMs listed in Table 8, the following AMMs will be implemented to prevent Project impacts to burrowing owl:

Pre-construction nesting bird surveys during burrowing owl breeding season (February 1 through August 31) will be conducted by a qualified biologist no more than 48 hours prior to the commencement of construction. If an active nest is found within 200 feet of the Project limits, the biologist will consult with CDFW to determine if additional AMMs are applicable.

Conduct Worker Environmental Awareness Training regarding potential sensitive species that could occur in or near the BSA, including burrowing owl.

No impacts are anticipated, and no compensatory mitigation is proposed.

4.4.2 White-tailed Kite

The white-tailed kite (*Elanus leucurus*) is a state, fully protected (FP) species and is also protected under the federal MBTA. This white hawk can be observed foraging for rodents while hovering above open grasslands, agricultural fields, and wetlands. In California, the white-tailed kite ranges from the coastline east to the Sierras and is patchily distributed from Eureka to the southern California border. They are mostly year-round residents but move in response to prey abundance (Moore, 2000).

White-tailed kites take cover and build nests in trees and tall shrubs with dense canopies. Their nests are situated near open foraging areas and are constructed of loosely piled sticks and twigs in the fork near the top of a tree or bush (Polite, 2005). Suitable nesting trees are present in the residential areas immediately east of the HMC property.

During February 2020 field surveys, a pair of kites were observed displaying courtship behavior. They appeared to be searching for a suitable nesting tree. During surveys conducted in May 2020 the pair were observed foraging and returning frequently to a nest in a tall tree in the back yard of a residence located approximately 50 feet east of the UPRR tracks. There is a high potential that they will continue to nest in the vicinity.

4.4.2.1 AVOIDANCE AND MINIMIZATION MEASURES

In addition to the AMMs listed in Table 8, the following AMMs will be implemented to prevent Project impacts to white-tailed kite:

- Pre-construction nesting bird surveys during kite breeding season (February 1 through August 31) will be conducted by a qualified biologist no more than 48 hours prior to the commencement of construction. If an active nest is found within 300 feet of the Project limits, the biologist will establish a protective buffer zone along the edge of the 300 feet radius The buffer zones will be delineated with high-visibility environmentally sensitive area (ESA) fencing or demarcated with pin flags or ribbon, as applicable based on-site conditions. If it becomes necessary for work to occur in closer proximity to a nest, the Project biologist may develop a nest monitoring plan in coordination with BART that will include continual monitoring of the nest as construction moves closer. If at any time the biologist determines that activities may cause nest abandonment, construction activity in that area must cease.

Conduct Worker Environmental Awareness Training regarding potential sensitive species that could occur in or near the BSA, including white-tailed kite.

4.5 Pallid Bat

The pallid bat (*Antrozous pallidus*) is a State species of special concern. It occurs throughout most of California in lower elevations in a wide variety of habitats including grasslands, shrublands, woodlands, and forests. Day roost and hibernation roost sites include caves, rock or bridge crevices, buildings, and hollow trees. At night they roost usually in the open near foliage or in open buildings. Pallid bats leave their day roost an hour after sunset capturing their prey on vegetation or on the ground. They hibernate in the winter near the summer day roost. Maternity colonies form in early April and may have between a dozen to 100 individuals (Harris 2005). The young are born between April to July.

The only CNDDB records for pallid bat are from museum specimens (#129, #130) with vague collection data though this does not rule out the potential presence of this species in the Project vicinity because bat surveys may not have been conducted in the area. There is a low potential that pallid bats could roost in crevices beneath the BART overpass over Industrial Boulevard. The noise and vibration caused by the frequent BART train crossings make it unlikely that they would roost in the structure.

4.5.1.1 Avoidance and Minimization Measures

The overpass structure will not be altered. Work near the structure will occur immediately east. If pallid bats are roosting in the structure, it is not likely that construction activity would disturb them because the area is highly trafficked.

4.6 Migratory Birds

Under the MBTA and California F.G.C. Sections 3503 and 3800, migratory birds, their nests, and eggs are protected from disturbance or destruction. All birds are protected under the MBTA and except for non-native species such as the European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), and rock pigeon (*Columbia livia*), as well as game species that are subject to limited protection. Whereas, all species of birds are protected under the California F.G.C.

Birds protected by the MBTA and California F.G.C. Sections 3503 and 3800 were observed within the BSA. No focused nesting surveys have been conducted for the purposes of this report.

4.6.1 Avoidance and Minimization Efforts

The following AMMs will be implemented to reduce potential impacts to nesting birds:

- If Project work occurs during the bird nesting season (February 1 – August 31), pre-construction nesting bird surveys will be conducted prior to the removal of trees or vegetation. If an active bird nest is identified, a protective buffer will be established around the nest. The standard buffer will be 50 feet for passerines (perching songbirds), 100 feet for egrets and herons, 200 feet for raptors, and 500 feet for peregrine falcon. The buffer zones will be delineated with high-visibility environmentally sensitive area (ESA) fencing or demarcated with pin flags or ribbon, as applicable based on-site conditions. If it becomes necessary for work to occur in closer proximity to a nest, the Project biologist may develop a nest monitoring plan in coordination with BART that will include continual monitoring of the nest as construction moves closer. If at any time the biologist determines that activities may cause nest abandonment, construction activity in that area must cease.
- Trees and native shrubs will be preserved in place to the extent practicable to avoid possible nest disruption.
- Conduct Worker Environmental Awareness Training regarding the MBTA and the importance of protecting migratory and nesting birds including repercussions of disrupting active nests.

No impacts are anticipated to occur to migratory nesting birds and therefore, no compensatory mitigation actions are proposed.

4.7 Roosting Bats

Several species of bats are considered Species of Concern by the State of California, including: pallid bat, Townsend's big-eared bat, spotted bat, western red bat, and western mastiff bat. In addition to bat species listed as sensitive by the resource agencies, state laws protect bats and their occupied roosts from harassment and destruction. Protection under California Law is found in the Fish and Game Code Sections 2000, 2002, 2014 and 4150, and under California Code of Regulations Section 251.1.

Bats are commonly found in association with many habitats, often with a source of water nearby that attract insects upon which bats forage. Some species of bats almost exclusively roost in hollowed trees, peeling bark, and tree foliage. These species require trees for some or all of the following activities, depending on the species: thermal regulation, predator avoidance, maternity roosting, and for resting between foraging flights. Bat species that depend on trees for roosting include:

- Yuma myotis
- western red bat
- hoary bat
- pallid bat

With the incorporation of AMMs, no impacts to roosting bats are anticipated.

4.7.1 Avoidance and Minimization Measures

Project-related impacts to sensitive bat species can be avoided or minimized by the following avoidance and minimization measures:

- To the extent practicable, structures or trees will be removed from September 1 to March 1, outside of the breeding season, so as not to disturb maternal colonies or roosts.
- Preconstruction surveys will be conducted for all areas that provide suitable bat roosting habitat including manmade structures, snags, rotten stumps, mature trees with broken limbs, exfoliating bark, dense foliage, etc. Sensitive habitat areas and roost sites will be avoided to the maximum extent practicable.
- If potential roost sites (trees, snags, etc.) are to be removed or trimmed, limbs smaller than 3 inches in diameter will be cut and the tree shall be left overnight to allow for any bats using the tree/snag for roosting time to leave and find another roost. A biological monitor will be present during the trimming or removal of trees/snags.

4.8 Trees

Applicable tree ordinances and their requirements are discussed below.

4.8.1 City of Hayward Tree Ordinance

As discussed in Mitigation Measure BIO-4 of the Project's 2011 IS/MND, mitigation shall be required for impacts to trees designated as "protected trees" in the cities of Hayward or Union City. Per the City of Hayward tree ordinance (2020), protected trees are defined in Section 10-15.13 of Article 15 as:

- Trees having a minimum trunk diameter of 8 inches measured 54 inches above the ground. For multi-trunk trees, the diameters of the three largest trunks must be added together.
- A tree or trees of any size planted as replacement for a protected tree.
- Trees of the following species that have reached a minimum of four inches diameter truck size:
  - California big leaf maple (*Acer macrophyllum*)
  - California buckeye (*Aesculus californica*)
  - Madrone (*Arbutus menziesii*)
  - Western dogwood (*Cornus nuttallii*)
  - California sycamore (*Plantanus racemosa*)
  - Coast live oak (*Quercus agrifolia*)
  - Canyon live oak (*Q. chrysolepis*)
  - Blue oak (*Q. douglassii*)
  - Oregon white oak (*Q. garryana*)
  - California black oak (*Q. kelloggi*)
  - Valley oak (*Q. lobata*)
  - Interior live oak (*Q. wislizenii*)
  - California bay (*Umbellularia californica*)

Per BIO-4, replacement trees will be a native tree species. Each removed tree meeting the above classifications will be replaced at a 1:1 ratio. Trees will be planted in locations suitable for the replacement species. Selection of the replacement sites and installation of replacement plantings will be supervised by a qualified botanist. Trees will be replaced as soon as practical after construction is completed. A qualified botanist will monitor newly planted trees at least once a year for 5 years. Each year during that period, any trees that do not survive will be replaced. Any trees planted as remediation for failed plantings will be planted as stipulated here for original plantings, and will be monitored for a period of 5 years following installation.

4.8.1.1 Project Impacts

A total of 52 trees that fall within the City of Hayward protected trees definition will be removed. Some trimming will occur for construction access.

4.8.1.2 Avoidance and Minimization Measures

Tree removal will be minimized to the extent possible. Trees that remain will be protected from impacts during construction. Tree removed will be replaced at a 1:1 ratio as described in the 2011 IS/MND mitigation measure BIO-4.

4.9 Combined Avoidance and Minimization Measures

Table 8 lists all of the proposed AMMs intended to ensure that the Project is in compliance with regulations governing biological resources.

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Table 8. Avoidance and Minimization Measures

Avoidance and Minimization Measures	**Description**
Protect Environmentally Sensitive Areas	• Preserve and protect trees in place to the extent practicable. • Dispose of all spoils, excavated materials, and plant materials at a licensed and approved facility.
Conduct Environmental Awareness Training	• Conduct Worker Environmental Awareness Training regarding potential sensitive species that could occur in or near the BSA, including burrowing owl, white-tailed kite, migratory birds, and roosting bats.
Implement Erosion Control Measures and Storm Water Pollution Prevention Plans	Storm Water Pollution Prevention Plans (SWPPP) and erosion control BMPs would be developed to minimize any wind erosion or storm water runoff. The SWPPP will provide guidance for design staff to include provisions for sediment removal, contracts to include measures to protect sensitive areas, and to prevent and minimize stormwater and non-stormwater discharges. Protective measures would include, but are not limited to these restrictions: • No discharge of pollutants from vehicle and equipment cleaning must be allowed into storm drains or watercourses. • Vehicle and equipment fueling, and maintenance operations must be at least 50 feet away from watercourses; except at established commercial gas stations or established vehicle maintenance facility.

Table 8. Avoidance and Minimization Measures

Avoidance and Minimization Measures	Description
Implement Project Site Best Management Practices (BMP) and Water Quality Protection	• Access routes and the number and size of staging and work areas would be limited to existing paved surfaces and previously disturbed areas as practicable. • All food and food-related trash items must be placed in trash containers and removed from the site at the end of each day. • No pets, such as dogs, cats, owned by Project personnel will be allowed anywhere in the BSA during construction to prevent harassment, mortality of native plants, wildlife, or destruction of habitats. • All equipment must be maintained in staging areas to avoid leaks (e.g. automotive fluids, gasoline, oils, or solvents). Hazardous materials such as fuels, oils, solvents, etc. will be stored in sealable containers at designated locations (at least 100 feet from aquatic habitats). A Spill Response Plan (including emergency contacts) would be prepared and kept at the site to address all spill response and emergency issues. • No firearms will be allowed except for those allowed to be carried by authorized security personnel, local, State, or Federal law enforcement officials. • To the extent practicable, sediment discharge and construction runoff will be contained to the Project vicinity in areas away from watercourses, storm drains and sensitive biological areas.
Roosting bats	• To the extent practicable, trees will be removed from September 1 to March 1, outside of the breeding season, so as not to disturb maternal colonies or roosts. • Preconstruction surveys will be conducted for all areas that provide suitable bat roosting habitat including manmade structures, snags, rotten stumps, mature trees with broken limbs, exfoliating bark, dense foliage, etc. Sensitive habitat areas and roost sites will be avoided to the maximum extent possible. • If potential roost sites (trees, snags, etc.) are to be removed or trimmed, limbs smaller than 3 inches in diameter will be cut and the tree shall be left overnight to allow for any bats using the tree/snag for roosting time to leave and find another roost. A biological monitor will be present during the trimming or removal of trees/snags.

Table 8. Avoidance and Minimization Measures

Avoidance and Minimization Measures	Description
Migratory Birds	• If Project work occurs during the bird nesting season (February 1 – August 31), pre-construction nesting bird surveys will be conducted prior to the removal of trees or vegetation. If an active bird nest is identified, a protective buffer will be established around the nest. The standard buffer will be 50 feet for passerines (perching songbirds), 100 feet for egrets and herons, 200 feet for raptors, and 500 feet for peregrine falcon. The buffer zones will be delineated with high-visibility environmentally sensitive area (ESA) fencing or demarcated with pin flags or ribbon, as applicable based on-site conditions. If it becomes necessary for work to occur in closer proximity to a nest, the Project biologist may develop a nest monitoring plan in coordination with BART that will include continual monitoring of the nest as construction moves closer. If at any time the biologist determines that activities may cause nest abandonment, construction activity in that area must cease. • Trees and native shrubs will be preserved in place to the extent practicable to avoid possible nest disruption. • Conduct Worker Environmental Awareness Training regarding the MBTA and the importance of protecting migratory and nesting birds including repercussions of disrupting active nests.

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Chapter 5 Conclusions and Regulatory Determination

5.1 Federal Endangered Species Act

This Project would have no effect on federally listed plant or wildlife species. This finding has been made for all federally listed species identified in the USFWS species lists requested for the proposed Project. No critical habitat would be affected as a result of Project activities. Federal agencies with oversight on the Project will make a final effects determination based on the information provided in this document.

5.2 California Endangered Species Act

There is no potential for special-status species protected under the CESA to occur in the Project area. With the implementation of AMMs, the Project would not impact CESA-listed species.

5.3 California Environmental Quality Act

CEQA California Public Resources Code §§21000-21177 requires state agencies, local governments and special district to evaluate and disclose impacts from projects to State designated Species of Special Concern. Burrowing owl is an SSC species that could occur in the BSA. With the implementation of AMMs, the Project would not impacts fully protected species.

5.4 California Fish and Game Code – Fully Protected Species

California Fish and Game Code Sections 3511, 4700, 5050, and 5515 lists species that are fully protected. Fully protected species may not be taken or possessed at any time unless specifically allowed by CDFW. A pair of white-tailed kites, state fully protected species, are known to have nested just beyond the BSA in 2019. With the implementation of AMMs, the Project would not impact fully protected species.

5.5 Wetlands and Other Waters

Aquatic resources identified in Section 4.2.1.1 are subject to Sections 401 and 404 of the Clean Water Act, and section 1602 of the California Fish and Game Code.

BART has received an Approved Jurisdictional Determination (AJD) from USACE for the drainage with areas designated as Ditch 1 and Ditch (culverted). These portions of the drainage were found to be non-jurisdictional.

In addition to the AJD, BART also received a Preliminary Jurisdictional Determination (PJD) (see attachments to the Aquatic Resources Delineation Report in Appendix E) from USACE for the wetlands designated as PW 1 and PW 2. These wetlands were found to be jurisdictional under Section 404 of the CWA.

The total impacts to wetlands would be 0.652 ac (28,401 sq. ft). Total impacts to waters of the State would be 0.798 ac (34,758 square feet) and 5,201 linear feet. Total impacts to riparian habitat under CDFW jurisdiction would be 0.009 ac (337 sq. ft) and 18 linear feet. These impacts would require compensatory mitigation. BART is in the process of locating mitigation that would be suitable to the USACE, RWQCB, and CDFW.

5.6 Other

5.6.1 Migratory Bird Treaty Act and Fish and Game Code §§ 3503 and 3800

Numerous bird species protected under the MBTA and F.G.C. are likely to nest in structures and vegetation in the BSA. To protect nesting birds, prior to vegetation or tree removal, pre-construction nesting bird surveys will be conducted by a qualified biologist during the typical nesting season, February 1 through August 31. If an active nest is found, the biologist will establish protective buffers around the nests, which will remain in place until it is determined the nest is no longer active. The standard buffer will be 50 feet for passerines (perching songbirds), 200 feet for raptors. If a federal threatened or endangered species is found within the BSA, consultation will occur with USFWS. If a state-listed, special-status species is found that was not addressed in this BRS, consultation will occur with CDFW.

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Appendix A Project Components Exhibits

LSA

LEGEND

Project Site

Project Components

East Side Yard

Northern Mainline Connector

0 400 800

FEET

FIGURE 5

BART HMC2 Project Supplemental IS/MND

Project Components

SOURCE: Google Maps (2021).

I:\WRO2001\GIS\Maps\IS-MND\Figure 5_Project Components.mxd (1/22/2022)

LSA

FIGURE 6

LEGEND

Project Site

0 250 500

FEET

SOURCE: Microsoft Bing (2021).

BART HMC2 Project Supplemental IS/MND

East Side Yard

I:\WRO2001\GIS\Maps\IS-MND\Figure 6_East Side Yard.mxd (1/22/2022)

LSA

LEGEND

Project Site

N

0 250 500
FEET

SOURCE: Microsoft Bing (2021).

FIGURE 7

BART HMC2 Project Supplemental IS/MND

Northern Mainline Connector

I:\WRO2001\GIS\Maps\IS-MND\Figure 7_Northern Mainline Connector.mxd (1/22/2022)

Appendix B Observed Plant and Wildlife Species Lists

Table 1. Observed Plant Species

Scientific Name	Common Name	Native Status
Arundo donax	Giant reed	Non-native
Avena fatua	Wild oat	Non-native
Baccharis pilularis	Coyote brush	Native
Brassica sp.	Mustard	Non-Native
Bromus hordeaceus	Soft chest	Non-native
Bromus diandrus	Ripgut brome	Non-native
Carduus pycnocephalus	Italian thistle	Non-native
Carex sp.	Sedge	Native
Centaurea solstitialis	Yellow star-thistle	Non-native
Cirsium vulgare	Bull thistle	Non-native
Conium maculatum	Poison hemlock	Non-native
Convolvulus arvensis	Field bindweed	Non-native
Cynodon dactylon	Bermuda grass	Non-native
Cynosurus echinatus	Dogtail grass	Non-native
Cyperus eragrostis	Tall flatsedge	Native
Dipsacus fullonum	Common teasel	Non-native
Distichlis spicata	Inland saltgrass	Native
Echinochloa colona	Jungle rice	Non-native
Eschscholzia californica	California poppy	Native
Foeniculum vulgare	Sweet fennel	Non-native
Hedera helix	English Ivy	Non-native
Helminthotheca echioides	Bristly ox-tongue	Non-Native

Scientific Name	Common Name	Native Status
Geranium dissectum	Cutleaf geranium	Non-native
Grindelia camporum	Common gumplant	Native
Juncus effusus	Bog rush	Native
Lactuca serriola	Prickly lettuce	Non-native
Lolium perenne	Italian ryegrass	Non-native
Lotus corniculatus	Bird's foot trefoil	Non-Native
Malva neglecta	Common mallow	Non-native
Malva nicaeensis	Bull mallow	Non-native
Phalaris aquatica	Harding grass	Non-native
Poa travialis	Rough bluegrass	Non-native
Quercus agrifolia	Coast live oak	Native
Quercus lobata	Valley oak	Native
Raphanus sativus	Wild radish	Non-native
Rumex crispus	Curly dock	Non-native
Salix sp.	Willow	Native
Schoenoplectus acutus	Hardstem bulrush	Native
Sonchus asper	Spiny sowthistle	Non-native
Sonchus oleraceus	Common sow thistle	Non-native
Toxicodendron diversilobum	Poison oak	Native
Tragopogon porrifolius	Purple salsify	Non-native
Trifolium hirtum	Rose clover	Non-native
Trifolium subterraneum	Sub clover	Non-native
Vicia sativa	Spring vetch	Non-native
Vicia tetrasperma	Slender vetch	Non-native

Table 2. Observed Plant Species

Scientific Name	***Common Name***
Mammals	
Felis catus	Feral cat
Procyon lotor	racoon
Birds	
Anas platyrhynchos	Mallard
Aeronautes saxatalis	White-throated swift
Calypte anna	Anna’s hummingbird
Egretta thula	Snowy egret
Carthartes aura	Turkey vulture
Elanus leucurus	White-tailed kite
Buteo jamaicensis	Red-tailed hawk
Sayornis nigricans	Black phoebe
Corvus brachyrhynchose	American crow
Corvus corax	Common raven
Petrochelidon pyrrhonota	Cliff swallow
Sturnus vulgaris	European starling
Mimus polyglottos	Northern mockingbird
Euphagus cyanocephalus	Brewer’s blackbird

Appendix C CNDDB, CNPS and USFWS Lists

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Hayward (3712261) OR San Leandro (3712262) OR Redwood Point (3712252) OR Newark (3712251) OR Dublin (3712168) OR Niles (3712158))
 AND Taxonomic Group IS (Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Balsamorhiza macrolepis big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
Campanula exigua chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T1T2	S1S2	1B.1
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Chorizanthe robusta var. robusta robust spineflower	PDPGN040Q2	Endangered	None	G2T1	S1	1B.1
Clarkia concinna ssp. automixa Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3
Eryngium aristulatum var. hooveri Hoover's button-celery	PDAPI0Z043	None	None	G5T1	S1	1B.1
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Hoita strobilina Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
Holocarpha macradenia Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
Horkelia cuneata var. sericea Kellogg's horkelia	PDROS0W043	None	None	G4T1?	S1?	1B.1
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
Plagiobothrys glaber hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Polygonum marinense Marin knotweed	PDPGN0L1C0	None	None	G2Q	S2	3.1
Sanicula maritima adobe sanicle	PDAPI1Z0D0	None	Rare	G2	S2	1B.1
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
Stuckenia filiformis ssp. alpina northern slender pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
Suaeda californica California seablite	PDCHE0P020	Endangered	None	G1	S1	1B.1
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2

Record Count: 29

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Hayward (3712261) OR San Leandro (3712262) OR Redwood Point (3712252) OR Newark (3712251) OR Dublin (3712168) OR Niles (3712158))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

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
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Asio flammeus short-eared owl	ABNSB13040	None	None	G5	S3	SSC
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G2	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Charadrius nivosus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2	SSC
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T2T3	S2S3	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S1S2	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G3G4	S4	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S1	FP
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Melospiza melodia pusillula Alameda song sparrow	ABPBXA301S	None	None	G5T2T3	S2S3	SSC
Microcina lumi Lum's micro-blind harvestman	ILARA47050	None	None	G1	S1	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Nannopterum auritum double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	AMAFF08082	None	None	G5T2T3	S2S3	SSC
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
Pomatiopsis californica Pacific walker	IMGASJ9020	None	None	G1	S1	
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G3T1	S1	FP
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Rynchops niger black skimmer	ABNNM14010	None	None	G5	S2	SSC
Scapanus latimanus parvus Alameda Island mole	AMABB02031	None	None	G5T1Q	SH	SSC
Setophaga petechia yellow warbler	ABPBX03010	None	None	G5	S3S4	SSC
Sorex vagrans halicoetes salt-marsh wandering shrew	AMABA01071	None	None	G5T1	S1	SSC
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	

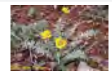
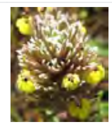
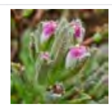
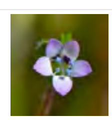
Record Count: 49

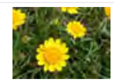
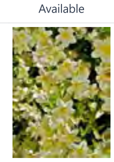
California Native Plant Society

Search Results

37 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**3712261:3712262:3712252:3712251:3712158:3712168**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	None	None	G3	S3	1B.2	 © 2011 Neal Kramer
Astragalus tener var. *tener*	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	No Photo Available
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	 ©1998 Dean Wm. Taylor
Calochortus umbellatus	Oakland star-tulip	Liliaceae	perennial bulbiferous herb	Mar-May	None	None	G3?	S3?	4.2	No Photo Available
Campanula exigua	chaparral harebell	Campanulaceae	annual herb	May-Jun	None	None	G2	S2	1B.2	No Photo Available
Castilleja ambigua var. *ambigua*	johnny-nip	Orobanchaceae	annual herb (hemiparasitic)	Mar-Aug	None	None	G4T4	S3S4	4.2	 ©2011 Dylan Neubauer
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	Asteraceae	annual herb	May-Oct(Nov)	None	None	G3T1T2	S1S2	1B.1	No Photo Available
Chloropyron maritimum ssp. *palustre*	Point Reyes salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Oct	None	None	G4?T2	S2	1B.2	 ©2017 John Doyen
Chorizanthe robusta var. *robusta*	robust spineflower	Polygonaceae	annual herb	Apr-Sep	FE	None	G2T1	S1	1B.1	No Photo Available
Clarkia concinna ssp. *automixa*	Santa Clara red ribbons	Onagraceae	annual herb	(Apr)May-Jun(Jul)	None	None	G5?T3	S3	4.3	No Photo Available
Eriogonum umbellatum var. *bahiiforme*	bay buckwheat	Polygonaceae	perennial herb	Jul-Sep	None	None	G5T3	S3	4.2	No Photo Available
Eryngium aristulatum var. *hooveri*	Hoover's button-celery	Apiaceae	annual/perennial herb	(Jun)Jul(Aug)	None	None	G5T1	S1	1B.1	No Photo Available
Eryngium jepsonii	Jepson's coyote-thistle	Apiaceae	perennial herb	Apr-Aug	None	None	G2	S2	1B.2	No Photo Available
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	No Photo Available
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	None	None	G2	S2	1B.2	 © 2004 Carol W. Witham
Gilia millefoliata	dark-eyed gilia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2	

										© 2017 John Doyen
Helianthella castanea	Diablo helianthella	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	 © 2013 Christopher Bronny
Hoita strobilina	Loma Prieta hoita	Fabaceae	perennial herb	May-Jul(Aug-Oct)	None	None	G2?	S2?	1B.1	 © 2004 Janell Hillman
Holocarpha macradenia	Santa Cruz tarplant	Asteraceae	annual herb	Jun-Oct	FT	CE	G1	S1	1B.1	 © 2011 Dylan Neubauer
Horkelia cuneata var. sericea	Kellogg's horkelia	Rosaceae	perennial herb	Apr-Sep	None	None	G4T1?	S1?	1B.1	 © 2018 Neal Kramer
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	FE	None	G1	S1	1B.1	 © 2013 Neal Kramer
Leptosiphon acicularis	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	None	None	G4?	S4?	4.2	 © 2007 Len Blumin
Leptosiphon ambiguus	serpentine leptosiphon	Polemoniaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	 © 2010 Aaron Schusteff
Leptosiphon grandiflorus	large-flowered leptosiphon	Polemoniaceae	annual herb	Apr-Aug	None	None	G3G4	S3S4	4.2	 © 2003 Doreen L. Smith
Monolopia gracilens	woodland woollythreads	Asteraceae	annual herb	(Feb)Mar-Jul	None	None	G3	S3	1B.2	 © 2016 Richard Spellenberg
Piperia michaelii	Michael's rein orchid	Orchidaceae	perennial herb	Apr-Aug	None	None	G3	S3	4.2	No Photo Available
Plagiobothrys glaber	hairless popcornflower	Boraginaceae	annual herb	Mar-May	None	None	GX	SX	1A	No Photo Available
Polemonium carneum	Oregon polemonium	Polemoniaceae	perennial herb	Apr-Sep	None	None	G3G4	S2	2B.2	 ©2018 John Doyen
Polygonum marinense	Marin knotweed	Polygonaceae	annual herb	(Apr)May-Aug(Oct)	None	None	G2Q	S2	3.1	No Photo Available
Ranunculus lobbii	Lobb's aquatic buttercup	Ranunculaceae	annual herb (aquatic)	Feb-May	None	None	G4	S3	4.2	No Photo Available
Sanicula maritima	adobe sanicle	Apiaceae	perennial herb	Feb-May	None	CR	G2	S2	1B.1	No Photo Available

										Available
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	G3	S2	2B.2	No Photo Available
Spergularia macrotheca var. longistyla	long-styled sand-spurrey	Caryophyllaceae	perennial herb	Feb-May	None	None	G5T2	S2	1B.2	No Photo Available
Streptanthus albidus ssp. peramoenus	most beautiful jewelflower	Brassicaceae	annual herb	(Mar)Apr-Sep(Oct)	None	None	G2T2	S2	1B.2	 © 1994 Robert E. Preston, Ph.D.
Stuckenia filiformis ssp. alpina	northern slender pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	May-Jul	None	None	G5T5	S2S3	2B.2	 Dana York (2016)
Suaeda californica	California seablite	Chenopodiaceae	perennial evergreen shrub	Jul-Oct	FE	None	G1	S1	1B.1	No Photo Available
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	No Photo Available

Showing 1 to 37 of 37 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website https://www.rareplants.cnps.org [accessed 18 May 2022].

CONTACT US

Send questions and comments to rareplants@cnps.org.

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CONTRIBUTORS

The Calflora Database
The California Lichen Society
California Natural Diversity Database
The Jepson Flora Project
The Consortium of California Herbaria
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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: May 18, 2022
Project Code: 2022-0043953
Project Name: Hayward Maintenance Complex (Phase 2) Project

Subject: List of threatened and endangered species that may occur in your proposed project location 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, 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 U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

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

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

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 Code 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

Project Code: 2022-0043953
Event Code: None
Project Name: Hayward Maintenance Complex (Phase 2) Project
Project Type: Railroad - New Construction
Project Description: San Francisco Bay Area Rapid Transit District (BART) proposes to construct the Hayward Maintenance Complex (Phase 2) Project (HMC2 Project), an element of the HMC Project, which was environmentally evaluated under California Environmental Quality Act (CEQA) with an Initial Study/Mitigated Negative Declaration in 2011. The HMC2 Project is subdivided into two major components, the East Side Vehicle Storage Yard and the Northern Mainline Connector.

The East Side Vehicle Storage Yard, the first component of the HMC2 Project, includes a vehicle storage yard capable of storing approximately 250 BART vehicles. The need for the East Side Vehicle Storage Yard is driven by BART's plan to increase its fleet size to accommodate a growing demand for reliable and more frequent train service to/from downtown San Francisco and Oakland.

It is estimated that construction activities will commence in summer 2024 and extend through early 2028.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.61495695,-122.0432212089792,14z

Counties: Alameda County, California

Endangered Species Act Species

There is a total of 14 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.

Mammals

NAME	STATUS
Salt Marsh Harvest Mouse *Reithrodontomys raviventris* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/613	Endangered

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) *Masticophis lateralis euryxanthus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5524	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
California Seablite *Suaeda californica* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6310	Endangered
Contra Costa Goldfields *Lasthenia conjugens* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
Santa Cruz Tarplant *Holocarpha macradenia* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6832	Threatened

Critical habitats

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

IPaC User Contact Information

Agency: County of Alameda
Name: Ashley Chan
Address: 1243 Alpine Road Suite 108
City: Walnut Creek
State: CA
Zip: 94596
Email ashley.chan@hdrinc.com
Phone: 9253959519

Appendix D Representative Photos

Photo 1. PW 1, Looking Northwest.

Photo 2. PW 1, Looking South over Project Site. Photo taken 2/6/20

Photo 3. PW 2, Looking South.

Photo 4. WS 1, Look South. **Photo taken 2/6/20**

Photo 5. WS 1, Look Northwest. **Photo taken 2/6/20**

Photo 5. OWUS 1, Facing Southwest. **Photo taken 2/6/20**

Photo 6. Potential Secondary Staging Area **Photo taken 3/10/20**

Appendix E Aquatic Resources Delineation

N

0 345 690 Feet

Aquatic Resources Delineation (1 of 2)

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Hayward Maintenance Complex Phase 2 Project

Cities of Union City and Hayward,

Alameda County, California

Prepared For:

BART

Prepared By:

WRECO

N

0 425 850 Feet

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Aquatic Resources Delineation (2 of 2)

Hayward Maintenance Complex Phase 2 Project

Cities of Union City and Hayward,

Alameda County, California

Prepared For:

BART

Prepared By:

WRECO

APPENDIX D

SECTION 4(F) ANALYSIS

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SECTION 4(F) EVALUATION

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT HAYWARD MAINTENANCE COMPLEX PHASE 2 PROJECT

HAYWARD, CA

LSA

June 2022

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SECTION 4(F) EVALUATION

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT HAYWARD MAINTENANCE COMPLEX PHASE 2 PROJECT

HAYWARD, CA

Submitted to:

San Francisco Bay Area Rapid Transit District
2150 Webster Street
Oakland, CA 94612

Prepared by:

LSA
157 Park Place
Pt. Richmond, California 94801

June 2022

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1.0 INTRODUCTION

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (U.S.C.) 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreational lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that the Secretary of Transportation may approve a transportation project requiring the use of publicly owned land of a public park, recreational area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the federal, State, or local officials having jurisdiction over the park, refuge, or site) only if:

- There is no prudent and feasible alternative to using that land; and
- The project includes all possible planning to minimize harm to the park, recreational area, wildlife and waterfowl refuge, or historic site resulting from the use.

This Section 4(f) Evaluation identifies the Section 4(f) resources in and near the San Francisco Bay Area Rapid Transit District (BART) Hayward Maintenance Complex Phase 2 Project (HMC2 Project or the proposed project) study area. The objectives of this analysis are to describe the regulatory setting, affected environment, impacts on Section 4(f) resources, and measures to minimize harm to the affected resources.

BART proposes to construct the HMC2 Project, which includes two major components – the East Storage Yard and the Northern Mainline Connector. The East Storage Yard would include vehicle storage for approximately 250 BART vehicles, as well as ancillary wayside and maintenance facilities. The Northern Mainline Connector would consist of a new trackway connection between the East Storage Yard and the BART mainline trackway. The purpose of the HMC2 Project is to expand vehicle storage capacity and improve BART operations at the existing HMC facility.

The project is subject to state and federal environmental review requirements because it involves the use of federal funds from the Federal Transit Authority (FTA). A Supplemental Initial Study/Mitigated Negative Declaration (Supplemental IS/MND) has been prepared for the proposed project in compliance with the California Environmental Quality Act (CEQA), and a Categorical Exclusion will be requested for the National Environmental Policy Act (NEPA). BART is the CEQA lead agency, and FTA is the NEPA lead agency. This Section 4(f) Evaluation has been prepared as part of the technical analysis required to support the NEPA Categorical Exclusion.

The proposed project would result in the "use" of property protected by Section 4(f) as defined in Code of Federal Regulations (CFR) 774.17 (see Section 5.0); therefore, documentation of compliance with Section 4(f) is required.

The following technical reports, prepared as part of the environmental document for the project, were used in support of the evaluation presented in this report:

- Air Quality Study, LSA, December 2021
- Noise & Vibration Technical Study, LSA, December 2021
- Biological Study Report, WRECO, December 2021
- Cultural Resources Study, LSA, January 2022

1.1 PROJECT LOCATION AND SETTING

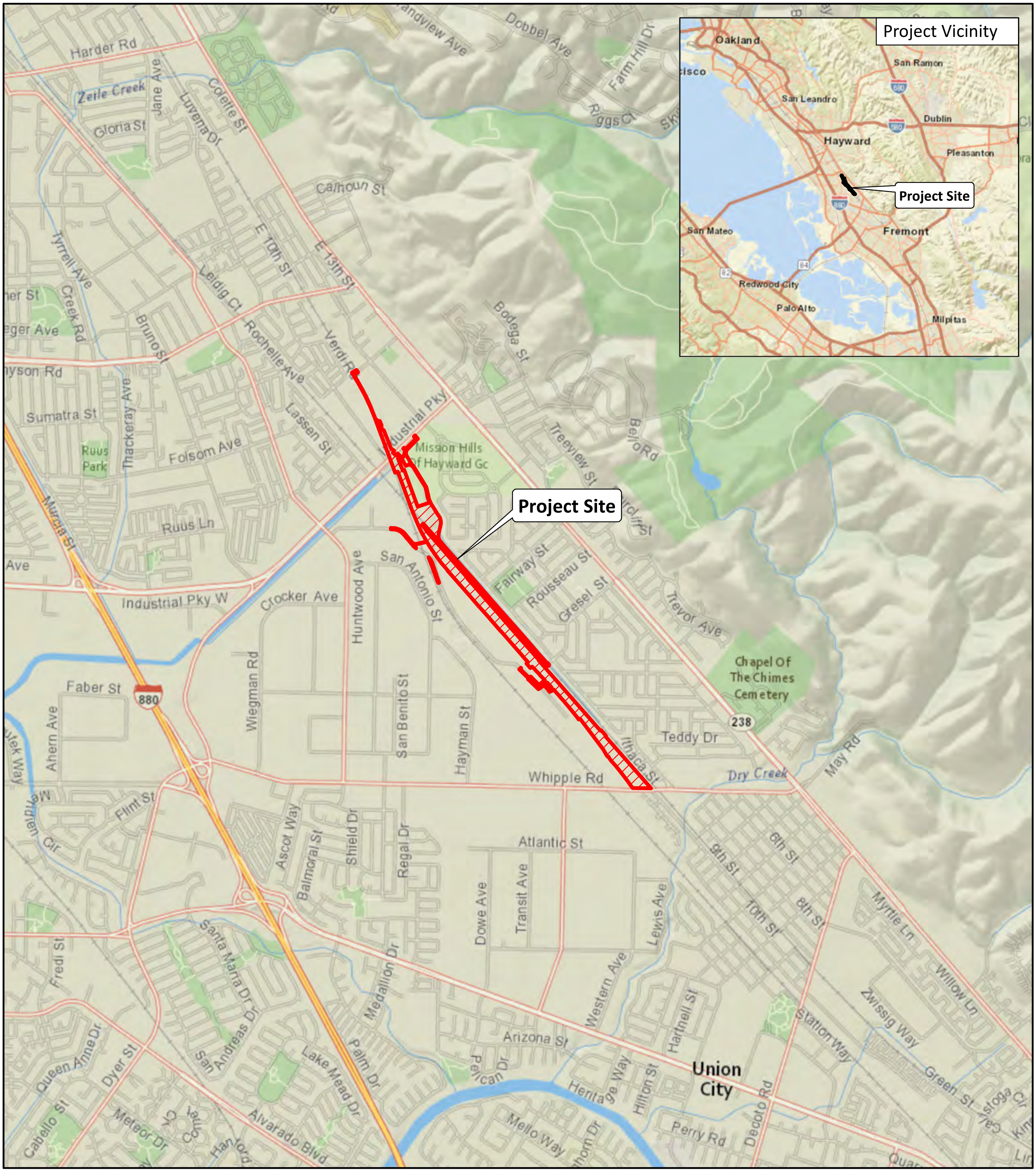
The HMC2 Project site is located at the north-eastern end of the HMC and consists of approximately 55 acres of land including portions of the existing HMC property and BART right-of-way north of Industrial Parkway. The majority of proposed improvements would be located within the HMC property, on the east side of the mainline BART tracks north of the existing maintenance and engineering facility and rail storage yard. The project site is bound by the Union Pacific Railroad (UPRR) Niles Subdivision rail line and Mission Hills of Hayward Golf Course Driving Range (golf course driving range) on the east, the BART Mainline and Hayward Test Track to the west, and the BART Rail Storage Yard to the south. The long linear corridor would extend approximately 3,600 feet north from the vehicle storage area to north of Industrial Parkway.

The project site primarily consists of undeveloped property located north of the BART Rail Storage Yard, where the East Storage Yard is proposed. The proposed facility would provide storage for approximately 250 rail vehicles and would also feature ancillary wayside and maintenance facilities needed for a fully functional, electrified, storage yard. Further north within the same undeveloped property and west of the Mission Hills of Hayward Golf Course driving range is the area where the Northern Mainline Connector is proposed. These areas consist of grasslands, with sparse patches of trees and bushes, low-lying wetland areas, a linear man-made drainage ditch, and a narrow corridor adjacent to the existing BART test track. As described further below, the project site also includes a portion of the golf course driving range. The regional location and limits of the proposed project site are shown on Figures 1 and 2, respectively.

1.2 PURPOSE AND NEED

BART has been in operation since 1972 and currently operates in five Bay Area counties. It operates and maintains 131 miles of revenue track and 50 stations serving an average of 405,000 passenger trips on an average weekday (prior to the Covid-19 pandemic). The most recent extension to the BART system was to the Berryessa/North San Jose Station in San Jose, which opened in June 2020.

The BART fleet has 669 legacy revenue vehicles and has ordered 775 “Fleet of the Future” cars. The first Fleet of the Future train carried passengers in January 2018. The size of BART's fleet will be dynamic while new trains are put into service and old trains are retired. The current forecast



LEGEND

Project Site

FIGURE 1

0 1500 3000

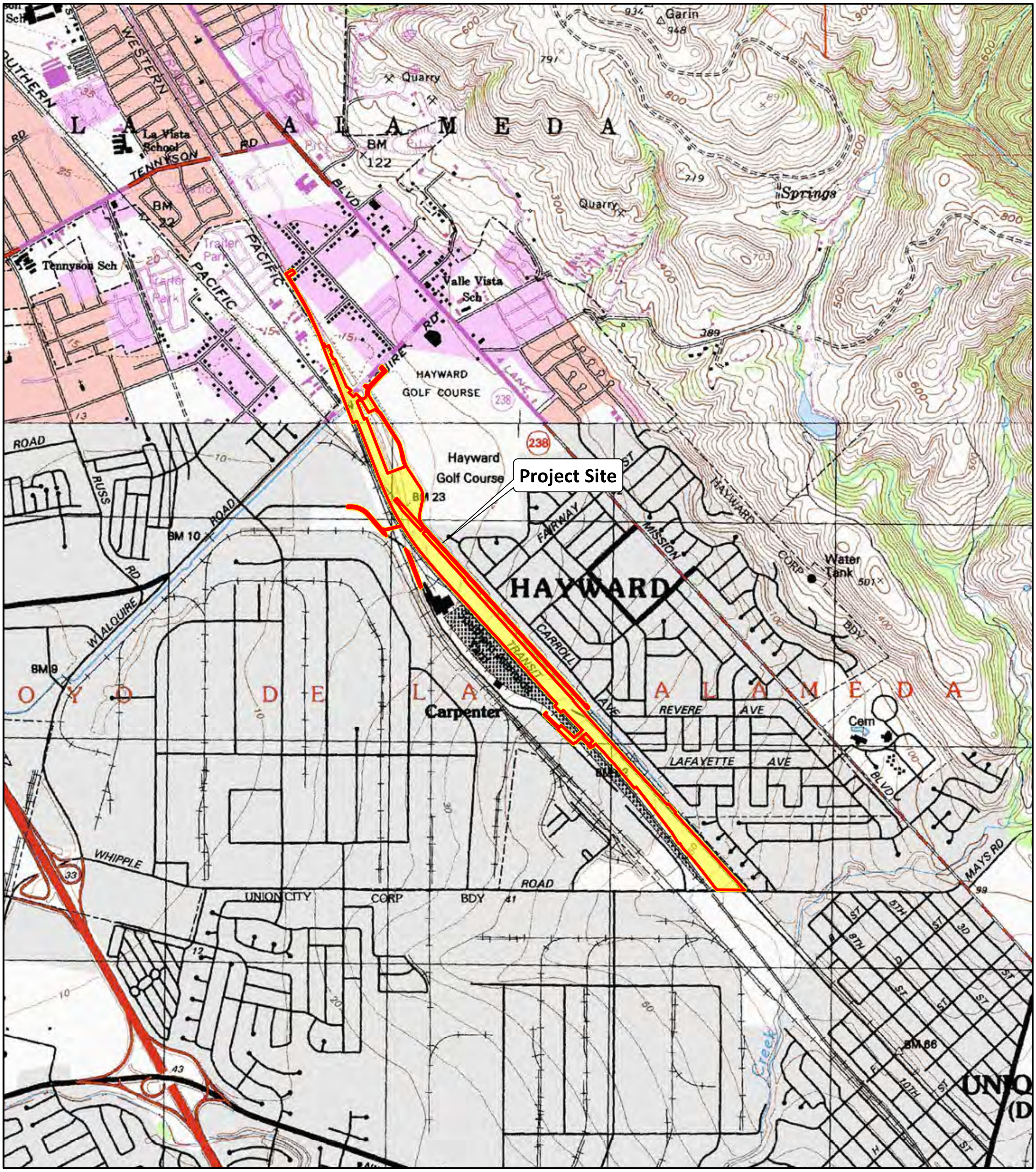
FEET

SOURCE: National Geographic (2020); Esri World Street Map (2020); Jacobs (07/2021); PGH Wong Eng (12/2021).

BART HMC2 Project Section 4(f) Evaluation

Regional Location and Vicinity

I:\WRO2001\GIS\Maps\Cultural\Figure 1_Regional Location and Vicinity.mxd (5/27/2022)



LSA

FIGURE 2

LEGEND

Project Site

0 1000 2000

FEET

SOURCE: Jacobs (07/2021); PGH Wong Eng (12/2021);
USGS 7.5-minute Topo Quads - *Newark, Calif.* (1993) and *Hayward, Calif.* (1990).

BART HMC2 Project Section 4(f) Evaluation

Project Site

I:\WRO2001\GIS\Maps\Cultural\Figure 2_Project Site.mxd (5/27/2022) indicates the balance of new train cars will be delivered by Spring 2022.[1] Approximately 620 vehicles are in service on a typical day. BART's current fleet of 728 revenue vehicles can all be stored within the four existing yards associated with the four vehicle maintenance shops. As the fleet expands to meet future needs, additional maintenance and storage will be necessary, both to accommodate the expected number of cars and to minimize non-revenue train movements to initiate and end daily service.

Maintenance will also need to be expanded to ensure future reliability and performance. BART has instituted a Strategic Maintenance Program (SMP) that will provide scheduled maintenance and overhauls for the vehicle fleet. The acquisition of the three properties (with four warehouses) adjacent to Hayward Yard (HMC Phase 1) created an efficient complex that could provide the necessary maintenance and also allow a consolidation of existing BART services.

As part of the Transbay Corridor Core Capacity Program, BART has prioritized three interrelated capital investment initiatives to ensure the system can safely, efficiently, and comfortably serve current and new riders. Collectively these projects are known as the "Big 3" and include the following:

- The Fleet of the Future (FOTF) – New rail vehicles to replace BART's current fleet
- Communications Based Train Control (CBTC) – An improved train control system to enable trains to operate more frequently
- The Hayward Maintenance Complex (Phase 2) (HMC2) Project – creates a new storage yard facility east of the existing Hayward Maintenance Complex to store the expanded fleet

The "Big 3" together can address some key current bottlenecks that hinder BART's ability to meet current and future ridership growth. The HMC2 consists of both East Storage Yard and the Northern Mainline Connector. These projects are located on the undeveloped land east of the Hayward Maintenance Complex and will provide an economical means to expand vehicle storage on a suitable and vacant land, which BART already owns.

1.2.1 Project Objectives

The objectives for the proposed project are to:

- Provide additional storage tracks for approximately 250 additional BART cars.
- Provide increased flexibility for BART operations by allowing some maintenance operations that now occur on the west side of the mainline to be conducted at the East Storage Yard.

1 San Francisco Bay Area Rapid Transit District (BART), 2021. "System Facts" website: www.bart.gov/about/history/facts (accessed July 30, 2021).

- Increase flexibility for BART operations by providing a direct and efficient rail connection from the East Storage Yard to the BART northbound mainline via the Northern Mainline Connector.

2.0 PROJECT DESCRIPTION

The following describes the proposed HMC2 Project (proposed project) that would include development of key features within the East Storage Yard and construction of the Northern Mainline Connector to provide a new trackway connection between the East Storage Yard and the BART mainline trackway.

2.1 PROPOSED PROJECT

The proposed project consists of two major components: the East Storage Yard and the Northern Mainline Connector. These two project components are described in further detail below. Figure 3 shows the two project components.

2.1.1 East Storage Yard

The East Storage Yard, the first component of the HMC2 Project, includes a vehicle storage yard capable of storing approximately 250 BART vehicles. The need for the East Storage Yard is driven by BART's plan to increase its fleet size to accommodate a growing demand for reliable and more frequent train service to/from downtown San Francisco and Oakland.

The East Storage Yard also features ancillary wayside and maintenance facilities needed for a fully functional, electrified, storage yard. Environmental impacts of the East Storage Yard project component were evaluated under CEQA in 2011; however, several key features were not fully addressed or developed in the 2011 IS/MND. These features, along with the Northern Mainline Connector component, form the basis of the proposed Project. Figure 4 shows the East Storage Yard Project Components. Key features of the East Storage Yard are as follows:

- **Drainage.** An existing open drainage channel that extends the length of the proposed East Storage Yard and the existing rail storage yard and maintenance facilities almost to Whipple Road would be filled. The length of the fill would be approximately 4,781 linear feet, and the surface area of the fill would be approximately 33,102 square feet (0.76 acres). The amount of fill required would be approximately 18,900 cubic yards. Replacement of the drainage channel is needed for the construction of a perimeter access road, which would provide for maintenance and emergency vehicles egress through the storage yard.

  A second drainage ditch, which originates in the middle of the yard and directs flow towards the western boundary of the HMC, would be partially filled to accommodate construction of the pedestrian/golf cart bridge crossing. The length of fill would be approximately 210 linear feet and the surface area of fill would be approximately 1,656 square feet (0.038 acre). A detoured culvert around the filled portion of the ditch will maintain its functionality for proper drainage.

- **Car Cleaning Platform.** A car cleaning platform would be provided within the storage yard. The car cleaning platform would allow car cleaners to access trains at vehicle door height, similar to typical passenger platforms. Canopies, mop sinks, and storage cabinets would also be provided along the cleaning platform. The dimensions of the platform would be approximately 700 long by 11 feet wide.

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LEGEND

Project Site

Project Components

East Storage Yard

Northern Mainline Connector

FIGURE 3

N

0 400 800
FEET

SOURCE: Google Maps (2021).

BART HMC2 Project Section 4(f) Evaluation

Project Components

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FIGURE 4

BART HMC2 Project Section 4(f) Evaluation

East Side Yard

SOURCE: Microsoft Bing (2021).

I:\WRO2001\GIS\Maps\IS-MND\Figure 6_East Side Yard.mxd (1/22/2022)

- **Cart Bridge Overcrossing.** An overcrossing structure would provide access for personnel carts and pedestrians to allow workers to traverse between the East Vehicle Storage Yard and the existing Hayward Yard. The cart bridge overcrossing would be approximately 780 feet long and 20 feet above the ground.

- **Extension of Whistle Stop Structure.** The existing Whistle Stop Structure would be extended to the east to allow Train Operators to cross over the Hayward Test Track and access the East Vehicle Storage Yard. The Whistle Stop Structure would also allow for additional pedestrian movement between the existing Hayward Yard and the East Side Vehicle Storage Area. The Whistle Stop Structure would be approximately 100 feet long by 5 feet wide.

- **Traction Power Substation.** A Traction Power Substation (TPSS) would be located in the East Vehicle Storage Yard. The TPSS would provide power to the storage yard. The dimensions of the TPSS would be 180 feet long by 70 feet wide by 12 feet high.

- **Train Operator Facility/Car Cleaner/Cart Charging Facility.** A two-story administrative building would provide work and break facilities for Car Cleaners and Train Operators. The facility would be located on the south end of the East Vehicle Storage Yard and would also include facilities to allow for the charging of electric carts. The facility would be approximately 8,600 square feet and 12 feet long by 40 feet wide by 32 feet high.

- **Ditch Restoration.** The East Storage Yard component would include a narrow linear area approximately 500 feet long located within the Hayward Maintenance Complex that is bounded by Sandoval Way on the east and the UPRR Niles Subdivision rail line on the west, which would accommodate proposed restoration of an existing ditch as mitigation for wetland impacts, if needed.

2.1.2 Northern Mainline Connector

The Northern Mainline Connector would consist of a new trackway connection between the East Storage Yard and the BART mainline trackway. The Northern Mainline Connector would also include the relocation of the western fence[1] of the golf course driving range to a location further to the east to allow for the construction of new trackway. Key features of the Northern Mainline Connector are shown in Figure 5 and described as follows:

- **Extended Trackway.** The BART tracks would be extended from the vehicle storage area north to Industrial Parkway, approximately 3,600 feet, to a point approximately 700 feet north of Industrial Parkway. A combination of turnouts and crossovers[2] would be installed, including three crossovers and eight turnouts that would be north of the vehicle storage yard.

[1] The driving range fence consists of black safety netting and associated steel support poles that extend approximately 120 feet above ground level.

[2] A crossover is defined as a pair of switches that connects two parallel rail tracks, allowing a train on one track to cross over to the other. A turnout is a mechanical device used to guide the trains from one rail track to another.

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LEGEND

Project Site

FIGURE 5

0 250 500
FEET

SOURCE: Microsoft Bing (2021).

BART HMC2 Project Section 4(f) Evaluation

Northern Mainline Connector

I:\WRO2001\GIS\Maps\IS-MND\Figure 7_Northern Mainline Connector.mxd (5/27/2022)

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- **Retained Fill Embankment.** A retained fill embankment would be constructed to carry the connecting tracks north from the storage tracks to the UPRR tunnel and from the UPRR tunnel to approximately 700 feet north of Industrial Parkway. The retained fill embankment would be approximately 3,600 feet (0.68 miles) long, 25 to 50 feet wide, and 25 feet high at the highest location. Between the UPRR tracks on the east and the BART test track on the west, the embankment would be constructed between two retaining walls and would carry a series of tracks from the East Storage Yard that would converge to just one track connecting to the BART mainline north of Industrial Parkway. The embankment would also carry a service road parallel to the tracks. The embankment would be lighted with shielded security lights 15 to 18-feet high.

- **Bridge Overcrossing of Industrial Parkway.** A new bridge overcrossing structure would be constructed over Industrial Parkway to carry the new Northern Connecter trackway. The structure would be approximately 250 feet long, 24 feet wide, and 23 feet high and would be supported by columns placed in the median and either side of the roadway.

- **Sound wall.** A 600-foot long, 10-foot-high sound wall (5 feet above top of rail) would be constructed along the east side the Northern Connector tracks north of Industrial Parkway to reduce noise generated by nearby crossovers.

- **Drainage.** Underground culvert pipes would replace portions of an existing open culvert/linear ditch at the south end of Northern Mainline Connector site along the west side to allow for the construction of a perimeter access road, which would provide access for emergency vehicles throughout the storage yard and to accommodate a Gap Breaker Station and a Train Control House.

- **Bioretention Basin.** A bioretention basin would be located between the retained fill embankment on the east and the BART test tracks on the west. Its dimensions would be approximately 580 feet long by approximately 50 feet wide by 4 feet deep. The bioretention basin would have an area of approximately 29,000 square feet and a capacity of approximately 44,000 cubic feet of stormwater storage. Flows from the Phase 1 (west side of Hayward maintenance yard) and Phase 2 (East Side Storage Area) would be conveyed by gravity into the bioretention basin.

- **Stormwater Storage.** In addition to the bioretention basin, the proposed Project would include stormwater storage to accommodate runoff from the Phase 1 area (west side of the mainline tracks) of the Hayward Yard. Stormwater from the Phase 1 area would be conveyed to storage culverts beneath the proposed bioretention basin. The storage facility would consist of four side-by-side box culverts that would be cross-connected to act as a single storage unit. The combined culvert dimensions would be approximately 40 feet wide by 8 feet deep by 400 feet long and would provide approximately 100,000 cubic feet of storage. Stormwater runoff from the Phase 1 site would flow to a bypass structure on the site, where Phase 1 flows would be stored in the box culverts and excess storm flows would be conveyed to an existing outfall. Once a storm event has passed and there is capacity in the bioretention basin, a pump station would lift the Phase 1 flows into the bioretention basin for treatment and eventual discharge to an existing outfall on the eastern side of the UPRR tracks. Pump stations and piping for this component would be provided as part of the proposed Project.

- **Jack and Bore 30-Inch Storm Drain**. A 30-inch storm drain culvert would be installed via jack and bore underneath the UPRR Niles Subdivision tracks to connect to an existing culvert east of the UPRR tracks. The existing culvert outlets to an Alameda County Flood Control District (ACFCD) channel. Approximately 200 feet of the storm drain would be jacked and bored. The existing drainage outfall to the ACFCD channel would not be impacted by construction activities.

- **Jack and Bore Sanitary Sewer**. An 8-inch sanitary sewer would be installed via jack and bore underneath the UPRR Oakland Subdivision, BART Hayward Test Track, and BART mainline trackways to provide a connection to an existing sanitary sewer system located on Sandoval Way.

- **Underground Utilities.** Power, water, sanitary sewer, and communications would be extended from the existing connections to the expansion area.

- **Traction Power, Train Control, and Communications Systems.** Embedded electrical conduit for traction power would be provided for power and communications circuits. A third rail to provide power to tracks and to power the vehicles would be installed.

- **Gap Breaker Stations**. Two gap breaker stations, one at the north end of the connecting tracks adjacent to the east side of the BART tracks north of Industrial Parkway and another at the south end of the Northern Mainline Connector tracks would be installed. These facilities would be approximately 1,000 square feet in size and provide for continuity in and the ability to isolate sections of contact rail. The gap breaker stations would be approximately 56 feet long by 20 feet wide by 13 feet high.

- **Train Control House.** A train control house would be located at the south end of the Northern Connector where the storage tracks start to merge. This facility would be approximately 3,800 square feet in size and would house automatic train control equipment. The train control house would be approximately 126 feet long by 30 feet wide by 18 feet high.

- **Access Road.** A new 20 to 26-foot-wide paved road would extend along the east side of the storage tracks to a point just north of the current wetlands area. This extension of the planned road would extend from the East Storage Yard towards the northern transfer tracks. It would provide for both BART and fire and emergency access to the proposed Project area.

- **Relocation of Driving Range Fence.** Construction of the track for the Northern Mainline Connector would require the relocation of the boundary fence between the driving range and the BART tracks. The property is owned by BART, but the Hayward Area Recreation and Park District (HARD) has a permanent operating easement for the property for the operation of the driving range. The relocation would shift the boundary fence a maximum of approximately 50 feet to the east along about 1,310 feet (the full length of the driving range). Approximately 61,544 square feet (1.41 acre) of property would be affected. The boundary shift would require BART and HARD to extinguish a portion of the existing operating easement.

- **Wetland Mitigation Area.** Approximately 2.24 acres of HARD property south of the driving range is being considered for conversion to a permanent wetland area as mitigation for the loss of wetlands on-site. Development of wetlands would follow use of this area as the Secondary Staging Area during construction.

- **Train Wash**. A train wash facility would be constructed at the south end of the Northern Connector tracks, just north of the vehicle storage area. The train wash would allow BART to clean the exteriors of trains as they enter the storage yard following the completion of revenue service. The train wash would be approximately 200 feet long by 30 feet wide by 14 feet high.

- **Site Lighting.** Light poles for security lighting would be added along the new trackway. Light poles would be 15 to 18 feet high with shielded lamps. The new lights would not include motion detectors.

- **Perimeter Fence.** A 9-foot-high security fence would be provided along the new perimeter of the expansion area topped with razor coil adding 12 inches in height.

2.2 PROJECT ALTERNATIVES

This Section 4(f) analysis considers two alternatives for the HMC2 Project – the No Build Alternative and one Build Alternative to address fleet storage and maintenance requirements. Due to the presence of the existing BART mainline track and associated embankment, construction of the new embankment and trackway must occur from the east side of the project site (e.g., from the existing golf course driving range); therefore, there are no viable alternatives that would eliminate the temporary use of the golf course driving range. As the design progresses and construction details are further refined, BART will continue to coordinate with HARD to try to reduce temporary impacts during construction. A summary of the proposed project alternatives is provided below.

2.2.1 No Build Alternative

The No Build Alternative proposes no improvements within the project area. The HMC Yard would continue to operate as it currently does with no additional car storage capacity or connection from the BART mainline to the existing HMC Yard.

2.2.2 Build Alternative

The Build Alternative consists of the HMC2 Project as described in Section 2.1 above.

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3.0 REGULATORY FRAMEWORK

Section 4(f) of the Department of Transportation Act of 1966 (23 United States Code [U.S.C.] 138 and 49 U.S.C. 303) declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) prohibits use of land from a publicly owned significant park, recreation area, or wildlife and waterfowl refuge, and historic sites only if:

1. There is no prudent and feasible alternative to using that land; and

2. The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Department of Agriculture and the Department of Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer (SHPO) is also needed.

Coordination with the Department of Agricultural and Department of Housing and Urban Development is not required for the project because there would be no impacts to National Forest System lands or federal funding from the Department of Housing and Urban Development. Because historic sites are not involved, coordination with the State Historic Preservation Officer is not needed.

3.1 DETERMINING SECTION 4(F) RESOURCES

Section 4(f) applies when the U.S. Department of Transportation agency approves a transportation project that uses Section 4(f) property, and the following four conditions are true:

1. The project must require approval from FTA in order to proceed

2. The project must be a transportation project

3. The project requires use of land from property protected by Section 4(f); and

4. None of the regulatory applicability rules or exceptions apply.

Section 4(f) properties include:

- Publicly Owned Public Parks, Recreational Areas, or Wildlife or Waterfowl Refuges open to the public.

- Historic sites of national, state or local significance in public or private ownership regardless of whether they are open to the public. Section 4(f) also applies to historic sites listed or eligible for inclusion in the National Register of Historic Places.

3.2 SECTION 4(F) USE

As defined in 23 Code of Federal Regulations (CFR) 774.17, a “use” of a protected resource occurs when any of the following conditions are met:

- Direct Use: Land is permanently incorporated into a transportation facility.
- Temporary Use: There is a temporary occupancy of land that is adverse in terms of the statute’s preservation purpose as determined by the criteria in 23 CFR 774.13(d).
- Constructive Use: There is a constructive use of a Section 4(f) property as determined by the criteria in 23 CFR 774.15.

3.2.1 Direct Use

A direct use of a Section 4(f) resource takes place when part or all of the property designated for protection under Section 4(f) is permanently incorporated into a transportation project (23 CFR Section 774.17). This may occur as a result of partial or full acquisition of a fee simple interest, permanent easements, or temporary easements that exceed the regulatory limits noted below (23 CFR Section 771.135).

3.2.2 Temporary Use

A temporary use of a Section 4(f) property occurs when there is temporary occupancy of a protected property for construction-related activities and when that temporary occupancy is considered adverse in terms of the preservationist purposes of the Section 4(f) statute.

If the following five conditions set forth in 23 CFR Section 774.13(d) can be satisfied, Section 4(f) does not apply.

1. The duration of the occupancy must be temporary (i.e., shorter than the period of construction) and does not involve a change in ownership of the property.
2. The scope of the work must be minor, with only minimal changes to the protected resource.
3. There are no anticipated permanent adverse physical impacts on the protected resource and no temporary or permanent interference with the activities or purpose of the resource.
4. The land being used must be fully restored to a condition that at least equals the condition that existed prior to the proposed project.
5. There must be documented agreement by the appropriate officials having jurisdiction over the Section 4(f) resource regarding the above conditions.

3.2.3 Constructive Use

A constructive use of a Section 4(f) resource happens when a transportation project does not permanently incorporate land from the resource in the transportation facility, but the proximity of the project to the Section 4(f) property results in adverse proximity impacts (i.e., noise, vibration, visual, access, and/or ecological impacts). For a constructive use to occur, these impacts must be so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired (23 CFR Section 774.15).

Substantial impairment occurs only if the protected activities, features, or attributes of the Section 4(f) property are substantially diminished by the indirect adverse impacts of the project (23 CFR Section 774.15(a)). This determination is made through the following process:

- Identification of the current activities, features, or attributes of the resource that may be sensitive to proximity impacts
- Analysis of the potential proximity impacts of the project on the resource
- Consultation with the appropriate officials having jurisdiction over the resource (23 CFR Section 774.15(d)).

3.3 DE MINIMIS IMPACT DETERMINATION

3.3.1 Determining *De Minimis* Impacts to Section 4(f) Resources

A *de minimis* impact to a Section 4(f) resource is a nominal impact that would not be adverse to the activities, features, or attributes of the Section 4(f) resource. A *de minimis* impact finding can be made for some direct uses and temporary uses; however, a *de minimis* impact finding cannot be made for constructive uses.

Under federal regulations (23 CFR Section 774.13(d)), various exceptions to the requirement for Section 4(f) approval have been identified. These exceptions include temporary occupancies of land (e.g., temporary construction easements [TCEs] and other temporary project activities) that are so minimal as to not constitute a "use" under Section 4(f), provided that they do not exceed the five thresholds discussed above in Section 3.2.2.

Under Section 4(f), *de minimis* impacts to historic resources would be either no impact to the property or a finding of "no adverse effect" under 36 CFR Part 800. For other Section 4(f) protected resources, including publicly owned parks, recreational areas, and wildlife and waterfowl refuges, *de minimis* impacts would be defined as those impacts that do not adversely affect the activities, features, or attributes of the Section 4(f) resource.

The *de minimis* impact finding is based on the level of impact, including any avoidance, minimization, and mitigation or enhancement measures that are included in the project to address the Section 4(f) use. *De minimis* impact findings are expressly conditioned upon the implementation of measures that are relied on to reduce the impact to a *de minimis* level.

To reach a *de minimis* impact finding for properties where a use would occur, the official(s) with jurisdiction over the Section 4(f) resource must provide written concurrence) that the project would not adversely affect the activities, features, or attributes that qualify the property for protection under Section 4(f). In addition, the public must be afforded the opportunity to review and comment on the effects of the project on the identified Section 4(f) resource(s).

3.3.2 Coordination and Concurrence on De Minimis Findings

As discussed above, the regulations require coordination with officials that have jurisdiction over park and historic resources that may be used by the project prior to the approval of Section 4(f) impact findings. Regulations require written concurrence from these officials prior to:

- Making *de minimis* impact findings
- Applying an exception for temporary occupancies
- Applying an exception for transportation enhancement and mitigation activities

For parks, recreational areas, and wildlife and waterfowl refuges, the officials with jurisdiction over the property must be informed of the intent to make a *de minimis* impact determination, after which an opportunity for public review and comment must be provided.

3.4 SECTION 6(F) RESOURCES

In addition to resources protected under Section 4(f), this project is also required to analyze potential impacts to properties protected or enhanced with Land and Water Conservation Fund (LWCF) grants. Section 6(f)(3) of the LWCF Act (16 U.S.C. Section 4601-4) contains provisions to protect federal investments in park and recreational resources and the quality of those resources. State and local governments often obtain grants through the LWCF Act to acquire or make improvements to parks and recreational areas. Section 6(f) of the LWCF Act prohibits the conversion of property acquired or developed with LWCF grants to a non-recreational purpose without the approval of the Department of Interior's National Park Service. Section 6(f) further directs DOI to assure that replacement lands of equal value, location, and usefulness are provided as conditions to such conversions. Consequently, where conversion of Section 6(f) lands is proposed for roadway and highway projects, replacements will be necessary.

To determine whether LWCF funds were involved in the acquisition or improvement of Section 4(f) resources, the Land and Water Conservation Fund (LWCF) project map[1] was reviewed to identify any LWCF-funded parks in the project vicinity. This research revealed that no LWCF funds were utilized for improvements at any sites within 0.5 mile of the proposed project. This finding was confirmed by Michael Williams, Senior Bond Project Manager at HARD via an email to BART on June 24, 2021. Therefore, there would be no effect on LWCF-funded parks or recreational resources.

[1] Trust for Public Land. 2021. Land and Water Conservation Fund Project Map website: lwcfcoalition.org/map (accessed October 5, 2021).

4.0 DESCRIPTION OF SECTION 4(F) RESOURCES

4.1 IDENTIFICATION OF SECTION 4(F) RESOURCES

As noted above, resources subject to Section 4(f) consideration include publicly owned lands such as public parks; recreational areas of national, state, or local significance; wildlife and waterfowl refuges; and historic sites of national, state, or local significance.

Resources in the project study area were identified if they were:

- Existing publicly owned recreational and park resources, including local, regional, and State resources;
- Publicly owned wildlife and waterfowl refuges and conservation areas;
- Existing public bicycle, pedestrian, and equestrian trails; or
- National Register of Historic Places (NRHP) listed or eligible historic sites.

Research was conducted to identify publicly owned parks, recreational areas, wildlife and waterfowl refuges, and land from a historic site within 0.5 mile of the project alternatives. Based on this research, there are twelve properties within 0.5 mile of the project corridor that qualify as Section 4(f) resources, including 7 parks/recreational facilities, 1 existing multi-use path, and 4 schools with publicly accessible facilities. Based on the results of the cultural resources study,[5] no historic properties or archaeological sites are located within 0.5 mile of the project alternatives. As stated previously, no Section 6(f) resources exist within the project study area.

A summary of the number of identified resources is provided in Table A and shown on Figure 6.

Table A: Summary of Properties Subject to Section 4(f) Consideration

Type of Property	Geographic Location to Project	Number of Properties Identified
Public Parks	Within 0.5 mile	7
Public Schools with Recreational Areas	Within 0.5 mile	4
Trails	Within 0.5 mile	1
Wildlife and Waterfowl Refuges	Within 0.5 mile	0
NRHP Listed or Eligible Historic Properties	Within 0.5 mile	0
NRHP Listed or Eligible Archaeological Resources	Within 0.5 mile	0

Source: LSA 2021

5 LSA. 2022a. *BART Hayward Maintenance Complex Phase 2 Project – Supplemental Cultural Resources Study.* May.

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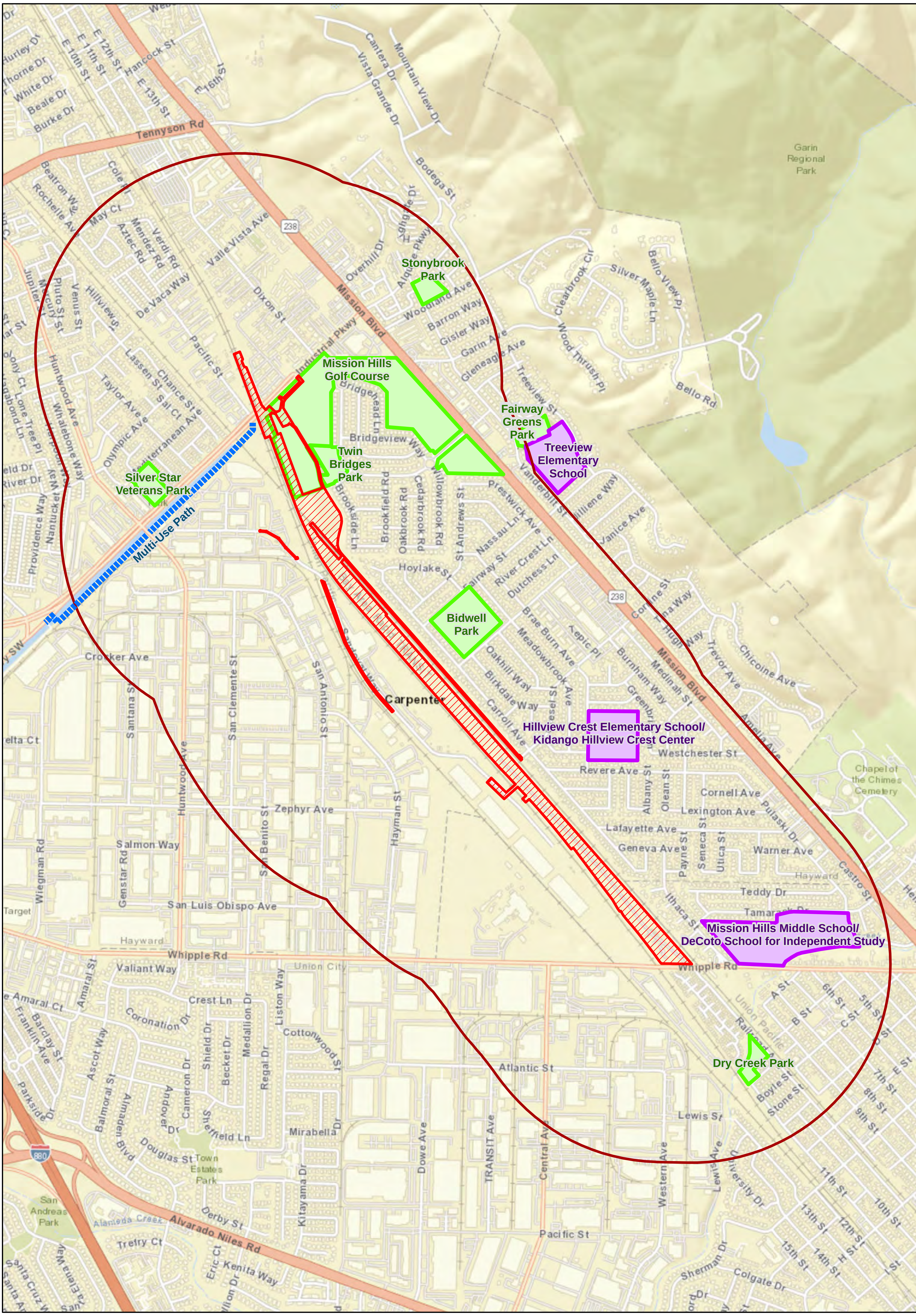

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FIGURE 6

LEGEND

- Project Site
- 0.5-mile Buffer of Project Site
- School
- Park
- Trail

0 600 1200
FEET

BART HMC2 Project Section 4(f) Evaluation

Section 4(f) Properties in the Vicinity of the Project Site

SOURCE: Esri World Street Map (2021).

I:\WRO2001\GIS\Maps\Section 4(f)\Figure 6_Section 4(f) Properties in the Vicinity of the Project Site.mxd (10/15/2021)

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4.2 PUBLIC PARKS AND RECREATION FACILITIES

Twelve publicly owned lands that contain parks and recreational areas are within 0.5 mile of the project site, as shown in Figure 6. Of these 12 properties, 4 are public schools with outdoor playgrounds and other recreational facilities, which are assumed to be open to the general public. Seven properties are outdoor parks and recreational areas (e.g., public golf course). In addition, one multi-use path is located within 0.5-mile of the project site. Table B provides a summary of all 12 properties by type (i.e., school and park), including information on location, ownership, facilities available at each property, and whether the property is subject to Section 4(f) protection.

Table B: Public Parks and Recreation Facilities within the Section 4(f) Study Area

Property Name	Location	Current Ownership	Facilities	Subject to Section 4(f)?
Schools				
Treeview Elementary School	30565 Treeview St. Hayward, CA 94544	Hayward Unified School District	Playground Soccer Field Open Lawn Area Basketball Courts	Yes
Hillview Crest Elementary School/Kidango Hillview Crest Center	31410 Wheelon Ave., Hayward CA, 94544	New Haven Unified School District	Open Lawn Area Playground Basketball Courts Four Square	Yes
Mission Hills Middle School	250 Tamarack Dr. Union City, CA 94587	Mission Hills Middle School	Baseball/ Softball Open Field Playground Basketball Courts	Yes
DeCoto School for Independent Study	725 Whipple Rd. Union City, CA 94587	New Haven Unified School District	Track Baseball/ Softball Open Field	Yes
Parks				
Twin Bridges Park	301 Arrowhead Way Hayward, CA 94541	Hayward Area Recreation and Park District	Barbecues Basketball Court Open Lawn Area Picnic Tables Playground	Yes
Bidwell Park	175 Fairway Hayward, CA 94541	Hayward Area Recreation and Park District	Barbecues Baseball / Softball Horseshoe Courts Open Lawn Area Picnic Tables Playground Soccer Volleyball	Yes
Silver Star Veterans Park	695 Industrial Parkway Hayward, CA 94544	Hayward Area Recreation and Park District	Playground Barbecues Picnic tables Basketball Courts Open Lawn Area	Yes
Mission Hills of Hayward Golf Course	275 Industrial Parkway W Hayward, CA 94541	Hayward Area Recreation and Park District	9 Hole Golf Course Driving Range Restaurant & Bar	Yes

Table B: Public Parks and Recreation Facilities within the Section 4(f) Study Area

Property Name	Location	Current Ownership	Facilities	Subject to Section 4(f)?
Fairway Greens Park	30504 Vanderbilt St. Hayward, C 94541	Hayward Area Recreation and Park District	Barbecues Picnic Tables Trails	Yes
Stonybrook Park	620 Woodland Dr, Hayward, CA 94544	Hayward Area Recreation and Park District	Barbecues Nature Center Open Lawn Area Parking Picnic Tables Restrooms	Yes
Dry Creek Park	1001 Westgard St, Union City, CA 94587	City of Union City	Picnic Area Open Lawn Area Playgrounds	Yes
Trails				
Multi-Use Path	Industrial Parkway	City of Hayward	Multi-Use Path	Yes

Source: LSA 2021

4.3 WILDLIFE AND WATERFOWL REFUGES

As described above, no wildlife and waterfowl refuges were identified within the Biological Study Area or within 0.5-mile of the project site.

4.4 HISTORIC AND ARCHAEOLOGICAL SITES

The study area for historic sites is the Area of Potential Effects (APE) developed for this project in accordance with 36 CFR 800.4(a)(1). The APE is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, including archaeological sites. Direct effects include physical changes to historic properties and visual effects or effects caused by noise or vibration. The proposed APE also incorporates areas that could be affected by the extent of project-related ground disturbance. Cultural resources specialists reviewed local historic landmark inventories and archaeological records, conducted background research, and performed field surveys of the project's APE as described in the Cultural Resources Study[6] and the Supplemental Cultural Resources Study.[7] No known and previously recorded cultural resources are located in or adjacent to the APE, nor did the field survey identify any cultural resources within the APE. Historic-period maps and aerial photographs indicate that the APE was undeveloped and mostly agricultural use; therefore, it is unlikely that any historic-period archaeological deposits are located within the APE, and no historic properties or archaeological sites were identified within 0.5-mile of the project site.

6 LSA. 2021. *BART Hayward Maintenance Complex Phase 2 Project –Cultural Resources Study*. March.

7 LSA. 2022a. op. cit.

5.0 IMPACTS ON SECTION 4(F) PROPERTIES

This section describes which Section 4(f) resources may be affected if the proposed project is implemented. Although not discussed in detail in this chapter, every Section 4(f) resource within the study area was analyzed for potential direct and indirect impacts under both alternatives. Of the twelve public parks and recreational facilities discussed in Chapter 4, potential impacts are discussed in this evaluation for only one property where impacts are anticipated under the Build Alternative. Additional analysis follows for this resource. An assessment has been made as to whether any permanent or temporary occupation of the property would occur, and whether the proximity of the project would cause any access, visual, air quality, noise, vibration, biological, or water quality effects that would substantially impair the features or attributes that qualify the resource for protection under Section 4(f).

The analysis of potential effects on Section 4(f) resources that follows includes discussion of how the proposed project would affect this Section 4(f) resource and whether the effects would result in a use of the resource.

5.1 POTENTIAL SECTION 4(F) USES BY THE NO BUILD ALTERNATIVE

There would be no uses of park, recreational, or historic resources subject to Section 4(f) provisions with the No Build Alternative.

5.2 POTENTIAL SECTION 4(F) USES BY THE BUILD ALTERNATIVE

The following section describes the potential Section 4(f) uses for the Build Alternative. In summary, the Build Alternative would require direct use and temporary use of one Section 4(f) resource – the Mission Hills of Hayward Golf Course. No direct use, temporary use, or constructive use of any other Section 4(f) resources would be required for the Build Alternative.

5.2.1 Mission Hills of Hayward Golf Course

5.2.1.1 Description of Mission Hills of Hayward Golf Course

The 58-acre Mission Hills of Hayward Golf Course, which is owned by the Hayward Area Recreation and Park District (HARD), is located immediately between existing BART property and Mission Boulevard in the City of Hayward. HARD is an independent special use district created to provide park and recreation services for over 280,000 residents. HARD's boundaries encompass a 100 square-mile area, which includes the City of Hayward and the unincorporated communities of Castro Valley, San Lorenzo, Ashland, Cherryland, and Fairview. HARD's park system includes some 104 sites covering 1,357 acres. The system includes local and community parks, school recreation sites, aquatic centers, golf courses, and other special facilities as diverse as the Hayward Shoreline Interpretive Center, Hayward Japanese Gardens, The Douglas Morrison Theater, Sulphur Creek Nature Center, and the Rowell Ranch Rodeo Park.[8]

[8] Hayward Recreation and Park District. 2019. Hayward Recreation and Park District Parks Master Plan. October.

The Mission Hills of Hayward Golf Course includes a 9-hole golf course, double-decker driving range, two practice putting greens, three green chipping areas, a pro shop, and café. The Mission Hills of Hayward Golf Course is located immediately adjacent to the project site, in particular, the driving range, which runs along the northeastern boundary of the site. The golf course is open from 8:00 a.m. to 4:00 p.m. daily. The driving range is open from 7:00 a.m. to 10:00 p.m. in the spring/summer and from 7:00 a.m. to 9:00 p.m. in the fall/winter. In addition, the golf course property includes approximately 3 acres of undeveloped open space land located to the south of the existing driving range. HARD has historically used this area for various purposes and has considered various other uses of the land.

As described in HARD's Parks Master Plan,[9] HARD has recently implemented a project to renovate the driving range, including the replacement of the synthetic turf surfacing and vertical mesh netting and conversion of the existing lighting to energy-saving LED light fixtures. In addition, improvements have been made to the golf course, including rehabilitation of the existing well, addition of new solar panels, and installation of new LED lights in the golf course parking lot.

A portion of the existing driving range is located on BART-owned property; however, HARD has a permanent operating easement that allows for operation of the driving range.

5.2.1.2 Project Effects at Mission Hills of Hayward Golf Course

The effects of the Build Alternative (HMC2 Project) on the Mission Hills of Hayward Golf Course are described below.

Direct Use. Construction of the track for the Northern Mainline Connector would require the relocation of the boundary fence between HARD's driving range and BART. The boundary fence consists of black safety netting strung between steel poles that extend approximately 120 feet above ground level. The relocation would shift the boundary fence a maximum of approximately 50 feet to the east along 1,310 feet (the full length of the driving range). Approximately 61,544 square feet (1.41 acres) of property would be affected. The boundary shift would require BART and HARD to extinguish a portion of the existing operating easement. Figure 7 shows the portion of the current easement area that would be extinguished by BART.

The 61,544-square foot easement area formerly granted to HARD from BART would have to be extinguished. The area represents approximately 9.5 percent of the driving range's pre-project acreage and 2.4 percent of the overall acreage of the Mission Hills of Hayward Golf Course facility, which would be permanently removed from this recreation use.

The direct use area described above would not adversely affect any of the recreational activities, features, or attributes within the existing golf course. Although the acquisition area would minimally reduce the overall size of the driving range, it would not inhibit existing recreational activities within the golf course/driving range. The reduction in area of the driving range would not change the number of users the driving range can accommodate or the hours the driving range can operate.

9 Hayward Recreation and Park District. 2019. op. cit.

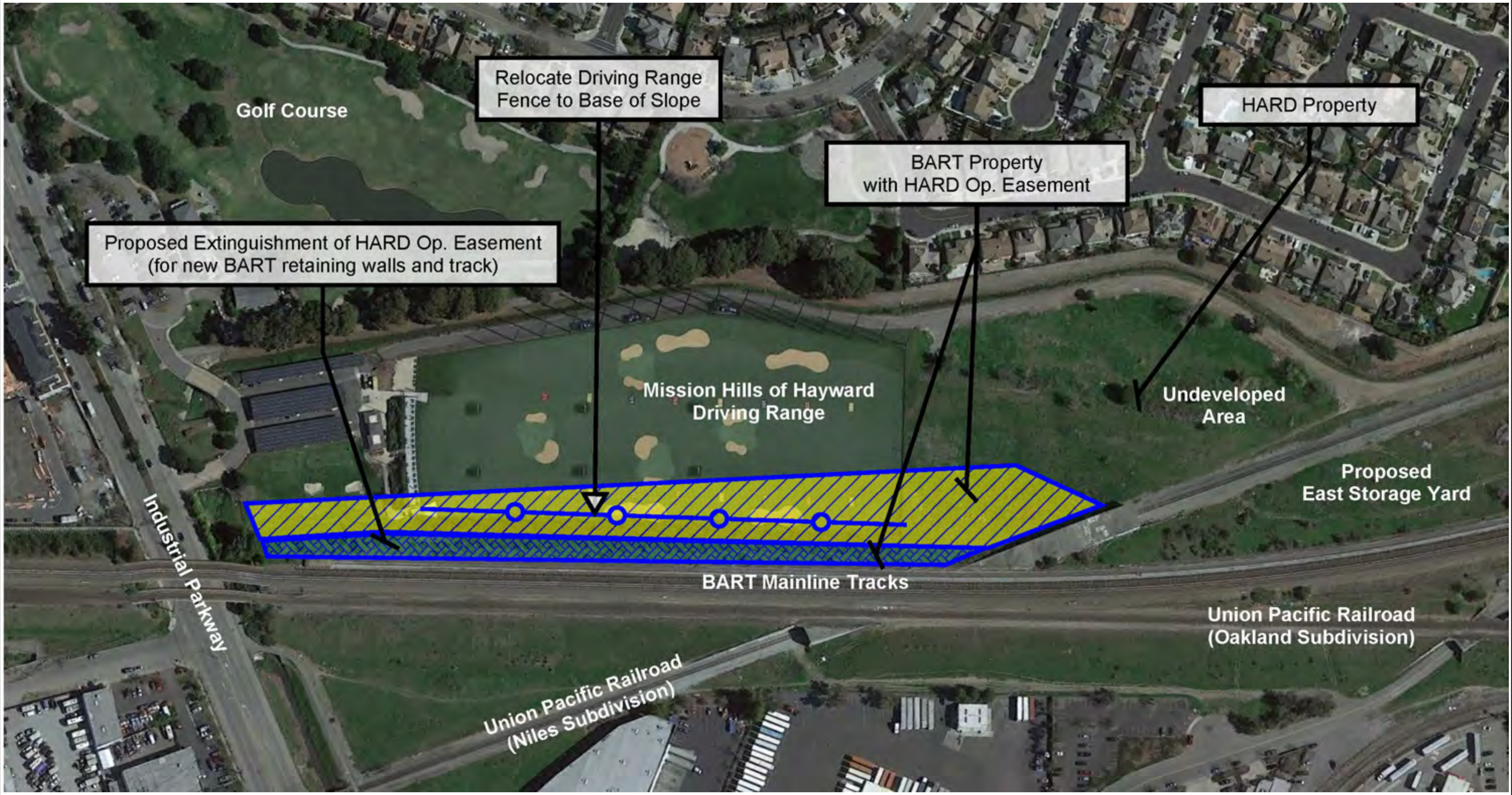

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FIGURE 7

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BART HMC2 Project Section 4(f) Evaluation
Permanent Acquisition Areas

SOURCE: San Francisco Bay Area Rapid Transit District, 2021

P:\WRO2001 Hayward BART\PRODUCTS\Section 4f\Figures\Figure 7.pdf(12/20/2021).

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In addition, as outlined in Section 2.0, Project Description, approximately 2.24 acres of the undeveloped open space area south of the driving range is being considered for conversion to a permanent wetland area as mitigation for the loss of wetlands associated with development of the HMC2 Project. This open space area is owned by HARD as part of the Mission Hills of Hayward Golf Course and has historically been used by HARD for various purposes and has been considered for various other uses. It is not currently accessible by or open to the public, used for recreation purposes, or developed with recreation facilities. Conversion of this area to permanent wetland would entail establishment of a conservation easement over this portion of HARD's property, to preserve the created wetlands in perpetuity. BART would provide HARD compensation for any permanent impacts. The details of the proposed compensation would be negotiated as part of real estate negotiations between the two agencies. Figure 8 shows the proposed wetland mitigation concept.

Because this portion of the HARD property is not currently open to the public for recreation use, its direct use would not adversely affect any of the recreational activities, features or attributes within the existing golf course. Although the acquisition area would minimally reduce the overall size of the HARD property (approximately 4 percent of the total 58 acres), it would not inhibit existing recreational activities within the golf course/driving range. Additionally, the demand analysis conducted for HARD's Parks Master Plan did not identify a need for additional golf courses within HARD's service area; therefore, it is unlikely that this undeveloped area would be developed in the future for expansion of the golf course. The Parks Master Plan indicates that HARD has considered development of this undeveloped site as a corporation yard; however, the site lacks the necessary utility connections.[10]

In total, the proposed project would result in the direct use of 3.65 acres of the 58-acre golf course property (approximately 6.2 percent) owned and/or operated by HARD as a public recreation facility. As described above, the use of a portion of the existing driving range would minimally reduce the overall size of the driving range; it would not inhibit existing recreational activities within the golf course/driving range. The use of the undeveloped area south of the existing driving range would not affect existing recreation facilities as this area is not currently open to the public for recreation use.

Temporary Use. Construction of the embankment, retaining wall, and trackway for the Northern Mainline Connector would require a temporary construction easement and staging area adjacent to the current BART embankment. Figure 9 illustrates the two staging locations: one on the HARD driving range immediately adjacent to the existing trackway, and the second on undeveloped HARD property just south of the driving range. Construction access would be required from Industrial Parkway and the driving range parking lot and service road. Construction access would also require the temporary removal of the solar panels in the eastern portion of the driving range parking lot to provide the space for a safe path for large trucks. Typical vehicles would include pickup trucks, cement trucks, and semi-trucks. Truck traffic estimated to be approximately 12 trucks per day.

10 Hayward Recreation and Park District. 2019. op. cit.

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FIGURE 8

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BART HMC2 Project Section 4(f) Evaluation
Proposed Wetland Mitigation Approach

SOURCE: San Francisco Bay Area Rapid Transit District, 2021

P:\WRO2001 Hayward BART\PRODUCTS\Graphics\ISMND\Figure 8.ai (9/30/2021).

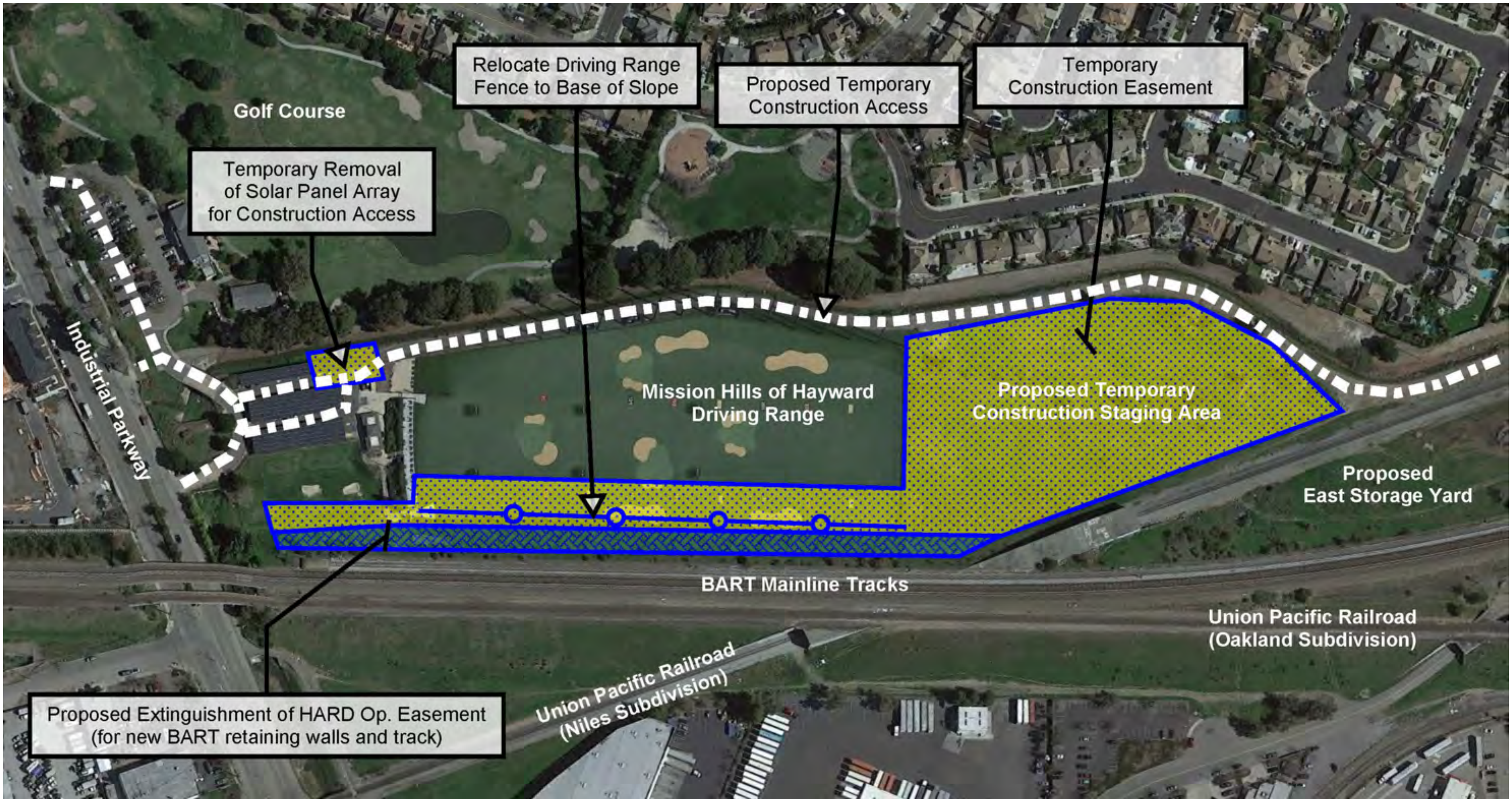

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FIGURE 9

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BART HMC2 Project Section 4(f) Evaluation
Temporary Acquisition Areas

SOURCE: San Francisco Bay Area Rapid Transit District, 2021

Following construction, the driving range would be restored with a relocated western fence, turf replaced, and solar panels reinstalled. As part of real estate negotiations, BART will coordinate with HARD regarding potential compensation for loss of revenue and temporary impacts associated with the closure of the driving range during construction.

Access to the golf course, pro shop and restaurant would be retained throughout the construction period. However, the driving range would be out of operation for approximately 14 months. The downtime is only an estimate and may change once final design is initiated. Prior to the proposed closure, notices would be provided to inform the public of the dates, times, and duration of the proposed closure. BART would coordinate with HARD regarding the appropriate methods for notifying the public; however, it is anticipated that notification would include, but not be limited to, a notice posted at the golf course clubhouse, and posted updates on the HARD website. The public would be directed to other nearby driving range facilities including the Fremont Park Golf Course, approximately 8 miles to the south, the Pleasanton Golf Center, approximately 18 miles to the east, and the Monarch Bay Golf Club, approximately 11 miles to the north.

Following project construction, the driving range would be fully available for public use - the "activities, features, and attributes" of the public driving range, a Section 4(f) resource, would not be adversely affected. Similarly, temporary use of the undeveloped area south of the driving range for construction staging would not affect recreation use as this area is not current developed with recreation facilities. Work associated with the temporary occupancy would be minor in scope, and there are no anticipated permanent adverse physical effects or other interference with the activities or purpose of the resource.

Constructive Use. The Build Alternative would not result in a constructive use of Mission Hills of Hayward Golf Course. An indirect impact would be considered a constructive use under Section 4(f) if the impact were so severe that the public did not have access to the park and/or recreational activities occurring within the park were severely affected by the project's impacts. Potential indirect impacts related to the Build Alternative are discussed below.

Accessibility. Vehicular and pedestrian access to the Mission Hills of Hayward Golf Course would be maintained at all times during construction and operation of the Build Alternative. As described above, construction vehicles would access proposed staging areas via Industrial Parkway and the golf course parking lot; however, the parking area would remain open throughout the construction period. Sidewalks and bicycle routes along Industrial Parkway would remain accessible throughout the construction period.

Visual. Visual impacts during construction would be typical of construction projects, including construction fencing, construction equipment, material stockpiles, and vegetation removal, which would temporarily affect the existing landscape aesthetic of the Mission Hills of Hayward Golf Course. Temporarily disturbed areas would be returned to pre-project conditions once construction is completed; therefore, the minor visual changes associated with the Build Alternative would not be considered a Section 4(f) constructive use.

Noise and Vibration. Indirect noise and vibration impacts associated with the Build Alternative are not expected to result in a constructive use of the Mission Hills of Hayward Golf Course.

According to the Noise and Vibration Impact Assessment,[11] no vibration impacts are anticipated at any of the sensitive receptors of the proposed project. The installation of a crossover north in Industrial Parkway would result in a significant noise impact for multi-family residential uses located adjacent to the proposed Northern Mainline Connector; however, as described in Section 2.1.2, a 600-foot long, 10-foot high sound wall (5 feet above top of rail) would be constructed along the east side the Northern Connector tracks north of Industrial Parkway to reduce noise generated by nearby crossovers. With implementation of the proposed sound wall, no noise or vibration impacts resulting from the proposed project operations are anticipated.

During construction, the project would generate noise and vibration impacts typical of construction activities and from using construction equipment and vehicles. Best Management Practices (BMPs) would be incorporated to minimize these short-term, temporary impacts. These include vibration monitoring by the contractor and having a plan in place before construction begins for the use of alternative equipment and techniques when established thresholds may be exceeded (see Section 6.1.1). The incremental increase in noise and vibration impacts during construction, and once the proposed project is in operation, would not inhibit the existing functions of, or activities at the Mission Hills of Hayward Golf Course. The proposed project would not result in a Section 4(f) constructive use of this resource to indirect noise and vibration impacts.

Air Quality. Indirect air quality impacts as a result of the Build Alternative are not expected to result in a constructive use of Mission Hills of Hayward Golf Course. As discussed in the project's Air Quality Study,[12] the Mission Hills of Hayward Golf Course is currently subject to indirect air quality impacts due to its proximity to Industrial Parkway and Mission Boulevard, and due to its location in a built-out urban environment. The incremental increase air quality impacts during construction and once the proposed project is in operation would not inhibit existing recreational functions in the Mission Hills of Hayward Golf Course that are already subject to air emissions. Further, BMPs would be incorporated to minimize short-term, temporary construction-related air emissions (see Section 6.1.1). The proposed project would not result in a Section 4(f) constructive use of the Mission Hills of Hayward Golf Course due to indirect air quality impacts.

Vegetation and Wildlife. The Mission Hills of Hayward Golf Course is located in a built-out urban area; there are no wildlife corridors or substantial vegetation communities adjacent to the golf course that would be indirectly impacted by the project; therefore, there would be no vegetation or wildlife impacts at the Mission Hills of Hayward Golf Course resulting in a Section 4(f) constructive use.

Water Quality. The Build Alternative would have potential short-term water quality impacts during grading and excavation activities as well as from uncovered or improperly covered stockpiles, unstabilized slopes, construction staging areas, unmaintained construction

11 LSA. 2022b. *Noise and Vibration Impact Assessment, BART Hayward Maintenance Complex Phase 2 Project.* June.

12 LSA. 2022c. *San Francisco Bay Area Rapid Transit (BART) Hayward Maintenance Complex – Phase 2 (HMC2) Project. Air Quality Impact Analysis*. June.

equipment, and accidental spills of fuels, oils, and other potentially toxic materials. Similarly, operation of the Build Alternative has the potential to affect water quality. Operation of the proposed Project components would result in the storage and use of cleaning compounds, corrosives, metals, adhesives, and solvents used to wash interiors and equipment. Release of these types of substances could enter the stormwater sewer system or local drainages in the event of a spill or leaking container. However, with minimization measures, short- and long-term water quality impacts associated with the Build Alternative would not substantially impair the activities, features, and/or attributes that qualify the Mission Hills of Hayward Golf Course for protection under Section 4(f).

5.2.1.4 Applicability of Section 4(f)

The Build Alternative would result in direct and temporary use of the Mission Hills of Hayward Golf Course. No constructive use of this resource is anticipated under the Build Alternative.

The Build Alternative would require direct use of 1.41 acres (61,544 square feet) of the Mission Hills of Hayward Golf Course driving range in the form of an extinguishment of a portion of the existing operating easement, which represents 9.5 percent of the driving range's pre-project acreage and 2.4 percent of the overall acreage of the Mission Hills of Hayward Golf Course facility. The Build Alternative may also require direct use of an additional 2.24 acres of undeveloped open space land south of the existing driving range for conversion to a permanent wetland mitigation area. This undeveloped open space area is owned by HARD as part of the Mission Hills of Hayward Golf Course but is not currently open to the public or used for recreation purposes. BART would provide HARD compensation for any permanent impacts. The details of the proposed compensation would be negotiated as part of real estate negotiations between the two agencies With implementation of the identified mitigation measures, direct use of the driving range and HARD-owned property south of the driving range would constitute a *de minimus* impact to Section 4(f) resources.

In addition, the Build Alternative would result in temporary use of approximately 89,500 square feet of the existing driving range, as well as a 3-acre parcel of HARD-owned land located south of the driving range for construction staging. This temporary use would result in the temporary interference to existing driving range operations for approximately 14 months during project construction, it would not interfere with other operations at the existing golf course. There are no anticipated permanent adverse physical effects or other interference with the activities or purpose of the resource. Temporarily disturbed areas of the existing driving range would be fully restored to pre-project conditions once temporary impacts are complete and HARD would be compensated for the lost revenue of the driving range associated with the temporary closure. Therefore, the temporary use of the driving range and HARD-owned property south of the driving range would constitute a *de minimus* impact to Section 4(f) resources. As described above, a portion of the 3-acre parcel of undeveloped open space may be permanently converted to wetland following its use for construction staging; this direct use is described above.

5.2.1.5 Documentation of Consultation

BART staff have been meeting with HARD staff to plan the HMC2 Project in manner that would lead to the greatest public benefit but with the least disruption of ongoing operation of the Mission Hills of Hayward Golf Course. BART and HARD staff have discussed potential project impacts and avoidance and minimization measures to be implemented during project operation and construction. Meetings and further correspondence between BART and HARD will continue to occur throughout the environmental review process. Formal consultation with HARD to confirm the *de minimis* finding will occur during public review of the Draft Supplemental IS/MND. Thereafter, correspondence with the official with jurisdiction over the Mission Hills of Hayward Golf Course will be added to Appendix A.

5.3 CONCLUSION

Based on the information presented above, the effects of the proposed improvements for the HMC2 Project constitute a *de minimis* impact and the requirements of 23 USC 138 and 149 USC 303 have been satisfied. This finding is considered valid unless new information is obtained, or the proposed effects change to the extent that a new analysis is needed.

6.0 AVOIDANCE, MINIMIZATION AND MITIGATION MEASURES

Several measures have been identified during development of the environmental studies to minimize potential impacts in the HMC2 Project area, including areas in which Section 4(f) properties are located, and are discussed in more detail in Section 6.1.1.

Planning efforts regarding reducing the size of parcel acquisition will continue during final design to refine the initial concept designs used in the environmental analysis with the expected outcome that HARD would concur that project plans would not result in an adverse effect to the Mission Hills of Hayward Golf Course. Concurrence by HARD will provide demonstrable evidence that harm to the Section 4(f) resources has been avoided and that the impacts would be *de minimis*.

Both common and property-specific measures to minimize harm to the Mission Hills of Hayward Golf Course are specified below. None of the effects under 36 CFR 800.5 are anticipated to be adverse, and a confirmation of that finding will be made with HARD, the official with jurisdiction, including revision to any minimization and mitigation measures proposed, as part of the consultation process. For the final environmental document, a HARD concurrence letter will be included as an appendix to the Section 4(f) Evaluation. The direct use and/or temporary occupancy of the Section 4(f) resource would be considered a *de minimis im*pact.

6.1 GENERAL MEASURES

Several measures have been identified during development of the technical studies and the Draft Supplemental IS/MND to minimize potential project impacts to Section 4(f) properties. These measures are summarized below.

6.1.1 Air Quality

- All work involving clearing, grubbing, grading, and fill transport associated with work on the project site north of Whipple Road shall not be conducted concurrently with construction work south of Whipple Road to assure that the BAAQMD nitrogen oxide (NOx) construction equipment emission threshold would not be exceeded.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day, or as necessary to control dust.

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

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

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

- All roadways, driveways, and sidewalks to be paved shall be completed as soon as practical.

- Building pads shall be laid as soon as practical after grading unless seeding or soil binders are used.

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage stating the regulations shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

6.1.2 Noise and Vibration

- Where feasible, BART shall require that the contractor complies with a Performance Standard of 80 A-weighted decibels (dBA) 8-hour equivalent continuous sound level (L_{eq}) during the daytime (7 a.m. to 10 p.m.) and 70 dBA 8-hour L_{eq} during the nighttime (10 p.m. to 7 a.m.) at the property line of the sensitive receptor.

- Prior to construction, BART shall ensure that a Noise Control and Monitoring Report is prepared. The report shall include expected construction noise levels, noise control measures, and explain how the contractor intends to monitor and document construction noise and complaints.

- Locate noisy equipment as far as possible from noise sensitive receptors. In addition, the use of temporary barriers should be employed around the equipment.

- Where construction noise impacts have been identified, use temporary noise barriers along the working area and/or project right-of-way. Barriers/curtains must achieve a Sound Transmission Class (STC) of 30 or greater in accordance with American Society for Testing and Materials (ASTM) Test Method E90 and be constructed from material having a surface density of at least 4 pounds/square foot, to ensure adequate transmission loss.

- When nighttime or 24-hour construction will be required, coordinate with residents to ensure that the affected residents are fully informed about the upcoming construction. Residents will be given the option of sleeping in hotel rooms at BART expense for the duration of the nighttime construction in areas where construction is expected to exceed the FTA criterion. Residents that work nights and sleep days in locations where construction noise is expected to exceed the FTA criterion will be given the same option.

- Require ambient sensitive ("smart") backup alarms, SAE Class D, or limit to SAE Class C (97 dB) for vehicles over 2.5 cubic yards haulage capacity, or California Occupational Safety and Health

Act (Cal-OSHA)/Division of Occupational Safety and Health (DOSH)-approved methods that avoid backup alarm noise for vehicles under 2.5 cubic yards haulage capacity.

- Fit silencers to combustion engines. Ensure that equipment has effective, quality mufflers installed, in good working condition.
- Switch off engines or reduce to idle when not in use.
- Lubricate and maintain equipment regularly.
- Route construction-related truck traffic along roadways that result in the least disturbance to sensitive receptors.
- Comply with a Performance Standard of 0.3 in/sec peak particle velocity (PPV) at any building at any time.
- Minimize vibration annoyance by maintaining vibration levels at 80 vibration velocity decibels (VdB) or less at any building at any time.
- Prior to construction, BART shall prepare a Vibration Control and Monitoring Report, in which the contractor indicates what vibration levels they expect to generate, vibration control measures they intend to implement, and how they intend to monitor and document construction vibration and complaints.
- Avoid the use of impact pile drivers and use instead sonic or vibratory impact drivers. It is also encouraged that “quiet” or “silent” piling technologies be used, if feasible.
- When nighttime or 24-hour construction is necessary, coordinate with residents to ensure that the affected residents are fully informed about the upcoming construction. Residents will be given the option of sleeping in hotel rooms at BART expense for the duration of the nighttime construction in areas where construction is expected to exceed the FTA criterion. Residents that work nights and sleep days in locations where construction vibration is expected to exceed the FTA criterion will be given the same option.
- Monitor vibration during construction to ensure compliance with the criterion for building damage for buildings within 40 feet from construction activities. Conduct a pre-construction crack survey at these structures.
- Plan routes for hauling material out of the project site that would cause the least impact (annoyance).
- Restrict high amplitude vibration methods such as vibratory pile driving and soil compaction using large truck-mounted compactors to areas beyond 50 feet and 20 feet, respectively, of residential structures or wood-framed buildings. Otherwise, temporary accommodations away from construction shall be coordinated between BART and the residents.

6.2 PROPERTY-SPECIFIC MEASURES

- Following construction, the western fence will be relocated and reinstalled and the solar panels in the eastern portion of the driving range parking lot will be reinstalled. Any disturbed turf grass and landscaping not used by the project will be replaced to match pre-project conditions in consultation with HARD during and at the completion of construction. As part of real estate negotiations, BART will coordinate with HARD regarding potential compensation for loss of revenue associated with the closure of the driving range during construction.

- Construction of the track for the Northern Mainline Construction would require relocation of the boundary fence between the driving range and BART property. Approximately 1.14 acres (61,544 square feet) of property would be affected, requiring this portion of HARD's operating easement to be extinguished. The easement area to be extinguished would be re-purchased by BART.

- Following its use for constructing staging, 2.24 acres of the undeveloped area located south of the driving range is being considered for conversion to a permanent wetland area as mitigation for the loss of wetlands associated with development of the HMC2 Project. Conversion of this area to permanent wetland would entail establishment of a conservation easement over this portion of HARD's property, to preserve the created wetlands in perpetuity. BART would provide HARD compensation for any permanent impacts. The details of the proposed compensation would be negotiated as part of real estate negotiations between the two agencies.

7.0 REFERENCES

Hayward Recreation and Park District. 2019. Hayward Recreation and Park District Parks Master Plan. October.

LSA. 2021. BART Hayward Maintenance Complex Phase 2 Project –Cultural Resources Study. March.

LSA. 2022a. BART Hayward Maintenance Complex Phase 2 Project – Supplemental Cultural Resources Study. June.

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San Francisco Bay Area Rapid Transit District (BART), 2021. “System Facts” website: www.bart.gov/about/history/facts (accessed July 30, 2021).

Trust for Public Land. 2021. Land and Water Conservation Fund Project Map website: lwcfcoalition.org/map (accessed October 5, 2021).

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APPENDIX E

RESPONSE TO COMMENTS AND STAFF-INITIATED TEXT CHANGES

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APPENDIX E

RESPONSE TO COMMENTS AND STAFF-INITIATED TEXT CHANGES

In accordance with California Environmental Quality Act (CEQA) Guidelines Section 15073, the Public Review Draft Supplemental Initial Study/Mitigated Negative Declaration (Supplemental IS/MND) for the proposed San Francisco Bay Area Rapid Transit District (BART) Hayward Maintenance Complex Phase 2 Project (HMC2 Project) was released for public review on June 17, 2022. The public review period was scheduled to end on July 18, 2022; however, due to technical issues with the email address provided by BART for receiving comments and questions about the project, the comment period was extended until August 8, 2022, resulting in a 53-day public review period. The Public Review Draft Supplemental IS/MND was posted on the project website (www.bart.gov/projects), made available to local libraries, and presented to the community at a public meeting on July 14, 2022. One comment letter was received by BART during this period, and verbal comments were also received at the public hearing. In the following pages, the comments and responses are enumerated to allow for cross-referencing of CEQA-related comments. The enumerated comment letters and meeting transcript are included in this memorandum, followed by the respective responses.

CEQA does not require or provide guidance on responding to comments on Mitigated Negative Declarations; therefore, this response to comments document follows CEQA Guidelines Section 15088, applicable to responses to comments on EIRs, which requires that agencies respond only to significant environmental issues raised in connection with the project. Therefore, this document focuses primarily on responding to comments that relate to the adequacy of the information and environmental analysis provided in the Supplemental IS/MND. BART has reviewed the comment letter and comments received during the public meeting. As part of BART's review and consideration of comments received, BART provides the following written responses that will become part of the CEQA record for the project.

The response to comments also contains clarifications and minor corrections to information presented in the draft Supplemental MND. None of the clarifications or modifications in this document requires "substantial revision" of the Supplemental MND as defined in the Guidelines, therefore BART has determined that no recirculation is required.

COMMENTS AND RESPONSES

This section includes a reproduction the comment letter received on the Supplemental IS/MND and the public meeting transcript and responses to each substantive CEQA-related comment. The comment letter and the meeting transcript are assigned a letter (A, B, etc.), and individual comments within the letter and meeting minutes are numbered consecutively. For instance, comment A-1 is the first numbered comment in Letter A. Please note that text that has not been numbered does not raise environmental issues or relate to the adequacy of the information or analysis within the IS/MND, and therefore, no comment is enumerated or response required, per CEQA Guidelines Section 15132.

The following comments on the Supplemental IS/MND were submitted to BART:

LETTER A
Liz Ames, BART Director, District 6
August 8, 2022

Public Meeting Comments - Meeting Transcript
July 14, 2022

Written responses to all written and verbal comments on the IS/MND are provided after the comments.

Comment Letter A

August 8, 2022

Email: constructionprojects@bart.gov

Subject: Public comments on draft supplemental IS/MND for BART Hayward Maintenance Complex Phase 2 (HMC 2) Project

Dear BART Staff,

BART is seeking off-site mitigation for unavoidable impacts for the subject Project. Per the environmental assessment Appendix C, Avoidance and Minimization Measures/Compensatory Mitigation Section 4.2.2 , the Mitigation is outlined below:

- Total impacts to waters of the State would be 0.798 ac (34,758 square feet) and 5,201 linear feet.
- Total impacts to riparian habitat under CDFW jurisdiction would be 0.009 ac (337 sq. ft) and 18 linear feet.
- These impacts would require compensatory mitigation.

BART is in the process of locating suitable off-site projects or compensatory mitigation in coordination with the USACE, RWQCB, and CDFW agencies based on this environmental assessment.

As background, Alameda Creek was improved this year with the installation of a fish ladder for the first time in 50 years to allow migratory fish such as Chinook salmon and threatened steelhead trout to get around a human-made barrier in the lower creek, including a rubber inflatable dam and a 120-foot, sloping cement structure known as the BART weir. 1

Alameda Creek supports anadromous fish, the salmon and steelhead trout, in their migration from saltwater to freshwater. More work is starting this year with the Lower Alameda Creek Fish Restoration in Flood Control District Zone 5 project and funding will likely be needed to support Alameda Creek improvements in this inflationary economy.

Conservation groups, the community along with Alameda Creek Alliance, Alameda County Water District, and the Alameda County Flood Control District officials are making significant strides to improve lower Alameda Creek. BART's participation to potentially provide Project mitigation off-site for the lower Alameda Creek project could be an opportunity for BART and our community.

Please consider including the Lower Alameda Creek Fish Restoration project as an off-site mitigation location and/or for compensatory mitigation as part of this HMC 2 Project. Thank you for your consideration and work on this Project so beneficial to the Bay Area.

Liz Ames,

BART Director, District 6

510.371.1311

Elizabeth.ames@bart.gov, Liz4bart@gmail.com

LETTER A
Liz Ames, BART Director, District 6
August 8, 2022

Response A-1: The primary comments in the attached letter relate to the compensatory and off-site mitigation sites that BART would need to obtain to offset impacts to wetlands, waters of the State and riparian habitat associated with implementation of the HMC2 Project and suggest that BART consider including the Lower Alameda Creek Fish Restoration project as an off-site mitigation location as part of this HMC 2 Project.

Mitigation Measure BIO-9, identified in this Supplemental IS/MND requires that BART obtain the necessary regulatory permits from the United States Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) and provide compensatory mitigation for impacted waters at a ratio of 1:1. With implementation of Mitigation Measure BIO-9, impacts to jurisdictional waters would be less than significant. BART is currently working with the regulatory agencies to identify appropriate mitigation opportunities in compliance with regulatory requirements. BART will continue to coordinate with the agencies as part of the regulatory permitting process and all potential mitigation sites will be considered.

BART Hayward Maintenance Complex Phase 2
Summary of Public meeting to review and receive comments
on the Draft IS/MND and Section 4f
July 14, 2022

Comment Letter PH

Shanna Guiler, Environmental Associate, LSA: So that concludes our presentation giving a brief overview of the HMC2 project as well as the findings of the environmental review.

There are a number of ways that you can provide your comments. You can submit them via email to the email address: constructionprojects@bart.gov. You can also send them in via mail via US postal service (BART, Attention Donald Dean, 8th Floor, 2150 Webster Street, Oakland, CA 94612), submit comments in the chat or make them verbally.

Liz Ames, Union City Resident: Can we go back to the slide that provides an overview of the site plan. Just to understand, does the current capacity of this facility have storage for about 300 train cars; so if we add 250, the whole site will have 550 cars? **1**

Aidin Sarabi, Project Manager, HMC 2, BART: I don't have the storage capacity of our existing yard, but the phase 2 project is going to provide additional 250 car capacity to the system.

Liz Ames: To the north where BART is going to connect to the existing line, and that's past Industrial, is there going to be a retaining or sound wall?

Aidin Sarabi: Yes, along the driving range there will be a retaining wall to carry the load of the new tracks and the connecting track base. Also, North of Industrial Parkway and on the west side of the SoHay development, we are going to have a retaining wall and on top of the retaining wall we will build the sound wall. **2**

Liz Ames: And there is also a new bridge over Industrial that's a significant project – it's a brand-new bridge with a BART track to take the track over to join the existing system. Is that correct? **3**

Aidin Sarabi: Yes, that's correct.

Liz Ames: Does BART have an easement that the Hayward Area Recreational District (HARD) has been allowed to use and because BART is putting in the new track, BART will be taking back the easement. So, BART is not actually shrinking the driving range when this is all done? Is that correct? **4**

Aidin Sarabi: Not precisely. BART will be relocating HARD's safety nets. Right now, the nets are located on the top of the hill; BART will be relocating them to the south of the hill. The full use of the area of the driving range is going to remain the same.

Liz Ames: So, this is going to be closed because of the construction, the netting is coming down (the driving range netting is very tall, I think it's over a hundred feet or something). The haul construction route so the trucks are going to be coming in around the driving range, between the driving range and the golf course? **5**

Aidin Sarabi: The new tracks are going to be between the safety nets on the west side of the driving range and existing BART mainline. The temporary construction access road is between the golf course and the driving range.

__Liz Ames:__ So, it's not interfering with the golf course operations, just the driving range. And the staging area is going to be to the south. I would like to talk about the environmental impacts that cannot be mitigated. **6**

__Shanna Guiler:__ There are no impacts that cannot be mitigated. They will all be mitigated. BART did identify a very few new impacts and we have identified measures to mitigate those. So, they will all be mitigated to a less-than-significant level.

__Liz Ames:__ So, my concern is the wetlands that we had. Can you explain where the wetlands are going to be reestablished? And I guess there's the wetland and the riparian areas and there's water that is going to be diverted into a retention basin. And because we are reverting water into a retention, do we have a drawing that shows the retention basin?

__Aidin Sarabi:__ I'm not sure the engineering drawing shows the retention basin. BART has some conceptual since this is one of the options being considered. BART's mitigation proposal hasn't been finalized. This is one of the options BART is considering, and BART is in the planning stage to discuss with HARD to work out the details. **7**

__Liz Ames:__ So, BART does have wetlands and riparian areas that need to be mitigated and if it cannot be mitigated at the Hayward site that BART is disturbing that construction zone could be turned into something (wetlands I suppose). If BART can't mitigate all of those water-related impacts, BART is putting water into a retention pond and BART is going to create a wetland possibly at this Hayward facility south of the driving range (BART will not impact the driving range). If we need to mitigate then what is shown and been discussed (wetland south of the driving range), and we need to mitigate more, I would like to propose that there's an Alameda Creek project that the Alameda County Flood Control District is pursuing. A fish passage project downstream of the BART. This is in Fremont which is I think within a range of 10 to 15 miles from the site of this. There is in close range, possibilities where BART could possibly mitigate, if BART couldn't mitigate everything in Hayward. So, this water diversion is causing mitigation potential and I would like to know if we could consider working with the Alameda County Flood District because they are working on a fish passage project, south of the BART weir, and that would promote the endangered salmon steelhead trout species from migrating from the bay to fresh water up to the BART weir. The BART weir is really near the town of Niles which is in Fremont. I don't think people are generally aware of where the BART weir is. **8**

__Shanna Guiler:__ The biologist knows where the BART weir is, but they are probably one of the few.

__Liz Ames__**:** It's a small concrete dam and the Alameda Creek Alliance received a significant amount of money and support to put in a fish ladder. So, the next step is to get the fish to the ladder from the bay to the base of the BART weir, which is where the ladder begins. This would allow the fish to bypass the weir, which is a small dam, and then it could go further upstream. Proposing that BART looks at the Alameda Creek and at a potential fish passage project that's possibly being permitted as we speak.

Liz Ames: Appreciate the description of the 4f and the de minimus, which is less than significant. However, that focuses on the recreation components and does not focus on the previously discussed water issue. So, we are returning the driving range back to operational condition. The only thing that I thought was a little alarming is that Hayward had just refurbished the driving range; they put in artificial turf which was an extensive amount of work to update driving range (and it was recently updated). I don't know what happened with construction of this, perhaps it was bad and had to be fixed, maybe they could have postponed it. However, in any event BART would restore the driving range completely, and BART would pay for that? **9**

Shanna Guiler: Yes

PUBLIC MEETING TRANSCRIPT
Public Meeting Comments – Meeting Transcript
July 14, 2022

Response PH-1: This comment requests clarification related to the potential capacity of the HMC Yard following implementation of the HMC2 Project. As described on page 3-12 of the Supplemental IS/MND, rail car storage capacity at the Hayward Yard is 303 cars, all on the yard's west side. Presently, 280 cars can be stored as complete trains of commonly scheduled lengths (twenty-four 10-car trains, and eight 5-car trains). The remaining spaces accommodate 23 single cars.

As indicated in the meeting transcript and on page 3-5 of the Supplemental IS/MND, the HMC2 Project would provide additional storage tracks for approximately 250 additional BART cars. This additional storage would support BART's plan to increase its fleet size to accommodate a growing demand for reliable and more frequent train service to/from downtown San Francisco and Oakland.

Response PH-2: This comment asks if a sound wall or retaining wall is proposed north of Industrial Parkway. Mitigation Measure NOI-6 requires construction of a sound wall at the crossover for the Northern Mainline Connector. In compliance with Mitigation Measure NOI-6, an approximately 500-foot long, 7-foot-high sound wall would be constructed along the east side of the Northern Mainline Connector tracks north of Industrial Parkway. Approximately 275 feet of the proposed sound wall would be constructed atop the proposed retaining wall; the remaining 230 feet would consist of a stand-alone sound wall. With implementation of Mitigation Measure NOI-6, noise impacts for sensitive receptors would be reduced to a less-than-significant level.

As further described below, "Staff-Initiated Text Changes," this description of the proposed sound wall differs from that included in the Draft Supplemental IS/MND. As such, the Supplemental IS/MND has been revised.

Response PH-3: This comment requests clarification regarding the proposed overcrossing over Industrial Parkway. As described on page 3-23 of the Supplemental IS/MND, the HMC2 Project would include a new bridge overcrossing structure that would be constructed over Industrial Parkway to carry the new Northern Connecter trackway. The structure would be approximately 230 feet long, 25 feet wide, and 25 feet high and would be supported by columns placed in the median and either side of the roadway.

Response PH-4: The comment requests information regarding the impacts of the proposed project on the golf course driving range and the details of the Hayward Area Recreation and Park District's (HARD's) operating easement. Potential impacts to the driving range associated with project construction and operation are identified in Section 5.16, Recreation, of the Supplemental IS/MND and in the Section 4(f) analysis provided as Appendix D of this Supplemental IS/MND.

As described in Section 5.16 of the Supplemental IS/MND, construction of the track for the Northern Mainline Connector would require the relocation of the boundary fence between the golf course driving range and the existing BART tracks. The boundary fence consists of black safety netting strung between steel poles that extend approximately 120 feet above ground level. The property where the fence is located is owned by BART, but HARD has an existing operating easement for the property for operation of the driving range. The relocation would shift the boundary fence approximately 50 feet to the east along 1,310 feet (the full length of the driving range). Approximately 61,544 square feet (1.41 acres) of property would be permanently affected. The boundary shift would require BART and HARD to extinguish a portion of the existing operating easement.

As clarified during the public meeting, the existing nets are located at the top of the existing embankment, which separates the driving range from the BART tracks. As part of the HMC2 Project, BART would relocate the nets to the bottom of the embankment. Although the boundary shift would reduce the overall area of the driving range property, the operating portion of the driving range would remain the same.

Response PH-5: The comment requests clarification regarding the proposed construction access route along the driving range. As described on page 3-35 of the Supplemental IS/MND, construction access to the Project site would be accomplished through three possible routes: (1) by way of the existing BART gate at Whipple Road (951 Whipple Road), (2) by way of Industrial Parkway through the driving range parking area, and (3) by way of Mission Boulevard through Gresel Street, a local neighborhood roadway. The proposed construction route through the driving range parking area would run along an existing access road between the driving range and the golf course.

Response PH-6: This comment requests clarification regarding environmental impacts that cannot be mitigated. As described throughout the Supplemental IS/MND, the proposed HMC2 Project would not have a significant effect on the environment. The majority of the environmental impacts associated with the HMC2 Project would be the same as or similar to those identified in the 2011 IS/MND. New impacts were identified related to biological resources and noise/vibration. None of the environmental impacts would result in any significant effects that could not be mitigated to less-than-significant levels following implementation of mitigation measures identified in the 2011 IS/MND or new, project-specific mitigation measures identified in the Supplemental IS/MND.

Response PH-7: The comment requests additional information related to re-establishment of wetlands in the project area and the proposed retention basin to be established as part of the HMC2 Project. Please see Response A-1, which addresses comments related to the potential wetland mitigation. These comments will be considered by the BART Board of Directors when considering whether or not to approve the proposed Project.

Response PH-8: Please see Response A-1, which addresses comments related to the potential wetland mitigation. These comments will be considered by the BART Board of Directors when considering whether or not to approve the proposed Project.

Response PH-9: The comment requests confirmation that BART would compensate HARD for the temporary use of the driving range area during project construction and would restore the driving range following completion of construction activities. Potential impacts to the driving range associated with Project construction and operation are identified in Section 5.16, Recreation, of the Supplemental IS/MND and in the Section 4(f) analysis provided as Appendix D of this Supplemental IS/MND. Following construction, the driving range would be restored with a relocated western fence, the turf would be replaced, and the solar panels would be reinstalled. The golf course driving range would be closed throughout the approximately 14-month construction period. The proposed closure would be temporary, and use of the golf course driving range would resume once construction activities are complete. HARD would experience a loss of revenue from the closure of the driving range during construction; BART would compensate HARD for the temporary revenue loss and temporary impacts during construction as part of real estate negotiations between the two agencies.

STAFF-INITIATED TEXT CHANGES

Since preparation of the Supplemental IS/MND, the design of the proposed soundwall has been refined. Therefore, the description of the proposed sound wall included in the Supplemental IS/MND has been revised. The following minor changes and modifications are hereby made to the Supplemental MND. Changes are shown in double underline and strikeout.

Page 3-23 of the Supplemental IS/MND has been revised as follows:

- **Sound Wall.** A ~~6~~500-foot-long, ~~10~~8-foot-high sound wall ~~(5 feet above track top of rail)~~ would be constructed along the east side the Northern Connector tracks north of Industrial Parkway as mitigation for noise impacts associated with construction of nearby crossovers (see Section 5.13, Noise). Approximately 275 feet of the proposed sound wall would be constructed atop the proposed retaining wall; the remaining 230 feet would consist of a stand-alone sound wall.

Page 3-36 of the Supplemental IS/MND has been revised as follows:

> One portion of ~~T~~the proposed sound wall would be located at the northernmost end of the Project limit, north of the proposed retaining wall. The proposed sound wall would be approximately 230 feet long and 8 feet above grade. The sound wall would be constructed on CIDH concrete piles ~~with a concrete masonry pier wall on top. The sound wall would be constructed using prefabricated masonry units filled with concrete and would require the use of drilling rigs.~~ using drilling rigs to drill the pile location, drop steel cages and pour concrete in place. The top of the piles would be connected with a continuous concrete pier wall and the ribbed steel sound wall would be constructed on top of it. An additional 275 feet of sound wall would be constructed atop the proposed retaining wall. Both sound wall components would be comprised of the same ribbed steel material.

Page 5-13 of the Supplemental IS/MND has been revised as follows:

> A new retaining wall, approximately 8 feet high would be constructed along the east side of the existing BART tracks, and a new, approximately ~~6~~500-foot-long, ~~5~~8-foot-high sound wall would also be constructed on the east side of the existing BART tracks to minimize sound impacts associated with the new crossover. Approximately 275 feet of the proposed sound wall would be constructed atop the proposed retaining wall; the remaining 230 feet would consist of a stand-alone sound wall.