STOCKTON DIAMOND

Unlocking Northern California's Freight and Passenger Rail Potential

DRAFT ENVIRONMENTAL IMPACT REPORT

March 2021

State Clearinghouse #2020080321

San Joaquin Regional Rail Commission

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Stockton Diamond Grade Separation Project

STATE CLEARINGHOUSE #2020080321

March 2021

Prepared for: San Joaquin Regional Rail Commission

San Joaquin Regional Rail Commission
949 East Channel Street
Stockton, California 95202

Contact: Kevin Sheridan
info@stocktondiamond.com

Prepared by: HDR

HDR Engineering, Inc.
2379 Gateway Oaks Drive, Suite 200
Sacramento, California 95833

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Abbreviations and Acronyms

Term	Definition
°F	degrees Fahrenheit
AASHTO	American Association of State and Highway Transportation Officials
AB	Assembly Bill
ACE	Altamont Corridor Express
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing materials
ACS	American Community Survey
ADA	Americans with Disabilities Act
AIA	Airport Influence Area
ALUCP	Airport Land Use Compatibility Plan
AM	morning
APE	area of potential effect
ARB	California Air Resources Board
ASTM	American Society for Testing and Materials International
BG	block group
bgs	below ground surface
BLM	Bureau of Land Management
BMP	best management practice
BNSF	BNSF Railway
BSA	biological study area
BTU	British Thermal Units
CAAQS	California Ambient Air Quality Standards
Cal Water	California Water Service
Cal/EPA	California Environmental Protection Agency
CALFIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CCAA	California Clean Air Act

Term	Definition
CCR	California Code of Regulations
CCT	Central California Traction Company
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
CHP	California Highway Patrol
CHSRA	California High-Speed Rail Authority
CMP	Construction Management Process
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRHR	California Register of Historical Resources
CT	census tract
CUPA	Certified Unified Program Agency
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
CY	cubic yard
dB	decibel
dBA	A-weighted decibel
DOF	California Department of Finance
DOT	Department of Transportation
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EB	eastbound

Term	Definition
EDR	Environmental Data Resources
EFH	Essential Fish Habitat
EHRA	Earthquake Hazards Reduction Act
EIA	Energy Information Administration
EIR	Environmental Impact Report
EO	Executive Order
EOP	Emergency Operations Plan
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
ESA	Endangered Species Act
FCAA	federal Clean Air Act
FEMA	Federal Emergency Management Agency
FGC	California Fish and Game Code
FIRM	Flood Insurance Rate Map
FR	*Federal Register*
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GAO	Government Accountability Office
GHG	greenhouse gas
GIS	geographic information system
GWh	gigawatt hour
HAPC	Habitat Areas of Particular Concern
HASP	health and safety plan
HCM	*Highway Capacity Manual*
HCP	Habitat Conservation Plan
HMMP	hazardous materials management plan
HRA	health risk assessment
I-205	Interstate 205
I-5	Interstate 5
I-580	Interstate 580
kV	kilovolt

Term	Definition
kWh	kilowatt hour
LBP	lead-based paint
LCCF	lightweight cellular concrete fill
Ldn	day-night sound level
LEP	limited English proficiency
Leq	equivalent sound level
Lmax	maximum sound pressure level
LOS	level of service
LQG	large-quantity generator
LRA	Local Responsibility Area
LUST	leaking underground storage tank
MBTA	Migratory Bird Treaty Act
mgd	million gallons per day
MM	mitigation measure
MP	milepost
mph	miles per hour
MRI	magnetic resonance imaging
MS4	municipal separate storm sewer system
MT	metric ton
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAVD 88	North American Vertical Datum of 1988
NB	northbound
NCCP	natural community conservation plan
NCCPA	Natural Community Conservation Planning Act
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NE	northeast
NEPA	National Environmental Policy Act
NFRAP	no further remedial action planned
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service

Term	Definition
NO	nitric oxide
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NO_X	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	National Register of Historic Places
NW	northwest
O_3	ozone
OES	Office of Emergency Services
OHP	Office of Historic Preservation
OSHA	Occupation Safety and Health Administration
PA	Programmatic Agreement
Pb	lead
PDT	Project Development Team
PFYC	Potential Fossil Yield Classification
PG&E	Pacific Gas and Electric
PL	Public Law
PM	evening
PM_{10}	particulate matter 10 microns in diameter or less
$PM_{2.5}$	particulate matter 2.5 microns in diameter or less
ppm	parts per million
PPV	peak particle velocity
PRC	California Public Resources Code
PRMP	Paleontological Resources Management Plan
RCMP	Regional Congestion Management Program
RCRA	Resource Conservation and Recovery Act
RMS	root mean square
ROG	reactive organic gas
RR	railroad
RSA	Resource Study Area

Term	Definition
RTD	Regional Transit District
RTP	Regional Transportation Plan
RWCF	Regional Wastewater Control Facility
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SCH	State Clearinghouse
SCK	Stockton Metropolitan Airport
SCS	Sustainable Communities Strategy
SE	southeast
SEL	sound exposure level
SEWD	Stockton East Water District
SFD	Stockton Fire Department
SHMA	Seismic Hazards Mapping Act
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SJAFCA	San Joaquin Area Flood Control Agency
SJCCTP	San Joaquin County Coordinated Transportation Plan
SJCOG	San Joaquin Council of Governments
SJJPA	San Joaquin Joint Powers Authority
SJMSCP	San Joaquin County Multi-Species Habitat Conservation and Open Space Plan
SJRRC	San Joaquin Regional Rail Commission
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_2	sulfur dioxide
SO_X	sulfur oxide
SP	Southern Pacific
SPCC	Spill Prevention, Control, and Countermeasure
SPD	Stockton Police Department
SPL	State Priority List
SQG	small-quantity generator

Term	Definition
SR	State Route
STIP	State Transportation Improvement Program
SWG	Stakeholder Working Group
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCE	temporary construction easement
TMDL	total maximum daily load
TSCA	Toxic Substances Control Act
TVSJVRRA	Tri-Valley San Joaquin Valley Regional Rail Authority
UC	University of California
UCMP	University of California Museum of Paleontology
UP	Union Pacific Railroad
US	United States
USA North	Underground Service Alert North
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USD	Unified School District
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
v/c	volume-to-capacity
VdB	vibration velocity
VMT	vehicle miles traveled
VOC	volatile organic compound
WB	westbound
WDR	waste discharge requirement
WEAP	Worker Environmental Awareness Protection

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ES.1 Project Background

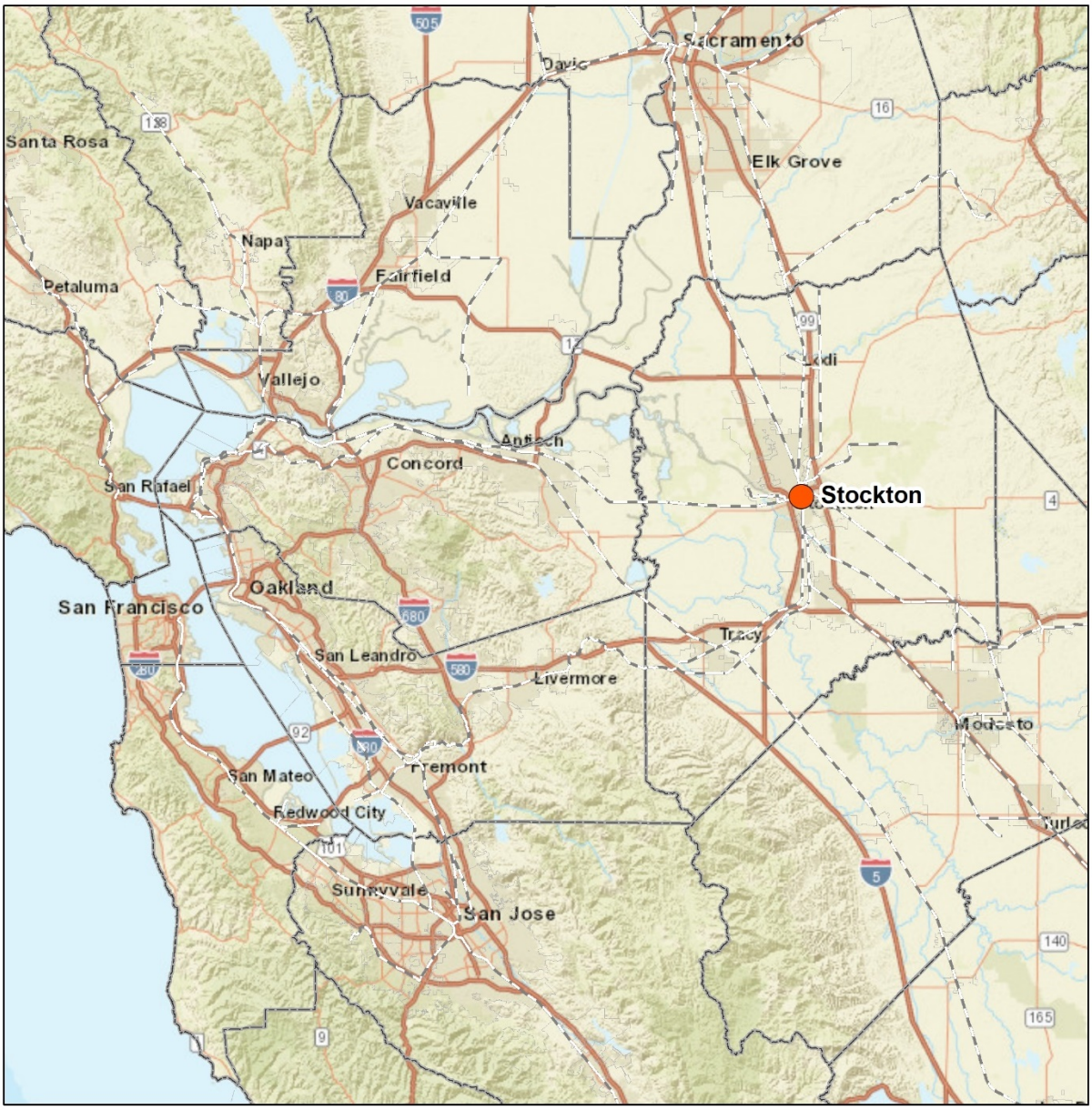
The San Joaquin Regional Rail Commission (SJRRC) proposes to construct a grade separation of two principal railroad lines at the Stockton Diamond in Stockton, California. This Environmental Impact Report (EIR) was prepared in conformance with the California Environmental Quality Act (CEQA). SJRRC, as the project sponsor, is the CEQA lead agency. This CEQA Document may be used, relied on, and is substantial evidence for any further environmental review, including but not limited to National Environmental Policy Act (NEPA) analysis.

The Stockton Diamond Grade Separation Project (Project) is a critical passenger and freight mobility project. The current Altamont Corridor Express (ACE) and Amtrak San Joaquins passenger rail services are constrained by the Stockton Diamond Interlock at-grade crossing, which can reduce reliability and on-time performance for both passenger and freight rail. The grade separation would help improve the operational performance for SJRRC and the San Joaquin Joint Powers Authority (SJJPA) as they provide service between the Central Valley, Sacramento, and the San Francisco Bay Area. Figure ES-1 shows the general regional Project location.

Currently, the BNSF Railway (BNSF) Stockton Subdivision and the Union Pacific Railroad (UP) Fresno Subdivision consist of two main tracks each, and they intersect each other at a level, at-grade crossing known as the Stockton Diamond. This rail intersection, located just south of Downtown Stockton near South Aurora Street and East Scotts Avenue, is the busiest at-grade railway junction in California. The at-grade crossing experiences substantial congestion and delays service for people and freight throughout the Central Valley—and for freight on the broader national network. The current, at-grade configuration of the tracks results in critical delays to passenger and freight trains in the area, including those serving the Port of Stockton. Train congestion also causes vehicle delays at roadway-rail crossings and creates potential motor vehicle, rail, bicycle, and pedestrian conflicts.

The proposed Project would construct a grade separation of the BNSF and UP rail lines to reduce rail congestion and allow passenger and freight rail traffic to flow uninterrupted through the crossing. The reduction in rail congestion would reduce delays for passenger and freight rail providers and improve freight mobility, which may lead to lower costs for freight shipping and reduce travel times for motor vehicle, bicyclist, and pedestrian traffic. The reduction in train congestion and motor vehicle wait times at these roadway-rail grade crossings would reduce locomotive and automobile idling and air emissions.

Figure ES 1-1: Regional Project Location



REGIONAL LOCATION

Stockton
California Rail Network
City Boundary
County Boundary

0 15 30 Miles

DATA SOURCE: City of Stockton (2019), ESRI, HERE, Garmin, NOAA, and USGS (2020)

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MAP CREATED ON: 11/19/2020

The proposed Project's public benefits would extend to motorists, pedestrians, rail passengers, freight shippers, and residents throughout the region. Additional benefits would include reduced fuel consumption, lower freight rail transportation costs, and improved travel times and reliability. Passenger and commuter rail reliability is essential for those residing and working in the region, especially those in rural communities who need improved access to essential services and economic centers. The proposed Project is aligned with San Joaquin County's goals to enhance existing rail infrastructure and to improve the rail network efficiency and capacity—including safe, reliable transportation choices—while also improving the local economy through economic growth, job retention, and job creation.

This Environmental Impact Report (EIR) is prepared in conformance to the California Environmental Quality Act (CEQA). The SJRRC, as the Project sponsor, is the CEQA lead agency. This EIR evaluates two alternatives: a No Project Alternative and the proposed Project (Alternative 1A).

This executive summary presents an overview of the EIR, specifically presenting:

- Issues raised during the public scoping process;
- Project Goals and Objectives;
- A description of the proposed Project
- Alternatives evaluated in the EIR;
- A summary of environmental impacts and applicable Best Management Practices (BMP)/or mitigation measures; and
- A summary of the CEQA environmental process

ES.2 Issues Raised During the Scoping Process

Public scoping is an important element in the process of determining the focus and content of an EIR and provides an opportunity for public and agency involvement. Scoping helps identify the range of actions, alternatives, environmental effects, and mitigation measures to be analyzed in depth and helps focus detailed study on those issues pertinent to the final decision on the Project. On August 19, 2020, SJRRC officially launched the environmental review process for the proposed Project with a Notice of Preparation (NOP) of an EIR. At the time of the issuance of the NOP, the environmental document was presented to stakeholders and the public as a combined CEQA/ NEPA document. SJRRC, as the CEQA Lead Agency in coordination with the California High Speed Rail Authority (CHSRA) as the NEPA Lead Agency, under assignment from the Federal Railroad Administration (FRA), was to prepare an EIR/Environmental Assessment (EA). Due to funding deadline considerations, the CEQA/NEPA document was split, and SJRRC proceeded to prepare this EIR for the proposed Project while CHSRA will prepare an EA for the proposed Project.

The NOP was filed with the State Clearinghouse (SCH#2020080321) and circulated to public agencies and other interested parties in compliance with Section 15082(a) of the CEQA Guidelines. The NOP formally initiated the CEQA environmental review processes and informed the public of this Draft EIR being prepared, identified public scoping meeting information, and established methods for how to provide comments on the Project during the 45-day public comment period (August 19 to October 3, 2020). The normal scoping period of 30 calendar days was extended an additional 15 calendar days to allow additional time for stakeholders and members of the public to provide their input on the proposed Project.

The scoping meetings and comments received on the NOP helped the lead agencies identify general environmental issues to be addressed in the EIR. The scoping process identified concerns including air quality, noise, community, environmental justice, as well as traffic and transportation circulation. The Project received a total of 84 comments, including letters, emails, calls, as well as comments provided during the virtual public meetings and submitted through the Project's website (stocktondiamond.com) from the public and stakeholders during the Project's scoping period. The issues raised during the scoping process include:

- Agency Coordination
- Air Quality
- Approval Process
- Community
- Concepts/Alternatives
- Construction
- Environmental Justice
- Freight Operations
- Funding/Costs
- Health/Safety
- Noise/Vibration
- Outreach/Communications
- Passenger Service
- Transportation Circulation

Refer to Chapter 8, *Public and Agency Involvement*, for additional information regarding outreach, consultation, and alternatives development for the EIR.

ES.3 Project Goals and Objectives

The Project Goals and Objectives are to:

- Reduce passenger and freight rail delays and associated congestion;
- Maintain key community connections;
- Improve multimodal access;
- Provide local and regional environmental and economic benefits; and
- Address safety by closure and enhancements at key roadway-rail grade crossings.

In achieving the proposed Project, SJRRC anticipates the following benefits**:**

1. **Stimulate Mobility**: Improve regional passenger and freight rail efficiency and travel reliability by reducing conflicting train movements.
2. **Enhance Safety**: Improve Stockton residents' access, safety, and mobility across rail lines through enhancements or closures at roadway-rail grade crossings.
3. **Economic Vitality**: Reducing delays will result in increased throughput and more efficient goods movement. This decreases fuel consumption and leads to cost savings.
4. **Inspire Connections**: Support faster, more reliable passenger rail service linking residents to family, jobs, and recreational destinations throughout Northern California.
5. **Improve Sustainability**: Improve air quality through reduction of greenhouse gas (GHG) emissions from trains and vehicles that idle due to congestion and delays.

ES.4 Alternatives

A Concept development and screening analysis was completed, and the No Project Alternative and the proposed Project were carried forward in this EIR for full analysis. Refer to Chapter 2, *Alternatives*, for additional information regarding the concept development and screening process. This section provides an overview of the No Project Alternative and proposed Project evaluated in the EIR. All components of both alternatives have been evaluated on the effects to the social, natural, and built environment.

No Project Alternative

CEQA requires that an EIR include the evaluation of a "no project" alternative [CEQA Guidelines Section 15126.6(e)]. The No Project Alternative considers the impacts of conditions forecast by current plans for land use and transportation in the vicinity of the Project Area, including planned improvements to future passenger rail infrastructure through the 2045 planning horizon, without the addition of the project.

The No Project Alternative proposes no improvements that would solve the congestion, delay, and safety issues related to rail activity through the Stockton Diamond. With the exception of the Stockton Wye, which is planned to be constructed by UP as a separate project in 2021, all existing connections between the BNSF Stockton Subdivision and UP Fresno Subdivision would remain and function as they currently do, and no alignments would be modified. As a result, operating conflicts between trains on various routes through the Stockton Diamond would continue to exist. Additionally, under the No Project Alternative, UP main tracks would remain across the BNSF main tracks at-grade. Therefore, traffic conflicts and train staging that currently occur as trains wait on one railroad's main track for trains using the other railroad's main track to pass through the Stockton Diamond would persist. Wait times at public roadway rail grade crossings in the study area are currently influenced by their location in a congested urban area and in close proximity to the Stockton Diamond. There would be no reductions in wait times along these roadways under the No Project Alternative. In general, average roadway-rail grade crossing occupancy times and roadway

vehicle delays would increase in the Study Area over time with the projected increase in population and anticipated increases in rail traffic. These delays would not only impact vehicles but would also impact the efficiency of pedestrian and bicycle travel.

Proposed Project (Alternative 1A)

The proposed Project involves raising the UP Fresno Subdivision main tracks to provide the vertical clearance required to grade separate the existing crossing of the UP and BNSF tracks at the Diamond. Figure ES.4-1 shows the Project Area. The grade separation would be constructed by elevating the UP Fresno Subdivision main tracks under three design options: a soil embankment, walled embankment, or viaduct structure, to bridge over the BNSF main tracks while maintaining the BNSF Stockton Subdivision tracks at their current grade. This proposed approach and bridge over the BNSF main tracks is identified in this document as a “flyover structure.” The UP approach/flyover structure is proposed to be shifted east of the existing UP Fresno Subdivision main tracks so that construction of the new flyover would minimize impacts to existing rail operations. Once the main tracks are shifted onto the flyover, the existing tracks would be removed, thereby removing the current at grade connection between the UP and BNSF main tracks.

There are several wye connection tracks at the Diamond that would remain and/or be modified with the proposed Project. These wye tracks provide connectivity between the UP Fresno Subdivision and the BNSF Stockton Subdivision, as well as to the UP Stockton yard immediately south of East Charter Way (Dr. MLK Jr. Blvd.). It is anticipated that current ACE rail services and the majority of UP trains would use the new flyover tracks during operations. Amtrak San Joaquins service, future Valley Rail service, and freight trains would continue to use the at-grade Wye connection tracks.

Figure ES-4.2 shows the layout plan for the proposed Project.

Figure ES 4-1: Project Area

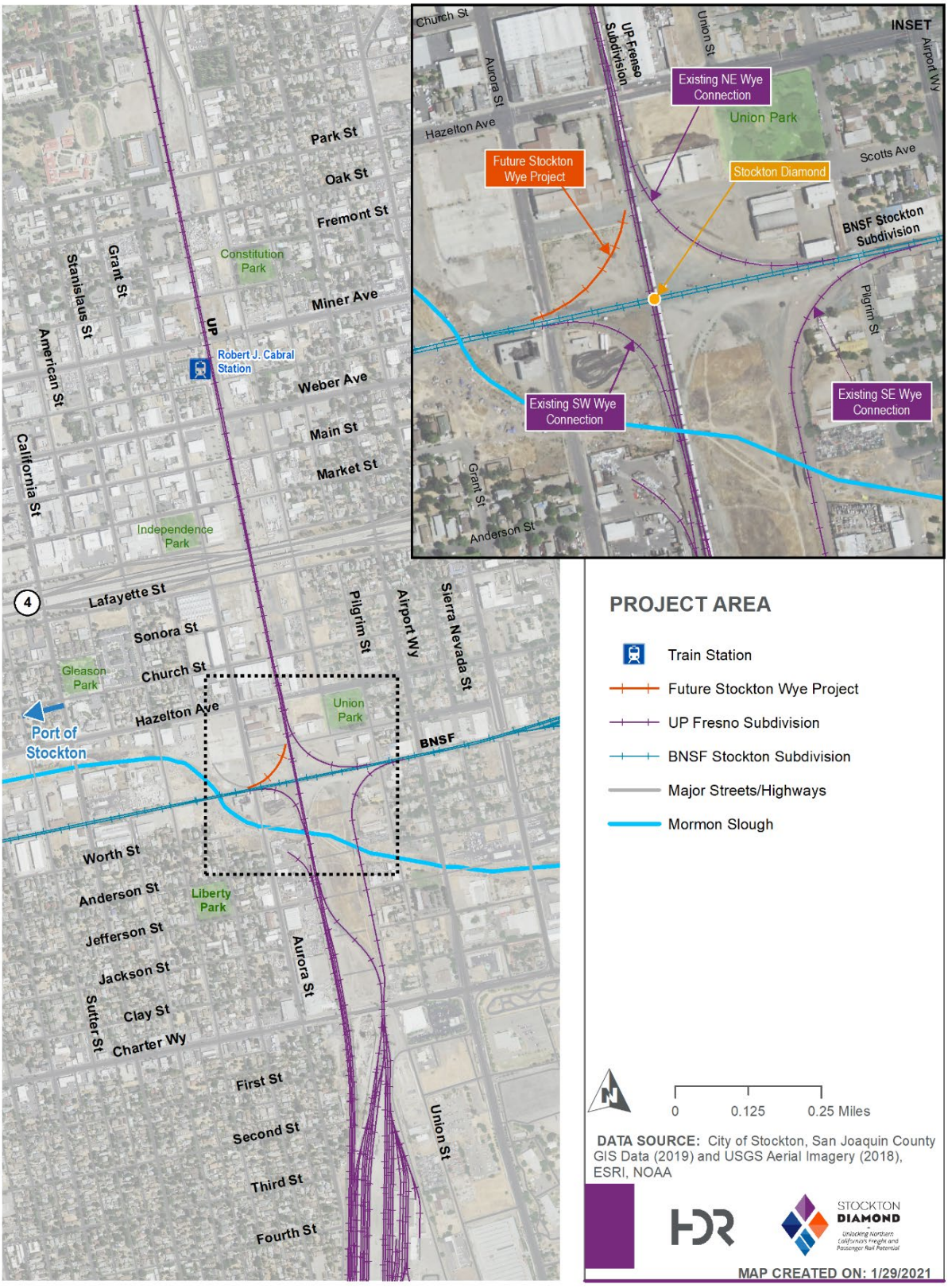

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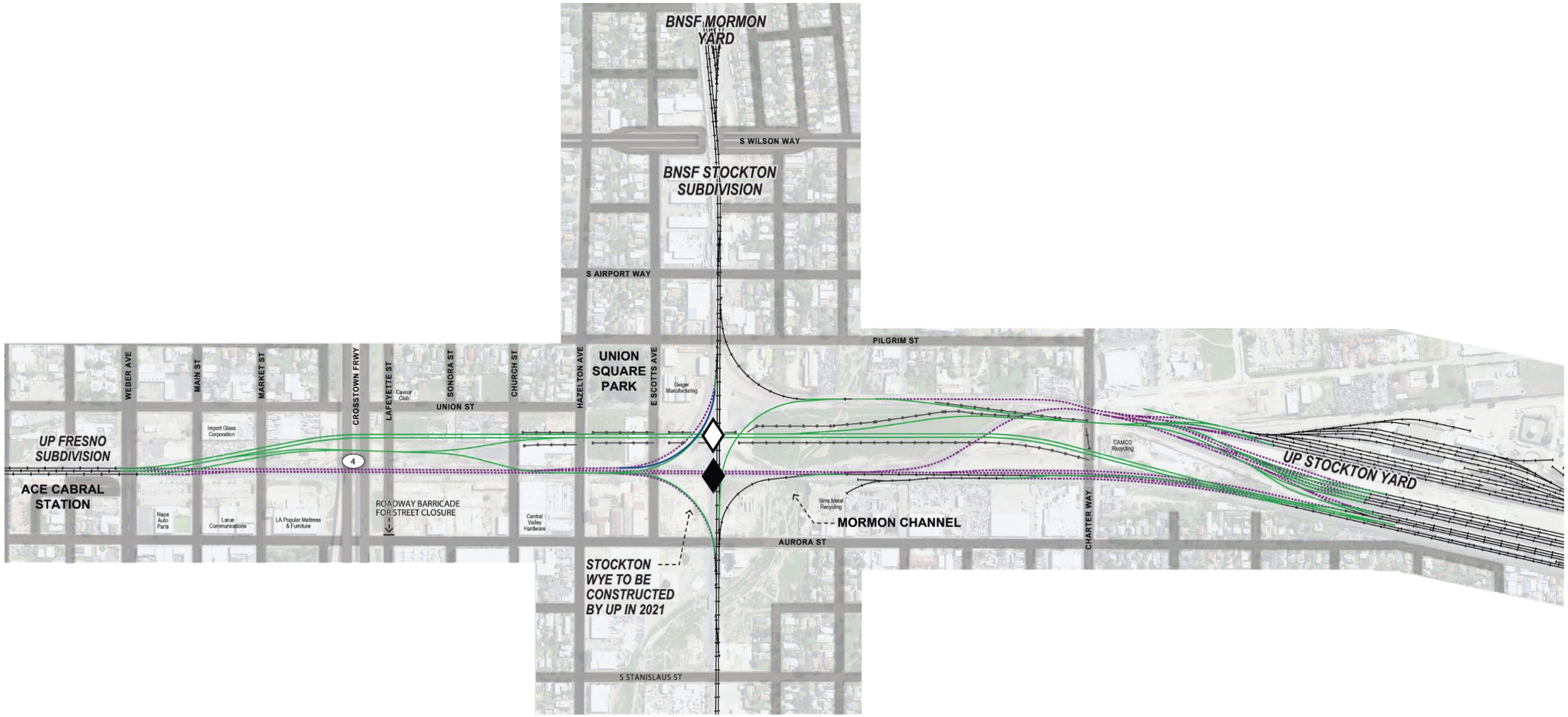
Figure ES.4-2: Project Concept Layout Plan



CONCEPT LAYOUT PLAN FOR PROPOSED PROJECT

HDR

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- Proposed Flyover Location
- Proposed Track
- Proposed Elevated Structure on Retaining Wall
- Existing at-Grade Stockton Diamond
- Existing Tracks (to remain)
- Track Removal (existing)
- Phase 1 - Shift Wye Track

CREATED ON: 3/8/2021

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The northern terminus of the proposed Project connects to the existing UP Fresno Subdivision tracks between East Main Street and East Weber Avenue. The new track alignment would remain at grade as it continues south under the Crosstown Freeway. Between East Main Street and East Market Street, an at-grade turnout would be constructed to provide trains using the proposed new UP Fresno Subdivision tracks an at-grade connection to transfer to the BNSF Stockton Subdivision heading east, or west to take them to the Port of Stockton. Once past the Crosstown Freeway viaduct, and just south of East Lafayette Street, the new main track flyover would begin to elevate. The flyover would reach its highest point of approximately 32 feet above the existing tracks as it crosses the BNSF Stockton Subdivision tracks within the Diamond. Renderings of the existing condition and proposed condition with the implementation of the proposed Project are shown in Figure ES.4-3.

As it continues south, the flyover would begin to descend so that it conforms back to the existing track elevation south of the existing East Charter Way underpass and continues into the UP Stockton Yard. For rail services traveling north from the UP Stockton Yard, a turnout is proposed on the flyover beginning just north of East Charter Way to bring rail services needing to connect to the BNSF Stockton Subdivision at grade before reaching the Diamond. Once returning to grade, a new wye is proposed to allow these rail services to select between traveling east or west on the BNSF line. Figure ES.4-4 provides the vertical profile of the flyover and the streets that cross the Project limits.

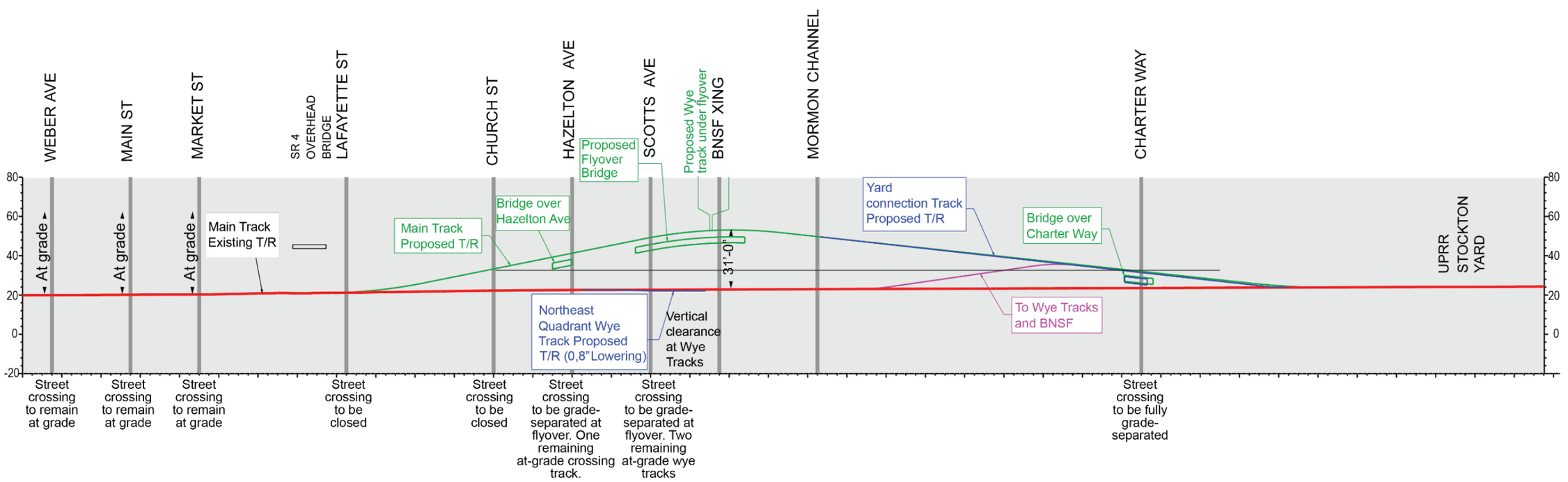
The proposed Project would modify the existing at grade crossings at East Weber Avenue, East Main Street, and East Market Street. At East Hazelton Ave and East Scotts Ave, the main track flyover would be grade separated, and a connection track between the UP Fresno Subdivision and BNSF Stockton Subdivision would remain at grade. Two new bridges across Charter Way would be constructed for the new main tracks and the connection track to the UP Stockton Yard. East Lafayette Street and East Church Street would be permanently closed due to the revised tracks and flyover structure alignment.

Figure ES.4-3: Existing Condition and Rendering of Proposed Flyover

Existing Condition

With Proposed Project

Figure ES.4-4: Vertical Profile of the Proposed Union Pacific Fresno Subdivision Flyover



PROPOSED PROJECT TRACK PROFILE - UP FLYOVER WITH WYE TRACKS

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DESIGN OPTIONS

Three design options are proposed for the flyover bridge structure and are described further below.

- **Soil embankment**: Soil embankment is the railroad's preferred choice and is characteristic of a natural aesthetic quality. This option would require approximately 484,000 cubic yards (CY) of fill. Fencing or other security features, and low maintenance materials on the embankment slope would be necessary.
- **Precast concrete panel system with lightweight cellular concrete fill (LCCF)**: LCCF consists of a large vertical wall that would be a highly resilient to seismic activity. This option would require approximately 324,000 CY of lightweight fill. Fencing or other security features, and low maintenance materials for the structure would be necessary.
- **Viaduct bridge structure**: The viaduct bridge structure would create a more open aesthetic. The total estimated fill would be approximately 73,000 CY. The viaduct bridge structure would require very complex seismic analysis and increased risk to the railroad under seismic loads.

ES.5 Environmental Justice

While environmental justice is a requirement by federal law[1], there is no explicit CEQA requirement to address environmental justice at this time. However, in February 2018, the California Attorney General established the Bureau of Environmental Justice. Its mission is to protect people and communities that endure a disproportionate share of environmental pollution and public health hazards. Under state law: "environmental justice" means the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies[2]. The Bureau of Environmental Justice recommends that CEQA be used to study the potential additional burdens on environmental justice communities. Therefore, environmental justice has been addressed in Chapter 5 of the EIR.

The proposed Project would result in benefits to low-income and minority populations that constitute the reference community. These benefits would include improvements in safety and mobility of residents across UP Subdivision tracks, air quality improvements, and improvements in transportation access to employment, recreational, shopping, educational, and community resource opportunities.

The design of the proposed Project would avoid, minimize and/or mitigate impacts related to aesthetics, air quality, biological resources, cultural resources, energy, geology/soils and paleontology, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise and vibration, population and housing, public services, parks and recreation, transportation, tribal cultural resources, and utilities and service systems. Impacts under these resource topics do not have the potential to adversely affect low-income and minority

[1] 1 Federal Actions to Address Environmental Justice in Minority Populations (Executive Order 12898)
[2] Gov. Code, § 65040.12, subd (e)

populations (see discussion of these resource topics in Chapter 5, *Environmental Justice*, for more information).

The EIR identified significant impacts associated with biological resources, hazards and hazardous materials, land use and planning, and noise and vibration on populations in the Study Area, including minority populations and low-income populations. However, all significant impacts identified would be reduced below the level of significance through the following mitigation measures: MM BIO-6, MM BIO-8, MM BIO-9, MM BIO-10, MM HAZ-1, MM HAZ-2, MM HAZ-3, MM HAZ-4, MM HAZ-5, MM HAZ-6, MM HAZ-7, MM HAZ-8, MM LU-2, MM NV-1, MM NV-2, MM NV-3. For these resource topics, the proposed mitigation would be applied equally to minority populations, low-income populations, and the general population. With the incorporation of these mitigation measures, the proposed Project would not result in disproportionately high and adverse effects on minority or low-income populations.

ES.6 Summary of Environmental Impacts

This EIR analyzed short-term (that is, construction) and long-term (that is, operational) impacts of various environmental resources as presented in Chapter 3, *Affected Environment, Environmental Analysis, and Best Management Practices and/or Mitigation Measures* for the No Project Alternative and the proposed Project.

Best Management Practice Measures

Best Management Practice (BMP) Measures were included as part of the proposed Project to help avoid and minimize impacts without the need for mitigation. BMP measures consist of standard engineering and environmental practices, and proposed Project features that will be implemented during construction and operation of the proposed Project. These BMP measures are referenced in applicable resource sections within Chapter 3 of this EIR and are identified in Table ES.6-1.

Summary of Environmental Impacts

Table ES.6-2 provides a summary of short-term (during construction) and long-term (during operation) impacts of the proposed Project under each resource section presented in Chapter 3 of this EIR, applicable mitigation measures required to address impacts to a particular resource, and the level of significance of impacts for each resource under CEQA. If mitigation measures are required to address significant impacts for a particular resource, the determination of significance under CEQA is made after the implementation of the mitigation measure. Incorporation of applicable mitigation measures would reduce the impacts to a less-than-significant level. All CEQA determinations and mitigation measures referenced in Table ES.6-2, below, are from their respective resource sections in Chapter 3.

Table ES.6-1: Best Management Practice (BMP) Measures

Best Management Practice (BMP) Measures	
Aesthetics	
BMP AES-1:	**Coordinate Design Elements to Reduce Visual Impacts.** During final design, SJRRC will ensure that all infrastructure within the corridor owned by UP and all materials and aesthetic features will be reviewed and approved by UP. The detail design of the elements in the Project corridor and the selection of the flyover's specific materials and forms will be rigorously coordinated to reduce visual impacts and enhance existing visual quality. For retaining wall options, this would include but not be limited to the wall type (cast-in-place, mechanically stabilized earth, or other types), the materials used in wall construction (concrete, block, stone, or metal), and the architectural treatment of its façade (dimensions, jointing, colors, textures). For the viaduct option, the bridge type, proportions for the openings, and design of piers would be coordinated, especially where located adjacent to a retaining wall or embankment structure, to achieve design coherence. For the embankment option, seed mixes will be selected to provide vigorous growth and seasonal variety. Coordination regarding potential sculpting of the embankments to be responsive to the public's interest in visual quality would be incorporated. For any of the design options, the type and placement of fencing, railings, and lighting to provide safety and security would be carefully considered and incorporated into the proposed Project during the design phase in coordination with UP.
BMP AES-2:	**Street Tree Planting.** During final design, SJRRC will ensure coordination with the City of Stockton on the incorporation of trees along the west side of South Union Street for the viaduct and retaining wall design options. The incorporation of trees would improve the visual quality of the proposed structure. SJRRC will coordinate with the City of Stockton and UP on the locations and types of plantings along the street to provide the visual screening of the viaduct or retaining wall structures.
BMP AES-3:	**Lighting Plan.** During final design, SJRRC will ensure that a lighting plan will be developed that will select temporary and permanent lighting fixtures to minimize glare on adjacent properties and into the night sky. As defined in the City's Municipal Code, permanent lighting fixtures will be selected to ensure that the light beam is controlled and not directed across a property line or upward into the sky. Lighting will be shielded with non-glare hoods or reflectors and focused within the Project right-of-way. The lighting plan will be reviewed and approved by the City of Stockton prior to construction to ensure compliance with the City's Municipal Code and General Plan.

Best Management Practice (BMP) Measures	
Air Quality	
BMP AQ-1:	**Compliance with EPA's Tier 4 Exhaust Emission Standards.** During construction, SJRRC will ensure that all offroad diesel powered construction equipment greater than 50 horsepower shall comply with EPA's Tier 4 Final exhaust emission standards (40 CFR Part 1039). In addition, if not already supplied with a factoryequipped diesel particulate filter, all construction equipment shall be outfitted with Best Available Control Technology devices certified by the California ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by California ARB regulations.
BMP AQ-2:	**Fugitive Dust.** Prior to issuance of a grading or building permit, SJRRC shall submit the dust control plan to SJVAPCD for review and approval, and shall provide the plan to the County, to demonstrate compliance with SJVAPCD Regulation VIII (Fugitive PM10 Prohibition). The plan shall address construction-related dust as required by SJVAPCD.
Biological Resources	
BMP BIO-1:	**Biological Monitor and Environmental Awareness Training.** If deemed necessary, SJRRC will ensure that a qualified biologist(s) will monitor activities that could affect special-status species and/or sensitive biological resources within the BSA. The amount and duration of monitoring would depend on the activity and would be determined by the qualified biologist. The duties of the qualified biologist shall comply with all agency conditions outlined in Project-related permits, but could include activities such as clearance surveys, flagging or fencing off environmentally sensitive areas for avoidance, and construction monitoring. The biological monitor will conduct preconstruction clearance surveys for special-status species prior to the start of Project activities and implement all biological-resources avoidance and minimization measures and applicable SJMSCP Incidental Take Mitigation Measures (ITMMs). In addition, a qualified biologist shall be retained to conduct mandatory contractor/worker awareness training for construction personnel. The awareness training will be provided to all construction personnel to brief them on the identified location of sensitive biological resources, including how to identify species (visual and auditory) most likely to be present, the need to avoid impacts on biological resources (for example, plants, wildlife, and jurisdictional waters), and to brief them on the penalties for not complying with biological mitigation requirements. If new construction personnel are added to the Project, SJRRC will ensure that the mandatory training be conducted by the contractor prior to starting work on the proposed Project.

Best Management Practice (BMP) Measures	
BMP BIO-2:	**Swainson's Hawk Nest Surveys.** Prior to construction, a qualified biologist shall conduct surveys for Swainson's hawk nests in accordance with current CDFW-approved guidance, such as the Swainson's Hawk Technical Advisory Committee's 2010 Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (CDFW 2000), or as required by the SJMSCP.
BMP BIO-3:	**Migratory Bird and Raptor Surveys and Nest Avoidance.** If vegetation clearing and/or construction activities are scheduled to occur during the migratory bird nesting season (February 1 to September 15), then pre-construction surveys to identify active migratory bird and/or raptor nests will be conducted by a qualified biologist no more than 7 days prior to construction initiation. If active nest sites are identified in the survey area, a no-disturbance buffer will be established for all active nest or burrow sites prior to commencement of any proposed Project-related activities. The size of the no-disturbance buffer would vary and would be determined by a qualified biologist based on the species, activities proposed near the nest, and topographic and other visual barriers, or as otherwise required through the SJMSCP (as described in SJMSCP ITMM 5.2.4.17, 5.2.4.18, and 5.2.4.19). A qualified biologist will monitor any active nest until the nest is deemed inactive and the no-disturbance buffer can be removed. The amount and duration of the monitoring will be determined by a qualified biologist and will depend on the same factors described above when determining the size of the no-disturbance buffer.
BMP BIO-4:	**Burrowing Owl Surveys and Avoidance.** A qualified biologist shall conduct surveys for burrowing owl during the peak breeding season (April 15 to July 15) prior to construction in accordance with current CDFW-approved guidance [*Burrowing Owl Survey Protocol and Mitigation Guidelines or Staff Report on Burrowing Owl Mitigation* (CDFW 2012)]. If no active burrowing owl burrows are located within, or within 500 feet of, the proposed Project construction limits, SJRRC or its construction contractor will proceed with measures A or B identified in SJMSCP ITMM 5.2.4.15 to prevent burrowing owls from subsequently occupying the Project construction limits, if feasible. If burrowing owl subsequently occupy the Project construction limits prior to construction SJRRC or its construction contractor will proceed with measures C or D identified in SJMSCP ITMM 5.2.4.15 to avoid impacts to breeding burrowing owls. Measure C consists of passive relocation during the non-breeding season (September 1 through January 1). Measure D consists of implementing 250-foot buffers around occupied, active nests/burrows. Once a qualified biologist has determined that young have fledged and are capable of independent survival, the burrow can be destroyed.
BMP BIO-5:	**Bat Roost Surveys.** A qualified biologist will conduct a daytime site reconnaissance in the maternity season prior to the construction of new infrastructure or modifications to existing infrastructure of any buildings, bridges, or other structures suitable to support bat

Best Management Practice (BMP) Measures

roosts. The qualified bat biologist will survey for SJMSCP-protected bats and bat sign, including existing roost sites and bat guano deposits, and will listen for roosting bats. If potential roost sites are identified, a nighttime exit survey will be conducted to determine the species of roosting bats and relative bat activity, and to estimate the number of individual bats. This nighttime survey may be an active or passive acoustic monitoring survey. If SJMSCP-protected bat individuals or roosts are found in, or within 100 feet of, the proposed Project construction limits, SJMSCP ITMM 5.2.4.28 will be implemented.

BMP BIO-7: **National Oceanic and Atmospheric Administration Consultation.** Prior to the completion of the Final EIR, SJRRC will ensure that consultation with the NOAA Fisheries Service for impacts on designated Critical Habitat for Central Valley steelhead and EFH for Chinook Salmon are finalized and any findings and/or determinations incorporated.

BMP BIO-8: **Construction BMPs at Mormon Slough.** During final design, SJRRC will ensure that construction best management practices will be employed on-site to prevent erosion or runoff of loose soil and dust. Methods will include the use of appropriate measures to intercept and capture sediment prior to entering aquatic resources, as well as erosion control measures along the perimeter of disturbance areas to prevent the displacement of fill material. All best management practices shall be in place prior to initiation of project-related activities and shall remain until activities are completed. All erosion control methods will be maintained until all onsite soils are stabilized.

BMP BIO-9: **Environmentally Sensitive Area Fencing at Mormon Slough.** Prior to and during construction, SJRRC will ensure that work areas will be reduced to the smallest practicable footprint throughout the duration of construction activities. Prior to any ground-disturbing activity, SJRRC will ensure that staging areas for construction equipment be stored in areas that minimize impacts on sensitive biological resources, including aquatic resources. Staging areas (including any temporary material storage areas) will be located in areas that will be occupied by permanent facilities, where practicable. Equipment staging areas will be identified on final project construction plans. SJRRC will ensure to flag and mark access routes to restrict vehicle traffic within the Project footprint to established roads, construction areas and other designated areas.

BMP BIO-10: **BMP BIO-10: Restoration of Temporary Impact Areas.** During construction, SJRRC will ensure that all exposed and/or disturbed areas resulting from Project-related activities will be returned to its original contour and grade, and restored using locally native grass and forb seeds, plugs, or a mix of the two. Areas shall be seeded with species appropriate to their topographical and hydrological character. Seeded areas shall be covered with broadcast straw and/or jute netted, where appropriate.

Best Management Practice (BMP) Measures	
BMP BIO-11:	**Vehicle Access and Speed Limits.** During construction, SJRRC will ensure that all vehicle traffic associated with project-related activities will be confined to established roads, staging areas, and parking areas. Vehicle speeds will not exceed 15 miles per hour on access roads with no posted speed limit to avoid collisions with special-status species or habitats. Additionally, maintenance or refueling of vehicles or equipment must occur in designated areas and/or a secondary containment, located away from aquatic resources.
BMP BIO-12:	**Storage and Disposal of Excavated Materials.** During ground-disturbing activities, SJRRC may temporarily store excavated materials produced by construction activities in areas at or near construction sites within the Project footprint. Where practicable, SJRRC will return excavated soil to its original location to be used as backfill. Any excavated waste materials unsuitable for treatment and reuse would be disposed at an off-site location, in conformance with applicable state and federal laws. Stockpiled, disassembled, and hazardous construction material should be stored at least 100 feet from aquatic resources, where possible.
BMP BIO-16	**City of Stockton Tree Ordinance.** During final design, SJRRC will ensure that the proposed Project will comply with the City of Stockton's tree ordinance which requires a permit issued by the City for the removal of any street trees or heritage oak trees within the City.
Cultural Resources	
BMP CUL-1:	**Archaeological and Tribal Monitoring.** Prior to issuance of grading permits, SJRRC will ensure that a qualified archeologist, meeting the Secretary of the Interior's standards for professional archaeology, and Native American monitors from the North Valley Yokuts Tribe and The Confederated Villages of Lisjan shall be retained to monitor earth-moving activities. Native American monitoring shall be conducted on a rotation basis during these activities and attendance is at the discretion of the tribe(s). The archaeological and Native American monitor shall be present for all ground-disturbing activities within the Project area. The qualified archaeologist shall have the ability to recommend, with written and photographic justification, the termination of monitoring efforts to SJRRC, and should SJRRC and the Native American monitor(s) concur with this assessment, then monitoring shall cease. If an inadvertent discovery of archaeological materials is made during project-related construction activities, the archaeological and Native American monitor(s) shall have the authority to halt ground disturbing activities within 50 feet of the resource(s) and an Environmentally Sensitive Area physical demarcation shall be established. The qualified archaeologist shall be notified regarding the discovery. If prehistoric or potential tribal cultural resources (TCR) are identified, the Native American monitor(s) shall be notified. Prior to issuance of grading permits, a qualified archaeologist, meeting the Secretary of the Interior's Standards

Best Management Practice (BMP) Measures

for professional archaeology, shall ensure that a Worker Environmental Awareness Protection (WEAP) training, presented by a Qualified Archaeologist and Native American representative, is provided to all construction and managerial personnel involved with the proposed Project. The WEAP training shall provide an overview of cultural (prehistoric and historic) and tribal cultural resources and outline regulatory requirements for the protection of cultural resources. The WEAP will also cover the proper procedures in the event an unanticipated cultural resource is identified during construction. The WEAP training can be in the form of a video or PowerPoint presentation. Printed literature (handouts) can accompany the training and can also be given to new workers and contractors to avoid the necessity of continuous training over the course of the proposed Project.

BMP CUL-2: **Archaeological and Tribal Monitor.** Prior to issuance of grading permits SJRRC shall retain an archaeological monitor. The archaeological monitor, working under the direct supervision of the qualified archeologist, shall be present for all ground-disturbing activities that occur in native soil within the archaeological APE. All archaeological monitors shall be familiar with the types of historical and prehistoric resources that could be encountered within the APE. Ground disturbing activities include, but are not limited to, brush clearance, grubbing, excavation, trenching, grading, and drilling. A sufficient number of archaeological monitors shall be present each workday to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. The qualified archaeologist shall have the ability to recommend, with written and photographic justification, the termination of monitoring efforts to SJRRC, and should SJRRC and the Native American participant(s) concur with this assessment, then monitoring shall cease.

If an inadvertent discovery of archaeological materials is made during Project-related construction activities, the archaeological monitor shall have the authority to halt ground disturbing activities within 50 feet of the resource(s) and an Environmentally Sensitive Area physical demarcation shall be constructed. The qualified archaeologist shall be notified regarding the discovery. If prehistoric or potential tribal cultural resources are identified, the interested Native American participant(s) shall be notified.

The qualified archaeologist, in consultation with SJRRC (and Native American participant[s] should the find be prehistoric), shall determine whether the resource is potentially significant as per Section 106 and/or CEQA (that is, whether it is an historical resource, a unique archaeological resource, or tribal cultural resources). If avoidance is not feasible, a qualified archaeologist, in consultation with SJRRC, shall prepare and implement a detailed treatment plan. Treatment of unique archaeological resources shall follow the applicable requirements of PRC Section 21083.2. Treatment for most resources would consist of, but would not be limited to, in-field documentation, archival research, subsurface testing, and excavation.

Best Management Practice (BMP) Measures	
	No work will continue within the 50-foot buffer until the qualified archaeologist, and Lead Agencies (along with the Native American participant[s] should the find be prehistoric) agree to appropriate treatment. One or more Native American monitors will also be present during all proposed Project ground disturbing activities.
BMP CUL-3:	**Inadvertent Discovery of Human Remains During Construction.** In the event of the inadvertent discovery of human remains, SJRRC will ensure that their designated contractor shall immediately notify the county coroner and SJRRC. If the county coroner determines the remains are Native American in origin, the Coroner shall contact the Native American Heritage Commission in accordance with Health and Safety Code Section 7050.5 subdivision c, and Public Resources Code Section 5097.98 (as amended by AB 2641). The Native American Heritage Commission shall designate a Most Likely Descendent for the remains per Public Resources Code 5097.98. Per Public Resources Code 5097.98, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where he Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendent regarding their recommendations, if applicable. If the remains are determined to be neither of forensic value to the Coroner, nor of Native American origin, provisions of the California Health and Safety Code (7100 37 et seq.) directing identification of the next-of-kin will apply.
Geology, Soils and Paleontology	
BMP GEO-1:	**Geologic Hazards.** Prior to construction, SJRRC will ensure that the contractor shall prepare a Construction Management Plan addressing how the contractor will address geologic constraints and minimize or avoid impacts to geologic hazards during construction. The plan will be submitted to SJRRC for review and approval. At minimum, the plan will address unstable soils and water and wind erosion.
BMP GEO-2:	**Geology and Soils.** Prior to construction, SJRRC will ensure that the contractor will issue a technical memorandum documenting the ways in which the following guidelines and standards have been incorporated into facility design and construction: • 2015 AASHTO Load and Resistance Factor Bridge Design Specifications and the 2015 AASHTO Guide Specifications for Load and Resistance Factor Seismic Bridge Design, or their most recent versions.
BMP GEO-3:	**Implement Geotechnical Recommendations.** During final design, SJRRC will ensure that a project specific *Geotechnical Design Report* will be prepared, which will include final geotechnical recommendations for ground improvement options and foundation, embankment, and retaining wall design for the proposed Project.

Best Management Practice (BMP) Measures	
BMP GEO-4:	**Preparation and Implementation of a Paleontological Resources Management Plan.** Due to the potential for impacts to paleontological resources in the Project subsurface, a Paleontological Resources Management Plan (PRMP) will be prepared during final design. SJRRC will ensure that the PRMP will include provisions for periodic spot checks during excavations to check for the presence of the early Holocene- to late Pleistocene-age Modesto Formation, and the implementation of full-time monitoring if the early Holocene- to late Pleistocene-age Modesto Formation is observed. In the event unanticipated paleontological resources are discovered during Project related activities, SJRRC or their designated contractor will ensure that work in the immediate vicinity of the discovery is halted until it can be evaluated by a qualified paleontologist.
Hydrology and Water Quality	
BMP HYD-1:	**Stormwater Management and Treatment Plan.** Prior to construction, SJRRC will ensure that the contractor prepares a Project specific stormwater management and treatment plan and all aspects of the Stormwater Management and Treatment Plan are implemented during construction activities.
BMP HYD-2:	**Construction Stormwater Pollution Prevention Plan.** Prior to construction (that is, any ground-disturbing activities), SJRRC will ensure that the contractor would comply with SWRCB CGP, which requires the preparation and implementation of a SWPPP. The construction SWPPP would propose BMPs to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for affected stream crossings.
BMP HYD-3:	**Industrial Stormwater Pollution Prevention Plan.** Prior to construction of any facility classified as an industrial facility, SJRRC will ensure that the contractor will comply with existing water quality regulations. The stormwater general permit requires preparation of a SWPPP and a monitoring plan for industrial facilities that discharge stormwater from the site, including vehicle maintenance facilities associated with transportation operations. The permit includes performance standards for pollution control.
BMP HYD-4:	**Flood Protection.** Prior to construction, SJRRC will ensure that the contractor prepares and implements a flood protection plan for the proposed Project.
Land Use and Planning	
BMP LU-1:	**General Plan Amendment.** During final design and prior to construction, SJRRC will coordinate with the City of Stockton to ensure that the City of Stockton's General Plan is amended to reflect the land use designations consistent with what has been identified by the proposed Project.

Best Management Practice (BMP) Measures	
Population and Housing	
BMP PH-1:	**Outreach and Engagement Plan.** Before and during proposed Project construction, SJRRC will actively coordinate with the City and County to prepare and implement an Outreach and Engagement Plan to address the homeless encampments that are present within the Mormon Slough area. The Outreach and Engagement Plan will include goals and strategies of the County's Community Response to Homelessness Strategic Plan and will focus on a targeted proactive response for temporary and permanent relocation assistance for transient populations affected by the proposed Project.
Transportation	
BMP TRA-1:	**Protection of Public Roadways during Construction.** Prior to construction, SJRRC will ensure that the contractor will provide a photographic survey documenting the condition of the public roadways along truck routes providing access to the proposed Project site.
BMP TRA-2:	**Construction Transportation Plan.** Prior to construction, SJRRC will ensure that the contractor will prepare a detailed construction transportation plan for the purpose of minimizing the impact of construction and construction traffic on adjoining and nearby roadways in close consultation with the local jurisdiction having authority over the site.
BMP TRA-3:	**Off-Street Parking for Construction-Related Vehicles.** During construction, SJRRC will ensure that the contractor will identify adequate off-street parking for all construction-related vehicles throughout the construction period to minimize impacts on public on-street parking areas.
BMP TRA-4:	**Maintenance of Pedestrian Access.** Prior to construction, SJRRC will ensure that the contractor will prepare specific Construction Management Plans (CMPs) to address maintenance of pedestrian access during the construction period.
BMP TRA-5:	**Maintenance of Bicycle Access.** Prior to construction, SJRRC will ensure that the contractor would prepare specific CMPs to address maintenance of bicycle and access during the construction period.
BMP TRA-6:	**Protection of Freight and Passenger Rail During Construction.** During construction, SJRRC will ensure that the contractor will repair any structural damage to freight or public railways that may occur during the construction period and return any damaged sections to their original structural condition.
BMP TRA-7:	**Transportation Management Plan.** During final design, SJRRC will ensure that a Project Traffic Management Plan will be drafted, approved, and filed with the City of Stockton Engineering and Transportation Department, or other agency with jurisdiction over the road, prior to any road closures. The plan would include alternative routing plans and methods and details for early public outreach.

Best Management Practice (BMP) Measures	
Utilities and Service Systems	
BMP UTIL-1:	**Notify Stakeholders of Utility Service Interruptions.** During final design and prior to construction, SJRRC will ensure compliance with Section 4216 of the California Government Code, that requires Project proponents to notify and inform relevant stakeholders prior to construction, thereby reducing the adverse impacts associated with temporary disruptions in utility services. SJRRC will coordinate with all utility providers during final design and construction planning phases to develop a Utility Relocation Plan (URP) to minimize service disruption. The URP would also include efforts to communicate and inform utility service customers of potential planned service interruptions.
BMP UTIL-2:	**Minimize Utility and Service System Disruptions.** During final design, SJRRC will ensure that utility disruptions and service system inconveniences are avoided, where possible, and will consider design opportunities to avoid permanent impacts to existing utility infrastructure, where practical.

Table ES.6-2: Summary of Impacts

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
Aesthetics **(Short-term)**	No State scenic highways, or regional or local scenic routes are present within the aesthetics resource study area (RSA). As a result, the proposed Project would not cause a substantial adverse effect on scenic vista, substantially damage scenic resources within a state scenic highway and no short-term impacts are anticipated. The existing visual quality in the aesthetics RSA is poor. Project construction would introduce construction equipment, materials storage and stockpiles, and dust, all of which could affect the sense of cultural order. In addition, road closures and construction-related visual elements would be temporary, and some visual elements introduced during construction would contribute to slightly lower visual quality from the existing condition. However, all impacts related to construction activities are considered temporary and would cease upon completion of construction. Therefore, the proposed Project would not substantially degrade the existing visual character or quality of the site and its surroundings. Short-term impacts are considered less than significant, and no mitigation is required. During construction, additional lighting may be required, such as lights required for nighttime construction activities. With the implementation of Measure BMP AES-3, short-term impacts during construction would be minimized through the selection and utilization of lighting fixtures that would minimize additional light and glare for traveling motorists, bicyclists, and pedestrians within the construction limits. Therefore, with the implementation of Measure BMP AES-3, the proposed Project would not create a new source of substantial light or glare that could temporarily impact daytime or nighttime views within the aesthetic RSA. Thus, short-term impacts would be considered less than significant, and no mitigation is required.	None	Less than Significant
Aesthetics **(Long-term)**	As stated above, no state scenic highways, or regional or local scenic routes are present within the aesthetics RSA. As a result, the proposed Project would not cause a substantial adverse effect on a scenic vista or substantially damage scenic resources within a state scenic highway and no long-term impacts are anticipated. With the implementation of the proposed Project, the primary potential impact on visual character is the construction of the proposed-UP flyover, which would affect the visual character of the aesthetic RSA. The proposed Project would not alter the current level of visual quality and would be consistent with the visual quality of the aesthetic RSA. In general, impacts to the visual quality of the area as a result of the proposed Project would be beneficial with the removal of railroad and industrial artifacts along the railroad corridor that currently degrade the visual quality of the area. With the implementation of Measures BMP-1 and BMP-2, long-term impacts associated with the proposed Project would not substantially degrade the existing visual character or quality of the site and its surroundings; thus, impacts are considered less than significant, and no mitigation is required. During operation, additional lighting may be required throughout the Project limits, including but not limited to new permanent lighting above the sidewalks located along the undercrossing beneath the grade separation flyover. However, with the implementation of Measure BMP AES-3, requiring a lighting plan for operation consistent with the City of Stockton Municipal Code and General Plan goals and policies, operation of the proposed Project would not create a new source of substantial light or glare. Thus, long-term impacts would be less than significant, and no mitigation is required.	None	Less than Significant
Air Quality **(Short-term)**	Project construction activities have the potential to generate emissions from equipment used during construction, as well as to generate dust. Likely air pollutants from construction include particulate matter (PM), dust, and criteria pollutants from fuel combustion. The emission of odors as a result of construction equipment could also result from construction activities. Prior to minimization, the annual emissions associated with construction of all three design options would exceed the San Joaquin Valley Air Pollution Control District (SJVAPCD) thresholds for NO_X. However, with the implementation of Measures BMP AQ-1 and BMP AQ-2, the annual construction emissions associated with all three design options would be reduced to below the SJVAPCD significance thresholds. Therefore, with the implementation of Measures BMP AQ-1 and AQ-2, the proposed Project would not conflict with or obstruct	None	Less than Significant

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	implementation of the applicable air quality plan, nor would it result in a cumulatively considerable net increase of any nonattainment criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. Further, with the implementation of Measures BMP AQ-1 and BMP AQ-2, the proposed Project would not expose sensitive receptors to substantial pollutant concentrations or result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Therefore, short-term impacts are considered less than significant, and no mitigation is required.		
Air Quality **(Long-term)**	The proposed Project, in and of itself, would not increase the projected number of freight and passenger trains or change the regional VMT during operation. Once complete, the proposed Project would reduce the local and regional air quality emissions, because the reduction in crossing occupancy would improve on-road traffic flow and reduce vehicle idling in the air quality RSA. Once complete, the proposed Project would provide an overall benefit by reducing the local and regional air quality emissions, because the reduction in crossing occupancy would improve on-road traffic flow and reduce vehicle idling in the Project Study Area. As such, operation of the proposed Project would not conflict with or obstruct implementation of the applicable quality plan, result in cumulatively considerable net increase of any nonattainment criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient quality standard, would not expose sensitive receptors to substantial pollutant concentrations, or result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Therefore, long-impacts are considered beneficial and less than significant, and no mitigation is required.	None	Less than Significant (Beneficial)
Biological Resources **(Short-term)**	Construction and demolition of existing and new tracks would require ground disturbance, grading, construction traffic (both vehicular and foot), possible removal of vegetation, relocation of existing utilities, and staging of equipment and materials. Additionally, indirect impacts in the form of noise and dust may occur as a result of construction activities within the biological study area (BSA). Although the BSA is highly urbanized and disturbed in nature, direct impacts to special-status species, such as burrowing owl, Swainson's hawk, white-tailed kite, and bats covered under the San Joaquin Multiple Species Conservation Plan (SJMSCP), could occur. However, with the implementation of Measure BMP BIO-1, Measure BMP BIO-2, Measure BMP BIO-4; Measure BMP BIO-5, and Measure MM BIO-6, short-term impacts to species, such as burrowing owl, Swainson's hawk, white-tailed kite, and bats would be avoided, minimized and/or mitigated. Further, birds that nest within the Project limits and vicinity are likely acclimated to a high level of ongoing disturbance. Construction of new structures, demolition of existing structures, ground disturbance, and any vegetation removal (including trees) during the nesting season could result in temporary direct and indirect impacts on nesting birds, should they be present in or adjacent to construction or staging areas. Increased noise from construction activity, increased use of open areas for staging, construction of new facilities, tree removal, ground disturbance, and other human activity could result in nest abandonment if nesting birds are present near the Project limits during construction activities. However, with the implementation of Measures BMP BIO-1 and BMP BIO-3, these short-term impacts would be avoided and/or minimized. Additionally, construction activities would temporarily impact SJMSCP-identified habitat for giant garter snake and pond turtles, associated with the Mormon Slough. However, with the implementation of Measure MM BIO-6, temporary impacts to areas identified in the SJMSCP as giant garter snake and pond turtle habitat would be mitigated. Therefore, with the implementation of Measures BMP-1 through BMP-6, the proposed Project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species; thus, short-term impacts would be considered less than significant with mitigation incorporated. The construction of pipe and box culverts for the proposed Project would cause direct or indirect impacts on potential jurisdictional resources in the BSA. Based on aerial mapping, Mormon Slough supports an estimated 1.41 acres of potential non-wetland waters of the U.S. and 2.47 acres of potential unvegetated California Department of Fish and Wildlife (CDFW) streambed. The proposed Project would result in temporary impacts on a minimum of approximately 0.26 acre of potential non-wetland waters of the U.S and approximately 0.38	**MM BIO-6: Compliance with SJMSCP.** Prior to and during construction, SJRRC will ensure compliance of the proposed Project with all applicable standards and regulations set forth in the SJMSCP, as well as all applicable Incidental Take Mitigation Measures identified within the SJMSCP. **MM BIO-13: Mitigation for Aquatic Resources.** During final design, SJRRC will ensure that temporary Project impacts on aquatic resources associated with Mormon Slough will be restored in-place and permanent Project impacts on aquatic resources to Mormon Slough will be mitigated at a minimum 1:1 ratio. Mitigation can include on-site restoration, in-lieu fee payment, or purchase of mitigation credits at an agency-approved mitigation bank. **MM BIO-14: Compliance with Permitted Mitigation Measures.** Prior to construction, SJRRC will obtain all required permits and authorizations for Project impacts to Mormon Slough, which may include the preparation and submittal of the following applications: • Pre-Construction Notification to USACE to use a Nationwide Permit for any Project	Less than Significant with Mitigation Incorporated

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	acre of potential unvegetated CDFW streambed within Mormon Slough. Additional temporary impacts to these resources could occur to allow for construction access. However, with the implementation of Measure BMP BIO-9, requiring minimization of construction access areas and fencing around all permitted work areas within the Mormon Slough, and Measure MM BIO-10, requiring all temporary impacts to aquatic resources as a result of the proposed Project be restored to pre-Project contours, short-term impacts would be considered less than significant with mitigation incorporated. A review of aerial and street view imagery indicates that there are no federally protected wetlands as defined by Clean Water Act (CWA) Section 404 within the BSA. During construction, the proposed Project would result in temporary impacts on 0.26 acre of potential non-wetland waters of the U.S as defined by CWA Section 404. However, with the implementation of Measures BMP BIO-9 and MM BIO-13, temporary impacts on federally protected waters of the U.S., as defined by CWA Section 404, would be avoided, minimized, and/or mitigated. Therefore, the proposed Project would not have a substantial adverse effect on federally protected wetlands as defined by CWQ Section 404 through direct removal, filling, hydrological interruption, or other means, and short-term impacts would be considered less than significant with mitigation incorporated. The proposed Project is located within a developed, disturbed area that provides little use for wildlife movement. The Mormon Slough does not likely provide habitat, act as a nursery, or function as a migratory route for fish and other aquatic species because of its dry and disturbed condition. However, there is potential that Mormon Slough serves as a migratory corridor and movement area for common terrestrial wildlife species within the BSA. While some reduction of wildlife movement within the Mormon Slough is expected during Project construction, all design options being considered would allow for continued movement of terrestrial species within Mormon Slough following Project completion. With the implementation of Measure BMP BIO-9, which requires fencing around all permitted work areas within the Mormon Slough to minimize the potential impact area, short-term impacts of the proposed Project on wildlife movement would be minimized to the greatest extent possible. With implementation of Measure BMP BIO-9, the proposed Project would not substantially interfere 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 wildlife nursery sites. Therefore, short-term impacts would be considered less than significant, and no mitigation is required. The proposed Project would comply with the standards and regulations set forth in the SJMSCP and all applicable Incidental Take Mitigation Measures (ITMMs) identified in the SJMSCP as identified in Measure MM BIO-6. In addition, with the implementation of Measure BMP-16, the proposed Project would be consistent with the Envision Stockton 2040 General Plan (City of Stockton 2018a), which identifies the City's tree ordinance that prohibits the removal of street trees and heritage oak trees without a permit (City of Stockton 2018c). With the implementation of Measures MM BIO-6 and BMP BIO-16, the proposed Project would not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved conservation plan and local policies. Therefore, short-term impacts are considered less than significant with mitigation incorporated.	impacts to Waters of the US subject to Section 404 of the federal Clean Water Act; • Water Quality Certification Application to Central Valley Regional Water Quality Control Board (RWQCB) for any Project impacts to Waters of the US subject to Section 401 of the federal Clean Water Act; • Notice of Intent to the Central Valley RWQCB to enroll under and comply with the General Waste Discharge Requirements for Dredged or Fill Discharges to waters deemed by USACE to be outside of federal jurisdiction (WQ-2004-2004-DWQ) for any aquatic features that would otherwise qualify Waters of the US ; and • Streambed Alteration Agreement Application to CDFW. **MM BIO-15: Preparation of Formal Jurisdictional Delineation.** During final design, SJRRC will ensure that a formal field-delineation of aquatic resources the proposed Project, to be verified by the regulatory agencies, will be conducted in order to confirm the exact extent of jurisdictional resources impacted by the proposed Project.	
Biological Resources **(Long-term)**	Permanent impacts to special-status species and/or SJMSCP-identified habitat for special status species would occur as a result of the proposed Project. The proposed Project would result in permanent impacts to up to 70.16 acres of Urban and Urban Park areas that contain scattered trees suitable to support white-tailed kite nests and Swainson's hawk nests. However, with the implementation of Measures BMP BIO-1 and BMP BIO-3, no direct take of white-tailed kite or Swainson's hawk nests would occur and any potential project impacts on white-tailed kite as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of required mitigation fees consistent with Measure MM BIO-6. In addition, the proposed Project would result in permanent impacts to up to 34.84 acres of suitable burrowing owl habitat. However, with the implementation of Measure BMP BIO-4, no direct take of Burrowing owl would occur. Any potential project impacts on Burrowing owl	**MM BIO-6: Compliance with SJMSCP.** Prior to and during construction, SJRRC will ensure compliance of the proposed Project with all applicable standards and regulations set forth in the SJMSCP, as well as all applicable Incidental Take Mitigation Measures identified within the SJMSCP. **MM BIO-13: Mitigation for Aquatic Resources.** During final design, SJRRC will ensure that temporary Project impacts on aquatic resources associated with Mormon Slough will be restored in-	Less than Significant with Mitigation Incorporated

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of required mitigation fees consistent with Measure MM BIO-6. Nesting birds have the potential to occur throughout the Project limits. However, long-term operation and maintenance of the proposed Project is not expected to differ substantially from existing operations. With the implementation of Measure BMP BIO-3, no direct take of active migratory bird nests would occur. Any potential project impacts on migratory nesting birds as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of required mitigation fees consistent with Measure MM BIO-6. All habitats within the Project limits have the potential to support roosting bats. Project implementation would result in up to 105 acres of permanent impacts to suitable bat roosting habitat. With implementation of Measure MM BIO-6, any potential Project impacts on roosting bats as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of required mitigation fees. Although the BSA does not currently support suitable habitat for giant garter snake or pond turtles, the SJMSCP identifies the Mormon Slough as suitable habitat for these species based on its prior condition as a perennial waterway. The proposed Project would result in permanent impacts to up to 1.35 acres of land associated with the Mormon Slough. However, with the implementation of Measure MM BIO-6, any potential project impacts on giant garter snake or pond turtle as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of the required mitigation fee. While the proposed Project would not result in any direct impacts on Central Valley steelhead or Chinook salmon due to the lack of perennial flows in Mormon Slough within the BSA, the proposed Project would result in direct impacts on designated critical habitat for Central Valley steelhead and EFH for Chinook salmon. Although Mormon Slough does not currently support suitable habitat for either of these species, Project activities in Mormon Slough have potential to affect its long-term restoration potential for use by these species. The design option that would cause the greatest amount of project impacts to critical habitat and EFH would occur with the construction of a new culvert structure design option, spanning the Mormon Slough. This design option would result in conversion of up to 0.33 acre of earthen areas within Mormon Slough into a concrete culvert structure. This impact would result in the loss of a small amount of potential habitat that in the future, if restored, could provide elements identified in primary constituent elements (PCEs) 1, 2, and 3 for Central Valley steelhead. However, this is not a substantial amount compared to the overall amount of critical habitat designated for this species. The proposed culvert structure would consist of four 12-foot wide openings and would span the entire Mormon Slough. Therefore, only minimal impacts on potential areas usable for fish passage would occur as the result of the three pier walls within the culvert. The slope of the design would be considered minimal and the culvert would be located at-grade with the existing Mormon Slough. Therefore, the culvert would not be too steep or provide any other barriers for fish passage. Culverts that may be replaced upstream and downstream as part of the proposed Project would be designed to carry the same level of flow or higher than current capacities and are therefore not expected to reduce fish passage potential within the BSA. As discussed in Measure BMP BIO-7, consultation with NOAA Fisheries Service is currently ongoing and will be finalized during final design. In addition, with the implementation of Measures BMP BIO-8, which identifies construction BMPs for work in Mormon Slough, BMP BIO-9, which requires Environmentally Sensitive Area fencing around construction limits in Mormon Slough, BMP BIO-10, which requires re-contouring and restoration of temporary impact areas, BMP BIO-11, which addresses project-related vehicle access, and BMP BIO-12, which addresses storage and disposal of excavated materials the project would not result in substantial impacts on Central Valley steelhead critical habitat for Chinook salmon EFH. Since the Project would not result in direct impacts on Central Valley steelhead or Chinook salmon individuals and would maintain fish passage viability within the Project limits in the case of future restoration of the Mormon Slough as a perennial water source, the Project is anticipated to result in a “may affect, but not likely to adversely affect” determination with respect to project impacts on designated critical habitat for Central Valley steelhead and EFH for Chinook salmon.	place and permanent Project impacts on aquatic resources to Mormon Slough will be mitigated at a minimum 1:1 ratio. Mitigation can include on-site restoration, in-lieu fee payment, or purchase of mitigation credits at an agency-approved mitigation bank. **MM BIO-14: Compliance with Permitted Mitigation Measures.** Prior to construction, SJRRC will obtain all required permits and authorizations for Project impacts to Mormon Slough, which may include the preparation and submittal of the following applications: • Pre-Construction Notification to USACE to use a Nationwide Permit for any Project impacts to Waters of the US subject to Section 404 of the federal Clean Water Act; • Water Quality Certification Application to Central Valley Regional Water Quality Control Board (RWQCB) for any Project impacts to Waters of the US subject to Section 401 of the federal Clean Water Act; • Request for Waste Discharge Requirements from the Central Valley RWQCB for dredge or fill discharges to waters deemed by USACE to be outside of federal jurisdiction for any aquatic features that would otherwise qualify as Waters of the U.S.; and • Streambed Alteration Agreement Application to CDFW. **MM BIO-15: Preparation of Formal Jurisdictional Delineation.** During final design, SJRRC will ensure that a formal field-delineation of aquatic resources the proposed Project, to be verified by the regulatory agencies, will be conducted in order to confirm the exact extent of jurisdictional resources impacted by the proposed Project.	

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	With the implementation of Measures BMP BIO-7 through BMP-12, long-term direct and indirect impacts would be considered less than significant, and no mitigation is required. Therefore, with the implementation of Measures BMP BIO-1, BMP BIO-3 through BMP BIO-5, MM BIO-6, and BMP BIO-7 through BMP BIO-12, the proposed Project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species; thus, long-term impacts would be considered less than significant with mitigation incorporated. A review of aerial and street view imagery indicates that there are no federally protected wetlands as defined by Clean Water Act (CWA) Section 404 within the Project limits. The proposed Project would permanently impact approximately 0.33 acre of potential jurisdictional waters of the US and 0.33 acre of unvegetated CDFW streambed. However, with the implementation of Measures MM BIO-13 through MM BIO-15, permanent impacts on federally protected waters of the U.S., as defined by CWA Section 404, would be mitigated. Therefore, with the implementation of Measures MM BIO-13 through MM BIO-15, the proposed Project would not have a substantial adverse effect on federally protected wetlands as defined by CWQ Section 404 through direct removal, filling, hydrological interruption, or other means, and long-term impacts would be considered less than significant with mitigation incorporated. Any permanent structure incorporated into the Mormon Slough constructed as part of the proposed Project, would be designed to allow for continued wildlife movement. As such, the proposed Project would not substantially interfere 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 wildlife nursery sites. Therefore, long-term impacts would be considered less than significant, and no mitigation is required. The proposed Project would comply with the standards and regulations set forth in the SJMSCP and all applicable Incidental Take Mitigation Measures (ITMMs) identified in the SJMSCP as identified in Measure MM BIO-6. In addition, with the implementation of Measure BMP-16, the proposed Project would be consistent with the Envision Stockton 2040 General Plan (City of Stockton 2018a), which identifies the City's tree ordinance that prohibits the removal of street trees and heritage oak trees without a permit (City of Stockton 2018c). With the implementation of Measures MM BIO-6 and BMP BIO-16, the proposed Project would not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved conservation plan and local policies. Therefore, long-term impacts are considered less than significant with mitigation incorporated.		
Cultural Resources **(Short-term and Long-term)**	The proposed Project proposes to construct new tracks and at-grade rail crossings, remove some existing tracks, and protect-in-place, relocate, and/or remove various utilities near the following historic resources. Protection-in-place, relocation and/or removal of utilities, such as storm drains, underground water, sewer, and gas lines and overhead electrical lines and fiber optic cable, may be required near each historical resource. Additionally, vibration levels from impact pile driving during Project construction of all historic structures discussed below are anticipated to exceed the FTA threshold for damage to fragile historic structures located within 75 feet of this type of construction. Historical resources identified within the cultural RSA include: Oranges Bros. Garage/Stockton Rollatorium (910 East Weber Avenue); Imperial Hotel (904) East Main Street; New York Hotel (34 South Aurora Street); a building at 915 East Market Street; Waldermar Apartments (920 East Market Street); Williams & Moore/Berberian Bros (142 South Aurora Street); Victory Soda Works (1144 East Lafayette Street); New Cavour Hotel (302 South Union Street); a building at 1104 East Sonora Street; and a building at 520 South Union Street. Based on the review of each historical resource the proposed Project would not cause a substantial change in the significance of a historical resource as defined in Section 15064.5. Therefore, short-term and long-term direct or indirect impacts would be considered less than significant, and no mitigation is required. Two archaeological resources were identified within or immediately adjacent to the area of potential effect (APE) during the records search and literature review, Native American outreach and consultation, and pedestrian survey. The historic-age burial place of John Brown	None	Less than Significant

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	(Juan Flaco: P-39-000532) is adjacent to the APE, and one historic-age refuse deposit is within the APE (P-39-005114/CA-SJO-000338H). Resource P-39-005114/CA-SJO-000338H (historic-age refuse deposit) lacks specific associations and is, therefore, exempt from documentation and evaluation per Attachment D of the Section 106 PA. In addition, no evidence of the resource was observed during the field survey. Site P-39-000532 (historic-age burial place of John Brown) is located outside of, but immediately adjacent to, the northern portion of the archaeological APE. The resource has been designated CHL-513 and a marker was erected September 13, 1969 at 1100 East Weber Avenue. The proposed Project is located within an area that has been subject to disruption by railroad and commercial development activities. As a result of previous development activities, archaeological resources that may have existed at the ground surface have likely been displaced or destroyed. There is, however, the possibility that ground-disturbing activities could impact previously undiscovered subsurface prehistoric or archaeological resources. However, with the implementation of Measures BMP CUL-1 and BMP CUL-2, short-term and long-term impacts to archaeological and subsurface prehistoric archaeological resources would be considered less than significant. No human remains have been identified within the archaeological APE. However, although the previous Citizen's Cemetery is not mapped within the archaeological APE, subsurface, undocumented remnants of the cemetery or associated features may exist within the boundaries of the archaeological APE. There is the possibility that previously undiscovered and undocumented human remains could be disturbed by ground disturbing activities during construction of the proposed Project. Implementation of Measure BMP CUL-3 would ensure that unknown human remains that could be discovered during construction are properly treated and would avoid or minimize the potential for direct adverse effects. With the implementation of Measure BMP CUL-3, impacts would be considered less than significant.		
Energy **(Short-term)**	The temporary increase in energy demand during construction would be minimized by compliance with the Environmental Protection Agency's (EPA) and Air Resources Board's (ARB) regulations. As a result, the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources during construction. Thus, short-term impacts would be less than significant, and no mitigation is required. The Project would provide an overall benefit as a result of a reduction of GHG emissions in the energy RSA. Therefore, the proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. As a result, no short-term impacts would occur, and no mitigation is required.	None	Less than Significant (Beneficial)
Energy **(Long-term)**	During operations, the proposed Project would result in improved regional passenger and freight rail efficiency, fewer delays, and reduced fuel consumption (resulting in a reduction of greenhouse gas [GHG] emissions), resulting in a beneficial effect on energy resources. As a result, the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources during operation. Thus, the proposed Project would create an overall beneficial impact, long-term impacts would be less than significant, and no mitigation is required. The Project would provide an overall benefit as a result of a reduction of GHG emissions in the energy RSA. Therefore, the proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. As a result, no long-term impacts would occur, and no mitigation is required.	None	Less than Significant (Beneficial)
Geology, Soils and Paleontology **(Short-term)**	The Project site is not located within an Alquist-Priolo Earthquake Fault Zone. The nearest active fault to the City of Stockton is the Greenville Fault, which is located approximately 22 miles west-southwest of Stockton. No active faults have been mapped on the Project site. The City of Stockton is close enough to major earthquake faults to be vulnerable to seismic activity and could be affected by ground shaking in the event of a major earthquake. Ground shaking and ground failure can result in structural failure and collapse, local damage	None	Less than Significant

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	to underground utilities, and paved areas cracking, presenting a hazard to structures and people. There is also a possibility for earthquake-induced liquefaction to occur at the Project site. However, with the implementation of Measures BMP GEO-1 through and BMP GEO-3, seismic hazards would be reduced by addressing geologic and seismic constraints during construction and incorporating seismic guidelines and standards into facility design and construction. Compliance with existing State and local laws and regulations would further reduce the potential impacts associated with the seismic hazards. Therefore, with the implementation of Measures BMP GEO-1 through BMP GEO-3, the proposed Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving a 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, strong seismic ground shaking, and seismic-related ground failure, including liquefaction. As a result, short-term impacts are considered less than significant, and no mitigation is required. Due to the gentle topography and lack of steep slopes in the Stockton area, the probability of earthquake-induced landslides is very low. Further, the Project site is not located within a landslide zone. Therefore, the proposed Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. As a result, no short-term impact would occur, and no mitigation is required. Construction activities often increase a disturbed area's runoff potential. Clearing, grubbing, and grading activities during construction would remove ground cover and expose and disturb soil. Exposed and disturbed soils are vulnerable to erosion from runoff during construction. Altered drainage patterns resulting from construction could also cause redirection and concentration of runoff, potentially further exacerbating erosion. As part of the proposed Project, coverage under the NPDES Construction General Permit would be obtained from the State Water Resources Control Board (SWRCB). This permit requires Stormwater Pollution and Prevention Plan (SWPPP) implementation to control stormwater runoff within the geology and soils RSA, thus minimizing soil erosion to the extent possible. BMPs for erosion and runoff, as outlined in the SWPPP and Construction General Permit, would be implemented during construction to minimize erosion and sediment migration from the construction and staging areas. These erosion and storm water pollution control measures would be consistent with NPDES requirements and would be included in the site specific SWPPP. With the implementation of Measure BMP GEO-1 and compliance with the requirements of the NPDES Construction General Permit and City of Stockton Municipal Code Chapter 15.48, soil erosion impacts and topsoil loss would be reduced. Therefore, the proposed Project would not result in short-term substantial soil erosion or topsoil loss. As a result, short-term impacts would be less than significant, and no mitigation is required. The Project site is anticipated to contain collapsible soils that would undergo settlement when loaded by fill placement and/or structure pressure. However, with the implementation of Measure BMP GEO-4, impacts associated with unstable soils, on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse would be minimized. Therefore, short-term impacts would be considered less than significant, and no mitigation is required. The Project site is anticipated to consist of expansive clay. Therefore, the proposed Project could create a substantial direct or indirect risk to life or property due to expansive soils. However, with the implementation of Measure BMP GEO-3 impacts associated with expansive soils would be minimized. Therefore, short-term impacts would be considered less than significant, and no mitigation is required. The Project does not propose the installation of, or connection to, a septic system or alternative wastewater disposal system. Therefore, no short-term impacts would occur as a result of soils providing inadequate support to septic tanks or alternative wastewater systems, and no mitigation is required. Based on available excavation information, the Project has the potential to encounter native early Holocene- to late Pleistocene-age Modesto Formation beneath the artificial fill and disturbed sediment during excavations starting at depths as shallow as 2 to 15 feet below		

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	the current grade and may result in adverse direct impacts to paleontological resources. Based on the analysis of geologic maps, literature, museum records and online databases, as well as the current Project description and excavation descriptions, construction activities for the proposed Project may result in significant impacts to paleontological resources if the early Holocene- to late Pleistocene-age Modesto Formation is encountered during excavations. Ground disturbance and excavations associated with the proposed Project have the potential to encounter and disturb paleontological resources. However, with the implementation of Measure BMP GEO-4, impacts associated with the potential to destroy a unique paleontological resources, site, or unique geological feature would be minimized. Therefore, short-term impacts would be considered less than significant, and no mitigation is required.		
Geology, Soils and Paleontology **(Long-term)**	As previously noted, there is a possibility for earthquake-induced liquefaction to occur at the Project site. Therefore, the proposed Project may potentially directly or indirectly cause potential substantial adverse long-term effect, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. However, with the implementation of Measure BMP GEO-3, long-term impacts would be considered less than significant, and no mitigation is required. Also, as previously noted, the proposed Project could create a substantial direct or indirect risk to life or property due to expansive soils. However, with the implementation of Measure BMP GEO-3 impacts associated with expansive soils would be minimized. Therefore, long-term impacts would be considered less than significant, and no mitigation is required. As stated earlier, the Project does not propose the installation of, or connection to, a septic system or alternative wastewater disposal system. Therefore, no long-term impacts would occur as a result of soils providing inadequate support to septic tanks or alternative wastewater systems, and no mitigation is required. Based on available excavation information, the Project has the potential to encounter native early Holocene- to late Pleistocene-age Modesto Formation beneath the artificial fill and disturbed sediment during excavations starting at depths as shallow as 2 to 15 feet below the current grade and may result in adverse direct impacts to paleontological resources. Based on the analysis of geologic maps, literature, museum records and online databases, as well as the current Project description and excavation descriptions, construction activities for the proposed Project may result in significant impacts to paleontological resources if the early Holocene- to late Pleistocene-age Modesto Formation is encountered during excavations. Ground disturbance and excavations associated with the proposed Project have the potential to encounter and disturb paleontological resources. However, with the implementation of Measure BMP GEO-4, impacts associated with the potential to destroy a unique paleontological resources, site, or unique geological feature would be minimized. Therefore, long-term impacts would be considered less than significant, and no mitigation is required.	None	Less than Significant
Greenhouse Gas Emissions **(Short-term)**	Demolition, construction, and clearing activities would generate 7,480 to 12,913 MT of CO_2e. Amortized over a 30-year period, the approximate life of the proposed Project, the yearly contribution to GHG from the construction of the proposed Project would be 249 to 430 MT of CO_2e. Therefore, the GHG emissions from construction would not exceed the 900 MT of CO_2e per year screening threshold, short-term impacts would be considered less than significant, and no mitigation is required.	None	Less than Significant
Greenhouse Gas Emissions **(Long-term)**	The current rail activity through the Stockton Diamond results in substantial delays and inefficiencies in operations. The proposed Project is intended to improve regional passenger and freight rail efficiency and travel reliability by reducing conflicting train movements. By grade separating and providing an uninterrupted flow for the freight main line and shared passenger rail traffic, which accounts for the majority of the total projected train volumes through the Diamond, the proposed Project would improve freight and passenger movements and lead to lower costs for freight shipping, reduced delays, and a decrease in fuel consumption for idling locomotives. The proposed Project would provide an overall benefit, by reducing GHG emissions caused by trains and vehicles that sit idling due to congestion and delays. The improved freight mobility would reduce the total daily occupancy of the roadway crossings by approximately 30 percent in 2045. The reduction in crossing occupancy would improve on-road traffic flow and reduce vehicle idling in the Project study area. Reductions in air	None	Less than Significant (Beneficial)

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	pollutant emissions can lead to long-term health benefits for residents and employees along the existing rail corridors, addressing health problems associated with air pollution such as lung irritation, inflammation, asthma, heart and lung disease, and worsening of existing chronic health conditions. In addition, reduction of GHG emissions would help California meet its 2030 goals under SB 32. Once complete, the proposed Project would provide an overall benefit, by reducing the long-term regional GHG emissions. Therefore, the proposed Project's long-term impacts would be considered less than significant, and no mitigation measures would be required. As stated above, the proposed Project would reduce the total daily occupancy of the roadway crossings by approximately 30 percent in 2045. The reduction of GHG emissions would help California meet its GHG reduction goals. Therefore, the proposed Project would not conflict with a plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Thus, long-term impacts would be less than significant, and no mitigation is required.		
Hazards and Hazardous Materials **(Short-term)**	Construction would involve the handling, storage, transport, and disposal of hazardous materials. During construction, the use of hazardous materials and substances would be required, and hazardous wastes would be generated during operation of construction equipment. Equipment fueling would likely occur using temporary aboveground storage tanks at specified staging and laydown areas. Other potentially hazardous materials used in smaller quantities (for example, paints, asphalt, etc.) would be stored using specialized containment, such as sheds or trailers. If a spill of these materials were to occur, the accidental release could pose a hazard to construction employees, the public, and the environment, depending on the magnitude of the spill and relative hazard of the material released. Although typical construction management practices limit and often eliminate the risk of such accidental releases, the extent and duration of Project construction presents a possible risk to the environment through the routine transport of hazardous materials. In addition to the use of construction-related hazardous materials, contaminated soil and groundwater are also expected to be encountered during soil excavations and dewatering activities, which would require specialized handling, treatment, and potentially off-site transport and disposal. Multiple hazardous materials listings exist within the hazards and hazardous materials RSA. For this reason, excavation, handling, transport, and disposal must be conducted by a licensed hazardous waste transporter, per California Code of Regulations (CCR) Title 22, Division 4.5 regulations. Depending on the contaminant and concentrations encountered, contaminated soils would be disposed at an approved facility in accordance with all applicable local, state, and federal laws and regulations. Handling such materials would occur during short-term construction activities and would be subject to federal regulations, state, and local health and safety requirements (those specified by SJRRC, railroad operators, or property owners on a case-by-case basis). Typical requirements include temporary storage BMPs, containment in closed containers, characterization of waste material for disposal, and disposal at facilities that are equipped and licensed to handle waste with specified characteristics. The potential hazards generated by the routine transport, use, and disposal of hazardous materials, contaminated soils, and/or contaminated groundwater during construction are not anticipated have a significant impact, if adequately managed according to applicable laws and regulations and industry BMPs. With the implementation of Measure MM HAZ-1, the proposed Project would not create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials. Therefore, short-term impacts would be considered less than significant with mitigation incorporated. Under the proposed Project, ground disturbing activities, such as excavations, the removal and addition of tracks, modification of tracks, utility relocations, and installation of new structures may have the potential to disturb contaminated soil or groundwater and result in hazardous materials and wastes impacts. 36 total sites in the Project study area (30 of which are moderate or high risk) have been listed on various hazardous materials databases for two main reasons. First, because they contain documented hazardous materials contamination such as gasoline or diesel leaking underground storage tanks (LUST) or removed LUSTs. Secondarily, some sites are listed based on historical land uses, which have, or may have, resulted in localized contaminated soil and groundwater. Ground disturbance and structure demolition at identified hazardous materials sites could result in a hazardous materials release into the environment. Due to the close proximity of the Project construction limits to existing hazardous materials listings, potential exposure to contaminated soil and/or groundwater or contaminant migration could result. Construction of bridge foundations or other below ground	**MM HAZ-1: Prepare a Construction Hazardous Materials Management Plan (HMMP).** Prior to construction, SJRRC will ensure that an HMMP be prepared, which will outline provisions for safe storage, containment, and disposal of chemicals and hazardous materials, contaminated soils, and contaminated groundwater used or exposed during construction, including the proper locations for disposal. The HMMP shall be prepared to address Project construction limits, and include, but not be limited to, the following: • A description of hazardous materials and hazardous wastes used (29 C.F.R. 1910.1200) • A description of handling, transport, treatment, and disposal procedures, as relevant for each hazardous material or hazardous waste (29 C.F.R. 1910.120) • Preparedness, prevention, contingency, and emergency procedures, including emergency contact information (29 C.F.R. 1910.38) • A description of personnel training including, but not limited to: (1) recognition of existing or potential hazards resulting from accidental spills or other releases; (2) implementation of evacuation, notification, and other emergency response procedures; (3) management, awareness, and handling of hazardous materials and hazardous wastes, as required by their level of responsibility (29 C.F.R. 1910)	Less than Significant with Mitigation Incorporated

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	elements could encounter soils contaminated with petroleum and petroleum products, which could release volatile contaminant vapors during excavations or tunneling. In addition, based on the age (pre-1970s) of many of the buildings within the area, it is possible that these buildings were constructed when asbestos-containing materials (ACM) and LBPs were readily used in exterior coatings. Human exposure to lead has been determined by EPA and OSHA to be an adverse health risk, particularly to young children. Demolition of structures containing LBP requires specific remediation activities regulated by federal (40 CFR 745), state (17 CCR 35001-36100), and local laws and regulations. As a result, the Project could result in the accidental release of ACMs or lead into the environment. However, with the implementation of Measures MM HAZ-2 through MM HAZ-7, these short-term impacts would be avoided or minimized. With the implementation of Mitigation Measures MM HAZ-1 through MM HAZ-7, any reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment during construction would be considered less than significant with mitigation incorporated. The nearest school to the Project site is Jane Frederick Continuation High School, which is approximately 0.04 miles to the northeast of the Project construction limits. Other educational facilities in the hazards and hazardous materials RSA, all located east of Stanislaus Street, include: TEAM Charter School and Academy, Creative Child Care at TEAM Charter, and Gleason Park Head Start. Construction activities could potentially cause exposure from hazardous releases near schools within 0.25 mile of the proposed Project. However, with the implementation of Measures MM HAZ-1 through MM HAZ-7, short-term impacts would be considered less than significant with mitigation incorporated. Further, the proposed Project would require multiple construction vehicles to be operated within the Project construction limits over the construction duration, which could result in emissions in the vicinity of an existing school. However, with the implementation of Measures BMP AQ-1 and BMP AQ-2 (as referenced in earlier in under Air Quality), impacts would be considered less than significant, and no mitigation is required. As noted above, 36 sites have been listed on various hazardous materials databases in the Project hazards and hazardous materials RSA and have been identified with a low- to high-risk ranking based on their potential to affect the environment as a result of excavation activities on acquired parcels where Project-related construction activities would occur. Some of the parcels would either be acquired or used for temporary construction activities and staging where no ground disturbance would occur. The close proximity of these existing hazardous materials listings to Project related construction activities would carry the potential for encountering contaminated soil and/or groundwater. Construction activities could also cause contaminants to migrate through changes in groundwater flow. Additionally, there is the potential to encounter undocumented contamination sources, and deep ground disturbing activities such as construction of bridge foundations, could encounter soils contaminated with petroleum and petroleum products, which could release volatile contaminant vapors during excavations. Further, construction activities associated with the proposed Project could occur on or near sites included on hazardous materials database listings and have the potential to disturb contaminated soil or groundwater. However, with the implementation of Measures MM HAZ-1, MM HAZ-3 though MM HAZ-6, short-term impacts would be considered less than significant with mitigation incorporated. The proposed Project is located within the Stockton Metropolitan Airport (SCK) Airport Influence Area (AIA) of the SCK Airport Land Use Compatibility Plan (ALUCP). Properties within AIA are routinely subject to over-flights by aircraft. However, this would not result in a safety hazard for people residing or working in the hazards and hazardous materials RSA during construction. Therefore, short-term impacts associated with the proposed Project are considered less than significant, and no mitigation is required. There are no private airstrips within the vicinity of the proposed Project. Therefore, the proposed Project would not result in a safety hazard for people residing or working in the Project area. Therefore, no short-term impacts as a result of the proposed Project are anticipated.	• Instructions on keeping Safety Data Sheets on site for each on-site hazardous chemical (29 C.F.R. 1910.1200) • Identification of the locations of hazardous material storage areas, including temporary storage areas, which shall be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank (29 C.F.R. 1910.120) **MM HAZ-2: Property Acquisition Phase 1 and Phase 2 Environmental Site Assessments.** Prior to or during the right-of-way acquisition phase, SJRRC will ensure that Phase 1 Environmental Site Assessments (ESAs) would be conducted in accordance with standard ASTM methodologies to characterize each parcel. The determination of parcels that require a Phase 2 ESA (for example, soil, groundwater, soil vapor subsurface investigations) would be informed by a Phase 1 ESA and may require coordination with state and local agency officials. **MM HAZ-3: Prepare a General Construction Soil Management Plan.** Prior to construction, SJRRC will ensure that a General Construction Soil Management Plan be prepared, which will include general provisions for how soils will be managed within the Project construction limits for the duration of construction. General soil management controls to be implemented by the contractor, and the following topics, shall be addressed within the Soil Management Plan: • General worker health and safety procedures • Dust control • Management of soil stockpiles • Traffic control • Stormwater erosion control using BMPs	

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	Roads that would require temporary closures during construction of the at-grade crossings and/or grade separations include: East Weber Avenue; East Main Street; East Market Street; East Hazelton Avenue; East Scotts Avenue; and East Charter Way. However, with the implementation of Measures BMP TRA-2 and BMP TRA-7, impacts to traffic and emergency evacuation routes, including the primary emergency route for City of Stockton Fire Department Fire Station 2, would be minimized. Therefore, short-term impacts would be considered less than significant, and no mitigation measures are required. The proposed Project is located in a highly developed area, and no wildlands are located within or adjacent to the proposed Project. Therefore, there would be no risk from wildland fires and no short-term impacts are anticipated.	**MM HAZ-4: Prepare Parcel-Specific Soil Management Plans and Health and Safety Plans (HASP).** Prior to construction, SJRRC will ensure that parcel-specific Soil Management Plans be prepared for known contaminated sites and LUST-adjudicated sites for submittal and approval by DTSC. The plans shall include specific hazards and provisions for how soils will be managed for known contaminated sites and LUST-adjudicated sites. The nature and extent of contamination varies widely across the Project construction limits, and the parcel-specific Soil Management Plan shall provide parcel-specific requirements addressing the following: • Soil disposal protocols • Protocols governing the discovery of unknown contaminants • Soil management on properties within the Project construction limits with LUSTs or known contaminants Prior to construction on individual properties with LUSTs or known contaminants, a parcel-specific HASP shall also be prepared for submittal and approval by DTSC. The HASP shall be prepared to meet OSHA requirements, Title 29 of the C.F.R. 1910.120 and CCR Title 8, Section 5192, and all applicable federal, state, and local regulations and agency ordinances related to the proposed management, transport, and disposal of contaminated media during implementation of work and field activities. The HASP shall be signed and sealed by a Certified Industrial Hygienist, who is licensed by the American Board of Industrial Hygiene. In addition to general construction soil management plan provisions, the following parcel-specific HASP provisions shall also be implemented: • Training requirements for site workers who may be handling contaminated material	

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
		• Chemical exposure hazards in soil, groundwater, or soil vapor that are known to be present on a property • Mitigation and monitoring measures that are protective of site worker and public health and safety Prior to construction, SJRRC shall coordinate proposed soil management measures and reporting activities with stakeholders and regulatory agencies with jurisdiction in order to establish an appropriate monitoring and reporting program that meets all federal, state, and local laws for the Project and each of the contaminated sites. **MM HAZ-5: LUST Sites and Coordination with DTSC.** Prior to construction on properties with a LUST, SJRRC will ensure that coordination be required with DTSC regarding any plans specified, construction activities, and/or public outreach activities needed to verify that construction activities on properties with LUSTs would be managed in a manner protective of public health. **MM HAZ-6: Halt Construction Work if Potentially Hazardous Materials/Abandoned Oil Wells are Encountered.** During construction, SJRRC will ensure that contractors will follow all applicable local, state, and federal regulations regarding discovery, notification, response, disposal, and remediation for hazardous materials and/or abandoned oil wells encountered during the construction process. **MM HAZ-7: Pre-Demolition Investigation.** Prior to the demolition of any structures constructed prior to the 1970s, SJRRC will ensure that a survey be conducted for the presence of hazardous building materials, such as ACMs, LBPs, and other materials falling under the Universal Waste requirements. The results of this survey shall be submitted to SJRRC and applicable stakeholders as deemed appropriate by SJRRC. If any hazardous building materials are discovered, prior to demolition of any structures, a plan for proper removal shall be prepared in accordance with applicable OSHA and San Joaquin	

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
		County Environmental Health Department requirements. The contractor performing the work shall be required to implement the removal plan, shall be required to have a C-21 license in the State of California, and possess an A or B classification. If asbestos-related work is required, the contractor or their subcontractor shall be required to possess a California Contractor License (Asbestos Certification). Prior to any demolition activities, the contractor shall be required to secure the site and ensure utilities are disconnected.	
Hazards and Hazardous Materials **(Long-term)**	Longer term operational activities and practices involving routine transport, use, and storage of potentially hazardous materials for railroad maintenance, including shipments in tankers on the railroads, would remain similar to existing conditions. Future operations within the Project study area would involve routine transport of hazardous materials and wastes, such as gasoline, brake fluids, and coolants. Heavy maintenance activities would continue off site at existing maintenance facilities. As discussed, the proposed Project would comply with standard regulations and policies regarding the routine transport, use, storage, handling, and disposal of potentially hazardous materials during operations in order to protect human health and the environment. Therefore, long-term impacts would be considered less than significant with mitigation incorporated. Future operations at the Stockton Diamond would involve the use of hazardous materials and wastes, such as gasoline, brake fluids, and coolants, that could be subject to accidental releases. The handling of such materials would be subject to federal regulations, state, and local health and safety requirements. In general, they require that these materials not be released to the environment or disposed of as general refuse. Collection in proper containers and disposal at approved facilities is required. Therefore, long-term impacts would be considered less than significant, and no mitigation measures are required. As discussed above, future operations within the Project study area would involve routine transport of hazardous materials and wastes near schools. However, the proposed Project would comply with standard regulations and policies regarding the routine transport, use, storage, handling, and disposal of potentially hazardous materials during operations in order to protect human health and the environment. In addition, once the proposed Project is operational, it would result in a net reduction in local and regional air quality emissions. Therefore, the proposed Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of existing or proposed school. Thus, long-term impacts are considered less than significant, and no mitigation measures are required. As stated above, the proposed Project is located within the SCK AIA of the SCK ALUCP. The proposed Project would not create additional flight hazards or create additional hazards for people residing in the Project study area. The proposed Project does not include new permanent sources of light or glare that could create flight hazards. Tall structures are prohibited at properties within Stockton AIA and ALUCP. The proposed Project involves the construction of a flyover structure at approximately 40 feet would not be great enough to create additional hazards to aircraft given how far away the airport is from the apex of the grade separation. Over-flights by aircraft would occur intermittently throughout the day and would therefore not result in increased noise hazards over an extended period of time. Therefore, long-term impacts associated with the proposed Project are considered less than significant, and no mitigation is required. There are no private airstrips within the vicinity of the proposed Project. Therefore, the proposed Project would not result in a safety hazard for people residing or working in the Project area. Therefore, no long-term impacts as a result of the proposed Project are anticipated.	**MM HAZ-8: Maintenance of Emergency Response Times.** Prior to construction and closure of East Church Street and East Lafayette Street, SJRRC will consult with applicable agencies and departments providing emergency response to ensure that acceptable response times are maintained during proposed Project operation.	

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	During operations, permanent closure of East Lafayette Street and East Church Street could impact a primary emergency response route for City of Stockton Fire Department Fire Station 2. Given the proposed closures of East Lafayette Street and East Church Street to through traffic, alternative routes for Fire Station 2 emergency response were considered to identify routes that could provide similar response times in the event of an emergency. Based on this high-level review, two routes were identified that could provide response times similar to using East Lafayette Street. These include predominantly East Hazelton Avenue and SR 4. Fire Station 3 response times would not be affected by closure of East Lafayette Street, as Station 3's primary response route is South Airport Way, which is east of the proposed closure. Measure MM HAZ-8 stipulates that prior to construction and closure of East Church Street and East Lafayette Street, SJRRC would consult with applicable agencies and departments providing emergency response to ensure that acceptable response times are maintained during proposed Project operations. With the implementation of Measure MM HAZ-8, long-term impacts would be considered less than significant with mitigation incorporated. The proposed Project is located in a highly developed area, and no wildlands are located within or adjacent to the proposed Project. Therefore, there would be no risk from wildland fires and no long-term impacts are anticipated.		
Hydrology and Water Quality **(Short-term)**	During construction activities, the proposed Project would implement Measure BMP HYD-1, for Stormwater Management; Measures BMP HYD-2 and BMP HYD-3, requiring the preparation and compliance with a Construction SWPPP and Industrial SWPPP, respectively; and other standard applicable construction site project feature, design prevention and pollution, and treatment BMPs. With the implementation of Measures BMP HYD-1 through HYD-3 and other standard treatment BMPs, the proposed Project would comply with applicable permitting requirements during construction. Therefore, the proposed Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. As a result, short-term impacts would be considered less than significant, and no mitigation is required. The Project would not involve the use of groundwater, which could otherwise carry the potential for interference with current groundwater recharge, possible depletion of groundwater supplies, or interference with adjacent wells. Although groundwater dewatering may be necessary during construction in localized areas, these activities would result in only temporary reductions in groundwater levels within and directly adjacent to construction areas. Any localized lowering of the groundwater table would be anticipated to recover quickly following pumping and would not cause a net deficit in aquifer volume or a lowering of the groundwater table. Further, the addition of impervious surfaces associated with the proposed Project would have the potential to reduce groundwater recharge. However, impacts would be localized and would not have substantial implications for the greater groundwater basin. Therefore, short-term impacts are considered less than significant, and no mitigation is required. Temporary water quality impacts could result from sediment discharge from disturbed soil areas (DSAs) and construction near water resources or drainage facilities that discharge to water bodies and construction activities would alter drainage and runoff patterns. Proposed Project activities would not result in the alteration of a stream or river, as the construction of the proposed Project would require either a clear span flyover bridge or a bridge with piers to span the Mormon Slough and associated floodplain. Existing drainage structures along the Mormon Slough would remain in place after construction of the proposed bridge. Pipe culverts under the existing UP main line immediately downstream (west) of the flyover alignment would also be left in place to support the remaining at-grade connection track to BNSF. New drainage structures for passing flows beneath the railroad flyover may be pipe culverts, box culverts, or a bridge. Pipe and box culverts would require fill within the existing channel. In addition, during construction, construction flows to existing drainage systems may occur, as well as potential sources of polluted runoff. Implementation of Measures BMP HYD-1 through BMP HYD-4 and mandates set forth in the CGP and MS4 Permit would help prevent runoff from entering nearby existing drainage systems. If necessary, clear water diversions would be implemented to work in the Mormon Slough for the construction of new structures. Therefore, with the implementation Measures BMP HYD-1 through BMP HYD-4, and mandates set forth in the Construction General Permit and MS4 Permit, the proposed Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river or through the addition of impervious surfaces, in a manner which would result in	None	Less than Significant

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	substantial erosion or siltation on- or off-site, substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite, 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 impede or redirect flood flows. Thus, short-term impacts would be considered less than significant, and no mitigation is required. According to the California Department of Conservation (2020), the Project study area is not located in a tsunami inundation area. Further, given the flat topography of the Project study area and inland location of the proposed Project, away from oceans or other large bodies of water, the occurrence of a seiche is unlikely. FEMA FIRMs were researched for the proposed Project; the FIRM at the proposed Project site is FIRM Number 06077C0460F, effective on October 16, 2009. The railroad intersection is in Zone X (levee protection). The Project study area crosses the Zone A region along Mormon Slough and into the Zone X region on either side of the channel. Zone A represents areas subject to inundation by the 100-year or 1 percent annual chance flood event generally determined using approximate methods. Zone X represents areas protected from the 1 percent annual chance flood by levees. The proposed Project would be designed in accordance with USACE standards. Therefore, the proposed Project would not result in a flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation. Thus, short-term impacts would be considered less than significant, and no mitigation is required. The proposed Project would not require the use of groundwater. Dewatering activities associated with construction would be temporary and localized. The proposed Project would comply with federal, state, and local regulations and policies related to water quality and implement BMPs to protect water quality and comply with applicable permitting requirements. Therefore, the proposed Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Thus, short-term impacts are considered less than significant, and no mitigation is required.		
Hydrology and Water Quality **(Long-term)**	Compliance with standard federal, state, and local regulations and policies related to water quality would occur during operation of the proposed Project. Therefore, long-term impacts on water quality would be considered less than significant and no mitigation is required. As stated above, the Project would not involve the use of groundwater, which could otherwise carry the potential for interference with current groundwater recharge, possible depletion of groundwater supplies, or interference with adjacent wells. The addition of impervious surfaces associated with the proposed Project would have the potential to reduce groundwater recharge. However, impacts would be localized and would not have substantial implications for the greater groundwater basin. Therefore, long-term impacts are considered less than significant, and no mitigation is required. Permanent impacts on water quality could result from the addition of new impervious area; this additional impervious area prevents runoff from naturally dispersing and infiltrating into the ground, resulting in increased concentrated flow. The proposed Project would permanently add approximately 2.4 acres of impervious surfaces, depending on the bridge structure type chosen. General measures related to water quality would include construction site BMPs during construction to prevent construction materials, debris, and polluted runoff and stormwater from entering surface waters or channels in the proposed Project vicinity. Additionally, with the implementation of Measure BMP HYD-2, Flood Protection, and compliance with applicable permits, impacts on the redirection of flood flows during operation would be minimized. Therefore, with the implementation of Measure BMP HYD-2, the proposed Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river or through the addition of impervious surfaces, in a matter which would result in substantial erosion or siltation on- or off-site, substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite, 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 impede or redirect flood flows. Thus, long-term impacts would be considered less than significant, and no mitigation is required. As stated above, the Project study area is not located in a tsunami inundation area. Further, the occurrence of a seiche is unlikely. The proposed Project would be designed in accordance with USACE standards. Therefore, the proposed Project would not result in a flood	None	Less than Significant

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation. Thus, long-term impacts would be considered less than significant, and no mitigation is required. As stated previously, the proposed Project would not require the use of groundwater. The proposed Project would comply with federal, state, and local regulations and policies related to water quality and implement BMPs to protect water quality and comply with applicable permitting requirements. Therefore, the proposed Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Thus, long-term impacts are considered less than significant, and no mitigation is required.		
Land Use and Planning **(Short-term)**	Temporary road closures during construction would occur as a result of the proposed Project. However, with the implementation of Measure BMP TRA-7 these impacts would be minimized. During construction, no more than one road would be closed at a time to minimize traffic interruptions, and where sidewalks need to be closed only one side of the street would be closed at a time to maintain access along the street. As a result, the proposed Project would not physically divide the neighborhoods, or cause short-term land use impacts within the land use and planning RSA. During construction, staging areas would be established throughout the land use and planning RSA to provide work areas and construction access, as well as a location to store Project equipment and materials. A few vacant industrial parcels, as well as railroad-owned property adjacent to the Stockton Diamond, would be used for staging areas and these properties would be restored to previous conditions after Project construction. Temporary construction easements (TCEs) would also be required as part of the proposed Project. Similar to the temporary staging areas, all TCE areas would be restored to previous conditions once Project construction is completed. Therefore, with the implementation of Measure BMP TRA-7, the proposed Project would not physically divide an established community. Thus, short-term impacts would be considered less than significant, and no mitigation is required. The proposed Project is consistent with applicable land use and planning goals and policies identified in the San Joaquin County General Plan and City of Stockton General Plan. Therefore, the proposed Project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation for the purpose of avoiding or mitigating an environmental effect. Thus, short-term impacts are considered less than significant, and no mitigation is required.	None	Less than Significant Impact
Land Use and Planning **(Long-term)**	The proposed Project would permanently convert several industrial parcels (all are zoned General Industrial) to a transportation use, reducing the available industrial land use in the area by 10.87 acres. The proposed Project would not acquire any residential properties; therefore, there would be no impacts to residents nor residential land uses in the land use and planning RSA. The proposed Project will result in 12 full acquisitions and two partial acquisitions, as well as two TCEs required for the construction of the proposed Project. Parcels impacted by the proposed Project are a mix of partially vacant parcels used for the purpose of truck and RV parking and five active businesses. The five active businesses would require relocation. The City has identified available industrial zoned properties elsewhere in the City that are suitable for relocation of these five displaced businesses. All relocation impacts of these displaced businesses would be minimized through the implementation of the Measure BMP LU-1. The affected businesses are not unique—generally auto- and truck-related services—and would not have relocation challenges. Moreover, these businesses serve larger areas and their relocation would not affect the local neighborhoods. The partial property acquisitions would not affect any existing business. Further, the full and partial acquisitions would result in minimal conversion of existing land use, amounting to approximately 0.37 percent, less than 1 percent of the City's industrial zoned land use. The proposed Project would require minor changes to zoning and/ or land use designations in the City of Stockton. However, with the implementation of Measure MM LU-2, these impacts would be mitigated. Therefore, with the implementation of Measures BMP LU-1 and MM LU-2, the proposed Project would not divide an established community. Thus, long-term impacts would be considered less than significant, and no mitigation is required. The proposed Project is consistent with applicable land use and planning goals and policies identified in the San Joaquin County General Plan and City of Stockton General Plan. Therefore, the proposed Project would not cause a significant environmental impact due to a	**MM LU-2: Relocation Assistance.** During final design, SJRRC will ensure that the loss of private industrial property be mitigated by payment of fair market compensation and provision of relocation assistance in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act. For these non-residential displacements, the following would be provided to business operators: • Relocation advisory services • Minimum 90 days written notice to vacate prior to requiring possession • Reimbursement for moving and reestablishment expenses	Less than Significant Impact with Mitigation Incorporated

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	conflict with any land use plan, policy, or regulation for the purpose of avoiding or mitigating an environmental effect. Thus, long-term impacts are considered less than significant, and no mitigation is required.		
Noise and Vibration **(Short-term)**	The City of Stockton does not have specific ordinances regarding the regulation of construction noise; and although San Joaquin County has limits on daytime and nighttime noise, the daytime noise limits are waived for construction activities. The track alignment east of the existing active rail line would be shifted east, allowing for a majority of the necessary construction along the railroad and structures to be completed during daytime hours. Sensitive land uses located within the approximate impact distance would be exposed to noise levels exceeding the FTA's daytime criterion. With the exception of the viaduct structure design option, which may require pile driving along the entire length of the flyover, bridge construction that requires extensive pile driving would not occur adjacent to sensitive receptors. For the embankment and retaining wall structure design options, sections of bridge construction requiring pile driving would be at the center of the flyover and at East Charter Way. To minimize impacts to passenger and freight rail operations, some construction work would be required during the nighttime hours to connect the new and existing rail track lines. Nighttime construction near sensitive receptors would have greater impacts than daytime construction. The greatest noise impact is associated with impact pile driving, which is less intense near these receptors due to the type of structural work that is necessary near the residential neighborhoods. However, with the implementation of Measure MM NV-1, short-term noise impacts would be mitigated. Based on the discussion above, with the implementation of Measures MM NV-1 and MM NV-2, the proposed Project would not generate a substantial temporary 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. Thus, short-term noise impacts would be considered less than significant with mitigation incorporated. When measured at a distance of 25 feet, construction of the proposed Project can be expected to generate vibration levels as high as 94 vibration decibel (VdB) due to compactors during site work, 87 VdB due to bulldozers during rail work, and 104 VdB due to impact pile drivers during structures work. The peak particle velocity (PPV) associated with the construction activities would be as high as 0.21 inches/second (in/sec) for vibratory rollers during site work, 0.089 in/sec due to bulldozers during rail work, and 0.644 in/sec due to impact pile drivers during structures work. For pile driving activities, it is anticipated that the potential for damage effects will be limited to structures located at distances in the range of 30 to 75 feet from the pile driving operations, depending on the building category. Construction activities involving pile drivers occurring at the edge of or slightly outside of the current right-of-way could result in vibration impacts to nearby properties. However, with the implementation of Measure MM NV-2, any generation of groundborne vibration and noise levels would be mitigated and not considered excessive in nature. Therefore, with the implementation of Measure MM NV-2, short-term impacts related to groundborne noise and vibration would be considered less than significant with mitigation incorporated. The proposed Project is not located within a vicinity of a private airstrip and the nearest public airport or public use airport is SCK, located beyond 2 miles from the noise and vibration RSA, approximately 4 miles south of the Study Area. Therefore, no short-term impacts related to excessive noise levels from airport use would occur under the proposed Project.	**MM NV-1: Noise Control Plan.** Prior to construction SJRRC will ensure that a noise control plan be prepared that will incorporate, at a minimum, the following best practices into the construction scope of work and specifications to reduce the impact of temporary construction-related noise on nearby noise-sensitive receptors. • Install temporary construction site sound barriers near noise sources. • Use moveable sound barriers at the source of the construction activity. • Avoid the use of impact pile drivers at night and, where possible, near noise-sensitive areas or use quieter alternatives (for example, drilled piles) where geological conditions permit. • Locate stationary construction equipment as far as possible from noise-sensitive sites. • Re-route construction-related truck traffic along roadways that will cause the least disturbance to residents. • Use low-noise emission equipment. • Implement noise-deadening measures for truck loading and operations. • Line or cover storage bins, conveyors, and chutes with sound-deadening material. • Use acoustic enclosures, shields, or shrouds for equipment and facilities. • Use high-grade engine exhaust silencers and engine-casing sound insulation. • Minimize the use of generators to power equipment.	Less than Significant with Mitigation Incorporated

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
		• Limit use of public address systems. • Grade surface irregularities on construction sites. • Monitor and maintain equipment to meet noise limits. • Implement noise monitoring during construction to ensure noise limits are met. • Maintain active coordination with the City of Stockton to identify potential options to retrofit residences closest to the construction with noise reduction window technology. • Establish an active community liaison program to keep residents informed about construction and to provide a procedure for addressing complaints. **MM NV-2: Vibration Control Plan.** Prior to construction, SJRRC will ensure that a vibration control plan is prepared and will incorporate, at a minimum, the following best practices into the construction scope of work and specifications to reduce the impact of temporary construction-related vibration on nearby vibration-sensitive land uses will be prepared and implemented. • Avoid the use of impact pile drivers where possible near vibration-sensitive areas or use alternative construction methods (for example, drilled piles) where geological conditions permit. • Avoid vibratory compacting/rolling in close proximity to structures. • Require vibration monitoring during vibration-intensive activities. In the event building damage occurs due to construction, repairs would be made, or compensation would be provided by SJRRC.	

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
Noise and Vibration **(Long-term)**	San Joaquin County and the City of Stockton do not have specific ordinances regarding thresholds for rail noise; Therefore, the operational noise as a result of the proposed Project would not violate or be in excess of any standards established by the local general plan or noise ordinance. As a result, the long-term noise impact analysis was based on applicable standards of other agencies, such as FRA and FTA. Four residences located along the northbound side of the proposed tracks between East Lafayette Street and East Hazelton Avenue would experience moderate noise impacts (one single-family and one multi-family residence comprised of three residences). These impacts are due to the main line tracks moving closer to the residences and the elevated height of the main line flyover. In addition, there are five residences with moderate noise impacts (three single-family homes and one multi-family residence comprised of two residences) located south of the Stockton Diamond, between East Anderson Street and East Charter Way. These moderate noise impacts would occur as a result of the operation of new, elevated connecting tracks (approximately 2 to 4 feet above grade) shifted closer to sensitive receptors at the eastern side of the railroad corridor and the new, elevated main track flyover as it approaches its highest elevation point at the Diamond. Two institutional receivers – Faith Tabernacle Assembly located on East Anderson Street and the Islamic Center of Stockton located on South Pilgrim Street would experience moderate noise impacts. There are no noise impacts at Union Park. Twelve single-family homes located between East Jefferson Street and East Clay Street, and between the railroad corridor and South Pilgrim Street would experience severe noise impacts and require noise mitigation. Because of engineering and operational limitations of the proposed Project, including the multiple levels of the proposed tracks, track turnouts and clearance issues, noise barriers would not be a feasible option for noise mitigation. Therefore, sound insulation is recommended for the twelve residences with severe noise impacts. Sound insulation programs are developed to reduce the interior noise levels in sleeping and living quarters in residential land uses or in noise-sensitive areas such as schools and other institutional uses to within the guidelines set by the U.S. Department of Housing and Urban Development. Under these guidelines, interior noise levels for residential land uses should not exceed a Ldn of 45 dBA, and a form of fresh air exchange must be maintained. The air exchange can be achieved by installing an air conditioning unit for the residence. Sound insulation is normally only used on older dwellings with single-paned windows or in buildings with double-paned windows that are no longer effective because of leakage. Sound insulation testing would be conducted to determine the appropriate measures to improve the outdoor to indoor sound level reduction, such as improved windows, doors or vents. Sound insulation would not reduce exterior noise levels. With the implementation of Measure MM NV-3, requiring sound insulation improvements be installed at the 12 residences that would be exposed to severe noise impacts, the interior noise levels at these residences would be mitigated. Therefore, the proposed Project would not generate a substantial 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. Thus, long-term noise impacts would be considered less than significant with mitigation incorporated. Because there are no vibration sensitive receivers within the screening distances for potential impact, there are no vibration impacts from operation projected for the proposed Project, and no long-term vibration impacts are anticipated. Because there are no vibration sensitive receivers within the screening distances for potential impact, there would be no excessive groundborne noise or vibration impacts from operations projected for the proposed Project Therefore, no long-term groundborne noise or vibration impacts are anticipated. As stated above, the proposed Project is not located within a vicinity of a private airstrip and the nearest public airport or public use airport is SCK, located beyond 2 miles from the noise and vibration RSA, approximately 4 miles south of the study area. Therefore, no long-term impacts associated related to excessive noise levels from airport use would occur under the proposed Project.	**MM NV-3: Reductions for Severe Noise Impacts.** Prior to construction, SJRRC will ensure that sound insulation improvements will be installed in the residential properties that would be exposed to severe noise impacts. The goal of these improvements is to reduce the interior noise levels to below the 45 dBA Ldn noise threshold set by the U.S. Department of Housing and Urban Development. In addition to the sound insulation improvements a form of fresh air exchange must be maintained. The air exchange can be achieved by installing an air conditioning unit for the residence. Sound insulation is normally only used on older dwellings with single-paned windows or in buildings with double-paned windows that are no longer effective because of leakage. Sound insulation testing would be conducted to determine the appropriate measures to improve the outdoor to indoor sound level reduction, such as improved windows, doors or vents.	Less than Significant with Mitigation Incorporated

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
Population and Housing **(Short-term)**	Under the proposed Project, temporary construction jobs would be created on a short-term basis and could be filled by the current workforce in the region. However, construction jobs would cease upon completion of Project construction. Therefore, permanent jobs that could cause substantial or unplanned growth within the population and housing RSA; and thereby necessitate the construction of additional housing and/or business services to serve substantial or unplanned growth, would not occur as a result of the proposed Project. Prior to and during construction, transient populations currently occupying part of the Mormon Slough would need to be temporarily relocated. With the implementation of Measure BMP PH-1, preparation of an Outreach and Engagement Plan, SJRRC would pro-actively coordinate with the City and the County to assist these populations in finding alternative housing options consistent with the strategies, goals, and policies of the San Joaquin County Community Response to Homelessness Strategic Plan, and San Joaquin County policies related to homelessness described above. With the implementation of Measure BMP PH-1, short-term impacts would be considered less than significant.	None	Less than Significant
Population and Housing **(Long-term)**	The proposed Project would involve the grade separation of two principal railroad lines at the Stockton Diamond that would reduce rail congestion and allow for an uninterrupted flow of passenger and freight rail traffic though the crossing; improve freight mobility, leading to lower costs for freight shipping; reduce delays for passenger and rail providers; and result in an overall decrease in fuel consumption. Although the proposed Project would permanently convert 10.87 acres of industrial land use to transportation land uses, which is less than 1 percent of the City's industrial zoned land use, it would not result in substantial amounts of unplanned growth that would require the need for additional housing units. No residential properties would be partially or fully acquired as part of the proposed Project. Therefore, the proposed Project would not displace any existing residences which could potentially trigger the construction of replacement residential housing within the population and housing RSA. While the benefits of the proposed Project would include improving passenger and freight rail operations and making transit a more attractive mode choice for those utilizing the current transportation system, it would not result in changes to the volume of the overall commuters in the City of Stockton or larger region. Further, because the proposed Project is limited to track improvements which would not provide any direct opportunities for people to board or alight trains within the community, substantial or unplanned growth in population would not occur; and as a result, the proposed Project would not substantially increase housing demand in the population and housing RSA, or trigger the need for the construction of additional infrastructure or the implementation of additional infrastructure improvements. Based on the discussion above, the proposed Project would not result in substantial unplanned population growth in an area, either directly through the need for the construction of new homes and businesses, or indirectly through extension of roads or other infrastructure. As a result, no long-term growth impacts related to the proposed Project are anticipated.	None	No Impact
Public Services **(Short-term)**	the nearest fire station, Fire Station 3, is located south of East Charter Way, outside of the Project construction limits. Although Fire Station 3 would not be directly impacted during construction, indirect impacts may occur related to emergency vehicle access that may be impeded during construction due to nearby temporary road closures. There are no police stations in the public services RSA; therefore, no police stations would be directly impacted with the proposed Project. However, indirect impacts may occur related to emergency vehicle access that may be impeded during construction due to nearby temporary road closures. Four schools are identified in the public services RSA, Jane Frederick High School, TEAM Charter School, Creative Child Care at TEAM Charter, and Gleason Park head start. Construction of the proposed Project would not result in any direct physical impacts on schools, nor an increased demand for school facilities. However, indirect impacts may occur related to emergency vehicle access that may be impeded during construction due to nearby temporary road closures. the Stockton-San Joaquin County Public Library currently operates five facilities in the city; however, none of these facilities are located in the public services RSA. The nearest library to the proposed Project site is the Cesar Chavez Central Library, approximately 0.7 miles to the northwest. In addition, public health care in San Joaquin County is available through the San Joaquin General Hospital,	None	Less than Signfiicant

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	approximately 3.5 miles south of the Project site. Additional private hospitals in the City include Dameron Hospital and Saint Joseph's Medical Center, each over a mile away from the Project site. There are no hospital facilities in the public services RSA. With the implementation of a Transportation Management Plan (TMP) identified in Measure BMP TRA-7, the Project would not 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 related to fire protection, police protection, schools, or other public facility. Thus, short-term impacts would be considered less than significant, and no mitigation is required.		
Public Services **(Long-term)**	The proposed Project is limited to operational improvements to an existing transportation facility and would not be considered growth inducing. Access in and around the new grade separation would be improved upon completion of the proposed Project. During operation of the proposed Project, emergency vehicles would benefit from improved local mobility. With the proposed flyover, there would be fewer delays at crossings since there would be substantially less "gate down" time for trains to travel through the rail corridor. Therefore, the proposed Project would not result in the need for new or physically altered fire protection facilities, police faciliites or other public facilities in the long-term. Access to the school facilities located within the public services RSA would not be directly impacted with the proposed Project and there would be no need for new or physically altered school facilities in the long-term. Therefore, no long-term impacts would occur.	None	No Impact
Parks and Recreation **(Short-term)**	The proposed Project improves passenger rail reliability by implementing infrastructure improvements to allow for better rail operations. These improvements would also improve safety and mobility in the local area and would not create greater demand for recreational opportunities. In addition, the proposed Project would not increase the use of the existing parks and recreational facilities in the area or cause substantial or accelerate physical deterioration of these facilities. Therefore, no short-term impacts would occur as a result of the proposed Project. The proposed Project does not include recreational facilities, nor does it include any features that would require construction of new recreation facilities or expand existing recreational facilities. However, the proposed Project will require 0.03-acre of TCE in the northwest corner of Union Park, located in the southeast quadrant of the intersection between East Hazelton Avenue and South Union Street. The TCE is considered a short-term direct impact, and would be used for the storage of construction materials and serve as construction access to East Hazelton Avenue during the construction of the proposed underpass. The TCE would not directly impact access to the existing facilities at Union Park in the short-term, as multiple access locations are available along the perimeter of the unfenced park and also would not directly impact any of the features of the park that currently provide recreational opportunities. Temporary indirect impacts to Union Park would occur over a 2 to 3-month period due to the full street closures of East Hazelton Avenue and East Scotts Avenue during proposed Project construction. These temporary street closures may indirectly impact local access to Union Park. However, in order to maintain traffic flow and park access throughout proposed Project construction, closures on East Hazelton Avenue and East Scotts Avenue would not occur at the same time. Similarly, access to Independence Park, located in the southwest quadrant of South Aurora Street and East Market Street, may be indirectly impacted by the temporary closure of South Market Street during construction. However, indirect short-term impacts related to access during construction would be reduced with the implementation of the proposed Project Construction Transportation Plan, that aims to minimize impacts of construction traffic on nearby roadways (Measure BMP TRA-2), a Construction Management Plan (CMP) that aims to address maintenance and pedestrian access during the construction period (Measure BMP TRA-4), a CMP for the maintenance of bicycle access during construction (Measure BMP TRA-5), and a TMP which requires alternate access or detour plans be available early and continuously throughout the proposed Project construction as part of ongoing public outreach (Measure BMP TRA-7).	None	Less than Significant

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	Additionally, due to the proximity of several parks (Union Park, Independence Park, and Liberty Park), noise and dust generated during construction may cause indirect short-term impacts on park users. However, indirect short-term impacts related to noise and dust during construction would be reduced with the implementation of Measures BMP AQ-1 and BMP AQ-2. Therefore, with the implementation of Measures BMP TRA-2, BMP TRA-4, BMP TRA-5, BMP TRA-7, BMP AQ-1, BMP AQ-2, MM NV-1 and MM NV-2, the proposed Project would not require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Thus, short-term direct and indirect impacts would be considered less than significant, and no mitigation is required.		
Parks and Recreation **(Long-term)**	As stated, above, the proposed Project improves passenger rail reliability by implementing infrastructure improvements to allow for better rail operations. These improvements would also improve safety and mobility in the local area and would not create greater demand for recreational opportunities. In addition, after construction of the proposed Project is completed, the affected area of the park property would be returned to its prior condition, and no permanent modifications to Union Park's recreational features would occur. Therefore, the proposed Project would not 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, nor would it require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Thus, no long-term impacts on parks and recreation would occur as a result of the proposed Project, and no mitigation is required.	None	No Impact
Transportation **(Short-term)**	Construction of the proposed Project would not result in any direct impacts on an applicable program, plan, ordinance or policy. However, indirect impacts may occur related to transportation and circulation during construction due to nearby temporary road closures. In order to reduce potential temporary transportation and circulation impacts, a Construction Transportation Plan (Measure BMP TRA-2), and a TMP (Measure BMP TRA-7) would be drafted, approved, and filed with the City of Stockton Engineering and Transportation Department, or other agency with jurisdiction over the road, prior to any road closures. With the implementation of Measures BMP TRA-2 and BMP TRA-7, short-term impacts would be considered less than significant, and no mitigation measures are required. Vehicle miles traveled (VMT) is now the metric used to evaluate significant transportation impacts under CEQA. The proposed Project is subject to CEQA Guidelines Section 15064.3, subsection (b)(2), Criteria for Analyzing Transportation Impacts, Transportation Projects, which states "*Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact* (Emphasis added). The "Technical Advisory on Evaluating Transportation Impacts in CEQA," prepared by the State of California Office of Planning and Research in December 2018 identifies transportation project types that are, and are not, likely to lead to measurable or significant increases in VMT. According to the Technical Advisory, "Projects that would not likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis [i.e., VMT analysis], include: • Grade separation to separate vehicles from rail, transit, pedestrians, or bicycles, or to replace a lane in order to separate preferential vehicles (for example, HOV, HOT, or trucks) from general vehicles (OPR 2018:20-21) Because the proposed Project is primarily a grade separation project to partially grade separate passenger rail from freight rail, and to separate rail from roadway traffic, the proposed Project is not likely to lead to measurable or significant increases in VMT. As such, VMT analysis is not required for analyzing the proposed Project's transportation impacts. Therefore, the proposed project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b), no short-term VMT impact would occur, and no mitigation is required. The proposed Project would have no impacts on existing transit routes except on Charter Way (Route 49). In the long term, Route 49 will remain on Charter Way. During construction, however, the proposed Project will construct two new bridges across Charter Way and will demolish a portion of an existing bridge. Temporary closures, detours, or narrowing to two lanes on Charter Way may be necessary	None	Less than Significant

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	during construction. Measure BMP TRA-6, which stipulates the protection of freight and passenger rail during construction, would ensure that any structural damage to freight or public railways that may occur during the construction period would be repaired and any damaged sections be returned to their original structural condition. Measure BMP TRA-6 would reduce potential short-term impacts related to transit resources. During construction, impacts may occur to existing pedestrian access within the transportation RSA. However, with the implementation of Measure BMP TRA-4, which specifies that a Construction Management Plan (CMP) address maintenance of pedestrian access during the construction period, short-term impacts related to pedestrian access would be considered less than significant and no mitigation is required. There are no existing bicycle facilities in the Traffic Study Area. During construction, impacts may occur to existing bicycle access within the transportation RSA. However, with the implementation of Measure BMP TRA-5, which specifies that a CMP address the maintenance of bicycle and pedestrian access during construction, short-term impacts related to bicycle access would be considered less than significant and no mitigation is required. During construction, impacts may occur to existing parking and loading within the transportation RSA. However, with the implementation of Measure BMP TRA-3, which specifies that adequate off-street parking for all construction-related vehicles be provided throughout the construction period, impacts to public on-street parking areas would be minimized. Therefore, with the implementation of Measure BMP TRA-3, short-term impacts related to parking and loading would be considered less than significant and no mitigation is required. The Traffic Study Area is served by two fire stations of the City of Stockton Fire Department. Fire Station 3 (1116 E. First Street) is the fire station nearest the proposed Project and accesses the Traffic Study Area via South Airport Way. Fire Station 2 (110 W. Sonora Street) currently uses SR 4 and East Lafayette Street as primary routes for emergency response. Roads that would require temporary closures during construction of the at-grade crossings and/or grade separations include: East Weber Avenue; East Main Street; East Market Street; East Hazelton Avenue; East Scotts Avenue; and East Charter Way. During construction, the contractor would likely start at one end of the proposed Project and work in one direction, closing one street at a time for the minimal amount of time possible to allow for safe working conditions and to minimize traffic interruptions. If the work is along existing tracks and work is minor, then a full roadway closure could potentially last one week in duration. Alternatively, depending on the extent of the work, work could also be accomplished with lane closures and flagging. Restrictions would be placed on the contractor to close every other crossing and no detours would be allowed to overlap. Further, Variable Message Signs would be required to be posted two weeks in advance of closures and through the duration of closure. During construction, truck routes on the State Highway system and major arterial streets within the City would be used heavily, including portions of East Charter Way, South Airport Way, East Hazelton Avenue, East Lafayette Street, East Market Street, East Weber Street, South Aurora Street, South Union Street, South Wilson Way, and South Stanislaus Street. With the implementation of Measure BMP TRA-1, which requires a photographic survey documenting the condition of the public roadways along truck routes providing access to the proposed Project site, temporary increases in truck traffic along these routes would be reduced, short-term impacts related to truck traffic would be considered less than significant, and no mitigation is required. The proposed Project is being developed using UP, BNSF, and City of Stockton railroad design standards for safe horizontal and vertical engineering elements, including track alignment, elevations, clearances, and curvature. Automobiles, trucks, buses, and other anticipated roadway traffic would have sufficient clearance with the East Hazelton Avenue, East Scotts Avenue, and East Charter Way underpasses for safe passage. Therefore, the project would not increase hazards due to geometric design or incompatible uses, and no short-term or long-term impacts are anticipated.		

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	In order to reduce emergency response impacts during construction activities, all emergency response and emergency evacuation routes would be maintained, and alternate emergency routes would be identified through coordination with appropriate agencies and local departments. With implementation of an approved TMP (Measure BMP TRA-7), alternative routing plans and methods, and details for early public outreach would be provided before and throughout construction. To further limit temporary impacts to traffic circulation during construction, the contractor would likely start at one end of the proposed Project and work in one direction, closing one street at a time for the minimal amount of time possible to allow for safe working conditions and to minimize traffic interruptions. If the work is along existing tracks and work is minor, then a full roadway closure could potentially last one week in duration. Alternatively, depending on the extent of the work, work could also be accomplished with lane closures and flagging. Restrictions would be placed on the contractor to close every other crossing and no detours would be allowed to overlap. Further, Variable Message Signs would be required to be posted two weeks in advance of closures and through the duration of closure. Therefore, with the implementation of Measure BMP TRA-7, the proposed Project would not result in inadequate emergency access. Thus, short-term impacts would be considered less than significant, and no mitigation is required.		
Transportation **(Long-term)**	During operation of the proposed Project, emergency vehicles would benefit from improved local mobility. With the proposed grade separation, there would be fewer delays at crossings since there would be substantially less “gate down” time for trains to travel through the rail corridor. Therefore, the proposed Project would be consistent with applicable programs, plans, ordinances, and policies. No long-term impacts would occur, and no mitigation is required. As stated above, the proposed Project is a transportation project and is subject to CEQA Guidelines Section 15064.3, subsection (b)(2), Criteria for Analyzing Transportation Impacts, Transportation Projects, which states “*Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact* (Emphasis added). According to the Technical Advisory, “Projects that would not likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis [i.e., VMT analysis], include: • Grade separation to separate vehicles from rail, transit, pedestrians, or bicycles, or to replace a lane in order to separate preferential vehicles (for example, HOV, HOT, or trucks) from general vehicles (OPR 2018:20-21) Therefore, the proposed project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b), no long-term impacts would occur, and no mitigation is required. After the completion of the proposed Project, transit operations would be improved from the existing condition and no long-term impacts would occur. The proposed Project would construct roadway-rail at-grade crossing infrastructure and sidewalk improvements on Weber Avenue, Main Street, Market Street, Hazelton Avenue, Scotts Avenue, and Charter Way, including ADA compliant ramps. After the completion of the proposed Project, safer pedestrian access would be provided within the transportation RSA compared to the existing condition and no long-term impacts would occur. Bicycle facilities in the Traffic Study Area are proposed as part of a separate project on East Weber Avenue, East Main Street, East Market Street, East Hazelton Avenue, and South Aurora Street. However, the proposed Project would not preclude implementation of the future bicycle facilities identified. Therefore, long-term impacts are considered less than significant, and no mitigation is required. No parking spaces would be removed on Weber Avenue, Main Street, Market Street, and Scotts Avenue. The rail crossing at Church Street is proposed to be closed and existing on-street parking to be removed. As the businesses along Church Street from the proposed tracks to Union Street would be closed, there would be minimal parking impacts. There is existing parking on Hazelton Avenue near Union Street and Aurora Street. The proposed Project design lengthens the existing median at Hazelton Avenue and therefore reduces	None	Less than Significant

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	the available parking spaces. The businesses adjacent to the parking spaces would be acquired by the proposed Project; and thus, there would be minimal impacts to needed parking at this location. Given the proposed closure of East Lafayette Street and East Church Street to through traffic, alternative routes for Fire Station 2 emergency response were evaluated to identify routes that could provide similar response times in the event of an emergency. Based on this high-level review, two routes were identified that could provide response times similar to the use of East Lafayette Street. These are East Hazelton Avenue and SR 4. Fire Station 3 response times would not be affected by the closure of East Lafayette Street and East Church Street, as Station 3's primary response route is South Airport Way, which is east of the proposed closure. In order to further reduce impacts to traffic, emergency response and emergency evacuation routes would be maintained, and alternate emergency routes would be identified through coordination with appropriate agencies and local departments. The plan would include alternative routing plans and methods, and details for early public outreach. Further, with implementation of an approved TMP, described in Measure BMP TRA-7, short-term impacts on an emergency response plan or emergency evacuation plan are considered less than significant, and no mitigation is required. East Lafayette Street and East Church Street will be permanently closed as part of the proposed Project. East Lafayette Street would be closed due to the multiple at-grade rail crossings of the at-grade main tracks and wye connection tracks (that is, four crossings within two blocks). After the completion of the proposed Project, overall transportation, circulation, and access would be improved within the transportation RSA, when compared to the existing condition. Therefore, no long-term impacts would occur and no mitigation is required. Further, operation of the proposed Project would not contribute to truck traffic within the transportation RSA. Therefore, no long-term impacts related to truck traffic are anticipated. The proposed Project is being developed using UP, BNSF, and City of Stockton railroad design standards for safe horizontal and vertical engineering elements, including track alignment, elevations, clearances, and curvature. Automobiles, trucks, buses, and other anticipated roadway traffic would have sufficient clearance with the East Hazelton Avenue, East Scotts Avenue, and East Charter Way underpasses for safe passage. Therefore, the project would not increase hazards due to geometric design or incompatible uses or result in inadequate emergency access. Thus, long-term impacts are considered less than significant, and no mitigation is required		
Tribal Cultural Resources **(Short-term and long term)**	As discussed in Section 3.4, Cultural Resources, the proposed Project is located within an area that has been subject to disruption by railroad and commercial development activities. As a result of previous development activities, archaeological resources and tribal cultural resources that may have existed at the ground surface have likely been displaced or destroyed. There is, however, the possibility that ground-disturbing activities could impact previously undiscovered subsurface prehistoric archaeological resources or tribal cultural resources. However, with the implementation of Measures BMP CUL-1 and BMP CUL-2, the proposed Project would not cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC 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 that is listed or eligible for listing in the California Register of Historic Resources, or in the local register of historical resources as defined in PRC Section 5020.1(k). Thus, short-term and long-term impacts to archaeological and tribal archaeological resources would be considered less than significant. Based on the background research, field efforts, and SJRRC's consultation with the North Valley Yokuts Tribe and the Confederated Villages of Lisian, no known tribal cultural resources were identified in the project area. However, project construction would involve ground disturbing activities that may result in the discovery or damage of as-yet undiscovered tribal cultural resources. With the implementation of Measures BMP CUL-1 through BMP CUL-3, the proposed Project would not cause a substantial adverse change in the significance of a tribal cultural resource. Thus, short-term and long-term impacts would be considered less than significant, and no mitigation is required.	None	Less than Significant

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
Utilities and Service Systems **(Short-term)**	Project construction would affect existing overhead and underground utilities due to the construction of new tracks, structures, or upgrades to existing tracks that involves ground-disturbing work. These activities would affect existing utility line placements. There is also the potential that ground-disturbing activities could damage existing utility infrastructure and lead to temporary service interruptions. Utility relocations, rerouting, removals, and utility line replacements, including electrical, gas, fiber optic cable, sewer, and storm drains, would be required as a part of the proposed Project. Potential utility conflicts have been identified. During the proposed Project's final design phase, utility potholing would be conducted to identify utility conflicts definitively, and measures to minimize conflicts would be proposed. Project construction would require new flyover bridges, which would necessitate the raising and rerouting of overhead utility lines. Utility upgrades and relocations would occur on previously disturbed land or on existing infrastructure. The proposed Project would be designed in coordination with Stockton Fire Department for water supply access points (hydrants) along the flyover. With the implementation of Measure BMP UTIL-1, the proposed Project would not require, or result in, relocating or constructing new or expanded water, wastewater treatment, storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. Thus, short-term impacts would be considered less than significant, and no mitigation is required. Construction would not result in substantial increases in demand for water such that existing resources would be insufficient to serve such proposed Project activities. California Water Service Company (Cal Water) owns and operates the domestic water lines located within the Project limits. Construction of the proposed Project would require water use for concrete work, earthwork compaction, and dust control. Although some underground water lines would be relocated or rerouted between East Lafayette Street and East Hazelton Avenue, proposed improvements for track work would not require a substantial amount of water for construction purposes, and local water providers have sufficient capacity to serve the proposed Project's temporary and minimal needs. Cal Water, as documented in the 2015 Urban Water Management Plan, is expected to have sufficient capacity to accommodate growth in its service area through future development during normal, dry, and multiple dry years. Therefore, short-term impacts are considered less than significant, and no mitigation is required. During construction, sewer lines would be removed and relocated, including the relocation of City-owned sanitary sewer lines. In addition, there would be a temporary increase in need for wastewater treatment from cleaning equipment, controlling dust, or other construction related activities. However, with the implementation of Measure BMP UTIL-2, the proposed Project would not 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. Thus, short-term impacts would be considered less than significant, and no mitigation measures are required. Construction of the proposed Project would generate solid waste from clearing vegetation, grading, demolishing existing track and structures, relocating and removing utility lines, and other general construction activities. Some of the solid waste generated may not be reusable or recyclable and would need to be disposed of in local solid waste landfills. The three local landfills (Forward Landfill in Manteca, the North County Landfill and Recycling Center in Lodi, and the Foothill Sanitary Landfill in Linden) would have sufficient capacity to accommodate the solid waste generated from the proposed Project. Therefore, the proposed Project would not generate solid waste in excess of state or local infrastructure, or otherwise impair the attainment of solid waste reduction goals. The proposed Project would be served by a landfill with sufficient permitted capacity to accommodate proposed Project solid waste disposal needs. Thus, short-term impacts would be considered less than significant. Project construction would comply with regulations including CALGreen Section 5.408 and Stockton Municipal Code Section 8.28.060. As part of the proposed Project, the Project team would maximize recycling and reuse, in compliance with the Integrated Waste Management Act, in order to reduce waste being transferred to landfills. The proposed Project would follow the policies and goals in the City of Stockton's 2040 General Plan to expand opportunities for recycling, material reuse, and waste reduction. Therefore, the	None	Less than Significant Impact

Resource Category	Summary of Impacts Under the Proposed Project (Alternative 1A)	Mitigation Measure(s)	Level of Significance
	proposed Project would comply with federal, state, or local management and regulations related to solid waste. Thus, no short-term impacts are anticipated.		
Utilities and Service Systems **(Long-term)**	After construction, proposed Project operations would not require or result in the relocation or construction of utility infrastructure and facilities. In addition, Project operations would not require or result in the demand for water supply. Operation of the proposed Project would not generate solid waste, as the proposed improvements are limited to operational improvements to an existing rail facility, or violate applicable statutes and regulations related to solid waste. Therefore, no long-term impacts to utility facilities, water supply, or the generation of solid waste would occur. The proposed Project would comply with federal, state, or local management and regulations related to solid waste. Thus, no long-term impacts are anticipated.	None	No Impact

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ES.7 CEQA Environmental Process

The SJRRC will make this Draft EIR available to the public and agencies for review and comment for a period of 45 days, which will include a virtual public meeting. The document will be available on the Project's website (stocktondiamond.com), as will information about the schedule of the virtual public meeting. During this period, comments from the public, organizations, and governmental agencies, including Tribal governments, regarding environmental issues raised in the Draft EIR, and on the Draft EIR's accuracy and completeness, may be submitted to SJRRC by mail or by email through the Project website.

After reviewing comments from the public and agencies, a Final EIR will be prepared. The sponsoring agency, SJRRC, may prepare additional environmental and/or engineering studies to address comments. The Final EIR will include responses to comments received on the Draft EIR during the formal public review period and will identify the preferred and environmentally superior alternative. After the public hearing has been conducted and the Final EIR is completed, if the SJRRC decides to approve the Project, a Notice of Determination will be published for compliance with CEQA. If impacts cannot be mitigated below the level of significance, SJRRC will also prepare a Statement of Overriding Considerations.

Project Implementation Schedule

Implementation of the proposed Project is planned over the next 5 years and would entail many activities, including:

- Completion of the environmental compliance phase (2021)
- Completion of preliminary engineering (2021)
- Completion of final design (2022/2023)
- Completion of right-of-way acquisitions and utility relocations (2022/2023)
- Construction (2023 to 2026)
- System operation (2026)

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1 Introduction

1.1 Project Overview

The San Joaquin Regional Rail Commission (SJRRC) proposes to construct a grade separation of two principal railroad lines at the Stockton Diamond in Stockton, California. This Environmental Impact Report (EIR) was prepared in conformance with the California Environmental Quality Act (CEQA). SJRRC, as the project sponsor, is the CEQA lead agency. This CEQA Document may be used, relied on, and is substantial evidence for any further environmental review, including but not limited to NEPA analysis.

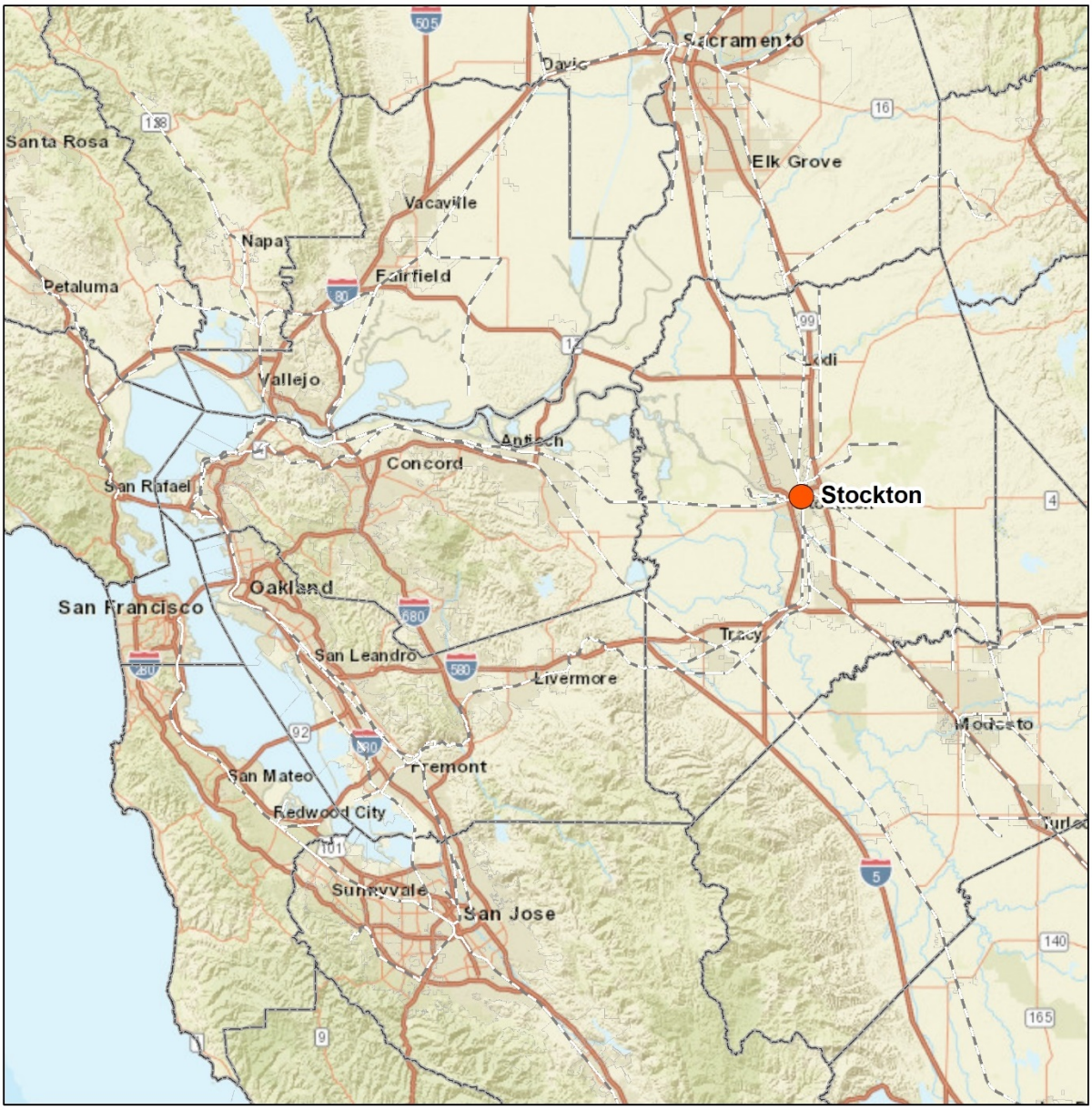
The Stockton Diamond Grade Separation Project (Project) is a critical passenger and freight mobility project. The current Altamont Corridor Express (ACE) and Amtrak San Joaquins passenger rail services are constrained by the Stockton Diamond Interlock at-grade crossing, which can reduce reliability and on-time performance for both passenger and freight rail. The grade separation would help improve the operational performance for SJRRC and the San Joaquin Joint Powers Authority (SJJPA) as they provide service between the Central Valley, Sacramento, and the San Francisco Bay Area. Figure 1.1-1 shows the general regional project location.

The Stockton Diamond Grade Separation Project would support on-time performance and travel options to connect affordable housing, jobs, school, recreation, and families.

Currently, the BNSF Railway (BNSF) Stockton Subdivision and the Union Pacific Railroad (UP) Fresno Subdivision consist of two main tracks each, and they intersect each other at a level, at-grade crossing known as the Stockton Diamond. This rail intersection, located just south of Downtown Stockton near South Aurora Street and East Scotts Avenue, is the busiest at-grade railway junction in California. The at-grade crossing experiences substantial congestion and delays service for people and freight throughout the Central Valley—and for freight on the broader national network. The current, at-grade configuration of the tracks results in critical delays to passenger and freight trains in the area, including those serving the Port of Stockton. Train congestion also causes vehicle delays at roadway-rail crossings and creates potential motor vehicle, rail, bicycle, and pedestrian conflicts.

The proposed Project would construct a grade separation of the BNSF and UP rail lines to reduce rail congestion and allow passenger and freight rail traffic to flow uninterrupted through the crossing. The reduction in rail congestion would reduce delays for passenger and freight rail providers and improve freight mobility, which may lead to lower costs for freight shipping and reduce travel times for motor vehicle, bicyclist, and pedestrian traffic. The reduction in train congestion and motor vehicle wait times at these roadway-rail grade crossings would reduce locomotive and automobile idling and air emissions. The proposed Project's public benefits would extend to motorists, pedestrians, rail passengers, freight shippers, and residents throughout the region. Additional benefits would include reduced fuel consumption, lower freight rail transportation costs, and improved travel times and reliability.

Figure 1.1-1: Regional Location



Passenger and commuter rail reliability is essential for those residing and working in the region, especially those in rural communities who need improved access to essential services and economic centers. The proposed Project is aligned with San Joaquin County's goals to enhance existing rail infrastructure and to improve the rail network efficiency and capacity—including safe, reliable transportation choices—while also improving the local economy through economic growth, job retention, and job creation.

1.2 Project Background

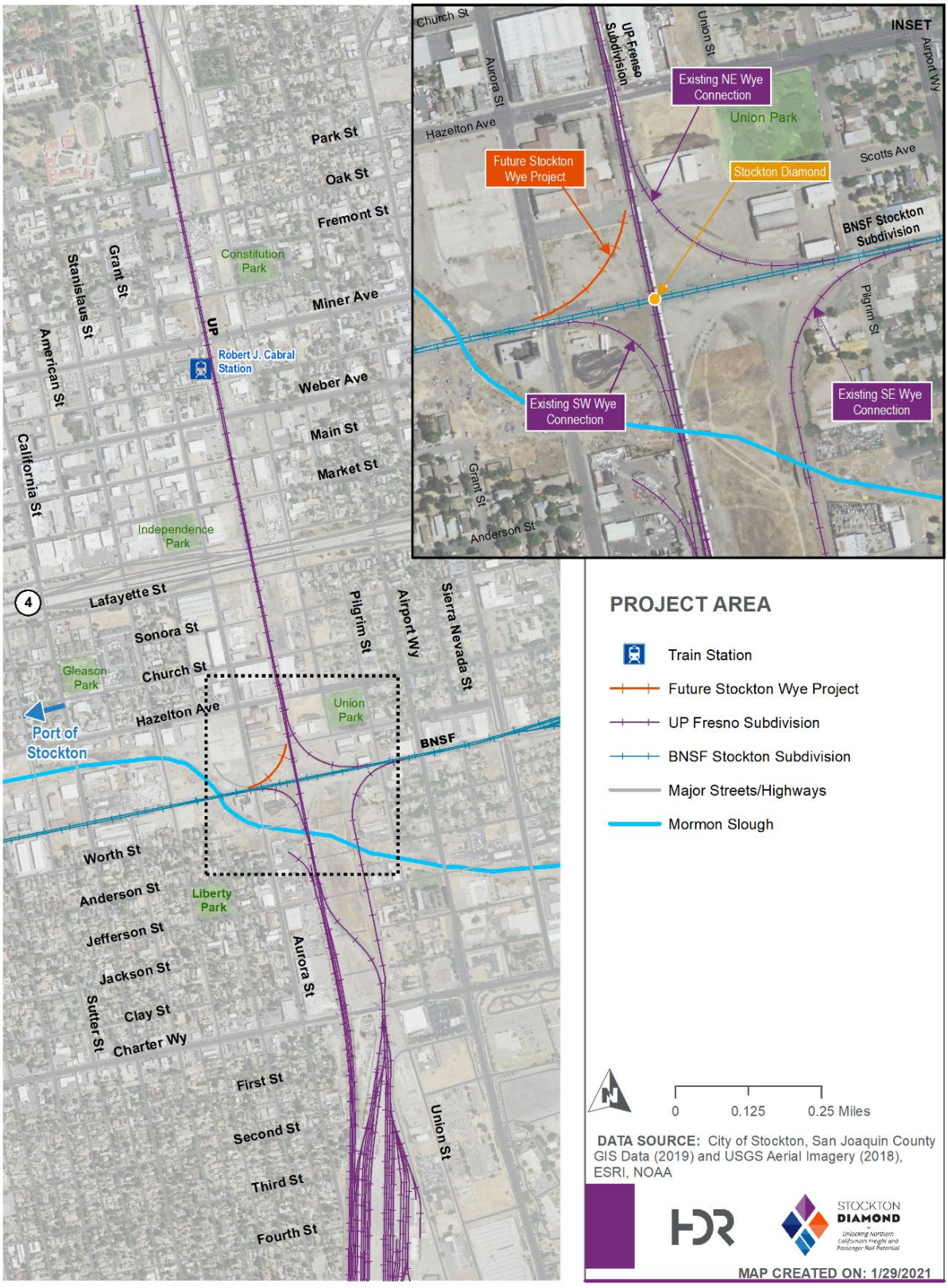
The railroad main lines at the Stockton Diamond are geographically oriented east-to-west (BNSF Stockton Subdivision) and north-to-south (UP Fresno Subdivision), as shown in Figure 1.2-1. Both railroads are segments of important trade routes between Northern California (including ports in Stockton and the San Francisco Bay Area), the central United States, and the Pacific Northwest. BNSF has operating rights on the UP main line that it exercises for certain trains, and UP has operating rights on the BNSF main line that it exercises for certain trains.

ACE commuter passenger trains between Stockton and San Jose, operated by SJRRC, and intercity Amtrak San Joaquins passenger trains between Oakland/Sacramento and Bakersfield, operated by SJJPA, operate on the UP and BNSF rail lines. Various types of freight trains typically operate through Stockton. These include intermodal trains that carry containerized freight or highway semi-trailers, bulk trains moving between a single origin and destination that consist of a single commodity such as grain, manifest trains moving between multiple origins and destinations that carry individual carloads of freight for many shippers, and local freight trains and transfers that move freight cars between switching yards, between yards and the docks, or between shipping and receiving facilities of railroad customers. Based on the *2018 California State Rail Plan*,[1] between 50 and 70 freight trains and between 12 and 20 passenger trains currently travel through the Stockton Diamond intersection per day.

The existing and estimated future rail activity through the Stockton Diamond, the amount of time roadway and rail crossings are occupied to allow trains to pass, the resulting vehicular traffic and train delays, and safety concerns associated with at-grade crossings are the basis for the Project's needs. Improvements that enhance railroad operating efficiency and safety are critical for the efficient movement of people and goods and to help economic conditions in Stockton and the region.

[1] California Department of Transportation, *2018 California State Rail Plan*, https://dot.ca.gov/programs/rail-and-mass-transportation/california-state-rail-plan

Figure 1.2-1: Project Area



Specifically, the proposed Project will address the following operational issues:

- High levels of freight and passenger rail activity cause train congestion. Stockton Diamond is the busiest, most congested at-grade railway junction in California.
- Congestion and freight maintenance activities cause delays and poor reliability. The Stockton Diamond's current at-grade configuration results in significant delays and poor reliability for BNSF and UP freight trains and for ACE and Amtrak San Joaquins passenger trains. Local road traffic also experiences delays and poor reliability because of the amount of time the road crossings are occupied by trains.
- Multiple roadway-rail grade crossings and the BNSF-UP main line track at-grade crossing create conflict points, resulting in increased safety risks.

Other existing operation deficiencies are identified in the sections below.

1.2.1 STOCKTON DIAMOND FREIGHT AND PASSENGER RAIL ACTIVITY

The Stockton Diamond Project would enable through trains proceeding on the UP main tracks to advance through the intersection without conflict with through trains on the BNSF main tracks. This easier flow of rail traffic would better accommodate the current and future projected train volumes.

Several passenger and freight rail services converge at the Stockton Diamond; consequently, there is a substantial amount of rail activity at this location. Publicly available Federal Railroad Administration (FRA) *Highway-Rail Grade Crossing Inventory Reports* were consulted to obtain a conceptual daily estimate of the typical number of freight trains operated through each roadway-rail grade crossing in the Project Study Area.[2] Data were available from 2016 for the UP Fresno Subdivision and from 2019 for the BNSF Stockton Subdivision. Train count data for the UP Fresno Subdivision from 2016 were escalated to 2019 using a 2 percent compound annual growth rate, which is a factor acceptable to FRA to account for freight growth for planning purposes.

According to the data, in 2019 an estimated daily average of 44 freight trains typically operated on the UP Fresno Subdivision north of the Diamond, 36 of which continued south through the Stockton Diamond and 8 of which used the northeast connecting tracks to access the BNSF Stockton Subdivision, or vice versa. In addition, an estimated daily average of 20 freight trains operated on the BNSF Stockton Subdivision east of the Diamond, of which 12 used the Stockton Diamond and 8 used the northeast connecting tracks to access the UP Fresno Subdivision.[3] An additional 4 trains per day, on average, used the southwest connecting tracks between the BNSF Stockton Subdivision west of the Diamond and the UP Fresno Subdivision south of the Diamond. Figure 1.2-2 illustrates the relative freight rail activity in 2019 through and near the Stockton Diamond.

In addition to the freight trains, in 2019 SJRRC operated 8 (peak-period service) ACE commuter trains each weekday between the Stockton Cabral Station and San Jose, through the Stockton Diamond on the UP Fresno Subdivision, all of which pass through the Stockton Diamond. In 2019,

[2] FRA, Highway-Rail Grade Crossing Inventory Reports, https://fragis.fra.dot.gov/gisfrasafety/.
[3] Actual typical number of freight trains is subject to future analysis and railroad coordination.

the SJJPA had 4 daily Amtrak San Joaquins intercity trains (operated by Amtrak) between Bakersfield and Sacramento traveling through the Stockton Diamond along the BNSF Stockton Subdivision and UP Fresno Subdivision (using the northeast connecting tracks), as well as 10 daily San Joaquins trains between Bakersfield and Oakland through the Stockton Diamond on the BNSF Stockton Subdivision both east and west of the Diamond. These passenger train volumes are also illustrated in Figure 1.2-2.

Using a 25-year planning horizon (out to 2045), the Existing Year (2019) freight train activity was escalated using the same 2 percent compounded annual growth rate noted above. The resulting forecast estimates as many as 52 daily freight trains passing through the Stockton Diamond on the UP Fresno Subdivision and 12 daily freight trains passing through the Diamond on the BNSF Stockton Subdivision. An additional 16 daily passenger trains passing through the Stockton Diamond on the UP Fresno Subdivision, and an additional 10 daily passenger trains using the connecting tracks in the Project Study Area.[4] Table 1.2-1 shows Existing Year (2019) and Future Year (2045) freight and passenger train volumes.

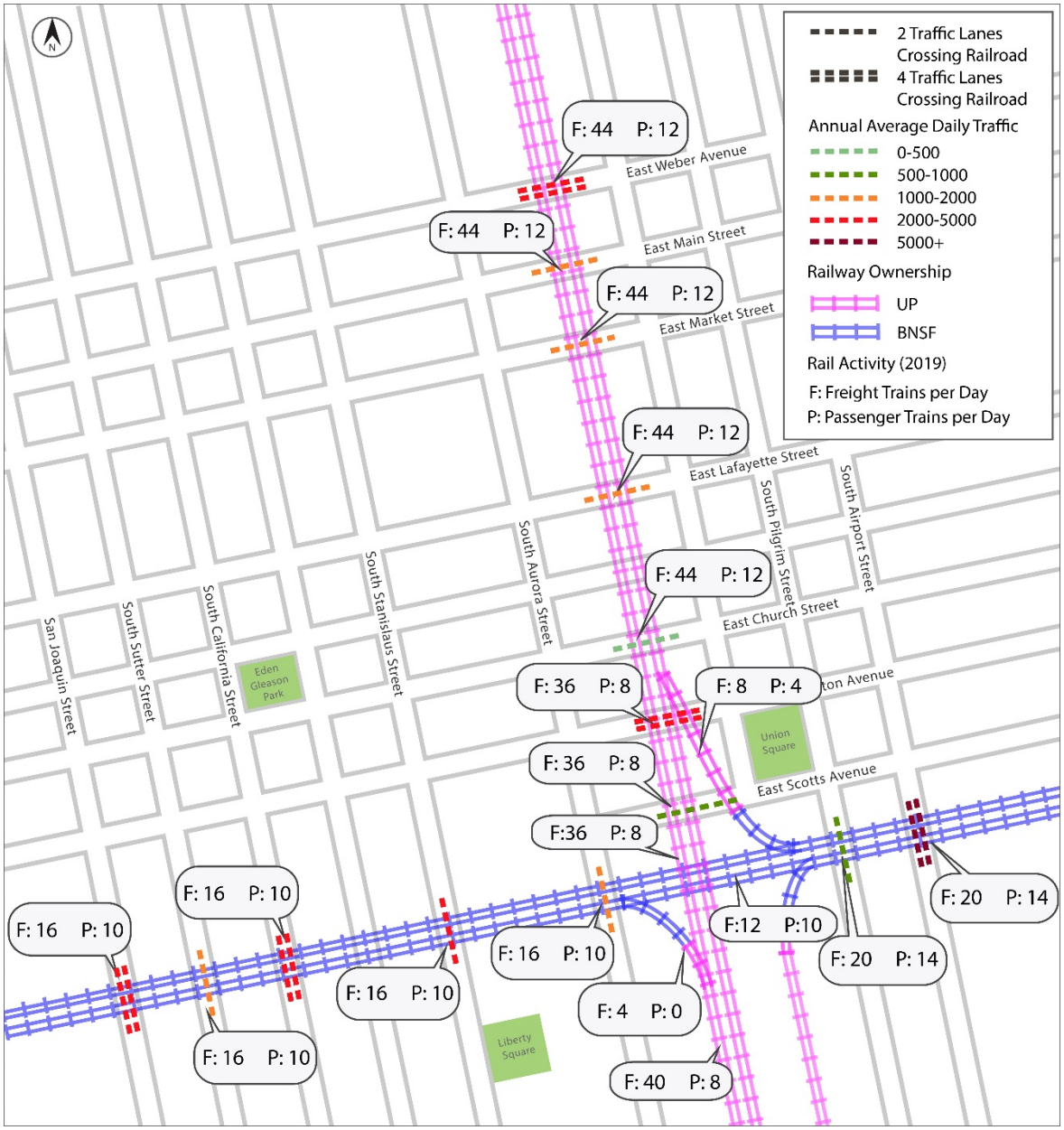
Table 1.2-1: Number of Freight and Passenger Trains, Existing Year (2019) and Future Year (2045)

Scenario	Diamond Route Freight Trains	Northeast Connector Route Freight Trains	Diamond Route Passenger Trains	Northeast Connector Route Passenger Trains
Existing Year (2019) Condition	36	8	8	4
Future Year (2045) No Project Condition	52	12	16	10
Future Year (2045) Build Condition	52	12	16	10

Passenger service through the Stockton Diamond would not increase as a result of the proposed Project. The separate SJRRC/SJJPA Valley Rail Program proposes 7 new passenger rail service round trips (2 new San Joaquins trains and 5 new ACE trains) that would pass through the Stockton Diamond[5] during the planning horizon.

[4] Actual typical number of freight trains for all planning horizons is subject to future analysis and railroad coordination.
[5] SJRCC and SJJPA, *SJRRC/SJJPA Valley Rail Sacramento Extension Final Environmental Impact Report*, https://acerail.com/deir-chapters-and-appendices/

Figure 1.2-2: Freight rail activity and crossing vehicular traffic near the Stockton Diamond



1.2.1 RAILROAD AND ROADWAY DELAYS IN THE PROJECT STUDY AREA

Roadway-rail grade crossing occupancy time for a given train (that is, "gate down" time for vehicles waiting for a train to pass) is based on train length, train speed, roadway width, and railroad industry best practices for minimum activation time, prior warning time, and the time it takes for the grade crossing warning devices to recover after the train passes. The ways in which these factors affect gate down time—and the resulting roadway delays—are discussed below.

Average Train Length: A 2019 report from the U.S. Government Accountability Office (GAO), *Rail Safety: Freight Trains Are Getting Longer, and Additional Information Is Needed to Assess Their Impact,* listed average freight train lengths provided by four different U.S. Class I railroads.[6] To support the analysis developed for this study, the average of these four values was taken as a baseline for a typical freight train length between 2016 and 2019.

Based on observation of rail industry trends,[7] a growth in average freight train length from 6,500 feet in 2016 through 2019 to 7,500 feet in 2045 was assumed. Passenger train length was assumed to grow from 700 feet in the 2019 baseline year to approximately 935 feet in 2045.

Average Train Speed: Based on information in the FRA *Highway-Rail Grade Crossing Inventory Reports*, trains can generally operate at speeds up to 40 miles per hour (mph) on the UP Fresno Subdivision, up to 60 mph on the BNSF Stockton Subdivision, and up to 15 mph on the connecting tracks in the vicinity of the Stockton Diamond, although typical speeds are lower.[8] As observed using Google Earth Pro imagery, the Stockton Diamond has a posted speed limit of 30 mph for all approaching trains until the entire train is clear of the Diamond. Based on observed train operations, train speeds are often reduced substantially as a result of rail congestion within the Stockton Diamond Project Study Area and on the immediate rail network.

Class IV Separated Bikeways – Provide for exclusive use by bicycles (cannot be used by pedestrians or vehicles) and include a horizontal and vertical separation (for example, flexible posts, on-street parking, grade separation) between the bikeway and through vehicle traffic.

Roadway Width: The roadway widths are generally determined by the number of travel lanes multiplied by an average width of 12 feet per lane. Most roadways that cross either the UP Fresno Subdivision or the BNSF Stockton Subdivision near the Stockton Diamond are two-lane roads (therefore, 24-foot crossing length); however, East Hazelton Avenue, South San Joaquin Street, South California Street, and South Airport Way each currently have four travel lanes (therefore, 48-foot crossing length).[9]

Warning Device Activation Time: The general assumptions for warning device activation include 20-second prior warning time, 5-second gate down time before the train enters the crossing,

[6] GAO, *Rail Safety: Freight Trains Are Getting Longer, and Additional Information Is Needed to Assess Their Impact*, https://www.gao.gov/assets/700/699396.pdf
[7] Actual average freight train lengths for existing and potential future freight trains are subject to future analysis and railroad coordination.
[8] Actual train speeds are subject to future study and railroad coordination.
[9] Note that with a separate City of Stockton project, South California Street will be reduced to three lanes with Class IV Separated Bikeways.

5-second reaction delay, and 12-second gate rise time. It should be noted that the time for the train to pass through the crossing is based on the other factors and not included in these times.

Considering average train lengths and train speeds, roadway widths, and warning device activation time, the 2019 total occupancy (or gate down time) per freight train crossing typically varies from a minimum of 3 minutes and 11 seconds to a maximum of over 8 minutes. The shorter passenger trains generally have gate down times of between 55 seconds and 1 minute and 30 seconds. By 2045, these times per freight train are expected to increase between 23 seconds and 1 minute each.

The Stockton Diamond Grade Separation Project is expected to reduce the average roadway-rail grade crossing occupancy time for trains, and the resulting roadway vehicle delays, by approximately 20 percent by 2045, compared with the estimated No Project condition.

The total gate down time over the course of a day, based on the 2019 combined train activity, ranges from approximately 22 minutes for a small subset of the trains using the BNSF Fresno Subdivision and southwest connecting track, to nearly 2 hours for the majority of the trains (36 per day) using the UP Fresno Subdivision and passing through the Stockton Diamond. By 2045, the total gate down time for the UP Fresno Subdivision roadway-rail grade crossings would be as high as 3 hours per day for the estimated 52 trains that would continue through the Stockton Diamond.

Given the close proximity to Downtown Stockton, the roadways that cross the UP and BNSF tracks also experience a great deal of activity, with traffic volumes ranging from under 1,000 vehicles a day at two-lane crossings, such as East Church Street, East Scotts Avenue, and South Pilgrim Street, to nearly 5,000 vehicles a day at East Hazelton Avenue and over 16,000 vehicles a day at South Airport Way, both of which are four-lane roadways. The current and future gate down times result in. and would continue to result in, delays to vehicles that need to cross the tracks.

1.2.2 PASSENGER TRAIN RELIABILITY

The *2018 California State Rail Plan* focuses on a sustainable and connected megaregional rail network, with competitive rail travel times and a high degree of reliability. Therefore, passenger rail services not only need to be integrated and part of a larger network, but the service and transfer opportunities should be reliable.

The Stockton Diamond Grade Separation Project would eliminate delays to passenger rail trains that are caused by passing BNSF trains by providing ACE with a direct and reliable route across the Stockton Diamond.

The large number of freight trains that operate along the UP Fresno and BNSF Stockton Subdivisions affects passenger rail operations through the Stockton Diamond and affects passengers' ability to reach destinations on time or to make critical connections to other transit services. Passenger rail users expect reliable service; they plan for the scheduled arrival and departure of their trains, and delayed trains can result in being late for work, missing transfer connections, and/or choosing to drive as an alternative.

Train movements through the Diamond are controlled by BNSF, which has priority at the Diamond crossing. As a result, when BNSF trains pass through the Diamond, ACE, San Joaquins, and UP

trains experience delays—needing to slow down or stop to wait for the BNSF trains to pass. Delays can also result from Diamond maintenance. The at-grade crossing is affected significantly by continuous heavy freight movements and must be maintained on a regular basis. Train movements through the Diamond must be shut down during maintenance, creating delays and reducing on-time performance and reliability for both freight and passenger trains.

The delays caused as a result of the at-grade Stockton Diamond adversely affect passenger confidence in rail travel. In addition, delayed passenger and freight trains can affect economic vitality if employees and goods do not arrive at their destinations on time, could affect air quality with increased emissions from longer periods of train idling or travelers choosing single-occupancy automobiles, and would not meet the goals of the *2018 California State Rail Plan*.

1.2.3 SAFETY AT ROADWAY-RAIL GRADE CROSSINGS

Constructing the grade separation would minimize hazards in the study area by increasing mobility across tracks through crossing enhancements or closures.

As a result of the number of trains that pass through the Project Study Area, crossing local and arterial roadways in residential neighborhoods, safety is a major concern among local residents. Over the past 5 years, six trespasser fatalities and five injuries have occurred within a 1-mile radius of the Project Study Area.[10] Immediately near the Stockton Diamond, there have been six bicycle or pedestrian injuries at at-grade crossings, one of which resulted in a fatality.

1.3 Project Description

The Stockton Diamond currently features wye connection tracks in three of its four quadrants. A new wye for the northwest quadrant, referred to as the Stockton Wye, is planned for construction in 2021. These wye connection tracks enable through trains of one railroad to use the other railroad's tracks. As shown in Figure 1.2-1, the wye connection tracks create a triangular ("diamond") joining arrangement of three rail lines, where trains can switch between the BNSF Stockton Subdivision and UP Fresno Subdivision. In the southeast quadrant, the wye track provides connection to and from the UP Stockton Yard, located south of the Diamond, and allows connectivity to the BNSF Mormon Yard, located east of the Diamond. In the southwest quadrant, a wye track connects the UP Fresno Subdivision and the UP Stockton Yard with the BNSF Stockton Subdivision heading westbound. In the northeast quadrant, a wye track provides a connection between the BNSF Stockton Subdivision and the UP Fresno Subdivision, which Amtrak uses for the San Joaquins service between Sacramento, Stockton, and Bakersfield. Completion of the Stockton Wye project would provide a connection track in the northwest quadrant of the diamond and would improve access between the UP Fresno Subdivision and the Port of Stockton to the west of the Diamond.

The proposed Project would replace the existing at-grade intersection of the BNSF Stockton Subdivision and UP Fresno Subdivision with a grade-separated structure (flyover bridge) that would

[10] FRA, *Trespassers Casualty Map*, https://fragis.fra.dot.gov/Trespassers/

elevate the UP main tracks over the BNSF main tracks, enabling through trains proceeding on the UP main tracks to travel unimpeded through the crossing, avoiding any conflict with trains on the BNSF main tracks (and vice versa). With the exception of the Stockton Wye, which UP plans to construct as a separate project in 2021, the three existing connections between the two railroads would remain and function much as they do today, although their alignments would be modified to accommodate the development of the flyover bridge structure and to reduce operating conflicts between trains on various other tracks within Stockton. No existing UP main tracks would remain at-grade across the BNSF main tracks after the Project is constructed. Traffic conflicts and train staging that currently occur, as trains wait on one railroad's main track for trains using the other railroad's main track to pass through the Stockton Diamond crossing, would be reduced once trains traveling on the UP main tracks use the grade-separated structure to cross above the BNSF main tracks. The at-grade crossing of the UP and BNSF main tracks would be removed permanently, thereby removing the need for frequent signal and other maintenance associated with this at-grade crossing and eliminating the resulting train delays created while this crossing is shut down for these maintenance activities.

1.4 Project Setting

1.4.1 REGIONAL SETTING

The proposed Project is located in the City of Stockton in San Joaquin County, California. San Joaquin County encompasses approximately 1,448 square miles, with approximately 773,632 residents. Alameda and Contra Costa Counties are located to its west, Sacramento County is located to its north, and Stanislaus County is located to its south. The region's incorporated cities include Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy, the largest of which is Stockton, with a population of 318,522 (California Department of Finance [DOF] 2020a).[11]

According to the San Joaquin Council of Governments (SJCOG), rail is a critical link to the full-service transportation network available in San Joaquin County. The rail network consists of approximately 200 miles of track owned by Class I railroads, BNSF and UP. The county also features approximately 50 miles of short-line railroads, including the Stockton Terminal and Eastern Railroad and the Central California Traction Company (CCT) (SJCOG 2018).

Transit in San Joaquin County is also important to the region and includes a system of bus rapid transit, intercity and interregional bus transit services, ACE commuter rail service, and San Joaquins intercity rail service.

Class I railroad means a railroad that, in the last year for which revenues were reported, exceeded the threshold established under regulations of the Surface Transportation Board [49 CFR Part 1201.1-1 (2008)].

Short-line railroads are smaller railroads that run shorter distances and connect shippers with the larger freight rail network.

[11] DOF, E-1 Population Estimate, http://www.dof.ca.gov/Forecasting/Demographics/Estimates//E-1/

There are currently 10 stops along the 86-mile ACE route between San Jose and Stockton. ACE trains pass through the Stockton Diamond between the current northern terminal station in Stockton (Robert J. Cabral Station) and the Lathrop/Manteca Station, approximately 11 miles to the south.

San Joaquin County's road network is made up of more than 3,600 maintained miles. Major north-to-south highways include State Route (SR) 99 and Interstate 5 (I-5). SR 99 is considered the "Main Street" of the San Joaquin Valley and I-5 is a corridor of statewide and national significance. These routes carry much higher truck traffic than the state average for the highway system and are imperative to goods movement. SR 120, SR 4, and SR 12 are major east-to-west highways, connecting SR 99 and I-5. SR 4, referred to as the Crosstown Freeway in Stockton, is located less than 2,000 feet north of the Stockton Diamond and continues west to the City of Hercules and east into the Sierra Nevada. Other important highways in the region include Interstates 580 (I-580) and 205 (I-205), which are located in the southwest region of the county. Each of these highways facilitates goods movement throughout the region. I-205 and I-580 serve as the gateway connection between the San Joaquin Valley and the San Francisco Bay Area.

1.4.2 PROJECT AREA

The northern limit of the proposed Project includes East Weber Avenue, a major east-to-west arterial in Downtown Stockton. Just north of East Weber Avenue is the Robert J. Cabral Station. The southern Project limit is the UP Stockton Yard, located approximately at East Fourth Street. The eastern and western limits of the Project are generally South Pilgrim Street and South Grant Street, respectively. Figure 1.2-1 provides a map of the Project Area.

The Stockton Diamond is generally located in the middle of the Project Area. Substantial freight movements between the Port of Stockton and points east, north, and south must pass through the Diamond. The existing at-grade nature of the Diamond provides an operational constraint that results in delays to the regional rail network where these two principal rail lines intersect.

At several locations, the existing north-to-south UP Fresno Subdivision tracks at and near the Diamond are raised above grade by approximately 3 feet, requiring any vehicular or pedestrian traffic to go up and over the hump to cross the tracks at roadway-rail grade crossings. Additionally, the Mormon Slough is crossed by existing road and railway tracks in several locations within the proposed Project Study Area.

1.5 Goals and Objectives of the Proposed Project

The Project goals and objectives are to:

- Reduce passenger and freight rail delays and associated congestion;
- Maintain key community connections;
- Improve multimodal access;
- Provide local and regional environmental and economic benefits; and
- Address safety by closures and enhancements at key roadway-rail grade crossings.

In achieving the proposed Project, SJRRC anticipates the following benefits**:**

1. **Stimulate Mobility**: Improve regional passenger and freight rail efficiency and travel reliability by reducing conflicting train movements.
2. **Enhance Safety**: Improve Stockton residents' access, safety, and mobility across rail lines through enhancements or closures at roadway-rail grade crossings.
3. **Improve Economic Vitality**: Reducing delays will result in increased throughput and efficient goods movement. This decreases fuel consumption and leads to cost savings.
4. **Inspire Connections**: Support faster, more reliable passenger rail service linking residents to family, jobs, and recreational destinations throughout Northern California.
5. **Improve Sustainability**: Improve air quality through reduction of greenhouse gas (GHG) emissions from trains and vehicles that idle because of congestion and delays.

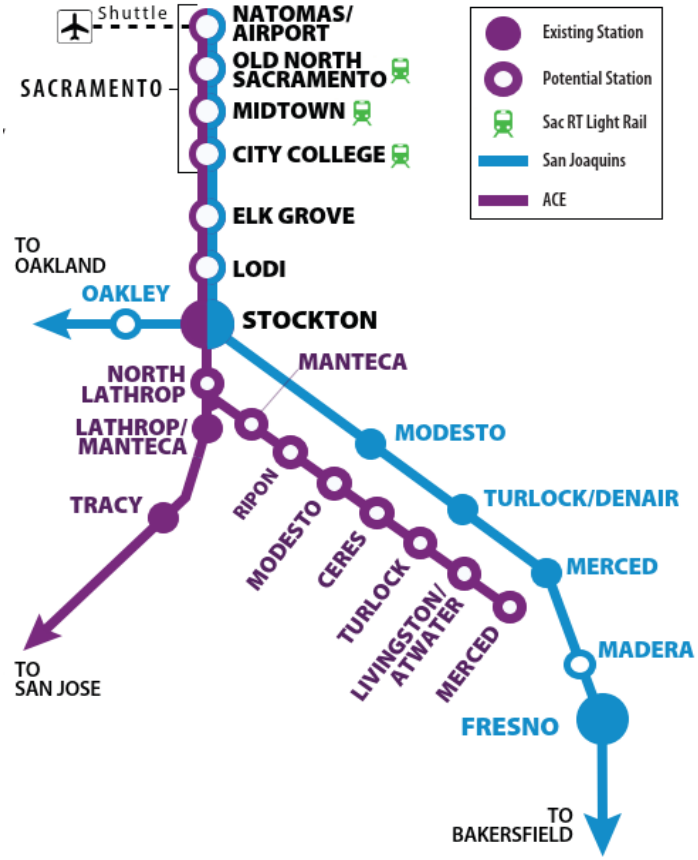
1.6 Relationship to Other Plans in the Study Area

This section identifies planned and current rail and roadway operations plans at the state and local level that are related to the proposed Project and have provided input into the development and evaluation of potential Project alternatives. It is important to note that all of these plans, studies, and projects are separate efforts from the proposed Project and that the improvements proposed as part of these efforts are not elements of the Stockton Diamond Grade Separation Project under environmental review in this EIR.

1.6.1 SAN JOAQUIN REGIONAL RAIL COMMISSION PLANS

SJRRC ACE*forward* is a phased improvement plan proposed to increase service reliability and frequency, enhance passenger facilities, reduce travel times along the existing ACE service corridor from San Jose to Stockton, and extend ACE service to Manteca, Modesto, Ceres, Turlock, Merced, Lodi, Elk Grove, and Sacramento. While a draft EIR for ACE*forward* was issued in 2017 (between San Jose and Ceres at a project-level and San Jose and Merced at a program-level), SJRRC rescinded the document to focus on the funded extensions to Sacramento and Ceres/Merced as part of the Valley Rail program (a joint program in partnership with SJJPA that includes expanded ACE/ACE*forward* and San Joaquins service).

Figure 1.6-1: Valley Rail Program



Valley Rail implements two new daily round trips for the Amtrak San Joaquins service to better connect San Joaquin Valley travelers with the Sacramento Area, and extends ACE between Sacramento and Ceres/Merced (see Figure 1.6-1). SJRRC issued a Final EIR for the ACE Extension Lathrop to Ceres/Merced (ACE Extension) project in July 2018. SJRRC issued a Final EIR for the Valley Rail Sacramento Extension project in October 2020.

In addition to the Valley Rail program, SJRRC and the Tri-Valley San Joaquin Valley Regional Rail Authority (TVSJVRRA) have established a *Universal Infrastructure* vision for the Altamont Corridor between Stockton and the San Francisco Bay Area. The investment in "Universal Infrastructure" throughout the San Joaquin Valley and the San Francisco Bay Area would enable one-seat rides via the Altamont Corridor to San José and the Peninsula via a new Dumbarton Bridge, and Oakland and San Francisco via a new Transbay Crossing. Universal infrastructure would be compatible with high-speed rail and would enable a one-seat ride from the California High-Speed Rail initial operating segment at Merced. The improvements that make up the *Universal Infrastructure* vision for the Altamont Corridor can be phased as follows:

- Near-term/Phase 1 Priority Improvements:
    - Additional ACE round trips between the San Joaquin Valley and San Jose via Altamont Pass and weekend service (6 daily round trips, weekdays)

  - New Valley Link service: Dublin/Pleasanton to North Lathrop (25 daily round trips)
  - Altamont Pass Tunnel/alignment improvements
- Mid-term Improvements:
  - Four additional ACE round trips between the San Joaquin Valley and San Jose via Altamont Pass (10 daily round trips, weekdays)
  - Newark to Alviso improvements
  - Valley Link extension from North Lathrop to Stockton (30 daily round trips)
- Long-term/Vision Improvements:
  - 15- to 30-minute frequency during peak periods
  - Dedicated track – "Universal Corridor"
  - One-seat ride San Joaquin Valley – San Jose/Oakland/San Francisco/Peninsula

The proposed Project is an important component of SJRRC's ACE*forward* and subsequent Valley Rail programs to address existing travel delays and lack of reliability and is an initial step in the implementation of the longer-term plans for an integrated and efficient ACE passenger rail network.

1.6.2 CALIFORNIA STATE RAIL PLAN

The objectives of the proposed Project align with the *2018 California State Rail Plan*, a strategic plan that identifies operating and capital investment strategies that would lead to a coordinated, statewide travel system. The 2040 vision laid out in the plan includes the following key passenger rail elements:

- **Statewide System**: Passenger rail service will tie together urban, suburban, and rural areas of the state.
- **Integrated Services**: Multimodal hubs will connect all levels of service with a common fare system, which allows trips to be made on a single ticket.
- **Coordinated Schedules**: Services will be coordinated in a "pulsed" schedule across the network to reduce wait times and allow direct transfers.
- **Frequent Service**: Service frequency will make rail a timely option for travelers, meeting trip demands throughout the day.
- **Customer Focus**: Enhanced ticketing, scheduling, and passenger information will be supported by coordinated services.

The proposed Project advances many of these goals by eliminating the Interlock at the Stockton Diamond and allowing for uninterrupted flow of passenger rail trains through the Diamond. The proposed Project would result in improved reliability of travel time, transfers, and passenger confidence.

1.6.3 CITY OF STOCKTON PLANS

The City of Stockton's *2017 Bicycle Network Master Plan* is part of the overall *General Plan* 2035 update. The City currently has 100 miles of off-street bicycle trails and paths and on-street bicycle facilities. The vision of the plan is to:

> Implement a vibrant, safe, and supportive bicycle network that connects residents in every neighborhood with desirable places to ride for any trip purpose. The Bicycle Master Plan should be the catalyst for starting a cultural shift toward cycling in Stockton by effectively marketing cycling as a healthy, active transportation option and through funding supportive educational programs to reach people of all ages and abilities.

To implement the vision, the plan proposes a network of facilities that creates a citywide "Backbone Network." New corridor and intersection tools are incorporated into the Backbone Network to create low-stress facilities.

The City of Stockton also received grant funding to develop a *Greater Downtown Active Transportation Plan* in 2017. The plan was developed to address the City's need for transportation options other than driving as Downtown Stockton continues to grow. The *Greater Downtown Active Transportation Plan* builds on the *2017 Bicycle Network Master Plan* bicycle network and will identify and recommend future bicycle and pedestrian facility projects in the City's greater Downtown. The plan is intended to enhance safety for pedestrians, cyclists, and transit riders by providing improved access to transit, schools, work, and regional trails; create connections to and from other areas in the City; and support the revitalization of Stockton's core.

In accordance with the City of Stockton's *Bicycle Network Master Plan* (2017) and the *General Plan 2040* (2018), several bicycle facilities are proposed in the Project Study Area. Class IV separated bikeways are proposed within the Project Study Area on Charter Way and Weber Avenue and near the Project Study Area on Airport Way and California Street. Class II bicycle lanes are proposed within the Project Study Area on Hazelton Avenue and just east of the Project Study Area on Main and Market Streets.

Class II Bike Lane (or Buffered Bike Lane) – Provides a striped lane for one-way bike travel on a street or highway. Buffered bike lanes are separated by a marked buffer between the bike lane and the traffic or parking lane.

The proposed Project considers these plans for improved bicycle facilities, in particular along Hazelton Avenue, which would be grade-separated from the UP Fresno Subdivision mainline tracks. The proposed Project's Hazelton Avenue underpass would accommodate the bicycle lanes planned by the City of Stockton.

1.6.4 OTHER LOCAL AND REGIONAL PLANS

San Joaquin Area Flood Control Agency Strategic Plan

The San Joaquin Area Flood Control Agency (SJAFCA) was formed to address flood protection with a mission to reduce and manage the region's flood risk. SJAFCA developed a *Strategic Plan* in 2019

to present its mission statement, goals, objectives, and priority actions.[12] The plan also provides policy guidelines to inform the agency's approach, decisions, investments, and actions as flood risk management programs develop within the region (SJAFCA 2019).

As part of meeting the strategic plan's expectations, SJAFCA identified the need to improve the Mormon Slough Bypass. The agency intends to improve the channel and construct a control structure to divert 1,200 cubic feet per second from the upstream end of the Stockton Diverting Canal to the Mormon Slough. It is expected that the project would result in a medium reduction of the flood elevation at the Stockton Diverting Canal and Calaveras River—up to 0.5 foot for a 200-year event and up to 1.2 feet for a 200-year event with climate change assumptions at the Stockton Diverting Canal.

With project implementation, there are opportunities to provide multiple benefits to recreational and open space. A feasibility study is expected to be initiated and completed in 2025. The initial scope of the feasibility study includes continuing the conceptual work to a feasibility level to determine the overall system impacts and extent of protection afforded. Project construction would not occur in the near term, and construction funds are currently not identified for the project.

San Joaquin Council of Governments Congested Corridors Plan

The *Congested Corridors Plan* was developed by SJCOG, California Department of Transportation (Caltrans), and other local agencies and was finalized in March 2020. The plan focuses on the highly congested corridors along I-205, I-5, SR 120, and SR 99. It was established to improve local, regional, and interregional circulation in San Joaquin County to serve both existing and projected (2040) travel between California's Central Valley and the San Francisco Bay Area. The plan accounts for all modes of travel, including cars, trucks, transit, rail, pedestrians, and bicyclists. The goal of the *Congested Corridor Plan* is to "reduce traffic congestion and increase travel choices through a balanced set of transportation, environmental, and community access improvements." The proposed Project is consistent with the *Congested Corridors Plan* because it would improve circulation, reduce congestion and delays at a highly trafficked location in San Joaquin County (the Stockton Diamond), and improve regional and interregional transportation efficiency.

San Joaquin Council of Governments Regional Transportation Plan and Sustainable Communities Strategy

SJCOG as the Metropolitan Planning Organization for San Joaquin County issued their *Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS) in 2018. The RTP/SCS is a transportation investment strategy through 2042 that identifies transportation needs to keep pace with anticipated growth and development. The following are the overarching goals that guide the Plan:

- Enhance the environment for existing and future generations and conserve energy
- Maximize mobility and accessibility

[12] SJAFA, 2019, *Draft Strategic Plan*, https://sjafca.com/pdf/StrategicPlan.pdf, accessed November 2020.

- Increase safety and security
- Preserve the efficiency of the existing transportation system
- Support economic vitality
- Promote interagency coordination and public participation for transportation decision-making and planning efforts
- Maximize cost-effectiveness
- Improve the quality of life for residents

San Joaquin Council of Governments Regional Congestion Management Program

The Regional Congestion Management Program is a mechanism to fulfill SJCOG's requirements as a metropolitan area with a population exceeding 200,000, under the federal Congestion Management Process. Federal regulation defines Congestion Management Program as a systematic process that provides for safe and effective integrated management and operation of the multimodal transportation system. The program includes the following elements:

- Develop congestion management objectives;
- Establish multimodal transportation system performance measures;
- Collect data and monitor system performance to define the extent and duration of congestion and determine the causes of congestion;
- Identify congestion management strategies;
- Implement activities, including identifying an implementation schedule and possible funding sources for each strategy; and
- Evaluate the effectiveness of implemented strategies.

San Joaquin Council of Governments Regional Transit Systems Plan

The SJCOG *Regional Transit Systems Plan* includes strategies to reduce congestion through a variety of mechanisms, including increased density, multimodal and commercial joint developments, transit expansions, and support for alternative modes of travel throughout San Joaquin County. The following are the goals of the plan:

- Implement effective ridership programs countywide, such as continuing work toward the implementation of San Joaquin County 511, incorporating San Joaquin County transit routes into Google transit, and adding Global Positioning System units to buses to enable the collection of real-time transit information.
- Develop a transit system that addresses, to the greatest extent possible, the needs for air quality and congestion management.
- Provide a transit system serving county residents that is efficient and cost-effective.
- Emphasize the multimodal nature and intermodal opportunities in San Joaquin County.

- Explore opportunities for extending services into additional travel markets.
- Provide a mechanism whereby service is responsive to local needs to enhance the opportunities for all county riders.

San Joaquin County Coordinated Transportation Plan

The *San Joaquin County Coordinated Transportation Plan* (SJCCTP) is a locally developed and coordinated human service transportation plan that identifies the transportation needs of individuals with disabilities, older adults, and people with low incomes. SJCCTP provides strategies for local needs and prioritizes transportation services for funding and implementation. SJCCTP was prepared by a work group consisting of representatives from various stakeholder groups (social service agencies, public agencies, and local jurisdictions).

San Joaquin Valley Regional Blueprint

Through executive orders issued by two presidents, the federal Interagency Task Force was created to help coordinate federal efforts within the San Joaquin Valley region. The San Joaquin Valley Regional Blueprint provides an opportunity for San Joaquin Valley residents, businesses, government agencies, and organizations to collectively plan for the future of transportation and land use in the San Joaquin Valley amid rapid population growth.

1.7 Scope and Content of this Environmental Impact Report

1.7.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA applies to all discretionary activities proposed to be implemented by California public agencies, including state, regional, county, and local agencies (California Public Resources Code [PRC] 21000 et seq.). CEQA requires agencies to estimate and evaluate the environmental impacts of their actions, avoid or reduce significant environmental impacts when feasible, and consider the environmental implications of their actions prior to making a decision. CEQA also requires agencies to inform the public and other relevant agencies and consider their comments in the evaluation and decision-making process. The CEQA Guidelines are the primary source of rules and interpretations of CEQA (PRC 21000 et seq.; 14 California Code of Regulations 15000 et seq.).

1.7.2 PURPOSE OF THIS ENVIRONMENTAL IMPACT REPORT

The purpose of this EIR is to provide the information necessary for SJRRC to make an informed decision about the improvements included under the proposed Project, and to supply the information necessary to support related permit applications and review processes.

This Draft EIR has been prepared in compliance with CEQA to achieve the following goals:

- Identify potential direct, indirect, and cumulative environmental impacts associated with the proposed Project.
- Provide feasible mitigation measures to avoid or minimize potentially significant impacts to a less than significant level.

- Disclose the environmental findings, which include potential impacts and mitigation measures, for public and agency review and comment.

1.7.3 PUBLIC SCOPING PROCESS

One of the purposes of CEQA is to provide an opportunity for the public and relevant agencies to review and comment on projects that might affect the environment. Scoping refers to the process used to assist the lead agency, in this case SJRRC, in determining the focus and content of an EIR. Scoping solicits input on the potential topics to be addressed in the EIR, the range of alternatives, and potential mitigation measures. Scoping also assists in establishing methods of assessment and in identifying the environmental effects to be considered in further detail.

Scoping for the proposed Project was conducted from August 19 to October 3, 2020. The normal scoping period of 30 calendar days was extended an additional 15 calendar days to allow additional time for stakeholders and members of the public to provide their input on the proposed Project. In addition, three scoping meetings were held virtually via WebEx to solicit feedback from the public on the scope of the EIR environmental analysis. The dates, times, and formats of each scoping meeting are discussed in Table 1.7-1.

Table 1.7-1: Summary of Virtual Scoping Meetings for Proposed Project

ENGLISH MEETINGS	SPANISH MEETING
Tuesday, September 15, 2020 6:00 – 7:30 p.m. Wednesday, September 16, 2020 2:00 – 3:30 p.m.	Thursday, September 17, 2020 6:00 – 7:30 p.m.

Members of the public were encouraged to attend the virtual meetings to learn more about the proposed Project, interact with Project team members, ask questions, and submit formal comments. Those who needed additional accessibility preferences were directed to call the Project hotline or send an email to info@stocktondiamond.com.

During the public scoping period, several public outreach and engagement tactics were deployed by the Project team to raise awareness, including alerts on the Project's bilingual website, SJRRC/ACE social media platforms, media releases and ads, a direct mailer, electronic notices, and stakeholder coordination through telephone discussions. These efforts resulted in a total reach of over 275,000 community members through the following:

- 16 social media posts on three platforms / 1 social media advertisement
- 11 electronic notices (eight from the Project, one from the Latino Times, and two from SJJPA to ACE ridership)

- 6,065 mailers distributed to the Project's contact database (regional stakeholders, property owners, and occupants within a one-mile radius)
- Two advertisements (Stockton Record and Vida en el Valle)
- Three press releases distributed to 235 media outlets resulting in 11 earned articles

During the public comment period, comments could be submitted through several different mediums in an effort to provide convenience to participants. Electronic comment submittal was established through the website, email, and virtual public meetings. Comments were also able to be submitted via hard copy mailers or voicemail on the project information line.

Following the release of this Draft EIR, SJRRC will provide a public review period of 45 calendar days from its release for comment. SJRRC will also conduct a virtual public meeting to solicit comments from stakeholders and the public during the comment period.

Once the public review period is complete, SJRRC will prepare a Final EIR that will include all comments received on the Draft EIR, responses to comments related to the CEQA analysis, and any necessary revisions to the Draft EIR. CEQA requires the SJRRC decision-making body, the SJRRC Board, to review and consider the information in the EIR before making a decision on the proposed Project.

Notice of Preparation

On August 19, 2020, SJRRC, the CEQA lead agency officially launched the environmental process for the proposed Project with an EIR Notice of Preparation (NOP). The NOP was posted at the State Clearinghouse (SCH# 2020080321) and circulated to public agencies and other interested parties in compliance with Section 15082(a) of the CEQA Guidelines. The NOP notified the public the EIR was being prepared, along with public scoping meeting information and how to provide comments on the Project during the formal 45-day scoping period from August 19 to October 3, 2020.

1.7.4 RESOURCE TOPICS

Consistent with Appendix G of the CEQA Guidelines, this Draft EIR evaluates the potential impacts of the proposed Project for the following resource areas:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials

- Hydrology and Water Quality
- Land Use and Planning
- Noise and Vibration
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Tribal Cultural Resources
- Utilities and Service Systems

The following topics are also analyzed in this Draft EIR:

- Alternatives
- Cumulative Impacts
- Environmental Justice

Resources eliminated from further analysis under CEQA include agriculture and forestry resources, mineral resources, and wildfire, for the reasons described below.

Agriculture and Forestry Resources: The proposed Project is located in an area with predominantly industrial zoned land. Other zoning designations in the Project Study Area include commercial and residential. According to the Department of Conservation Important Farmland Finder, the Project Study Area is designated as Urban and Built-Up Land (California Department of Conservation 2016).[13] No agriculture or forestry resources, important farmland, or Williamson Act properties exist in the Project Study Area, and none would be affected as a result of proposed Project activities. As a result, agriculture and forestry resources were eliminated from further analysis under CEQA.

Mineral Resources: According to the U.S. Geological Survey (USGS) Mineral Resources Online Spatial Data, there are no known or locally important mineral resources or mineral resource recovery sites in the Project Study Area, and none would be affected by the proposed Project. Therefore, mineral resources were eliminated from further analysis under CEQA.

Wildfire: The proposed Project is located in an Urban Unzoned Fire Hazard Zone, outside of High or Very High Fire Hazard Severity Zones (California Department of Forestry and Fire Protection [CALFIRE] 2020).[14] The Project Study Area is also located in a predominantly industrial area and is not within the vicinity of wildlands. Therefore, there would be no impact associated with wildfires as a

[13] California Department of Conservation, 2016, *California Important Farmland Finder*, DLRP Important Farmland Finder (ca.gov)
[14] CALFIRE, 2020, *San Joaquin County Fire Hazard Severity Zones Map*, https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/

result of implementation of the proposed Project. As such, wildfire has been eliminated from further analysis under CEQA.

1.7.5 ENVIRONMENTAL IMPACT REPORT ORGANIZATION

This Draft EIR is organized into the following chapters and appendices:

- Executive Summary provides a summary of the findings and conclusions in the EIR.
- Chapter 1, Introduction, provides an overview, background, and brief description of the proposed Project and Project setting; the Project goals and objectives; relationships to other plans within the Project Study Area; an overview of the environmental review process; and the scope, content, and organization of the Draft EIR.
- Chapter 2, Project Description, provides a comprehensive description of the proposed Project evaluated in the EIR.
- Chapter 3, Environmental Impact Analysis, provides an evaluation of the Project's impacts for each of the environmental resource topics listed above. Each resource-specific section discusses the regulatory setting, methodologies, environmental impact analysis, and proposed Best Management Practices (BMP) and/or mitigation measures.
- Chapter 4, Alternatives, provides a detailed and comprehensive discussion of the Alternatives evaluated within the EIR and the multiple design concepts evaluated during the feasibility study that were not carried forward to be evaluated for the proposed Project, and why they were eliminated from further consideration.
- Chapter 5, Environmental Justice, provides a discussion of proposed Project impacts on Environmental Justice communities.
- Chapter 6, Cumulative Impacts, provides a discussion of cumulative impacts related to the proposed Project.
- Chapter 7, Other Considerations, includes significant environmental effects which cannot be avoided and relationship between short-term uses and long-term productivity.
- Chapter 8, Public and Agency Involvement, provides a description of the outreach by SJRRC to the public, stakeholders, and agencies over the course of project definition; alternatives development; and environmental review.
- Chapter 9, References, provides a list of the printed references and personal communication cited in this Draft EIR.
- Appendices (provided in a separate document):
    - Appendix A: Stockton Background Documents Affecting Visual Quality
    - Appendix B: Health Risk Assessment
    - Appendix C: Supporting Biological Resources Information
    - Appendix D: Construction General Permit Risk Assessment
    - Appendix E: Traffic Report

- Appendix F: Assembly Bill 52 Consultation Documentation
- Appendix G: Preferred Alternative and Concepts Eliminated from Further Consideration
- Appendix H: Multilingual Communications Plan
- Appendix I: Public Scoping Summary Report

2 Project Description

2.1 Description of the Proposed Project

2.1.1 PROJECT OVERVIEW AND PROPOSED TYPES OF ACTIVITIES

The proposed Project would construct a flyover structure to provide the vertical clearance required by both railroads to grade separate the existing crossing of the UP and BNSF tracks at the Diamond.

General Project Features

The grade separation would be constructed by elevating the UP Fresno Subdivision main tracks on either an embankment, walled embankment, or long approach structures to bridge over the BNSF tracks while maintaining the BNSF Stockton Subdivision tracks at their current grade. This document refers to this approach and grade separation as a "flyover structure." The UP approach/flyover structure is proposed to be shifted east of the existing UP Fresno Subdivision tracks so that construction of the structure would minimize impacts on existing rail operations. Figure 2.1-1 provides an aerial photograph of the existing Stockton Diamond crossing and a rendering of the crossing with the proposed Project, illustrating the approximate location of the proposed flyover.

The existing at-grade connecting track in the northeastern quadrant of the Stockton Diamond and at-grade track along the UP Fresno Subdivision would remain in place, allowing for connectivity between the UP Fresno Subdivision and the BNSF Stockton Subdivision. It is anticipated that current ACE rail services and the majority of UP trains would use the new flyover tracks during operations. San Joaquins service and some freight trains would continue to use the at-grade tracks. Details on which tracks will remain at grade and which will be removed are provided in Section 2.1.2.

The northern proposed Project limit connects to the existing UP Fresno Subdivision tracks between East Main Street and East Weber Avenue. The new track alignment would remain at grade as it continues south under the Crosstown Freeway. An at-grade turnout would be constructed between East Main and East Market Streets to provide trains using the proposed new UP Fresno Subdivision tracks an at-grade connection to transfer east to the BNSF Stockton Subdivision or west to the Port of Stockton. Once through the Crosstown Freeway viaduct, and just south of East Lafayette Street, the new track alignment would begin to elevate. The flyover would reach its highest point, approximately 32 feet above the existing tracks, as it crosses the BNSF Stockton Subdivision tracks within the Diamond.

Figure 2.1-1: Existing Condition and Rendering of Proposed Flyover

Existing Condition

With Proposed Project

As it continues south, the flyover would begin to descend so that it conforms back to the existing track elevation south of the existing East Charter Way underpass and continues into the UP Stockton Yard. For rail services traveling north from the UP Stockton Yard, a turnout is proposed on the flyover beginning just north of East Charter Way to bring rail services that need to connect to the BNSF Stockton Subdivision to grade before reaching the Diamond. Once returning to grade, a new wye is proposed to allow these rail services to select between traveling east or west on the BNSF line. Figure 2.1-2 provides the vertical profile of the flyover and the streets that cross the Project limits. Figure 2.1-3 provides the concept layout plan for the proposed Project.

East Main and East Market Streets would have new tracks running perpendicular through the street, east of the existing track crossing. The new tracks at East Weber Avenue, East Main Street, and East Market Street would require a modification to the roadway profile to accommodate the flat grades across the new tracks to tie back into the existing roadway. Those tie-ins would likely occur within 200 feet of the existing and new tracks. The new and existing tracks would also require upgrading the railroad crossing equipment to the most current UP/BNSF crossing guideline standards. Each new crossing would evaluate the need for new flashing light signals, gate arms, signs, and pavement markings. Depending on existing site conditions, improvements at the new crossing locations would tie into the existing pedestrian facilities, including placement of Americans with Disabilities Act (ADA)-required tactile walking surface indicators for the blind and vision-impaired to indicate crossing locations. Street lighting would be assessed at each crossing to ensure lighting is adequate.

Roadway-Rail Grade Crossings

The track alignment, modified rail connections, and flyover construction associated with the proposed Project would affect several existing east-to-west city street at-grade rail crossings. Table 2.1-1 provides information on existing and proposed conditions at each of the street crossings with proposed temporary or permanent closures.

In conjunction with the City of Stockton, SJRRC, and the railroads, SJRRC's design team continues to evaluate the need for potential closures and grade separations at select crossings. Final determination of road closures and improvements that may be required at and near the rail crossings would occur through a combination of technical analysis, engineering feasibility, and stakeholder/public input.

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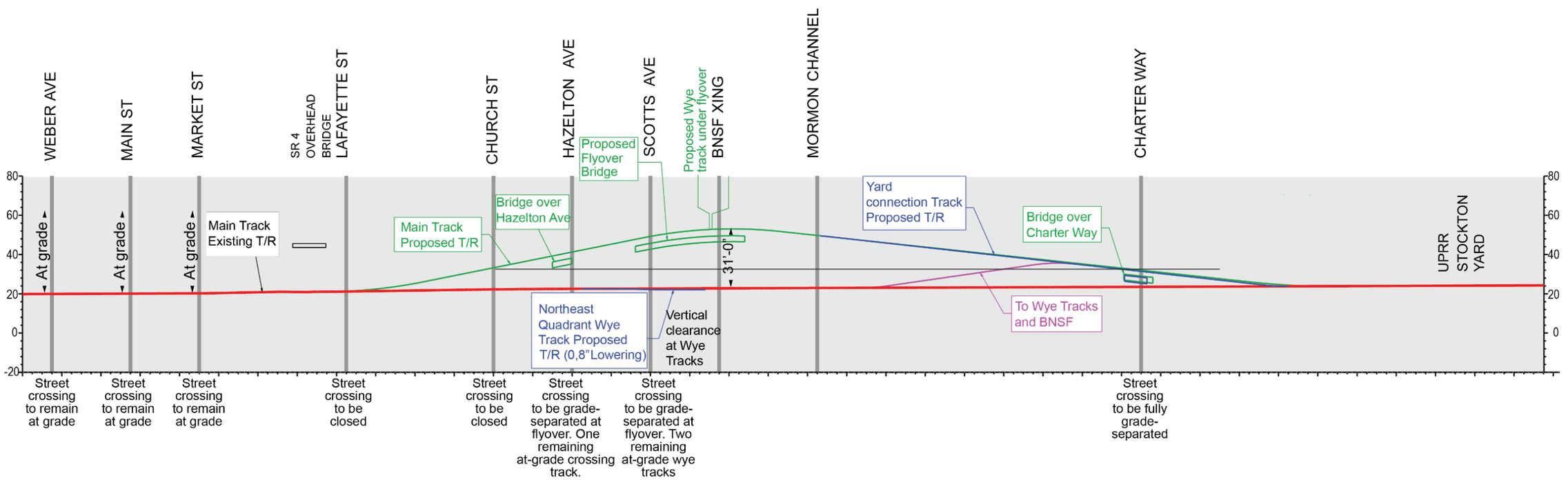
Figure 2.1-2: Vertical Profile of the Proposed UP Fresno Subdivision Flyover



ALTERNATIVE 1A TRACK PROFILE - UP FLYOVER WITH WYE TRACKS

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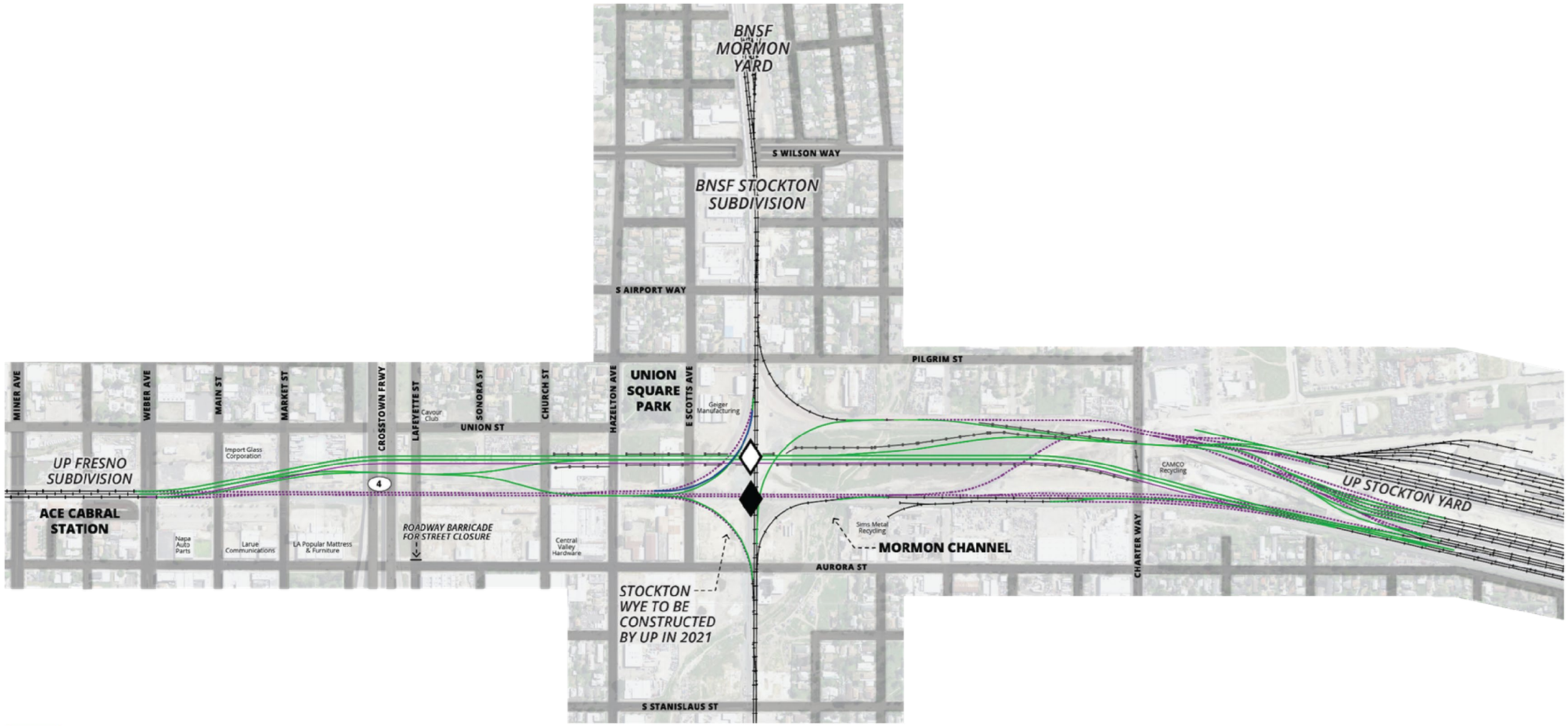
Figure 2.1-3: Concept Layout Plan for Proposed Project



CONCEPT LAYOUT PLAN FOR PROPOSED PROJECT

HDR

STOCKTON DIAMOND
Unlocking Northern California's Freight and Passenger Rail Potential

- Proposed Flyover Location
- Proposed Track
- Proposed Elevated Structure on Retaining Wall
- Existing at-Grade Stockton Diamond
- Existing Tracks (to remain)
- Track Removal (existing)
- Phase 1 - Shift Wye Track

CREATED ON: 3/5/2021

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Table 2.1-1: Proposed Temporary Construction and Permanent Road Closures

Street	Roadway Classification	Pedestrian Crossing	Proposed Street Crossing Impacts
East Weber Avenue	Major Collector	Yes	Temporary closure during construction; street crossing to remain at grade after construction
East Main Street	Arterial	Yes	Temporary closure during construction; street crossing to remain at grade after construction
East Market Street	Minor Arterial	Yes[a]	Temporary closure during construction; street crossing to remain at grade after construction
East Lafayette Street	Major Collector	No	Street crossing to be permanently closed
East Church Street	Local	Yes[a]	Street crossing to be permanently closed
East Hazelton Avenue	Major Collector	Yes	Temporary closure during construction; with proposed Project, full grade-separated underpass of main UP tracks and at-grade crossing to the west side for a single connecting wye track
East Scotts Avenue	Local	No	Temporary closure during construction; with proposed Project, grade-separated underpass at flyover site and at-grade crossings to the west side for connecting tracks
East Charter Way	Arterial	Yes	Temporary closure during construction; with proposed Project, full grade-separated underpass

[an] *Existing pedestrian crossing is not ADA-compliant.*

Temporary Construction Road Closures

For this EIR, it was assumed that all temporarily closed roads during construction would require a Transportation Management Plan. The plan would be drafted, approved, and filed with the City of Stockton Engineering and Transportation Department, or other agency with jurisdiction over the road, prior to any road closures. The plan would include alternative routing plans and methods, and details for early public outreach.

Temporary construction road closures are anticipated at the at-grade crossings. Further discussion is included in Section 2.1.2.

Permanent Road Closures

In addition to the temporary construction closures, it is also anticipated that the at-grade crossings of East Church Street and East Lafayette Street would be permanently closed to through traffic. Further discussion is included in Section 2.1.2.

Grade Separation Crossings

New grade-separated crossings of the UP main line tracks are proposed for East Hazelton Avenue and East Scotts Avenue. A grade separation over East Charter Way is also proposed, consistent with the existing grade-separated crossing. Further discussion is included in Section 2.1.2.

Modifications to Existing UP Fresno Subdivision At-grade Tracks

In conjunction with the shifted flyover alignment, portions of the existing at-grade UP tracks would be reconstructed to meet railroad design requirements, modify existing connections, and conform to the proposed flyover. Table 2.1-2 shows existing and proposed rail facilities. Affected track sections south of the Diamond include the existing UP Fresno Subdivision tracks at the UP Stockton Yard, the wye connection track in the southwest quadrant of the Diamond, and the UP Stockton Yard connection track to the BNSF Stockton Subdivision. North of the Diamond, the proposed at-grade connection track at the existing UP Fresno Subdivision would be modified to address the grade changes created by the new track connections to the BNSF Stockton Subdivision. Each of these areas is discussed in more detail in Section 2.1.2.

Table 2.1-2: Existing and Proposed Rail Facilities

Street	Existing UP Rail Facilities	Proposed Configuration with Proposed Project
East Weber Avenue	3 tracks	3 new tracks – 2 main tracks, one connector track[a]
East Main Street	3 tracks	3 new tracks – 2 main tracks, one connector track[a]
East Market Street	2 tracks	4 new tracks – 2 main tracks, 1 connector track, 1 crossover
East Lafayette Street[a]	2 tracks	3 tracks – 2 new main tracks, 1 connector track[a]
East Church Street	2 tracks	4 tracks – 2 new main tracks, 1 connector track, 1 crossover track[a]
East Hazelton Avenue	3 tracks- 2 tracks and wye track; UP Stockton Wye project adds future wye track to existing main track[b]	3 tracks – 2 main tracks on flyover structure, 1 connector at-grade track
East Scotts Avenue	4 tracks - 2 tracks and 2 wye tracks	4 tracks – 2 new main tracks on flyover structure, 2 new wye at-grade tracks
East Charter Way	6 tracks - 4 tracks and another set of 2 tracks crossing overhead on existing grade-separated crossings	4 tracks – 2 new main tracks on new bridge; yard connection track on new bridge; replacement of 4 existing grade-separated tracks with single connector track

[a] *Crossover tracks are at a lower speed (10 mph) than main tracks (30 mph).*
[b] *Stockton Wye refers to new UP Stockton wye track to be constructed in 2021.*

Proposed Right-of-Way Acquisitions and Temporary Construction Easements

Construction of the proposed flyover, wye tracks, and related track work would require right-of-way acquisition of approximately 14 private parcels, 37 railroad owned parcels, and two publicly owned parcels (Table 2.1-3).

In addition, encroachment permits and temporary construction easements would be required to allow construction crews to enter public agency and private rights-of-way. All property acquisition and permitting associated with access to public agency property would be completed prior to implementation the start of construction of the proposed Project.

Two railroad-owned parcels have billboards that would be relocated as part of the proposed Project. One is on the south side of East Lafayette Street and one is on the south side of East Market Street.

Table 2.1-3: Acquisitions and Temporary Construction Easements

Ownership	Current Use of Parcels		
	Vacant	Industrial	Total
Railroad	35	2	37
Publicly owned	1	1	2
Private property	12	2	14
Total parcels	**48**	**5**	**53**

Utility Relocations

Utility relocation or protection-in-place of existing utilities would be necessary during construction. Utility impacts could include:

- Raising or rerouting overhead electrical lines,
- Raising or rerouting overhead or underground fiber optic cable,
- Relocating or rerouting underground gas or water lines,
- Removing and relocating City-owned storm drains or sanitary sewer lines, and
- Raising or rerouting joint overhead electrical and telecommunication lines.

Service outages could occur for short durations during switchover to new utility facilities. During removal and relocation of underground utilities, it is also anticipated that the proposed Project would be required to include roadway improvements, such as upgrades to sidewalks or nearby intersections to meet ADA accessibility requirements in locations where ground disturbance occurs. The proposed Project Study Area has been extended to include those potential improvement areas, resulting from utility relocations or other Project construction, where upgrades and improvements to public roads and adjacent pedestrian and bicycle routes could be required. For more information

regarding utility relocations during construction, refer to Section 3.17, *Utilities and Service Systems* in this EIR.

2.1.2 PROPOSED PROJECT ACTIVITIES BY PROJECT STUDY AREA SECTION

For this environmental review, the Project study area was divided into three sections to provide details on proposed activities (Figure 2.1-4). This section provides details on the Project features along the proposed Project Study Area. These sections are not intended to infer how the proposed Project would be constructed; construction details would be determined during final design and contracting. Figure 2.1-4 also presents the proposed Project's construction limits. This area includes all areas that could be permanently or temporarily disturbed during implementation of the proposed Project.

Section 1: East Weber Avenue to South of East Church Street

Project Features

Figure 2.1-5 provides an overview of this northernmost section and the Project construction limits. It also presents the proposed Project design features and general areas proposed for equipment and materials staging and construction site access. More information on staging and anticipated site access locations is provided in Section 2.1.4. Figure 2.1-6 through Figure 2.1-9 provide detailed information on the existing and proposed track configuration at each of the roadway crossings within this section: East Weber Avenue, East Main Street, East Market Street, East Lafayette Street, and East Church Street.

East Weber Avenue is the northernmost extent of the proposed Project Study Area, through which three UP tracks currently cross, and no work is anticipated to occur north of East Weber Avenue. At East Weber Avenue, one of the existing UP Fresno Subdivision main tracks may need to be slightly realigned farther east on the south side of the street. Minor street modifications to accommodate this track realignment may be necessary.

Between East Main Street and East Market Street, two UP Fresno Subdivision tracks would shift eastward and the new connector track would shift eastward with the other two UP tracks. The resulting three tracks would continue toward the proposed flyover location in a north-to-south direction, approximately 200 feet east of the existing track location. The existing tracks south of East Weber Avenue would be removed with the proposed Project and replaced with the new tracks shifted eastward.

Figure 2.1-4: Project Study Area Sections

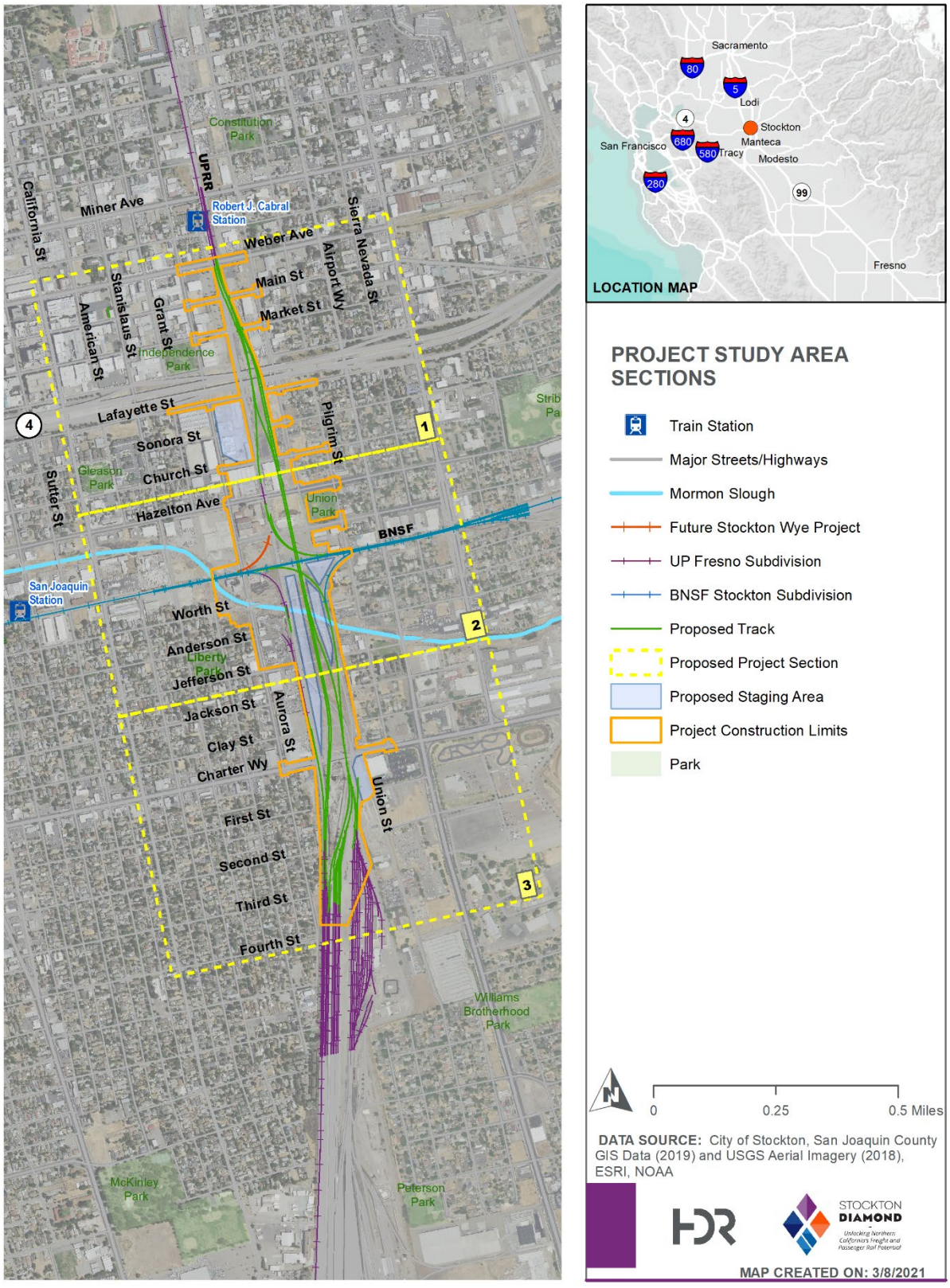


Figure 2.1-5: Project Design Features and Study Area (East Weber Avenue to South of East Church Street)

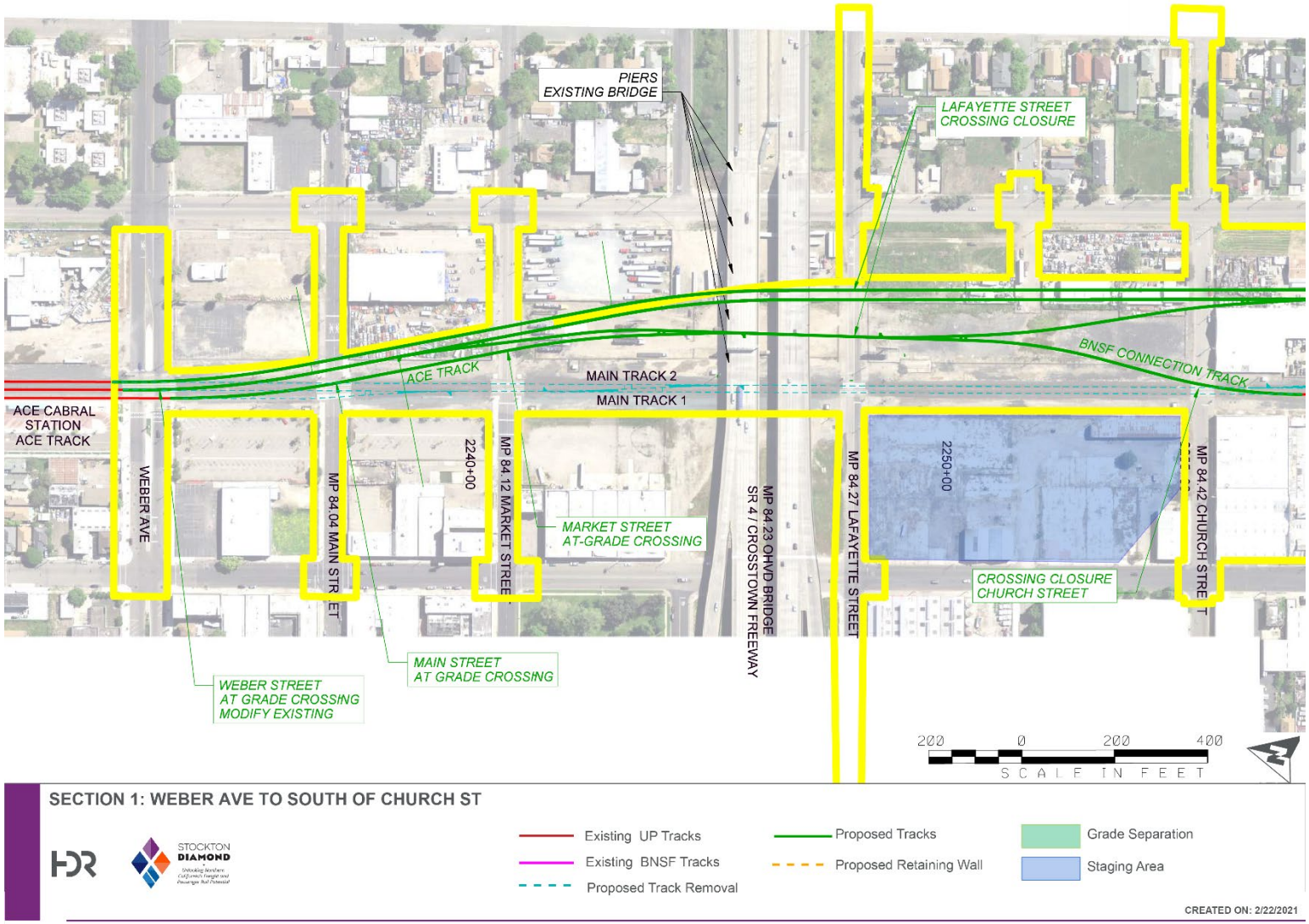
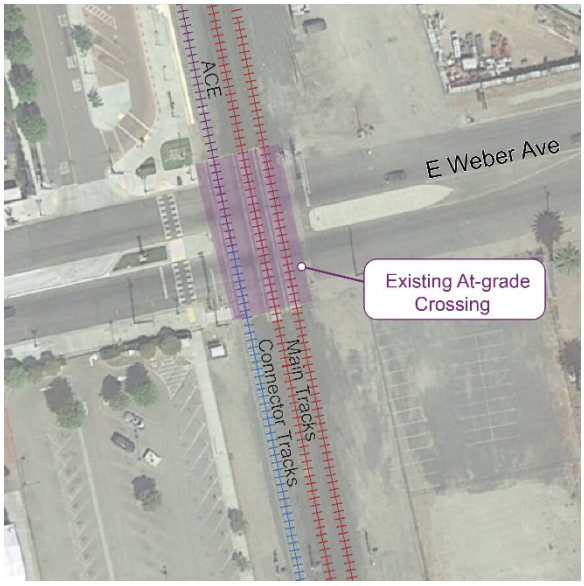


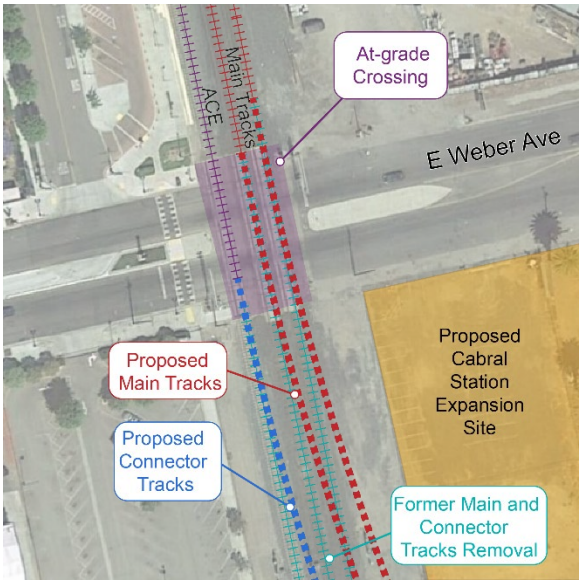
Figure 2.1-6: Existing and Proposed Track Configuration (East Weber Avenue to South of East Church Street) – Sheet 1 of 3

East Weber Avenue

Existing Condition

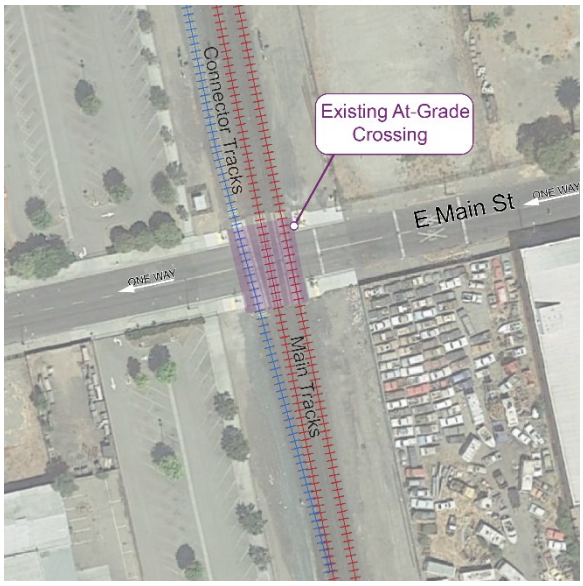


With Proposed Project

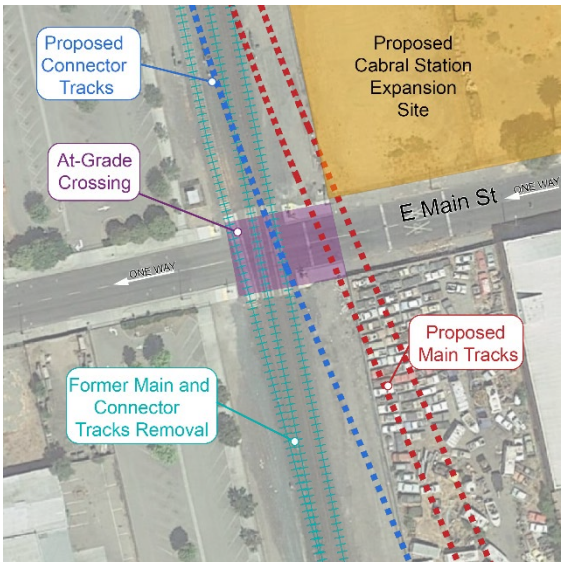


East Main Street

Existing Condition



With Proposed Project



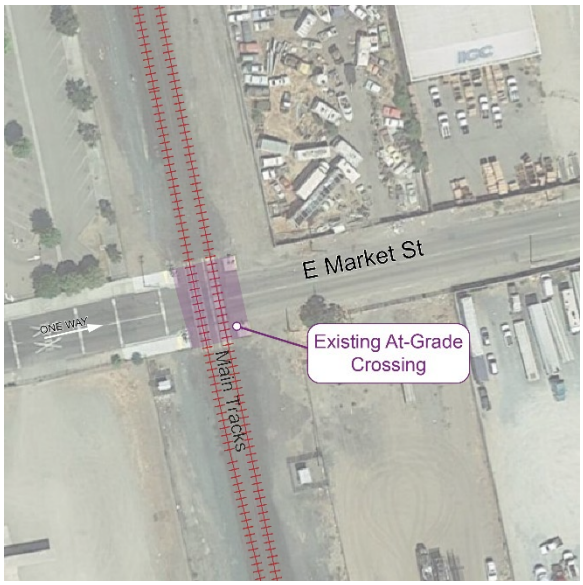
LEGEND

Existing ACE Tracks
Existing Main Tracks
Proposed Main Tracks
At-Grade Crossing
Existing Connector Tracks
Proposed Track Removal
Proposed Connector Tracks
Grade Separation

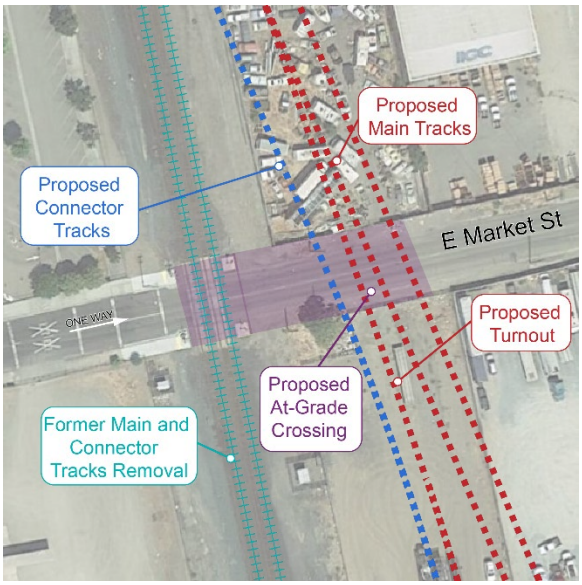
Figure 2.1-7: Existing and Proposed Track Configuration (East Weber Avenue to South of East Church Street) – Sheet 2 of 3

East Market Street

Existing Condition

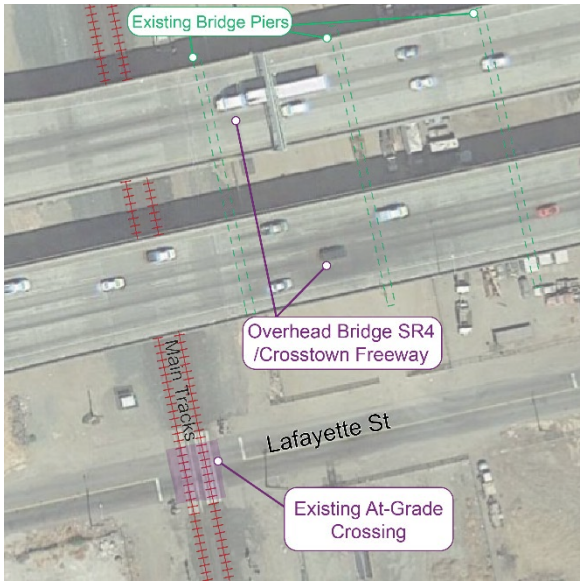


With Proposed Project

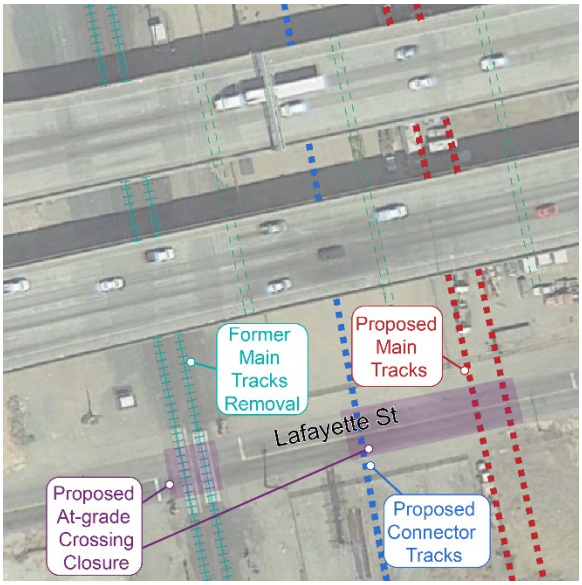


East Lafayette Street

Existing Condition



With Proposed Project



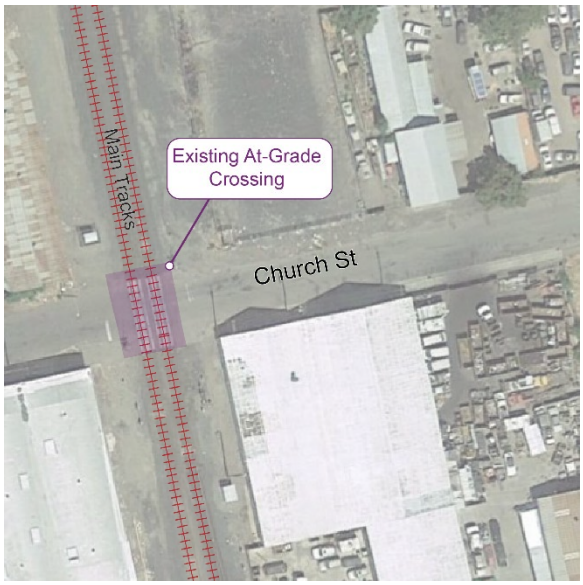
LEGEND

Existing ACE Tracks
Existing Main Tracks
Proposed Main Tracks
At-Grade Crossing
Existing Connector Tracks
Proposed Track Removal
Proposed Connector Tracks
Grade Separation

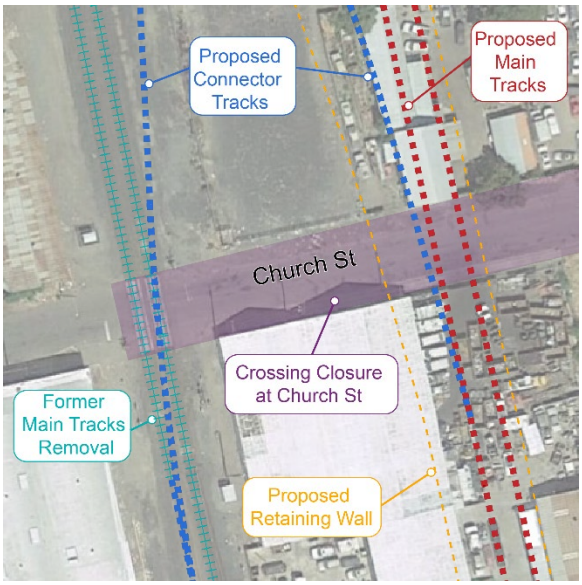
Figure 2.1-8: Existing and Proposed Track Configuration (East Weber Avenue to South of East Church Street) – Sheet 3 of 3

East Church Street

Existing Condition



With Proposed Project



Between East Market Street and the Crosstown Freeway, a turnout between the main tracks and ACE connection track would be added to allow trains running on the main tracks to access the remaining at-grade wye connection track. The connection and main tracks the existing tracks and associated crossing features between East Main Street and East Church Street would be removed, and the roadway would be modified accordingly to match the new track location(s). Just north of East Lafayette Street, the two new shifted tracks that would become the proposed flyover tracks would stop heading to the east and would begin to head south toward the UP Stockton Yard. Also, just south of East Lafayette Street, the proposed flyover tracks would start to gain elevation; however, the maximum height would not be reached until the proposed flyover structure reaches the crossing with the east-to-west BNSF Stockton Subdivision tracks in the Diamond.

The connection tracks that diverge from the shifted UP Fresno Subdivision tracks just before the Crosstown Freeway crossing would continue to move southwest until connecting with the existing westernmost UP track just before East Hazelton Avenue. A new wye would be constructed at the convergence; track upgrades would also be done on the existing tracks to allow for the connection.

The proposed track configuration allows for southbound UP Fresno Subdivision trains to go straight to the BNSF Stockton Subdivision without crossing over and disrupting traffic on the

parallel UP Fresno Subdivision track. The same would be true for trains traveling north from the BNSF Stockton Subdivision to the UP Fresno Subdivision tracks. This would enhance railroad operating efficiency by reducing passenger and freight rail delays and associated congestions.

Roadway-Rail Grade Crossings

Both East Main and East Market Streets are one-way roads. Temporary closure at these two crossings could occur in one of two ways:

1. Both streets closed for up to 2 to 3 months, with traffic diverted to East Weber Avenue or East Lafayette Street, or
2. Closures are staggered so that either East Main Street or East Market Street are always open with one of the one-way lanes being used for opposing traffic, which would temporarily be a single lane in either direction.

No structural modifications are proposed for the grade-separated crossing below the Crosstown Freeway; however, new at-grade tracks would be added under the structure.

East Lafayette Street would be anticipated to be open for most of the construction period, with possible staggered short closures over 1 to 2 months while construction occurs in that location. However, East Lafayette Street is also being proposed for permanent closure (see next section).

East Lafayette Street is being proposed for closure because of the multiple at-grade rail crossings of the at-grade main tracks and wye connection tracks (that is, four proposed crossings within two blocks). Final determination of road closures and improvements needed would occur through a combination of technical analysis, engineering feasibility, and stakeholder/public input.

East Sonora Street, which is currently closed, would remain closed. Depending on right-of-way acquisitions needed, East Sonora Street would become a T-intersection at the Union Street intersection.

East Church Street requires closure because the proposed flyover structure would not have reached its full elevation and, therefore, would not meet the required minimum vertical clearance for a vehicle crossing. The crossing would not provide the minimum 16.5 feet of vertical clearance required by UP/BNSF joint guidelines for an undercrossing while still adhering to the American Association of State and Highway Transportation Officials (AASHTO) design criteria for change in grade for a local roadway.

Proposed Right-of-Way Acquisitions and Temporary Construction Easements

The proposed Project would result in nine full acquisitions, two partial acquisitions, and one temporary construction easement (TCE) between East Weber Avenue and South of East Church Street.[1] All relocation impacts associated with these displaced businesses would conform with the Uniform Relocation Assistance and Real Property Acquisition Policies Act. For further information

[1] Union Pacific owned parcels were not included as part of this discussion of acquisitions and TCEs.

regarding right-of-way acquisitions and TCEs, refer to Section 3.10, *Land Use and Planning* of this EIR.

Utility Relocations

Utility relocation or protection-in-place of existing utilities would be necessary during construction. Utility changes within this section are anticipated to include:

- Raising or rerouting overhead fiber optic cable, AT&T, to provide sufficient clearance at East Market Street;
- Relocating underground fiber optic cable, owned by AT&T, at East Market Street;
- Removing and relocating City-owned sanitary sewer at East Market Street;
- Relocating underground fiber optic cable, owned by CenturyLink and Level 3, at East Market Street;
- Raising or rerouting overhead electrical lines, owned by the Pacific Gas and Electric (PG&E), at East Lafayette Street;
- Removing and relocating City-owned storm drain at East Lafayette Street;
- Relocating or rerouting underground water lines, owned by California Water Service (Cal Water), at East Lafayette Street;
- Raising or rerouting overhead electrical lines, owned by PG&E, at East Sonora Street;
- Relocating or rerouting underground gas lines, owned by PG&E, at East Sonora Street;
- Relocating or rerouting underground water lines, owned by Cal Water, at East Sonora Street;
- Raising or rerouting overhead electrical lines, owned by PG&E, at East Church Street;
- Removing and relocating City-owned sanitary sewer at East Church Street; and
- Relocating or rerouting underground water lines, owned by Cal Water, at East Church Street.

Section 2: North of East Hazelton Avenue to South of East Jefferson Street

Project Features

Figure 2.1-9 provides an overview of this central section and the project construction limits. It also presents the proposed Project design features and general areas proposed for equipment and materials staging and construction site access. More information on staging and anticipated site access locations is provided in Section 2.1.4. Figure 2.1-10 provides detailed information on the existing and proposed track configuration at each of the roadway crossings within this section, including East Hazelton Avenue and East Scotts Avenue.

The Stockton Diamond is included in this section, and it is within this section that the flyover would reach its maximum height of 32 feet.

Just south of East Hazelton Avenue, the connection track that diverged from the shifted UP Fresno Subdivision tracks and merged with the westernmost UP track would separate into a new

connecting track to the BNSF Stockton Subdivision in the eastbound direction and the new track to be constructed with the separate Stockton Wye project (planned for completion in 2021) for connectivity to the BNSF Stockton Subdivision in the westbound direction, improving access to the Port of Stockton. With these connections, any freight train traffic going from the UP Fresno Subdivision to the BNSF Stockton Subdivision could use this proposed connection track and avoid having to go through the ACE Cabral Station. This would enhance railroad operating efficiency, capacity, and network mobility, which are among the goals of the Project.

East Hazelton Avenue is proposed for a grade-separated undercrossing structure at the location of the UP main tracks flyover. No track upgrades are anticipated for the UP track at the at-grade crossing of East Hazelton Avenue; however, it is anticipated that some additional track upgrades would be required on the existing at-grade track to update the connection with the UP Stockton Wye to be constructed in 2021.

East Scotts Avenue is also proposed for a grade-separated undercrossing structure at the location of the UP main tracks flyover. Farther west, there would be an at-grade crossing of the realigned connecting track between the UP Fresno Subdivision and BNSF Stockton Subdivision heading east. The new UP Stockton Wye would also cross East Scotts Avenue at grade. East Scotts Avenue does not have existing pedestrian crossing facilities, and new equipment would likely be required to meet current standards.

At the south entrance to the Diamond, a new wye track would be constructed to provide a direct connection between the BNSF Stockton Subdivision tracks coming from the west and the UP Stockton Yard. Also, just before reaching East Anderson Street, the easternmost UP main line includes a wye that would allow a direct transfer from the UP main line to the UP Stockton Yard. This connector line would ultimately connect with the aforementioned BNSF Stockton connector tracks prior to reaching the UP Stockton Yard.

The proposed flyover structure reaches a maximum elevation of 32 feet (with a 23.5-foot vertical clearance) at the crossover of the BNSF Stockton Subdivision tracks. Following this crossing, the proposed flyover structure begins to descend back to grade.

Construction of the proposed Project would require a clear span flyover bridge, a bridge with in-channel piers, or a multi-cell box culvert to span the Mormon Slough and associated floodplain. Existing drainage structures along Mormon Slough would remain in place after construction of the proposed slough structure. Further, pipe culverts under the existing UP main tracks immediately downstream (west) of the flyover alignment would be left in place to support the remaining at-grade connection track to BNSF.

Figure 2.1-9: Project Design Features and Study Area (North of East Hazelton Avenue to South of East Jefferson Street)

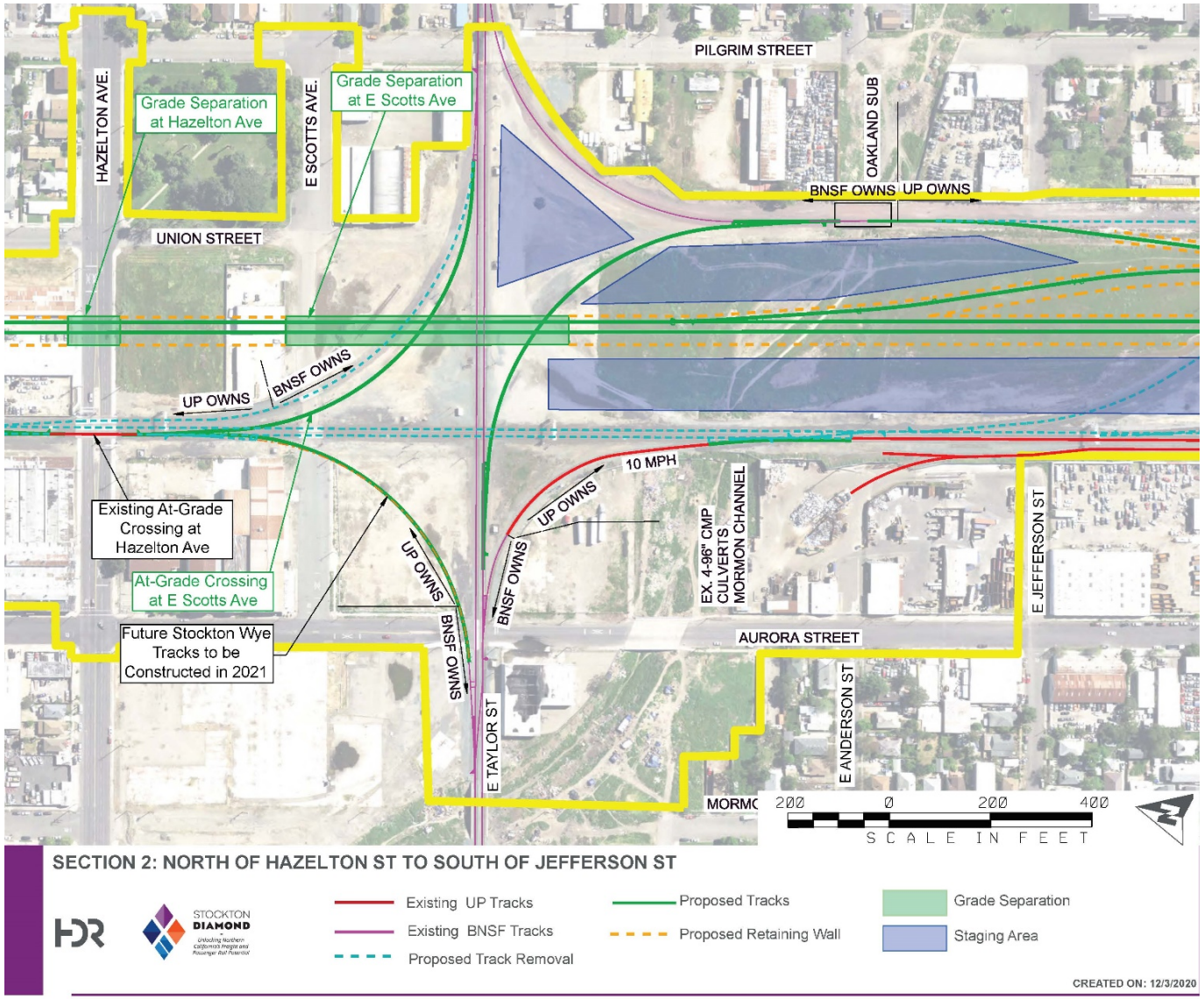
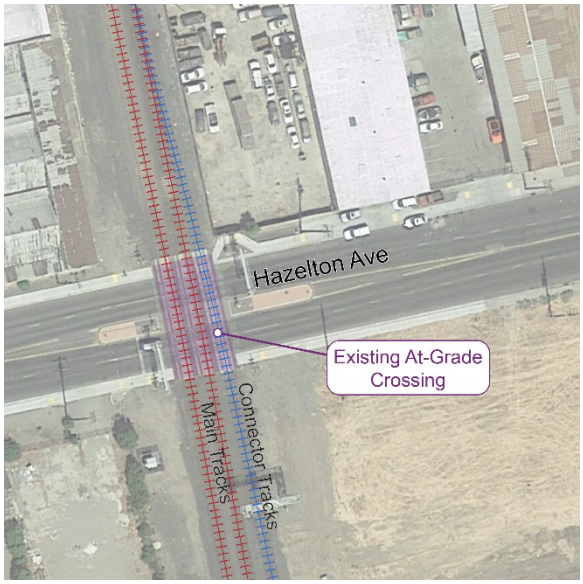


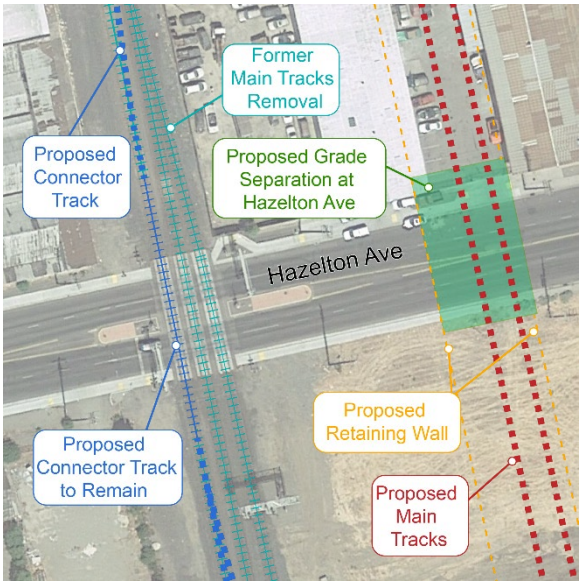
Figure 2.1-10: Existing and Proposed Track Configuration (North of East Hazelton Avenue to South of East Jefferson Street)

East Hazelton Avenue

Existing Condition

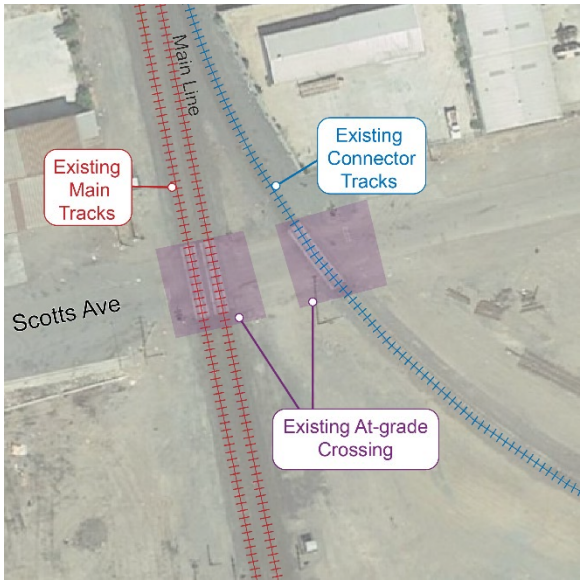


With Proposed Project

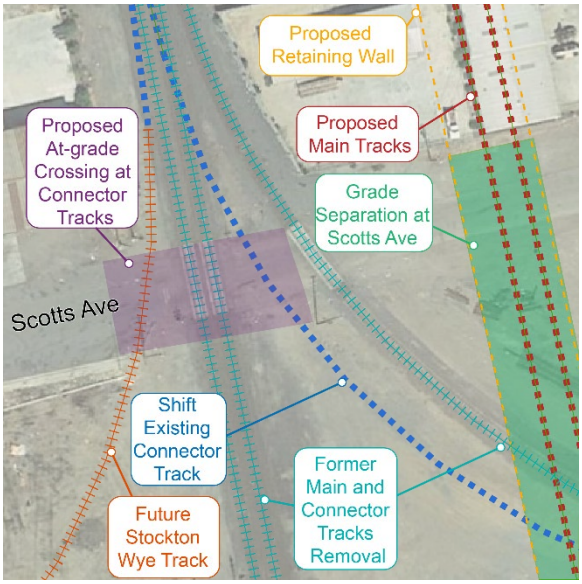


East Scotts Avenue

Existing Condition



With Proposed Project



LEGEND

Existing ACE Tracks
Existing Main Tracks
Proposed Main Tracks
At-Grade Crossing
Existing Connector Tracks
Proposed Track Removal
Proposed Connector Tracks
Grade Separation

SJAFCA modeling of future flows noted an additional culvert is required under the Fresno Subdivision tracks, and SJAFCA was planning to add another pipe opening under the tracks at this location to accommodate future flows. The new culvert is not part of the proposed Project.

Hydraulic analyses within the slough would be conducted prior to finalizing the proposed bridge structure using a projected flow of 1,550 cubic feet per second (according to SJAFCA's *Strategic/ Capital Plan*) through the Mormon Slough for the existing and proposed crossings. The proposed Project would leave the existing Fresno Subdivision culverts in place.

Drainage structures for passing flows beneath the railroad flyover may be pipe culverts, box culverts, or a bridge. Any structure designed for this location would be designed for both existing conditions and proposed future conditions, which SJAFCA provided. Pipe and box culverts would require fill within the existing dry channel, but since it is a dry channel this may not be a concern. A bridge structure may consist of one or several spans between tall abutments adjacent to retaining structures on each end or may be a continuation of a viaduct bridge structure extending over BNSF to the north. Section 2.1.3 provides detailed information regarding design options being considered.

A bicycle/pedestrian multiuse path is also in the long-term plan for this area along Mormon Slough and connecting to other local trail systems. Depending on the railroad-approved structure type, the future bike path could be built under the bridge, or rerouted around the structure, pending railroad approvals.

Roadway-Rail Grade Crossings

East Hazelton Avenue is proposed for a grade-separated undercrossing structure. East Hazelton Avenue is a four-lane minor arterial roadway with two lanes of traffic running in each direction. East Hazelton Avenue has the highest average daily traffic of any of the local at-grade road crossings affected by this Project. These factors make East Hazelton Avenue the most logical choice for an undercrossing of the two relocated UP main line tracks. The grade-separated undercrossing structure is discussed further below in the section, *Section 3: South of East Jefferson Street to UP Stockton Yard*).

During construction, temporary closure at East Hazelton Avenue would likely occur over 2 to 3 months and could include full closures during the day or could be limited to nighttime full closures, with traffic diverted to East Scotts Avenue. Alternatively, if possible, only a partial closure would occur, with two lanes closed at one time and traffic redirected temporarily to the two remaining lanes. East Scotts Avenue would likely see closure for up to 5 to 6 months; however, closures at East Hazelton Avenue and East Scotts Avenue would not occur at the same time to minimize traffic disruption.

No permanent road closures are proposed for this section of the proposed Project.

As noted above, grade-separated undercrossing structures are proposed at East Hazelton and East Scotts Avenues since the flyover structure would have reached sufficient elevation to meet the UP/BNSF joint guidelines for an undercrossing.

Proposed Right-of-Way Acquisitions and Temporary Construction Easements

The proposed Project would result in two full acquisitions and one TCE between north of East Hazelton Avenue and South of East Jefferson Street.[2] All relocation impacts associated with these displaced businesses would conform with the Uniform Relocation Assistance and Real Property Acquisition Policies Act. For further information regarding right-of-way acquisitions and TCEs, refer to Section 3.10, *Land Use and Planning* of this EIR.

Utility Relocations

Utility relocation or protection-in-place of existing utilities would be necessary during construction. Utility impacts or modifications within this section are anticipated to include the following:

- Raising or rerouting overhead electrical lines, owned by PG&E, at East Scotts Avenue;
- Relocating or rerouting underground gas lines, owned by PG&E, at East Scotts Avenue;
- Relocating or rerouting underground gas lines, owned by PG&E, at East Hazelton Avenue;
- Raising or rerouting overhead electrical lines, owned by PG&E, at East Hazelton Avenue;
- Removing and relocating City-owned storm drain at East Hazelton Avenue;
- Relocating underground fiber optic cable, owned by AT&T, at East Hazelton Avenue;
- Raising or rerouting joint overhead electrical and telecommunication lines, owned by PG&E and AT&T, to provide sufficient clearance at East Hazelton Avenue;
- Raising or rerouting high-voltage lines, owned by PG&E, crossing UP right-of-way at East Anderson Street;
- Raising or rerouting overhead high-voltage electrical lines, owned by PG&E, at East Anderson Street; and
- Relocating or rerouting underground gas lines, owned by PG&E, at East Jefferson Street;

Section 3: South of East Jefferson Street to UP Stockton Yard

Project Features

Figure 2.1-11 provides an overview of this southernmost section and the project construction limits. It also presents the proposed Project design features and general areas proposed for equipment and materials staging and construction site access. More information on staging and anticipated site access locations is provided in Section 2.1.4. Figure 2.1-12 provides detailed information on the existing and proposed track configuration at the East Charter Way crossing within this section.

The proposed flyover structure would return to grade just south of East Charter Way. In coordination with UP, it was determined that the descending grade of the rail connection between the UP Stockton Yard and the flyover at full elevation could be reduced by extending the yard

[2] Union Pacific owned parcels were not included as part of this discussion of acquisitions and TCEs.

connection south of East Charter Way and into the northern end of the UP Stockton Yard, rather than designing the flyover to return to grade north of East Charter Way. However, this would require two new structures across East Charter Way and modifications to several UP yard tracks.

At East Charter Way, two separate existing railroad bridges cross over the roadway. A portion of one of these existing bridges would need to be removed to accommodate the new flyover bridge. This would require short-term closures, but traffic could potentially either be shifted to keep two lanes open at all times or nighttime-only closures could minimize effects.

As the UP tracks enter the UP Stockton Yard, they split into multiple lines to converge with existing yard tracks. Upgrades at the existing tracks would also be included to connect the upgraded tracks to existing tracks at the yard.

Roadway-Rail Grade Crossings

The proposed Project would not require closing East Charter Way except for short periods to do the superstructure (bridge) work; these could be limited to nighttime closures, as possible.

There are no permanent road closures in this section of the proposed Project.

As discussed previously, a new grade-separated bridge would be constructed over East Charter Way as part of the proposed Project.

Proposed Right-of-Way Acquisitions and Temporary Construction Easements

The proposed Project would result in one full acquisition between South of East Jefferson Street and UP Stockton Yard.[3] All relocation impacts associated with these displaced businesses would conform with the Uniform Relocation Assistance and Real Property Acquisition Policies Act. For further information regarding right-of-way acquisitions and TCEs, refer to Section 3.10, *Land Use and Planning* of this EIR.

Utility Relocations

Utility relocation or protection-in-place of existing utilities would be necessary during construction. Utility modifications within this section are anticipated to include:

- Raising or rerouting overhead electrical lines, owned by PG&E, at East Jackson Street;
- Raising or rerouting overhead electrical lines, owned by PG&E, at East Charter Way;
- Relocate underground fiber optic cable, owned by AT&T, at East Charter Way;
- Raising or rerouting overhead fiber optic cable, owned by AT&T, to provide sufficient clearance at East Charter Way;
- Relocating or rerouting underground gas lines, owned by PG&E, at East Charter Way; and
- Removing and relocating City-owned storm drain at East Charter Way.

[3] Union Pacific owned parcels were not included as part of this discussion of acquisitions and TCEs.

Figure 2.1-11: Project Design Features and Study Area (South of East Jefferson Street to UP Stockton Yard)

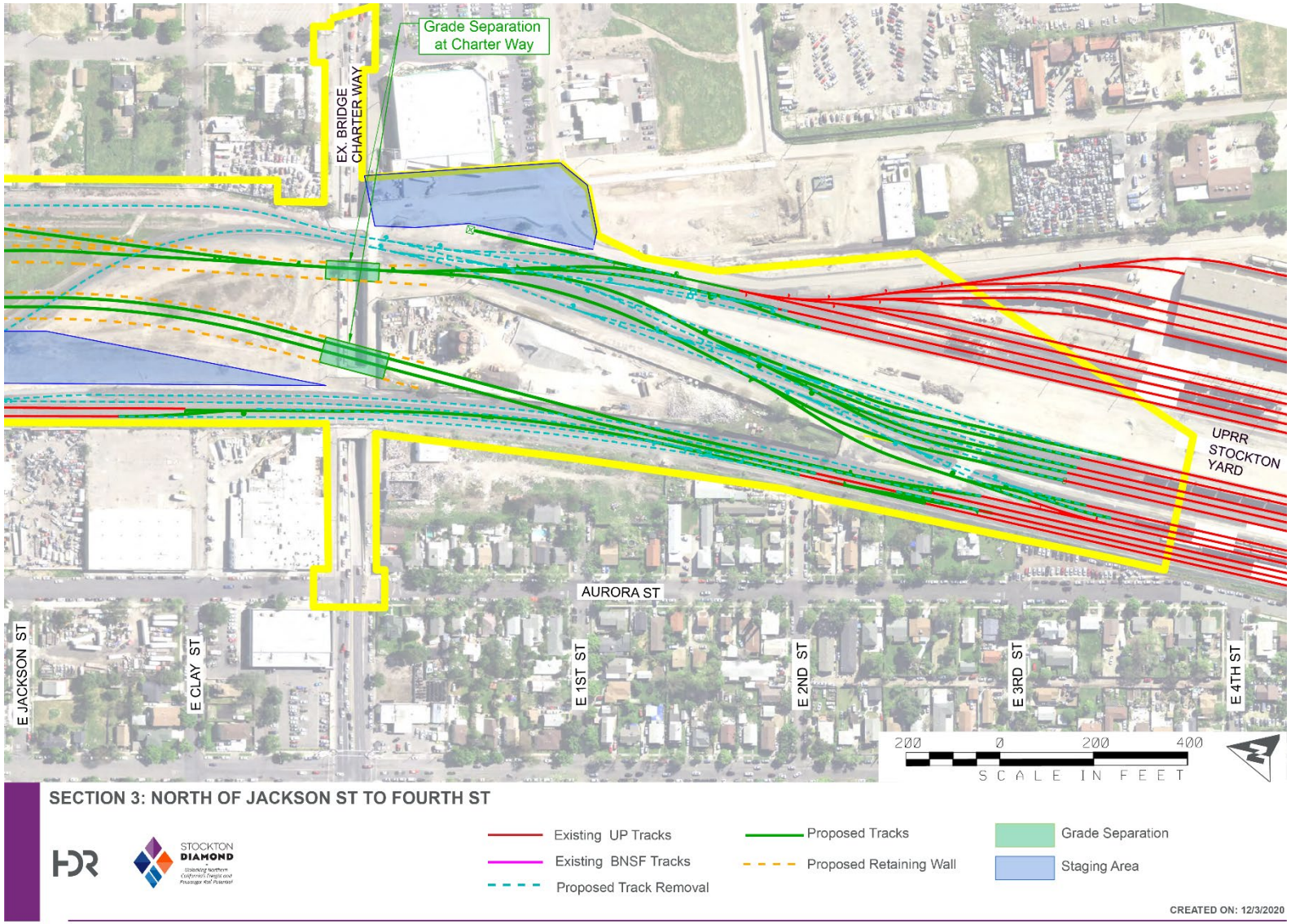
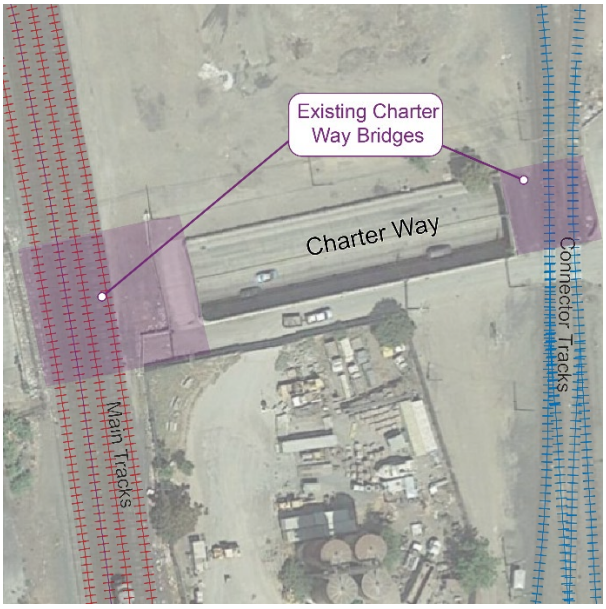


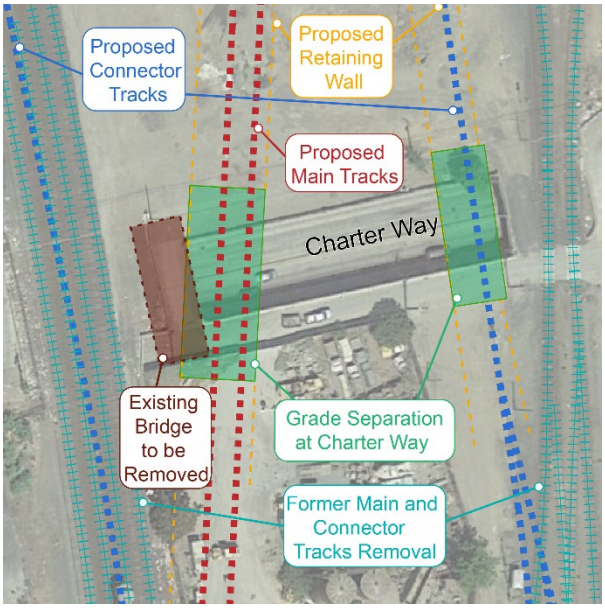
Figure 2.1-12: Existing and Proposed Track Configuration (South of East Jefferson Street to UP Stockton Yard)

East Charter Way

Existing Condition



With Proposed Project

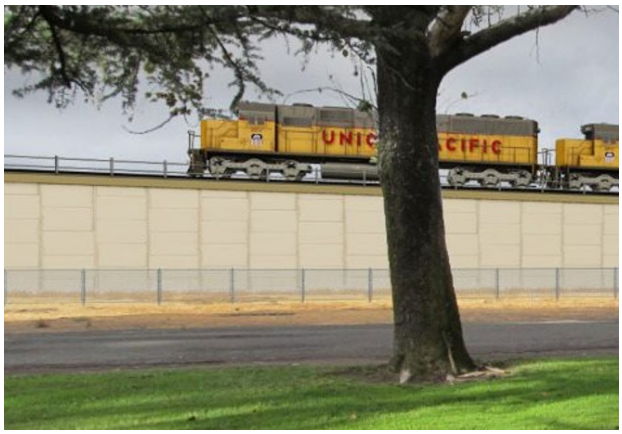


2.1.3 DESIGN OPTIONS OF THE PROPOSED PROJECT

The proposed Project includes the track configurations, grade separations, and other improvements as described in the previous section; however, the exact bridge structure for the flyover is not determined at this time. Structure types under consideration include the following three options:

Soil embankment. Soil embankment is the railroad's preferred choice and is characteristic of a natural aesthetic quality. This option would be low maintenance; however, maintenance on the embankment slope would be necessary. Of the three options considered, soil embankment would require the largest permanent footprint and large quantities of fill to be delivered. It is estimated that this concept would require approximately 484,000 cubic yards (CY) of fill. The soil embankment option would potentially provide access for trespassers; however, fencing would mitigate that risk. Potential issues

associated with soil embankment include slope instability and settlement, vegetation impacts and impacts on buried utilities.



Precast concrete panel system with lightweight cellular concrete fill (LCCF). LCCF consists of a large vertical wall, which would be a highly resilient system and would serve as a barrier to trespassers. Fencing would also mitigate risk from trespassing and provide additional safety and security. As it relates to seismic safety, this system would be seismically stable and resilient compared with other options. The LCCF would be a low-maintenance option over the life of the structure. Panels that may become damaged could be replaced with minimal impact to the wall. Additionally, there would be a minimal permanent footprint. Lightweight fill replacement would require minimal crews, and truck delivery of fill would be significantly lower than for soil embankment and other retaining wall options. This option would require approximately 324,000 CY of lightweight fill. The design of the LCCF could be stepped with a bottom outset, or with other architectural features to make it appear less imposing to pedestrians. Issues associated with this option include the potential for graffiti and vandalism.

Viaduct bridge structure. Using spaced bridge columns, the viaduct bridge structure would create an open aesthetic compared to the two other design options. The total estimated fill would be approximately 73,000 CY, less than both the LCCF and soil embankment options. However, high short-term environmental impacts during construction (drilling holes for shafts, carrying away debris, delivering and placing concrete and reinforcement) would be anticipated. The space under the bridge is open and bridges would potentially be vulnerable to fires or other acts of vandalism. The viaduct bridge structure would require a complex seismic analysis and increased risk to the railroad under seismic loads.

The three potential structure types are evaluated in this EIR, in conjunction with railroad and stakeholder input. A preferred structure type would be selected at the conclusion of these efforts.

2.1.4 CONSTRUCTION OF THE PROPOSED PROJECT

Table 2.1-4 through Table 2.1-6 show the construction crew size and construction equipment needed for each phase of construction under the three design options (soil embankment, LCCF, and viaduct bridge structure, respectively). Construction of the proposed Project would take approximately 36 months, regardless of the flyover structure type selected. For all design options, pile driving is assumed only for the bridge foundations.

Construction Staging Areas and Access Points

Equipment and Materials Staging

As shown in Figure 2.1-4, Figure 2.1-5, Figure 2.1-9, and Figure 2.1-11, staging areas for equipment and materials would be provided throughout the Project Study Area to maximize access to work areas and to store material. Potential staging areas are shown in the figures above for each of the three footprint sections; however, equipment and materials staging may not require the full extent of the areas shown and the actual siting within these proposed locations may change during further design.

Generally speaking, it is anticipated that the open areas in each of the four quadrants of the Diamond would be used for staging and may be used to store materials needed for construction of the bridges over the BNSF connector and main line, and East Hazelton Avenue. Additionally, the area south and east of the existing UP main line tracks, within the UP right-of-way, would be used for staging. Additional space along East Lafayette Street between South Aurora and South Union Streets may also be used for roadway construction staging. All staging would occur within the public and/or railroad right-of-way and would not require permanent construction of additional unpaved areas to impervious hardscaping. Any unpaved areas temporarily used for construction staging would be returned to their original condition or better.

Project Access

Access to the Project would be anticipated to occur at the following points (Figure 2.1-13):

- From East Scotts Avenue, north of the BNSF Stockton Subdivision main line;
- From East Taylor Street from South Pilgrim Street, east of the UP Fresno Subdivision main line and south of the BNSF Stockton Subdivision;
- From South Aurora Street, west of the UP Fresno Subdivision;
- From East Lafayette Street between South Aurora Street and South Union Street; and
- From East First Street, south of Charter Way.

Table 2.1-4: Soil Embankment Option Construction Crew and Equipment

Task	No. of Crews	Crew Size	Equipment per Crew
Hazelton Avenue Bridge Construction			
Construct bridge foundations	1	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	1	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	1	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Flyover Bridge Construction			
Construct bridge foundations	2	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	2	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	2	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Mormon Slough Bridge Construction			
Construct bridge foundations	1	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	1	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	1	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Charter Way Main Track Bridge			
Construct bridge foundations	1	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	1	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	1	13	180-ton service crane, 300-ton crane, welder, 2 manlifts

Task	No. of Crews	Crew Size	Equipment per Crew
Charter Way Yard Connection Track			
Construct bridge foundations	1	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	1	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	1	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Earthwork	1	30	9 dump trucks, 3 front-end loaders, 3 bulldozers, 3 motor scrapers, 2 excavators, 3 water trucks, vibratory soil compactor, sheep foot roller, motor grader
Track work	1	12	Track laying machine, speed wing, skid steer, excavator, front-end loader, railroad tamper, 100-ton crane, fork truck, lowboy truck, grapple truck
Signal work	1	7	180-ton crane, excavator, small backhoe, 2 gang trucks
Roadway work	1	10	4 dump trucks, wheel loader, asphalt paver, roller compactor

Table 2.1-5: LCCF Option Construction Crew and Equipment

Task	No. of Crews	Crew Size	Equipment per Crew
Hazelton Avenue Bridge Construction			
Construct bridge foundations	1	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	1	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	1	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Flyover Bridge Construction			
Construct bridge foundations	2	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	2	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	2	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Mormon Slough Bridge Construction			
Construct bridge foundations	1	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	1	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	1	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Charter Way Main Track Bridge			
Construct bridge foundations	1	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	1	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	1	13	180-ton service crane, 300-ton crane, welder, 2 manlifts

Task	No. of Crews	Crew Size	Equipment per Crew
Charter Way Yard Connection Track			
Construct bridge foundations	1	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	1	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	1	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Earthwork	1	30	9 dump trucks, 3 front-end loaders, 3 bulldozers, 3 motor scrapers, 2 excavators, 3 water trucks, vibratory soil compactor, sheep foot roller, motor grader
Retaining wall construction	1	6	Concrete pump truck, 2 concrete trucks, vibration equipment, excavator, 3 delivery trucks, lightweight fill plant, front-end loader, 2 water trucks
Track work	1	12	Track laying machine, speed wing, skid steer, excavator, front-end loader, railroad tamper, 100-ton crane, fork truck, lowboy truck, grapple truck
Signal work	1	7	180-ton crane, excavator, small backhoe, 2 gang trucks
Roadway work	1	10	4 dump trucks, wheel loader, asphalt paver, roller compactor

Table 2.1-6: Long Viaduct Bridge Option Structure Construction Crews and Equipment

Task	No. of Crews	Crew Size	Equipment per Crew
Long Viaduct Bridge			
Construct bridge foundations	3	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	3	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	3	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Charter Way Main Track Bridge			
Construct bridge foundations	1	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	1	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	1	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Charter Way Yard Connection Track			
Construct bridge foundations	1	12	180-ton service crane, 300-ton crane, pile driving hammer, welder, concrete pump truck, 3 concrete trucks
Construct bridge piers/caps	1	12	180-ton service crane, welder, plasma cutter, 2 manlifts, concrete pump truck, 2 concrete trucks, vibration equipment
Erect superstructure	1	13	180-ton service crane, 300-ton crane, welder, 2 manlifts
Earthwork	1	30	9 dump trucks, 3 front-end loaders, 3 bulldozers, 3 motor scrapers, 2 excavators, 3 water trucks, vibratory soil compactor, sheep foot roller, motor grader
Retaining wall construction	1	6	Concrete pump truck, 2 concrete trucks, vibration equipment, excavator, 3 delivery trucks, lightweight fill plant, front-end loader, 2 water trucks
Track work	1	12	Track laying machine, speed wing, skid steer, excavator, front-end loader, railroad tamper, 100-ton crane, fork truck, lowboy truck, grapple truck

Task	No. of Crews	Crew Size	Equipment per Crew
Signal work	1	7	180-ton crane, excavator, small backhoe, 2 gang trucks
Roadway work	1	10	4 dump trucks, wheel loader, asphalt paver, roller compactor

For construction vehicles, primary western access to the construction area would be provided from Aurora Street and primary eastern access would be provided by East Taylor Street, South Pilgrim Street, East First Street, and East Scotts Avenue. Secondary access points would be provided from East Jackson Street and off East Lafayette Street for the roadway construction. East Charter Way, Wilson Way, and Stanislaus Street are the logical construction access routes that provide local road connections from the state highway system. Local road connections to the access points are designated truck routes (Figure 2.1-14).

In addition, the access routes would use existing at-grade crossings of UP tracks off South Pilgrim Street to East Taylor Street crossing the Diamond. During construction, this and the other temporary crossings would be supervised by a UP flag person, who would control the crossing. Rail traffic would have priority.

Construction Schedule

Construction of the flyover structures and railroad track would be accomplished through staged construction to maintain railroad operations during construction. The estimated time to complete all construction activities, including site preparation and utility relocations, is a maximum of 3 years. Construction is anticipated to occur from 2023 to 2026 (Table 2.1-7). Given the limited resources within the construction limits (for example, biological resources), it is not expected that construction would be limited to specific work windows.

Railroad bridges associated with this proposed Project would generally take about 3 months to construct, for a 2- to 5-span bridge with a length of 100 to 200 feet when unconstrained by ongoing railroad or roadway traffic. However, this would vary with length/height/width and would be highly dependent on the contractor's approach, construction material type, and crew availability. Multiple independent railroad bridges would be built as part of the proposed Project (that is, East Hazelton Avenue, East Scotts Avenue, BNSF crossing, and East Charter Way). These bridges could be constructed at the same time with multiple pieces of equipment and crews, or in an overlapping fashion by using linear progression of construction activities with specialized crew and equipment moving from one bridge to the next until completion of the entire Project.

Depending on the type of structure (embankment, walls, or approach bridges), used for the flyover, each may have a slightly different timeframe for construction. The bulk of track construction could likely be completed in 3 weeks using a track laying machine, or it could take several months if using skeletonized track construction methods. Many turnouts (also called switches) would be required, and those can be staged and assembled off to the side, each taking approximately 2 weeks to complete. Then, turnouts are ready to install ahead of work windows (also called track curfews) to move and connect them in the final position in active track.

Figure 2.1-13: Construction Access

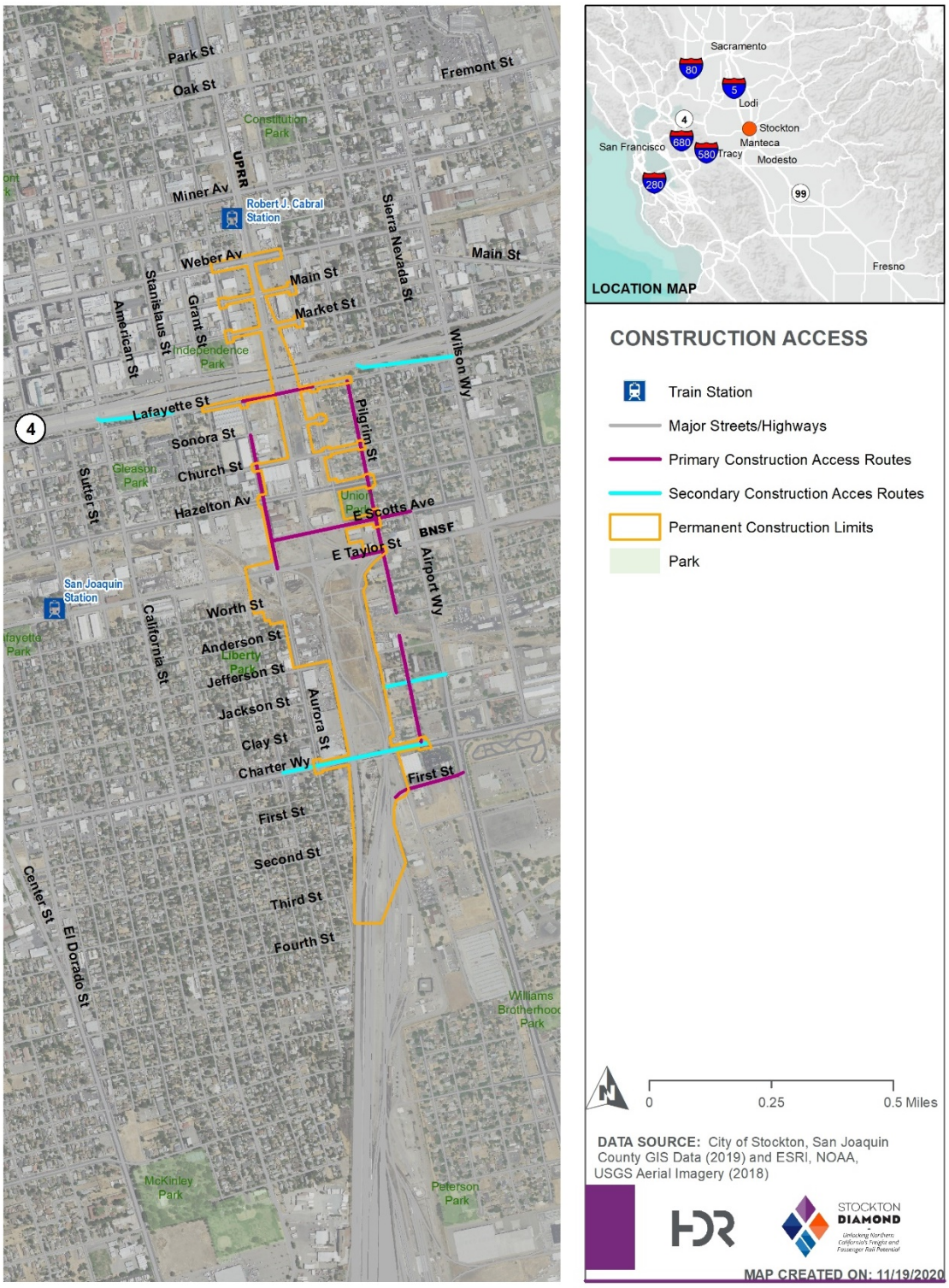
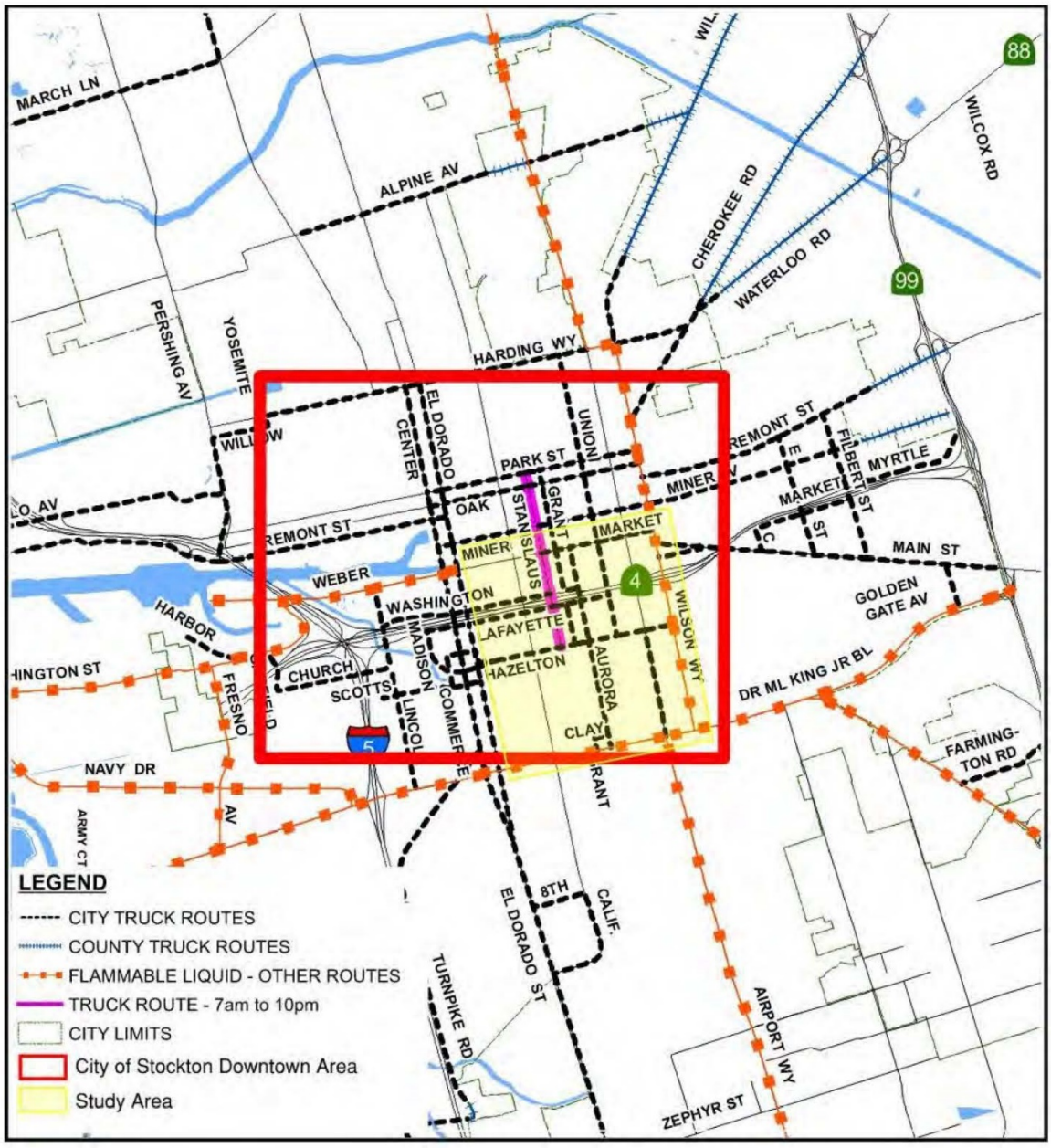


Figure 2.1-14: Truck Routes



Source: *City Of Stockton. Truck Routes Map dated October 2009.*

Table 2.1-7: Preliminary Construction Schedule

Activities	2023							2024												2025												2026					
	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
Construction contract award																																				
Mobilize																																				
Clear/grub																																				
Excavation of surface soils (as needed)																																				
Install soil mitigation features (if necessary)																																				
Construct bridge foundations																																				
Construct flyover support structure (includes walls and fill)																																				
Erect/place bridge superstructure (prefabricated girders)																																				
Construct flyover track																																				
Construct/modify wye connection tracks																																				
Modify at-grade crossings – new alignment																																				
Shift traffic to new flyover																																				
Modify at-grade crossings – existing alignment																																				
Local roadway improvements																																				
Demobilization																																				

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Depending on results of further geotechnical investigations, soil mitigation may be required to minimize or avoid anticipated soil settlement and potential liquefaction (soils becoming unstable during an earthquake) at the proposed flyover structure. Soil treatment and mitigation options may include replacement of poor soils, treatment with lime, deep soil mixing, stone columns or rammed aggregate piers, or use of lightweight engineered/concrete fill. Soil treatment and/or mitigation options must occur prior to, or in conjunction with, the proposed flyover construction, and are estimated to take approximately 3 to 4 months.

2.1.5 MAINTENANCE OF THE PROPOSED PROJECT

Future track maintenance activities in the Project area would be very similar to current maintenance activities. The amount and type of railroad track would be about the same, and regular inspections and maintenance of the tracks would occur in the future just as they do today. Track inspection occurs at least as often as required for this class of track in accordance with FRA regulations. In general, maintenance of newly installed track would require less intensive work than maintenance on older track. Maintenance of the track consists of minor track fastener adjustments or replacements, wood tie spot replacements, rail grinding or weld repairs, and rail-laying temperature adjustments on an irregular basis depending on condition and defects found during routine inspections. Track lining and surfacing for main tracks may occur anywhere from a few times per year to every 3 to 5 years, depending on local conditions. Ballast cleaning or undercutting may also be needed infrequently, depending on local conditions.

The two primary differences between existing maintenance and future maintenance would be the at-grade diamond crossing itself and the structures associated with the new flyover. Current maintenance of the diamond crossings consists of routine repairs and likely complete replacement every 10 years or so given the high wear associated with this special track work. In the future, with the diamonds removed, these maintenance activities would no longer be required. Future maintenance with the proposed bridges and structures associated with the flyover alignment would involve routine inspections. However, similar to new track, newly built structures are not expected to require maintenance activities for many years after they are open to railroad traffic. Therefore, less maintenance activity would be anticipated for newly built track and structures than with older track and structures.

Railroads use low-maintenance materials, such as weathering steel and reinforced concrete, to prevent deterioration. They also use design details proven to hold up to heavy railroad traffic over time. Design service life expectations for railroad structures are 75 to 100 years, or longer. Maintenance activities, however, may be required at any time if damage from a vehicle collision or vandalism occurs. This typically involves fence and handrail repairs, concrete patching, graffiti removal, or painting over graffiti. Other potential maintenance activities, typically after 20 to 25 years, may include jetting storm drains, replacing bridge bearings, replacing fence and handrails, tightening or replacing bolts, and patching or spot replacing concrete.

2.2 Permits, Certifications and Agency Concurrence

The proposed Project is anticipated to require the following approvals:

- USACE – Section 404 of the Clean Water Act (CWA) compliance and Section 14 of the Rivers and Harbors Act compliance – Nationwide Permit
- Section 7 Compliance with the National Marine Fisheries Service
- Caltrans – Encroachment Permit
- CDFW – California Fish and Game Code Section 1602 Streambed Alteration Agreement
- California SWRCB – CWA Section 401 Water Quality Certification or Porter-Cologne Water Quality Control Act Water Discharge Requirement (WDR) and CWA Section 402 National Pollutant Discharge Elimination System (NPDES) General Construction Stormwater Permit Waste Discharge Requirements (MS4 permit Order No. R5-2007-0173 compliance)
- Central Valley Regional Water Quality Control Board (RWQCB) – CWA Section 401 Water Quality Certification
- Central Valley Flood Protection Board (CVFPB) Encroachment Permit
- San Joaquin Multispecies Habitat and Conservation Plan (SJMSCP) participation approval
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – grading or building permits
- San Joaquin County local permits
- City of Stockton Encroachment Permit
- UP and BNSF Construction and Maintenance Agreements
- Utility company approvals

3 Environmental Impact Analysis

3.0 Introduction

All discretionary projects in the state of California are required to undergo environmental review in accordance with CEQA if implementation of the project has the potential to result in either a direct physical change to the environment or a reasonably foreseeable indirect physical change to the environment. More specifically, a project requires environmental review if it incorporates a discretionary action undertaken by a public agency; is an activity that is supported in whole or in part through public agency contracts, grants, subsidies, etc.; or is an activity requiring a public agency to issue a lease, permit, license, certificate, or other entitlement. If the project may have a "significant" impact on any environmental resource, then an EIR must be prepared. In accordance with Section 15121(a) of the CEQA Guidelines (California Administrative Code, Title 14, Division 6, Chapter 3), the purpose of an EIR is as follows:

> An EIR is an informational document which will inform public agency decision makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.

California PRC Section 21000 et seq. and the CEQA Guidelines require state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, when feasible. California PRC Section 21100(b)(3) provides that an EIR will include a statement setting forth the mitigation measures (MM) proposed to minimize the significant impacts on the environment.

The Stockton Diamond constitutes a "project" within the meaning of PRC Section 21065 and, therefore, consistent with Section 15161 of the CEQA Guidelines, SJRRC is preparing this EIR as a "project" EIR to consider the environmental effects for the construction and operation of the proposed Project. The analysis contained in this EIR reflects the level of detail necessary for SJRRC, as lead agency in conformance with CEQA, to evaluate the potential environmental effects of the alternatives considered for the proposed Project, including a No Project Alternative. This EIR focuses on the direct, indirect, and cumulative effects that may be expected with the approval and subsequent implementation of the Project.

This chapter includes a discussion of the regulatory setting, affected environment, impact analyses, and the identification of recommended mitigation measures for potentially significant direct and indirect impacts. The impact analyses evaluated effects as a result of the proposed Project related to the construction and operation of the proposed Project.

3.0.1 ORGANIZATION OF ENVIRONMENTAL ISSUE AREAS

Chapter 3 provides an environmental analysis of the environmental issues that SJRRC determined could result in significant impacts with approval and implementation of the Stockton Diamond project. Chapter 6, *Cumulative Impacts*, provides the analysis of cumulative effects based on the project-level findings and determinations in this chapter.

The following environmental issue areas are included in Chapter 3:

- Section 3.1, *Aesthetics*
- Section 3.2, *Air Quality*
- Section 3.3, *Biological Resources*
- Section 3.4, *Cultural Resources*
- Section 3.5, *Energy*
- Section 3.6, *Geology, Soils, and Paleontological Resources*
- Section 3.7, *Greenhouse Gas Emissions*
- Section 3.8, *Hazards and Hazardous Materials*
- Section 3.9, *Hydrology and Water Quality*
- Section 3.10, *Land Use and Planning*
- Section 3.11, *Noise and Vibration*
- Section 3.12, *Population and Housing*
- Section 3.13, *Public Services*
- Section 3.14, *Recreation*
- Section 3.15, *Transportation*
- Section 3.16, *Tribal Cultural Resources*
- Section 3.17, *Utilities and Service Systems*

3.0.2 FORMAT AND CONTENT OF THE ENVIRONMENTAL ANALYSIS

For each environmental issue area considered in Chapter 3, the basic format for the environmental analysis is as follows:

- **Introduction**—Presents an overview of the environmental resource and cross-references related issues addressed elsewhere in the EIR.
- **Regulatory Setting**—Identifies the federal, state, regional, and local laws, regulations, ordinances, and policies that are relevant to each environmental resource area and applicable to construction, operation, and maintenance of the proposed Project.

- **Affected Environment**—Provides an overview of the existing physical conditions of an environmental resource in the Project Resource Study Area (RSA) at the time of, or prior to, publication of the Notice of Preparation that could be affected by implementation of the proposed Project. As applicable, a specific resource study area is identified for each environmental resource because the extent of the study area may vary by resource. The affected environment provides the basis of analysis of potential impacts related to each environmental resource.
- **Impact Analysis**—Describes the methodology used for the analysis, identifies the criteria used to determine the significance of potential impacts, and provides a corresponding discussion of impacts associated with implementation of proposed improvements. For each potential impact, a significance determination is made (that is, no impact, less than significant, less than significant with mitigation, or significant and unavoidable). If required, feasible mitigation measures are identified to reduce significant impacts.

3.0.3 METHODOLOGY

Methods for Evaluating Impacts

This discussion describes the methods, process, procedures, and/or assumptions used to characterize existing environmental conditions and evaluate the potential for adverse effects on the human and natural environment. This includes the methods used in identifying and considering the range of direct and indirect effects for each environmental issue area. Project effects fall into the following three categories:

- **Direct Effects**: These effects would be caused as a direct result of implementing the proposed Project and would occur at the same time and place as the proposed Project. The environmental analysis addressed potential direct effects of temporary construction activities within the construction limits of the proposed Project. Direct effects would result from demolition of existing structures, buildings, and infrastructure; construction of on- and off-site rail infrastructure and roadway improvements; and long-term operation of the proposed Project.
- **Indirect Effects**: These effects are anticipated to occur later in time or are farther removed in distance from the construction limits of the proposed Project but are reasonably foreseeable as a result of Project implementation. Examples of indirect effects include growth-inducing effects and other effects related to changes in land use patterns, population density, or growth rate, and related effects on the physical environment caused by the proposed Project. Effects associated with potential mitigation measures not specifically proposed as part of the proposed Project are considered indirect.
- **Cumulative Effects**: A cumulative effect is an impact that would result from the incremental impact of the proposed Project when compounded with other past, present, and reasonably foreseeable future actions (even if those actions are undertaken by others). Cumulative effects associated with the proposed Project are discussed and analyzed in Chapter 6, *Cumulative Impacts*.

Geographic Areas Defined for the Analysis

As presented in Table 3.0-1, this EIR uses specific terminology in defining the geographic areas involved in the assessment of impacts for the proposed Project and No Project Alternative. In distinguishing between the geographic areas considered in the environmental analysis, it is important to note that the Affected Environment for the majority of the environmental issue areas within Chapter 3 of this EIR is characterized in terms of the Project Study Area. However, for some environmental issue areas, a larger study area is considered for the resource analyzed based on direct or indirect effects that may extend beyond the primary Project Study Area, such as for air quality and GHGs.

Table 3.0-1: Terminology Used for the Geographic Study Areas of the Proposed Project

Area Title	Area Description
Project Construction Limits	Area within the Project Study Area where physical disturbance would occur as a result of the Project. The construction limits would be the subject of the Project-related direct effects and includes temporary construction easements (TCE) where necessary.
Resource Study Area	The Resource Study Area (RSA) is identified for the analysis of direct and indirect effects beyond the Project construction limits, defined separately for each resource area, where applicable.
Cumulative Study Area	Referred to throughout Chapter 6, *Cumulative Impacts*, as part of the evaluation of cumulative effects. This area is defined and varies by the RSA.
Cultural Resources Study Area	Area delineated by complete parcel boundaries of properties potentially affected by the Project. The cultural RSA is only relevant in terms of historic and cultural resource evaluation, and includes areas potentially having long-term and short-term effects. Cultural resources in this EIR includes both archaeological and architectural resources.

Definition of Resource Study Areas

RSAs are the geographic boundaries in which the environmental investigations specific to each resource topic are conducted to determine the resource characteristics and Project impacts. A resource topic may have more than one RSA depending on the types of resources present and the types of impacts being analyzed. The RSAs pertinent to each resource topic are described in each resource section (Sections 3.2 through 3.17) and for cumulative impacts (Chapter 6).

Each RSA covers a geography that includes:

- The area necessary to define characteristics and context of the resource;
- The facilities or features within the Project footprint of each alternative and associated activities that could affect the resource; and
- The area necessary to determine the direct and indirect impacts (both beneficial and adverse) of the Project alternatives.

Methods for Data Collection and Analysis

Each resource section describes the methods and data sources analysts used to identify impacts on that resource. The methods for analysis vary by resource and rely on both quantitative and qualitative techniques. For many resource topics, fieldwork was conducted to collect data to support the impacts analysis.

Methods for Determining Significance under CEQA

Thresholds of significance for each resource were developed consistent with CEQA Guidelines Appendix G to determine the significance of potential impacts. According to the Council on Environmental Quality (CEQ), CEQA requires the identification of each "significant effect on the environment" resulting from the whole of the action and ways to mitigate each significant effect (CEQ 2014). The "whole of an action" considers off-site as well as on-site activities, cumulative as well as project level, direct as well as indirect, and construction as well as operational impacts. If the action may have a significant effect on any environmental resource, an EIR must be prepared. In addition, the CEQA Guidelines list several circumstances requiring a mandatory finding of significance, and therefore requiring preparation of an EIR (CEQ 2014).

A significant impact is defined by CEQA Section 21068 as one that would cause "a substantial, or potentially substantial adverse change in any of the physical conditions within the area affected by the project." Levels of significance can vary by project, based on the change in the existing physical condition. CEQA significance conclusions are described in further detail below.

Approach to Impact Analysis

Significance Criteria

The significance criteria used in this EIR to define the level at which an impact would be considered significant—in accordance with CEQA— are presented under the subheading *Thresholds of Significance* in each environmental resource section. In accordance with Section 15022(a) of the CEQA Guidelines, SJRRC uses significance criteria that are based on CEQA Guidelines Appendix G; factual and scientific information and data; and the regulatory standards of the federal, state, regional, and local jurisdictions (as applicable) where the proposed Project improvements are proposed.

Impact Identification and Levels of Significance

For the purposes of CEQA, this analysis uses the following terminology to denote the significance of environmental impacts identified for the proposed Project:

- **No Impact**: No impact indicates that the construction, operation, and maintenance of the proposed Project would not have any direct or indirect effects on the environment. It means no change from existing conditions. This impact level does not require mitigation.

- **Less than Significant Impact**: A less than significant impact is one that would not result in a substantial or potentially substantial adverse change in the physical environment. This impact level does not require mitigation, even if feasible, under CEQA.
- **Significant Impact**: A significant impact is defined by CEQA Section 21068 as one that would cause "a substantial, or potentially substantial adverse change in any of the physical conditions within the area affected by the project." Levels of significance can vary by project, based on the change in the existing physical condition. Under CEQA, mitigation measures or alternatives to the project must be provided, where feasible, to reduce the magnitude of significant impacts.
- **Significant and Unavoidable Impacts**: A significant, unavoidable impact is one that would result in a substantial or potentially substantial adverse effect on the environment, and that could not be reduced to a less than significant level even with any feasible mitigation. Under CEQA, a project with significant and unavoidable impacts could proceed, but the lead agency would be required to prepare a "statement of overriding considerations" in accordance with State CEQA Guidelines CCR Section 15093, explaining why the lead agency would proceed with the project in spite of the potential for significant impacts.

Mitigation Measures

CEQA Guidelines Section 15126.4(a)(1) states that an EIR "shall describe feasible measures which could minimize significant adverse impacts." Mitigation measures identified in this EIR were developed during the analysis and designed to reduce, minimize, or avoid potential environmental impacts associated with construction, operations, and maintenance of the proposed Project. The mitigation measures are numbered to correspond to the impacts they address. As applicable, the description of the mitigation measure identifies which specific proposed Project improvement or activities the mitigation measure applies to.

3.0.4 TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS

Resources eliminated from further analysis under CEQA include agriculture and forestry resources, mineral resources, and wildfire, for the reasons described below.

Agriculture and Forestry Resources

The proposed Project is located in an area with predominantly industrial zoned land. Other zoning designations in the Project Study Area include commercial and residential. According to the Department of Conservation Important Farmland Finder, the Project Study Area is designated as Urban and Built-Up Land (California Department of Conservation 2016).[1] No agriculture or forestry resources, important farmland, or Williamson Act properties exist in the Project Study Area and none would be affected as a result of proposed Project activities. As a result, agriculture and forestry resources were eliminated from further analysis.

[1] California Department of Conservation, 2016, *California Important Farmland Finder*, DLRP Important Farmland Finder (ca.gov)

Mineral Resources

According to USGS Mineral Resources Online Spatial Data, there are no known or locally important mineral resources or mineral resource recovery sites in the Project Study Area and none would be affected by the proposed Project. Therefore, mineral resources were eliminated from further analysis.

Wildfire

The proposed Project is located in an Urban Unzoned Fire Hazard Zone, outside of High or Very High Fire Hazard Severity Zones (CALFIRE 2020).[2] The Project Study Area is also located in a predominantly industrial area and is not within the vicinity of wildlands. Therefore, there would be no impact associated with wildfires as a result of implementation of the proposed Project. As such, wildfire has been eliminated from further analysis.

[2] CALFIRE, 2020, *San Joaquin County Fire Hazard Severity Zones Map*, https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/

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3.1 Aesthetics

3.1.1 INTRODUCTION

This section describes the regulatory setting for aesthetic resources in the aesthetic RSA for the proposed Project. It also describes the impacts on aesthetic resources that would result from the implementation of the proposed Project and the appropriate avoidance, minimization, and/or mitigation measures that would reduce significant impacts, where feasible.

3.1.2 REGULATORY SETTING

This section summarizes federal, state, regional, and local plans, policies, and regulations related to aesthetic resources and applicable to the proposed Project.

Federal Plans, Policies and Regulations

There are no applicable federal plans, policies, and regulations related to aesthetics for this Project.

State Plans, Policies, and Regulations

State Scenic Highways

There are no state-designated scenic highways in the proposed Project's vicinity (Caltrans2019).

Regional and Local Plans, Policies, and Regulations

San Joaquin County General Plan (2016)

The San Joaquin County General Plan (adopted in December 2016) identifies I-5, north of SR 4, as a scenic county route. The portion of I-5 identified as a scenic county route is located within the City limits; however, it is not located within the Project limits.

Envision Stockton 2040 General Plan

The Envision Stockton 2040 General Plan (adopted December 4, 2018), does not identify any scenic highways or routes within the City of Stockton. No applicable goals or policies related to aesthetics are identified within the City's General Plan in relation to the proposed Project.

Stockton Municipal Code

Ordinance 15.08.090 of the Stockton Municipal Code Building Code Chapter 15.08 states that "plain concrete construction shall not be utilized as a structural building component within the City." Chapter 15.32, Maintenance, Security and Rehabilitation of Abandoned and Vacant Property, contains ordinances that require attention to aesthetics so that "neglected, vacant, and abandoned properties" that could create "nuisance conditions" must be remedied by the owners of the property. Light and glare requirements are addressed in Stockton Municipal Code Chapter 16.32.

3.1.3 METHODS FOR EVALUATING IMPACTS

This section defines the aesthetics RSA and describes the methods used to analyze the effects of the proposed Project on aesthetics resources.

Definition of Resource Study Area

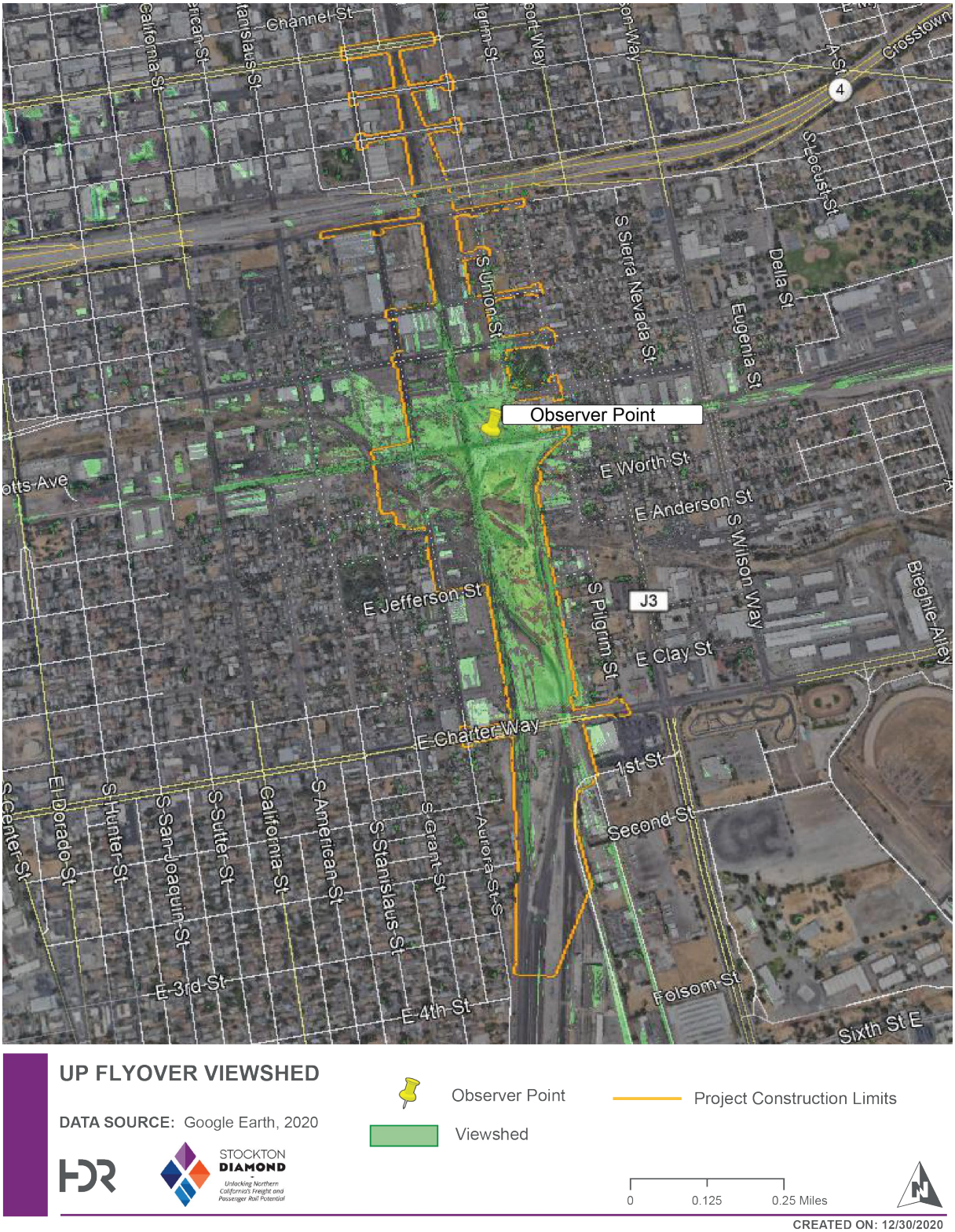
The aesthetics RSA for the evaluation of impacts on aesthetics encompasses the areas directly or indirectly affected by construction and operation of the proposed Project. The aesthetic RSA includes the Project construction limits plus a buffer that reflects the area that can be viewed from the proposed Project flyover and the surrounding area from within which the proposed Project flyover can be viewed. This area is referred to as the viewshed to and from the proposed Project. The aesthetics RSA is depicted on Figure 3.1-1.

Within the aesthetics RSA, the viewshed is the area that could be visually affected by the proposed Project, as shown on Figure 3.1-1. North to south, the viewshed would be adjacent and parallel to the UP Fresno Subdivision tracks extending from East Weber Avenue in the north to the UP Stockton Yard in the south. West to east, the affected viewshed was determined by the view from the height of the proposed flyover; which would be approximately 32 to 40 feet, where the north-to-south UP flyover would cross the east-to-west BNSF at-grade tracks (see Figure 3.1-1).

Methods for Data Collection and Analysis

The visual impact assessment process includes four phases: establishment, inventory, analysis, and design. Each phase is defined by the interaction between the environment and people. In the establishment phase, the physical constraints of the landscape and the physiological limitations of the human visual system are defined, which leads to the inventory of visual quality. The value of the impact—whether it is beneficial or adverse—and the degree to which it alters existing visual quality is determined in the third phase, analysis. Finally, the fourth phase, design, defines measures that would avoid, minimize, and/or mitigate potentially significant impacts, or advance enhancements to existing aesthetic quality.

Figure 3.1-1: Aesthetic Resources Study Area: UP Flyover Viewshed



Data regarding existing visual quality were collected by examining images from Google Earth Pro, augmented by photographic images taken throughout the proposed Project corridor.

Several visual simulations of the proposed Project flyover were developed to inform the impact analysis. Impacts were evaluated by comparing the relative values of existing aesthetic quality with the aesthetic quality of the proposed Project.

Method for Determining Significance under CEQA

The thresholds of significance for aesthetic impacts were developed consistent with the CEQA guidelines (Appendix G) to determine the significance of potential aesthetic impacts that could result from implementation of the proposed Project. Accordingly, the following criteria were assessed:

a) Would the project have a substantial adverse effect on a scenic vista?

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

c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

d) Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

3.1.4 AFFECTED ENVIRONMENT

Scenic Resources

According to the State Scenic Highway Program, no eligible or officially designated state scenic highways exist within the aesthetics RSA. The San Joaquin General Plan identifies I-5, north of SR 4, as a scenic county route. Although, the portion of I-5 identified as a scenic county route is located within the City limits, it is not located within the aesthetics RSA. Additionally, based on the review of the City's General Plan, no City designated scenic highways or routes exist within the City limits. Further, the City's General Plan states that scenic vistas or significant scenic resources are primarily located on the outskirts or edges of the City.

Visual Character

As shown in Figure 3.1-1, the area aesthetically affected by the proposed Project would be mostly limited to properties nearby the railroad corridor. Although the aesthetic viewshed expands on streets and railroads that are perpendicular to the UP tracks, most public aesthetic views of the proposed Project, in particular the flyover, are truncated by surrounding buildings, with the notable exception of views from Union Park.

Existing Visual Resources and Visual Character

Landscapes are composed of multiple visual resources that can be divided into two primary categories: *natural visual resources* and *cultural visual resources*. For the proposed Project, these two categories of visual resources are sufficient for analyzing impacts to visual quality outside the

railroad right-of-way. Within the railroad right-of-way, visual elements are labeled as *Project corridor visual elements.*

Cultural visual resources dominate the landscape outside of the railroad right-of-way, although some natural visual resources are also prevalent. Within the proposed Project viewshed, the existing railroad right-of-way is flanked by a grid of local streets lined mostly with single- or two-story industrial buildings, warehouses, and single- or two-story residences. These structures typically are composed of wood, stucco, or brick.

The general level of building maintenance and appearance is varying and inconsistent. Some buildings are well-maintained while some others are derelict or abandoned. A few of the buildings within the aesthetics RSA are considered historic (see Section 3.4, *Cultural Resources*). Many of the buildings on properties where the flyover would be constructed have recently been razed, creating vacant lots with several having with building pads still visible. Similarly, the appearance of streets and sidewalks ranges from being poorly maintained (with some nearly abandoned) to new streetscapes with decorative pavements, ornamental lighting, and median planters.

The Envision Stockton 2040 General Plan identifies open space, agricultural fields, and riparian areas (especially along the San Joaquin River and Calaveras River) as visual resources found within the City. Within the proposed Project Study Area, natural aesthetic resources are limited primarily to topography, vegetation, and daytime views of the sky. The area is flat except for one major drainageway, Mormon Slough, slicing diagonally through the Project construction limits. Most mature trees are located on private property, typically in residential areas. Street trees on the public rights-of-way of local streets are relatively sparse. The largest concentration of mature trees is in publicly owned parks, such as Union Park, located to the east of the proposed flyover structure.

Existing Project corridor aesthetic elements are artifacts associated with the railroad, such as railroad tracks, ties, ballast, signals, maintenance and operational facilities, trackside material storage, piles of scrap, and vacant right-of-way from which tracks have been removed.

EXISTING VISUAL CHARACTER WITHIN THE AESTHETICS RSA

The existing visual character in the northern part of the aesthetics RSA is dominated by urban land uses. The architecture of earlier structures reflects the use of materials and forms associated with railroad-related commerce. North of East Weber Avenue and outside the Project construction limits (but visible from it) is the existing Robert J. Cabral Station. The existing Robert J. Cabral Station (formerly known as the Southern Pacific Station) has been restored and provides Amtrak San Joaquin and ACE passenger service. The station was built using architectural styles from Italy to reinforce the concept (and the draw) that California was the nation's Mediterranean. Other commercial buildings were more utilitarian but were still mostly substantial, constructed of fireproof brick and later steel. Within the construction limits, there are no residential buildings.

The visual character north of the Stockton Diamond is dominated by single-story architecturally ordinary commercial buildings of various ages and condition. Some commercial property adjacent to these buildings is used for storage and is fenced with 6-foot metal sheets. Most parcels, however,

are unfenced and vacant where the flyover would be constructed. Parallel to and opposite the proposed Project corridor, across Union Street to the east of the railroad corridor, are the homes of residential neighbors who would be sensitive to changes to the existing visual character of the aesthetics RSA. Figure 3.1-2 provides an image of the visual character along South Union Street just north of SR 4, looking north.

Farther south along South Union Street, adjacent to Union Park, the general visual character of the railroad corridor is similar to that farther north; however, south of East Hazelton Avenue is Union Park, a green space that offers a sense of natural harmony within the landscape. Figure 3.1-3 shows an image of South Union Street adjacent to Union Park. On the park's south side, the eastern side of East Scotts Avenue has residential properties while the block's western side has older brick and metal commercial structures. On the west side of the Union Park, across South Union Street, are unkempt vacant land and a walled service yard. South Union Street between East Hazelton Avenue and East Scotts Avenue was previously vacated and is currently in disrepair.

At the Stockton Diamond, the BNSF and UP tracks currently cross each other and interconnect at grade. The actual crossing is in the center of the square that would be bounded by East Scotts Avenue, South Aurora Street, East Worth Street, and South Union Street. An image of the crossing as seen looking east from South Aurora Street along the BNSF tracks toward the existing UP main line tracks is shown in Figure 3.1-4.

Figure 3.1-2: Existing Visual Character along South Union Street

Source: Google Maps. 199 S Union Street (looking north). Stockton, California.

Figure 3.1-3: South Union Street near Union Park

Source: Google Maps 699 S Union St. (looking north) Stockton, California.

Figure 3.1-4: View of the Existing At-grade Crossing at the Stockton Diamond

Source: Google Maps

Figure 3.1-5: View of UP Property from the Bridge Over East Charter Way

Source: Google Maps

In the southern part of the aesthetics RSA, south of the Stockton Diamond, the existing visual character is dominated by industrial properties within and abutting the railroad right-of-way, many of which are vacant. Figure 3.1-5 provides an image of the UP property over East Charter Way. Mormon Slough, which is home to several transient encampments, runs underneath the railroad south of the Stockton Diamond (Figure 3.1-6).

Figure 3.1-6: Existing Visual Character of Mormon Slough

Source: Google Maps

Preferred Visual Quality

Based on the visual preferences implied in the planning documents and ordinances of the City of Stockton (see Appendix A, *Stockton Background Documents Affecting Visual Quality*), and on public comments made during the public scoping meeting, the community has indicated preferences for clean, orderly, visually interesting visual elements. The community's visual preferences are modest; essentially, they express a desire to live, work, and recreate in a landscape that contributes to the vibrancy of the community with evidence of a healthy natural environment, a clean and cared for cultural environment, and with Project corridor environments that are visually coherent.

Existing Visual Quality

Existing visual quality in the aesthetics RSA is poor. In the center of the aesthetics RSA, within the Project construction limits, the industrial and railroad land uses do not present the aesthetic qualities of cleanliness or order that the community would prefer. There is a preponderance of abandoned and derelict buildings, abandoned or stored cars and trucks, and piles of discarded materials and trash. The absence of natural resources, particularly those associated with water, vegetation, or wildlife, create an impression that existing natural harmony is less than desired.

The visual coherence of the railroad property would be relatively close to the community's visual expectation of industrial land uses. However, underused space formerly occupied by tracks but now mostly raw earth, the lack of good drainage, and the seemingly random depositing of waste and other materials leave the impression to most neighbors and travelers that the Project corridor is less visually coherent than it could be.

The visual quality of the balance of the aesthetics RSA, outside of the railroad right-of-way and industrial land uses, is defined by neatly arranged single- and multifamily houses along residential streets and some well-maintained commercial structures (Figure 3.1-7). Parks within the aesthetics RSA, such as Union Park, Liberty Park, and Independence Park, are characterized by grassy areas, trees, and pathways that present natural harmony within the urbanized community (Figures 3.1-8 and 3.1-9).

Figure 3.1-7: Representative Neighborhood View Outside of Railroad Right-of-Way

Figure 3.1-8: View of Union Park

Figure 3.1-9: View of Liberty Park

3.1.5 ENVIRONMENTAL ANALYSIS

CEQA Significance Findings

An environmental analysis of each threshold identified is provided, below:

a) Would the project have a substantial adverse effect on a scenic vista?

No Impact. The San Joaquin County General Plan identifies I-5, north of SR 4, as a scenic county route. Although this County designated route is located within the City limits, it does not lie within the aesthetics RSA. The City of Stockton General Plan does not identify any scenic vistas located within the aesthetics RSA. Although the Envision Stockton 2040 General Plan identifies significant visual features within the City, none of these visual resources are located within the aesthetics RSA. Therefore, the proposed Project would not have a substantial adverse effect on scenic vista. Thus, no short-term or long-term impacts would occur as a result of the proposed Project.

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 Impact. The proposed Project is not located within an existing state scenic highway. While the San Joaquin County General Plan identifies I-5 north of SR 4 as a County scenic route, I-5 is located over one mile west of the Project Study Area. Therefore, the proposed Project would not substantially degrade scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway and no short-term or long-term impacts would occur as a result of the proposed Project.

c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Less than Significant Impact. Existing visual quality in the aesthetics RSA is poor. Project construction would introduce construction equipment, materials storage and stockpiles, and dust, all of which could affect the sense of cultural order in the proposed Project construction limits. However, these short-term effects related to proposed Project construction-related aesthetics would be understandable and typically acceptable to most viewers as merely a temporary and minor degradation of visual quality.

Road closures and other construction-related visual elements would be temporary, and some visual elements introduced during construction would contribute to slightly lower visual quality from the existing condition. However, these types of impacts are temporary and would cease upon construction completion. Therefore, impacts during would not substantially degrade the existing visual character or quality of the site and surroundings. Thus, short-term impacts considered less than significant, and no mitigation is required.

With the implementation of the proposed Project, the placement of the flyover in the existing essentially flat landscape would visually create a wall of varying height that would alter former vistas. Existing views across the UP main line tracks may be blocked in some locations. These changes would be particularly noticeable along South Union Street and South Aurora Street that run parallel to the UP tracks to the east and west, respectively. Changes would also be noticeable along several other streets that are perpendicular to the railroad, especially East Lafayette and East Church Streets, which currently cross the tracks but would be closed with the proposed Project.

There are three design options for constructing the flyover component of the proposed Project. The primary difference between the design options are how the track would be supported. The three design options are:

- **Embankment Design Option.** The tracks would be supported by an earth embankment with a symmetrical cross-section as defined by the fill's natural angle of repose (Figure 3.1-10).
- **Retaining Wall Design Option.** Earth fill would support the track between two parallel vertical retaining walls on both sides of the track (Figure 3.1-11).
- **Viaduct Design Option.** Tracks would ride on a series of bridges supported by widely spaced piers (Figure 3.1-12).

Of these three design options, the embankment option would form the largest footprint on the existing ground plane with embankment slopes that would typically be in the range of 3:1 to 6:1. With their vertical sides, the footprints of the retaining wall and viaduct design options would be smaller. Their footprints would be only slightly wider than the width of the ballast supporting the ties and rails for two tracks along the flyover. These differences in footprint size, however, would not substantially affect visual quality.

Figure 3.1-10: Example of Typical Embankment

Source: Google Maps. Crosstown Freeway (SR 4) Embankment, 1112 East Lafayette Street. Stockton, California.

Figure 3.1-11: Example of Typical Retaining Wall

Source: Google Maps. Crosstown Freeway (SR 4) Retaining Wall, 1315 East Washington Street. Stockton, California.

Figure 3.1-12: Example of Typical Viaduct

Source: Google Maps. Crosstown Freeway (SR 4) Viaduct, 800 East Lafayette Street. Stockton, California.

A larger source of visual impacts would be the height of the flyover, which would alter the visual experience of neighbors and travelers more than the width of its footprint. Since the height of the three design options would be identical, it is the transparency of the design options that would primarily affect the visual quality of the flyover. The solidity of the embankment and retaining wall design options would be opaquer than the more open and transparent appearance of the viaduct option.

Although the solidity of the visual restriction would be the same for both the embankment and retaining wall design options, the retaining wall's restriction would appear more visually pronounced than that caused by the embankment. The retaining wall would abruptly terminate views with a hard-vertical edge while an embankment would appear to be softly deflecting views skyward. Deep shadowing created by the wall would accentuate these differences during the day and especially in the winter. Even though both design options would restrict views to the same degree, the restriction caused by the embankment would appear less severe. Additionally, embankments may provide opportunities for landscaping, which can minimize potential visual impacts.

The third option, a viaduct, would also restrict the views of neighbors. Its height would be the same as the other two design options, but composed of a series of bridges, it would create a succession of punctuated openings under the tracks. The spacing of the viaduct's piers—and consequently the width of the openings between the piers—would likely be identical for the length of the viaduct. However, the height of the openings would vary, becoming progressively taller toward the crest.

The higher the opening, the more expansive the view. Although constricted by the width and height of the structure framing the openings between piers, views from ground level to the other side of the UP tracks would still be present with the viaduct option. Consequently, the viaduct option would

seem more transparent even though it would rise to the same height as the other two design options.

For rail passengers, the raised section of the flyover would extend views deeper into the adjacent neighborhood, allowing for a more comprehensive understanding of the community and the context of the railroad. These views would be the same with all three flyover design options.

An assessment of potential impacts to aesthetic resources resulting from various components of the proposed Project is as follows.

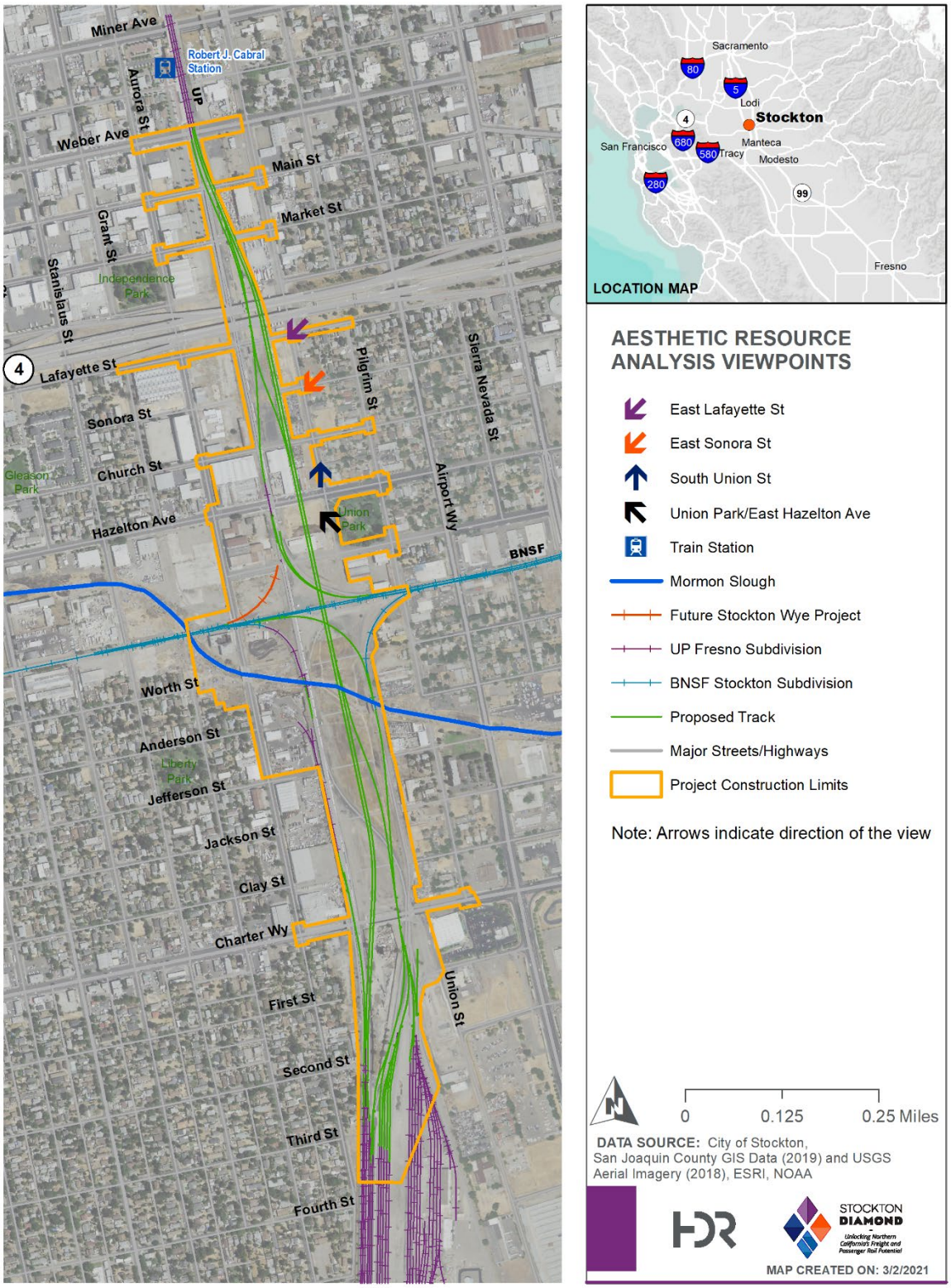
Assessment of Aesthetic Impacts – Flyover Structure

The proposed flyover structure for the grade-separation of the UP Fresno Subdivision over the BNSF Stockton Subdivision would result in the greatest change to the visual character of the aesthetics RSA. The tracks would elevate on a 2 percent grade from south of East Lafayette Street to its maximum elevation of 32 feet (with a 23.5-foot vertical clearance) at the crossover of the BNSF Stockton Subdivision tracks. The increasing elevation of the railroad would progressively decrease the ability of neighbors to see beyond the proposed flyover. South of this crossing, the proposed flyover structure would begin to descend back to grade.

The new UP flyover would be east of the existing crossing and parallel to South Union Street. Visibility of the flyover from the west along South Aurora Street would be minimal; however, the flyover would be quite visible along South Union Street and visual character would be altered. Currently, views to the west from affected residential properties between East Lafayette Street and East Hazelton Avenue are composed of nonresidential land uses such as salvage storage lots and metal-sided commercial structures for auto body repair and paint shops. These industrial uses not only obscure views to the west for residential neighbors, but the visual quality is poor. The construction of the flyover would inhibit views to a similar degree as the existing buildings and opaque fences but would enhance the view with a new and clean structure. Consequently, residential neighbors along South Union Street would likely perceive the flyover as enhancing their perception of cultural order and corridor coherence.

To assist in the assessment of potential visual effects, visual simulations of the proposed flyover structure at four locations east of the railroad corridor were developed, and the anticipated visual quality of the views from specific locations was compared with the existing visual quality from the same viewpoints. The four viewpoint locations are shown in Figure 3.1-13.

Figure 3.1-13: Aesthetic Resource Analysis Viewpoints



EAST LAFAYETTE STREET

The existing view at East Lafayette Street is shown in Figure 3.1-14. Fully closing East Lafayette Street would affect visual quality by decreasing the perception of cultural order of those viewers currently crossing the UP tracks on East Lafayette Street (Figures 3.1-15 and 3.1-16). At East Lafayette Street, with either the embankment or retaining wall option, the railroad tracks and a passing train would be slightly elevated from their existing at-grade height. Given the very low elevation of the tracks at this location, there would be no viaduct option. The embankment and retaining wall design options would have a similar appearance to viewers. The proposed Project would eliminate the typical railroad and industrial corridor visual elements; and thus, viewers may perceive the railroad corridor more favorably.

Figure 3.1-14: Existing View of East Lafayette Street

Figure 3.1-15: Proposed Project View of East Lafayette Street with Embankment Option

Figure 3.1-16: Proposed Project View of East Lafayette Street with Retaining Wall Option

EAST SONORA STREET

The existing view at East Sonora Street is shown in Figure 3.1-17. This view is farther south along South Union Street and the flyover elevation is higher. Both currently and with the proposed Project, East Sonora Street does not continue west across the railroad tracks. The existing views of the railroad and industrial land uses would be replaced with the view of the low (4-foot-high) embankment or retaining wall flyover structure (Figures 3.1-18 and 3.1-19). With the very low elevation of the tracks at this location, there would be no viaduct option. East Sonora Street west of South Union Street—not a through street—would be closed and replaced with guard rails. Similarly, to East Lafayette Street, the proposed Project would eliminate typical railroad and industrial corridor visual elements; and thus, viewers may perceive the railroad corridor more favorably.

Figure 3.1-17: Existing View of East Sonora Street

Figure 3.1-18: Proposed Project View of East Sonora Street with Embankment Option

Figure 3.1-19: Proposed Project View of East Sonora Street with Retaining Wall Option

SOUTH UNION STREET

The existing view at South Union Street is shown in Figure 3.1-20. Between East Church Street (proposed to be closed with the proposed Project) and East Hazelton Avenue (proposed to remain open with an underpass), South Union Street is flanked by a residential area to the east and the railroad and industrial corridor to the west. Looking north along South Union Street, the existing similar visual characteristics of the two sides of the street, even with different land uses, would be replaced with a contrasting view of either an embankment or retaining wall flyover structure on the west side of the street (Figures 3.1-21 and 3.1-22). The elevation of the tracks at this location is too low for safe vehicular passage below, so there would be no viaduct design option. At this location, the flyover structure would be approximately 10 to 12 feet higher than the current at-grade track height. The increasingly higher elevation would begin to obstruct views across the tracks; however, the proposed Project would not significantly alter the existing visual elements. Instead, viewers, especially neighbors near the railroad corridor, may perceive the railroad corridor more favorably with the elimination of industrial views on the west side of South Union Street. There would be generally no difference in potential impacts between the embankment and retaining wall options since the height of the structure is low in this location.

Figure 3.1-20: View of Existing South Union Street

Figure 3.1-21: Proposed Project View of South Union Street with Retaining Wall Option

Figure 3.1-22: Proposed Project View of South Union Street with Embankment Option

UNION PARK AND EAST HAZELTON AVENUE

The existing view at Union Park and East Hazelton Avenue is shown in Figure 3.1-23. As the proposed flyover would continue to rise farther south toward the Stockton Diamond, the changes to visual character would increase. At East Hazelton Avenue, the flyover would be 18 feet high, and would allow for a grade-separated crossing of East Hazelton Avenue via an underpass. East Hazelton Avenue would be depressed to accommodate the required vertical clearance. The views from Union Park would be altered by the proposed flyover and the visual character of the park's context, particularly the views west and northwest toward East Hazelton Avenue, would change (Figures 3.1-24, 3.1-25, and 3.1-26).

The change from open views of vacant land to a structure (either with a viaduct, embankment, or retaining wall structure) would truncate the view west from Union Park; however, it would also define more clearly the use of the land on the other side of South Union Street than is provided with the existing land use. The defining and bounding of the space adjacent the park would provide clarity, enhancing both cultural order and project corridor coherence.

Figure 3.1-23: View of Existing Union Park

Figure 3.1-24: Proposed Project View of South Union Street with Viaduct Option

Figure 3.1-25: Proposed Project View of South Union Street with Embankment Option

Figure 3.1-26: Proposed Project View of South Union Street with Retaining Wall Option

Figures 3.1-24, 3.1-25, and 3.1-26 also illustrate East Hazelton Avenue passing under the flyover, maintaining an intact crosstown connection. With the embankment or retaining wall design options, the East Hazelton Avenue underpass would provide visibility through the flyover that would otherwise be obscured by the structure. Implementation of a viaduct structure south of East Hazelton Avenue would provide more visual exposure across the tracks and flyover than either the embankment or retaining wall design options. However, existing bridges and viaducts within the aesthetics RSA have proven detrimental to the community's preference for cultural order and project corridor coherence. The areas under the viaduct have the potential to be neglected and result in long-term low visual quality. A viaduct design option at this location would also alter the visual character of the area, providing visual access to the railroad corridor west of the flyover while also introducing a new vertical structure.

Although a grassy embankment would terminate views across the flyover, it would be visually more in concert with the natural resources found in the park; moreover, as a rounded landform, it would deflect views skyward. Ongoing maintenance of the slope embankment would be necessary to protect the natural harmony of this area and avoid overgrown vegetation that could impact the visual character of the structure. The visual character of the retaining wall design option would best mimic existing urban forms, but it would not enhance the visual character of the neighborhood as would a well-maintained grassy embankment. With implementation of the retaining wall design option, screening the vertical wall with street trees along the west side of South Union Street would be recommended.

Permanently closing East Lafayette and East Church Streets would alter the views of neighbors that use these streets and would no longer be able to cross the railroad tracks because of the presence of the flyover. The existing visual character in this northern portion of the aesthetics RSA is generally poor closest to the tracks and, with the proposed Project, the visual character at these locations would not worsen; therefore, the impacts as a result of proposed road closures are considered less than significant.

With the proposed Project, tracks in the northern portion of the aesthetics RSA would be realigned farther east in the approach to the flyover structure. There would be no impact on visual resources north of East Lafayette Street, where the tracks remain at grade, because the existing and relocated tracks would remain within industrial land use areas and no substantial vertical elements would be introduced that would change viewers' experiences. With the removal of several less orderly buildings and activities, the experience of visual quality may be enhanced for neighbors or travelers, particularly in terms of cultural order and Project corridor coherence.

Following construction of the flyover at East Hazelton and East Scotts Avenues, the roadways would be reopened as grade-separated underpasses to allow for uninterrupted travel under the flyover. To accommodate the necessary roadway clearance below the flyover, the existing roadway at East Hazelton Avenue would be lowered slightly.

East Hazelton and East Scotts Avenues currently provide views of the main rail line, while other local roadways do not go through to the tracks, so impacts on the visual quality experienced by viewers would be based on impressions of changes to cultural order and Project corridor coherence as seen from those two streets. While the proposed Project and the flyover would affect cultural order and Project corridor coherence, as described above, the visual character of East Hazelton and East Scotts Avenues would not be substantially altered because the views across the railroad corridor along the roadways would still be generally intact.

There are two existing grade separations in the aesthetics RSA that cross the railroad corridor: one at the Crosstown Freeway where the freeway goes over the railroad tracks, and one at East Charter Way where the roadway goes under the railroad tracks.

The Crosstown Freeway crosses over the main line of the UP Fresno Subdivision as an elevated freeway. Constructed as an open viaduct, the space underneath the freeway is currently used for storage, mostly truck trailers, which contributes to the crossing's existing visual character from Union and Aurora Streets. Although the alignment of the UP main line tracks would be shifted east under the Crosstown Freeway, bringing the railroad closer to neighbors and those using South Union Street, the visual character of the landscape would not substantially change, except the disorderly storage of materials and vehicles and other uses not associated with railroad operations would be removed. The only substantial change to the existing grade-separated crossing would be the possible addition of more crash struts between existing bridge piers to protect the structural integrity of the bridge in case of a train derailment. These crash struts may inhibit views; however, these views under the viaduct have low visual quality and any changes to these views would be minor and would not be considered negative.

East Charter Way is an existing grade-separated crossing with the roadway dipping below two separated railroad bridges through an undercrossing. Retaining walls with classically fluted pilasters line the trench through which the road passes. The bridge is supported in its center by arched piers with a single pier cap. The walls and bridges are capped with a concrete railing with large arched openings punctuated by the regularly placed pilasters extending to the top of railing. A rectangular concrete safety barrier separates opposing lanes of traffic. With the proposed Project, there would be no substantial changes to roadway-level views. The western railroad bridge would be slightly modified to accommodate shifts in track alignment south of the flyover; however, these changes to the bridge structure would not result in significant changes to the visual quality of this grade separation.

With the proposed Project, some overhead utility structures would be relocated to avoid conflicts with Project features. It is anticipated that overhead utility lines currently running parallel on the south sides of East Lafayette Street and East Hazelton Avenue would be buried or relocated to avoid conflicting with trains. The removal of the overhead utility lines and their associated wood utility poles would eliminate existing visual clutter, slightly enhancing the experience of visual quality by neighbors and travelers. Therefore, no impacts to visual quality from utility relocations associated with the proposed Project are anticipated.

In summary, the primary potential impact on visual character of the resources that compose the natural, cultural, and Project corridor visual environments are related to moving the main line tracks to the east toward South Union Street and elevating them on a flyover structure. The construction of the proposed UP flyover would affect the visual character of the UP corridor. By its proximity to sensitive neighbors, the proposed flyover would truncate views and diminish the ability to perceive the city's cultural order. For residential neighbors, the flyover structure would enhance the design coherence of the Project corridor by eliminating or screening from view land uses, such as salvage yards, that are usually considered to be undesirable by residential neighbors. Regarding natural harmony, while the proposed Project would not negatively affect natural harmony, there is the opportunity to enhance it with some design options. Further, SJRRC would coordinate with UP on the detail design of the elements in the proposed Project corridor, and the selection of the flyover's specific materials and forms in order to reduce visual impacts and enhance existing visual quality, as discussed in Measure BMP-1.

Of the three design options, the retaining wall option most mimics other dominant urban forms in the aesthetics RSA: buildings, and their rigidly vertical façades. Existing views of the Project corridor from South Union Street are frequently blocked by single-story commercial buildings. Having those same views blocked by a new wall with a different purpose would, visually, be no different than the current situation. However, the new structure would truncate views for some neighbors. The addition of street trees, as discussed in Measure BMP AES-2, along the west side of South Union Street between East Weber Street and East Scotts Avenue, particularly across from Union Park, to screen the flyover and railroad operations would substantially enhance natural harmony in the Project corridor and minimize potential negative effects.

Selecting the embankment design option would potentially improve the current status of natural harmony more than other design options, particularly with a commitment to maintain the side slopes. Without maintenance, the vegetated slopes, even if only covered with grasses, could become patchy and weedy. However, since the existing visual quality is poor, the embankment design would not alter the current level of visual quality with the addition of a vegetated embankment. As specified in Measure BMP-1, for the embankment option, seed mixes would be selected to provide vigorous growth and seasonal variety and potential sculpting of the embankments would be responsive to the public's interest in visual quality.

In the RSA, bridges and viaducts disrupt the cultural order and Project corridor coherence. A viaduct design option at this location would alter the visual character of the area. However, the addition of street trees along the west side of South Union Street, as identified in Measure BMP AES-2, to screen the flyover and railroad operations would substantially enhance natural harmony with the viaduct option.

The proposed Project would not alter the current level of visual quality and would be consistent with the visual quality of the aesthetics RSA. In general, impacts to the visual quality of the area as a result of the proposed Project would be beneficial with the removal of railroad and industrial artifacts along the railroad corridor that currently degrade the visual quality of the area. With the implementation of Measures BMP-1 and BMP-2, long-term impacts would not substantially degrade the existing visual character or quality of the site and its surroundings; thus, aesthetic impacts are considered less than significant, and no mitigation is required.

d) Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Less than Significant Impact. The Project limits currently receive light and glare from traffic, street lighting, traffic signals, and surrounding businesses. During construction, additional lighting may be required, such as lights required for nighttime construction activities. With the implementation of Measure BMP AES-3, short-term impacts during construction would be minimized through the selection and use of lighting fixtures that would minimize additional light and glare within the construction limits for traveling motorists, bicyclists, and pedestrians. Therefore, with the implementation of Measure BMP AES-3, the proposed Project would not create a new source of substantial light or glare that could temporarily impact daytime or nighttime views within the aesthetics RSA. Thus, short-term impacts would be considered less than significant, and no mitigation is required.

During operation, additional lighting may be required throughout the Project limits, including but not limited to new permanent lighting above the sidewalks located along the undercrossing beneath the grade separation flyover. The Stockton Municipal Code, Title 16, Section 16.32.070 development code standard for light and glare is to prevent spillover illumination or glare onto adjoining properties and prohibit interference with the normal operation or enjoyment of adjacent property. With the implementation of Measure BMP AES-3, which requires a lighting plan for operation consistent with the City of Stockton Municipal Code and General Plan goals and policies, operation of the proposed

Project would not create a new source of substantial light or glare. With the implementation of Measure BMP AES-3, long-term impacts would be less than significant, and no mitigation is required.

3.1.6 BEST MANANAGEMENT PRACTICES AND/OR MITIGATION MEASURES

The following BMP measures associated with aesthetic resources would be applied to the proposed Project.

BMP AES-1: **Coordinate Design Elements to Reduce Visual Impacts.** During final design, SJRRC will ensure that all infrastructure within the corridor owned by UP and all materials and aesthetic features will be reviewed and approved by UP. The detail design of the elements in the Project corridor and the selection of the flyover's specific materials and forms will be rigorously coordinated to reduce visual impacts and enhance existing visual quality.

For retaining wall options, this would include but not be limited to the wall type (cast-in-place, mechanically stabilized earth, or other types), the materials used in wall construction (concrete, block, stone, or metal), and the architectural treatment of its façade (dimensions, jointing, colors, textures).

For the viaduct option, the bridge type, proportions for the openings, and design of piers would be coordinated, especially where located adjacent to a retaining wall or embankment structure, to achieve design coherence.

For the embankment option, seed mixes will be selected to provide vigorous growth and seasonal variety. Coordination regarding potential sculpting of the embankments to be responsive to the public's interest in visual quality would be incorporated.

For any of the design options, the type and placement of fencing, railings, and lighting to provide safety and security would be carefully considered and incorporated into the proposed Project during the design phase in coordination with UP.

BMP AES-2: **Street Tree Planting.** During final design, SJRRC will ensure coordination with the City of Stockton on the incorporation of trees along the west side of South Union Street for the viaduct and retaining wall design options. The incorporation of trees would improve the visual quality of the proposed structure. SJRRC will coordinate with the City of Stockton and UP on the locations and types of plantings along the street to provide the visual screening of the viaduct or retaining wall structures.

BMP AES-3: **Lighting Plan.** During final design, SJRRC will ensure that a lighting plan will be developed that will select temporary and permanent lighting fixtures to minimize glare on adjacent properties and into the night sky. As defined in the City's Municipal Code, permanent lighting fixtures will be selected to ensure that the light beam is controlled and not directed across a property line or upward into the sky. Lighting will be shielded with non-glare hoods or reflectors and focused within the Project right-of-way. The lighting plan will be reviewed and approved by the City of Stockton prior to construction to ensure compliance with the City's Municipal Code and General Plan.

3.2 Air Quality

3.2.1 INTRODUCTION

This section describes ambient air quality conditions, including existing pollutant concentrations and meteorology in the air quality RSA. This section also discusses applicable criteria pollutant regulations. Critical air quality issues along the construction footprint include short-term construction related emissions, which could exceed local air district thresholds designed to achieve regional attainment with state ambient air quality standards. The effects analysis of the proposed Project considers the net effect of the proposed Project on air quality as a result of long-term operation.

3.2.2 REGULATORY SETTING

This section identifies the federal, state, and local laws, regulations, and orders that are relevant to the analysis of air quality in this EIR. It also states whether or not the proposed Project would be in compliance with regulations described herein.

Federal Plans, Policies, and Regulations

Clean Air Act (42 USC 7401) and National Ambient Air Quality Standards

The federal Clean Air Act (FCAA), promulgated in 1963 and amended several times thereafter, including the 1990 FCAA amendments, establishes the framework for modern air pollution control in the U.S. The FCAA is regulated by EPA, which sets standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter, which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers or smaller ($PM_{2.5}$), and sulfur dioxide (SO_2). In addition, national standards exist for lead (Pb). The NAAQS standards are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Toxic air contaminants (TACs) are covered, as well.

The FCAA requires EPA to designate areas as attainment, nonattainment, or unclassified for each criteria pollutant based on whether the NAAQS have been achieved. The federal standards are summarized in Table 3.2-1. EPA has designated the San Joaquin Valley Air Basin (SJVAB) as nonattainment area for O_3, and $PM_{2.5}$.

Table 3.2-1. Federal and State Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard8	Federal Standard9	SJVAB Attainment Status
Ozone (O_3)[2]	1 hour 8 hours	0.09 parts per million (ppm) 0.070 ppm	--- 0.070 ppm[4] (4^{th} highest in 3 years)	Federal: No Federal Standard (1-hour), Nonattainment/ Extreme (8-hour) State: Nonattainment/ Severe (1-hour), Nonattainment (8-hour)
Carbon Monoxide (CO)	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm[1] 6 ppm	35 ppm 9 ppm ---	Federal: Attainment/ Unclassified State: Attainment/ Unclassified
Respirable Particulate Matter (PM_{10})[2]	24 hours Annual	50 µg/m^3 20 µg/m^3	150 µg/m^3 ---[2] (expected number of days above standard < or equal to 1)	Federal: Maintenance State: Nonattainment
Fine Particulate Matter ($PM_{2.5}$)[2]	24 hours Annual Secondary Standard (annual)	--- 12 µg/m^3 ---	35 µg/m^3 12.0 µg/m^3 15 µg/m^3 (98^{th} percentile over3 years)	Federal: Nonattainment State: Nonattainment
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm 0.030 ppm	100 ppb[6] (98^{th} percentile over 3 years) 0.053 ppm	Federal: Attainment/ Unclassified State: Attainment
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual Arithmetic Mean	0.25 ppm --- 0.04 ppm ---	75 ppb[7] (99^{th} percentile over 3 years) 0.5 ppm[9] 0.14 ppm 0.03 ppm	Federal: Attainment/ Unclassified State: Attainment

Pollutant	Averaging Time	State Standard8	Federal Standard9	SJVAB Attainment Status
Lead (Pb)[3]	Monthly Calendar Quarter Rolling 3-month average	1.5 µg/m^3 --- ---	--- 1.5 µg/m^3 0.15 µg/m^3[10]	Federal: No Designation/ Classification State: Attainment
Sulfates	24 hours	25 µg/m^3	---	Federal: No Federal Standard State: Attainment
Hydrogen Sulfide	1 hour	0.03 ppm	---	Federal: No Federal Standard State: Unclassified
Visibility Reducing Particles	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70 percent	---	Federal: No Federal Standard State: Unclassified
Vinyl Chloride[3]	24 hours	0.01 ppm	---	Federal: No Federal Standard State: Attainment

[1] Rounding to an integer value is not allowed for the state 8-hour CO standard. Violation occurs at or above 9.05 ppm.

[2] Annual PM_{10} NAAQS revoked October 2006; was 50 µg/m^3. 24-hour. $PM_{2.5}$ NAAQS tightened October 2006; was 65 µg/m^3. Annual $PM_{2.5}$ NAAQS tightened from 15 µg/m^3 to 12 µg/m^3 December 2012, and secondary standard set at 15 µg/m^3.

[3] The Air Resources Board (ARB) has identified vinyl chloride and the particulate matter fraction of diesel particulate matter (DPM) as TACs. DPM is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and the EPA have identified Pb and various organic compounds that are precursors to O_3 and $PM_{2.5}$ as TACs. There are no exposure criteria for substantial health effects because of TACs, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

[4] Prior to June 2005, the 1-hour NAAQS was 0.12 ppm. Emission budgets for 1-hour O_3 are still in use in some areas where 8-hour O_3 emission budgets have not been developed, such as the San Francisco Bay Area. On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[5] The 0.08 ppm 1997 O_3 standard is revoked FOR CONFORMITY PURPOSES ONLY when area designations for the 2008 0.75 ppm standard become effective for conformity use (July 20, 2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, SIP amendments for the newer NAAQS are approved with an emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the “Interim” period prior to availability of emission budgets, conformity tests may include some combination of build versus no build, build versus baseline, or compliance with prior emission budgets for the same pollutant.

[6] Final 1-hour NO_2 NAAQS published in the Federal Register on February 9, 2010, effective March 9, 2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot-spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause redesignation to nonattainment in some areas after 2016.

[7] The EPA finalized a 1-hour SO_2 standard of 75 ppb in June 2010. Nonattainment areas have not yet been designated as of September 2012.

[8] California standards for O_3, carbon monoxide (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[9] National standards (other than O_3, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the EPA for further clarification and current national policies.

[10] Lead NAAQS are not considered in Transportation Conformity analysis.

$\mu g/m^3$= micrograms per cubic meter; CAAQS = California Ambient Air Quality Standards; CO= carbon monoxide; DPM = diesel particulate matter; FCAA = Federal Clean Air Act; NAAQS = National Ambient Air Quality Standards; NO_2 = nitrogen dioxide; NO_X = oxides of nitrogen; O3 = ozone; Pb = lead; $PM_{2.5}$ = particles of 2.5 micrometers and smaller; PM_{10} = particles of 10 micrometers and smaller; ppb = parts per billion; ppm = parts per million; ROG = reactive organic gas; SJVAB = San Joaquin Valley Air Basin; SIP = state implementation plan; SO_2 = sulfur dioxide; SO_X = sulfur oxides; TAC = toxic air contaminant

State Plans, Policies, and Regulations

California Clean Air Act and California Ambient Air Quality Standards

The California Clean Air Act (CCAA) is administered by the Air Resources Board (ARB) at the State level and by the air quality management districts and air pollution control districts at the regional and local levels. The ARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the State requirements of the FCAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA requires all air districts in the State to endeavor to achieve and maintain the CAAQS. CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

ARB regulates mobile air pollution sources, such as motor vehicles. ARB is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. ARB established passenger vehicle fuel specifications, which became effective in March 1996. ARB oversees the functions of local air pollution control districts and air quality management districts, which, in turn, administer air quality activities at the regional and county levels.

The State standards are summarized in Table 3.2-1. The CCAA requires ARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard and are not used as a basis for designating areas as nonattainment. Under the CCAA, SJVAB is designated as a nonattainment area for O_3, $PM_{2.5}$, and PM_{10}.

California State Implementation Plan

Federal clean air laws require areas with unhealthy levels of ozone, inhalable particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide to develop State Implementation Plans (SIP).

SIPs are comprehensive plans that describe how an area will attain NAAQS. The 1990 amendments to the FCAA set new deadlines for attainment based on the severity of the pollution problem and launched a comprehensive planning process for attaining the NAAQS. The promulgation of the national 8-hour ozone standard and the fine particulate matter standards in 1997 resulted in additional statewide air quality planning efforts. In response to new federal regulations, SIPs began to address ways to improve visibility in national parks and wilderness areas. SIPs are not single documents, but rather a compilation of new and previously submitted plans, programs, district rules, State regulations, and federal controls.

Many of California's SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations, and limits on emissions from consumer products. State law makes ARB the lead agency for all purposes related to the SIPs. Local air districts and other agencies prepare SIP elements and submit them to ARB for review and approval. ARB then forwards SIP revisions to EPA for approval and publication in the Federal Register. The Code of Federal Regulations (CFR) Title 40, Chapter I, Part 52, Subpart F, Section 52.220 lists all of the items that are included in the California SIP.

Mobile Source Toxics and Toxic Air Contaminants

California regulates Toxic Air Contaminants (TAC) primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (Hot Spots Act). The Tanner Act created the state's program to reduce exposure to air toxics, including diesel particulate matter (DPM), which ARB identified as a TAC in 1998. The Hot Spots Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and stationary source plans to reduce these risks.

ARB has adopted a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The ARB has also adopted regulations to reduce emissions from both on-road and off-road heavy-duty diesel vehicles (for example, equipment used in construction). These regulations, known as airborne toxic control measures, reduce the idling of school buses and other commercial vehicles, control DPM, and limit the emissions of ocean-going vessels in California waters. The regulations also include measures to control emissions of air toxics from stationary sources.

Local Plans, Policies, and Regulations

San Joaquin Valley Air Pollution Control District

The proposed Project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD), which has the following responsibilities:

- Implementing air quality regulations, including developing plans and control measures for stationary sources of air pollution to meet the NAAQS and CAAQS.

- Implementing permit programs for the construction, modification, and operation of sources of air pollution.
- Coordinating with local transportation planning agencies on mobile emissions inventory development, transportation control measure development and implementation, and transportation conformity.
- Enforcing air pollution statutes and regulations governing stationary sources. With ARB oversight, SJVAPCD also administers local regulations.

SJVAPCD has adopted several air quality attainment plans over the years that identify measures needed in SJVAB to attain EPA's increasingly stringent NAAQS. Plans adopted by SJVAPCD include:

- 2013 Plan for the Revoked 1-hour Ozone Standard,
- 2016 Plan for the 2008 8-hour Ozone Standard
- 2007 PM10 Maintenance Plan
- 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards.

All the plans include federal, State, and local measures that would be implemented through rule making or program funding to reduce air pollutant emissions in SJVAB.

SJVAPCD has adopted several regulations that are applicable to the proposed Project. These regulations are summarized below.

- **Rule 2201**: New and Modified Stationary Source Review – Rule 2201 applies to new or modified stationary sources and requires that sources not increase emissions above the specified thresholds. Under the New Source Review, all new permitted sources with emission increases exceeding two pounds per day, for any criteria pollutant are required to implement Best Available Control Technology. Furthermore, all permitted sources emitting more than the New Source Review offset thresholds for any criteria pollutant must offset all emission increases in excess of the thresholds.
- **Rule 9510**: Indirect Source Review (ISR) – The purposes of Rule 9510 are to fulfill SJVAPCD's emission reduction commitments in the PM_{10} and Ozone Attainment Plans, achieve emission reductions from the construction and use of development projects through design features and on-site measures, and provide a mechanism for reducing emissions from the construction of and use of development projects through off-site measures. Rule 9510 applies to any transportation or transit project where annual construction exhaust emissions equal or exceed two tons of NO_X or two tons of PM_{10}.
- **Regulation VIII**: Fugitive Dust PM_{10} Prohibitions – Rules 8011-8081 which are, together, Regulation VIII, are designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, landfill operations, etc.

- **Rule 4101**: Visible Emissions – Rule 4101 prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants.
- **Rule 4102**: Nuisance – Rule 4102 prohibits the discharge of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to the public or cause damage to business or property.

Envision Stockton 2040 General Plan

The following *Envision Stockton 2040 General Plan* policies and implementing actions are relevant to this Project:

- **Policy SAF-4.1**. Reduce air impacts from mobile and stationary sources of air pollution.
- **Action SAF-4.1A**. Require the construction and operation of new development to implement best practices that reduce air pollutant emissions, including:
  - Use of low-emission and well-maintained construction equipment, with idling time limits.
  - Development and implementation of a dust control plan during construction.
  - Installation of electrical service connections at loading docks, where appropriate.
  - Installation of Energy Star-certified appliances.
  - Entering into Voluntary Emissions Reduction Agreements with SJVAPCD
- **Action SAF-4.1B**. Use the results of the Health Risk Assessments required by the California Air Toxics "Hot Spots" Act to establish appropriate land use buffer zones around any new sources of toxic air pollutants that pose substantial health risks.
- **Action SAF-4.1C**. Require the use of electric-powered construction and landscaping equipment as conditions of project approval when appropriate.
- **Action SAF-4.1D**. Limit heavy-duty off-road equipment idling time to meet the ARB's idling regulations for on-road trucks.
- **Policy SAF-4.3**. Coordinate with SJVAPCD to promote public awareness on air quality issues and consistency in air quality impacts analyses.
- **Action SAF-4.3B**. Coordinate review of development project applications with SJVAPCD to ensure that air quality impacts are consistently identified and mitigated during CEQA review.

Consistency with Plans, Policies, and Regulations

The proposed Project would comply with all relevant federal, state, and local policies and regulations as it relates to air quality. The proposed Project would ensure that all air quality regulations are followed, which includes compliance with federal and state's Clean Air Act and all applicable goals and policies set forth by San Joaquin County and the City of Stockton.

3.2.3 METHODS FOR EVALUATING IMPACTS

This section describes the approach used in this memorandum to analyze potential Project impacts on air quality. The impact analysis evaluates the potential of the Project to conflict with the applicable air quality plan; violate any air quality standard or contribute significantly to an existing or projected air quality violation; result in a cumulative net increase of any nonattainment pollutant; expose sensitive receptors to substantial pollutant concentrations; or create objectionable odors affecting a substantial number of people. The environmental analysis for the proposed Project was based on a review of the air quality setting presented in Section 3.2.4.

Definition of Resource Study Area

As defined in Section 3.1, *Introduction*, RSAs are the geographic boundaries in which the environmental investigations specific to each resource topic were conducted. The air quality RSA is distinct because of the nature of criteria pollutants mixing into the atmosphere. The air quality RSA for the proposed Project is defined as the entire SJVAB.

Methods for Data Collection and Analysis

The impact analysis focuses on two types of air pollutants that are of greatest concern for the Project—criteria pollutants and TACs. The impacts of these pollutants generated by construction and operations of the proposed Project were assessed using standard and accepted software tools, techniques, and emission factors. This section summarizes the methods used to analyze impacts.

Construction Impacts

Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2. Three design options for the grade separation were quantitatively analyzed and included in the emissions modeling: soil embankment, precast concrete panel system with lightweight cellular concrete fill, and viaduct bridge structure.

Operational Impacts

The proposed Project in and of itself would not increase the projected number of freight and passenger trains or change the regional vehicle miles traveled (VMT). Therefore, the proposed Project's effect on long-term air quality is evaluated qualitatively.

Health Risk Assessment

Since diesel-related exhaust, specifically DPM, is considered a TAC by the ARB, a human health risk assessment (HRA) was conducted to assess the risk associated with the construction of the three design options. An HRA consists of three parts: (1) a TAC emissions inventory, (2) air dispersion modeling to evaluate off-site concentrations of TAC emissions, and (3) assessment of risks associated with predicted concentrations. The HRA (Appendix B) was conducted using the guidelines provided by the California Office of Environmental Health Hazard Assessment for the Air

Toxics Hot Spots Program and the HRA guidelines developed by the California Air Pollution Control Officers Association (CAPCOA).

Methods for Determining Significance under CEQA

The thresholds of significance for impacts were developed consistent with CEQA Guidelines (Appendix G) to determine the significance of potential impacts in relation to aesthetics that could result from implementation of the proposed Project. Accordingly, the following criteria were assessed:

a) Would the project conflict with or obstruct implementation of an applicable air quality plan?

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?

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

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

SJVAPCD Air Quality Thresholds

As stated in Appendix G of the CEQA Guidelines, the significance criteria established by the applicable air quality management district may be relied on to make significance determinations. Thus, this analysis evaluates the Project's air quality impacts pursuant to SJVAPCD's recommended guidelines and thresholds of significance, as discussed further below.

CRITERIA AIR POLLUTANTS

In 2015, SJVAPCD adopted the *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI), which defines methodology and thresholds of significance for the assessment of air quality impacts for projects within SJVAPCD's jurisdiction, along with mitigation measures for identified impacts. SJVACD's GAMAQI identifies regional construction and operational emissions thresholds to determine a project's cumulative impact on air quality in SJVAB. Specifically, these thresholds gauge whether a project would significantly contribute to a nonattainment designation based on the mass emissions generated. Table 3.2-2 shows the thresholds of significance established by SJVAPCD to determine whether a proposed Project would result in a significant air quality impact.

Table 3.2-2. SJVAPCD Thresholds of Significance for Criteria Air Pollutants

Pollutant/Precursor	Construction and Operational Phase Significance Thresholds (Tons/Year)
ROG	10
NOX	10
CO	100
PM10	15
PM2.5	15
SOX	27

Source: SJVAPCD GAMAQI, 2015, http://valleyair.org/transportation/GAMAQI_12-26-19.pdf
ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; PM_{10} = particles of 10 micrometers and smaller; $PM_{2.5}$ = particles of 10 micrometer and smaller; SO_X = sulfur oxides.

TOXIC AIR CONTAMINANTS

Potential health impacts from TACs are generally categorized into two groups: (1) carcinogenic (cancer causing) effects and (2) non-carcinogenic (non-cancer causing) effects. The non-carcinogenic effects can be further divided into long-term (chronic) health effects such as birth defects, neurological damage, or genetic damage; and short-term (acute) effects such as eye irritation, respiratory irritation, and nausea. SJVAPCD's current thresholds of significance for TAC emissions from the operations of both permitted and non-permitted sources are presented in Table 3.2-3.

Table 3.2-3. SJVAPCD Thresholds of Significance for TACs

Pollutant	TAC Significance Thresholds
Carcinogens	Maximally Exposed Individual risk equals or exceeds 10 in one million
Non-Carcinogens	Acute: Hazard Index equals or exceeds 1 for the Maximally Exposed Individual
	Chronic: Hazard Index equals or exceeds 1 for the Maximally Exposed Individual

Source: SJVAPCD GAMAQI, 2015, http://valleyair.org/transportation/GAMAQI_12-26-19.pdf

ODORS

While offensive odors rarely cause any physical harm, they can be unpleasant; leading to considerable distress among the public and often resulting in citizen complaints to local governments and SJVAPCD. Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact.

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there are no quantitative or formulaic methodologies to determine the presence of a significant odor impact. The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of

odor emissions. As shown in Table 3.2-4, SJVAPCD has identified buffer distances for some common types of facilities that have been known to produce odors in the San Joaquin valley.

Table 3.2-4. SJVAPCD Screening Levels for Potential Odor Sources

Land Use/Type of Operation	Distance
Wastewater Treatment Facility	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (for example, auto body shops)	1 mile
Food Processing Facility	1 mile
Feed Lot/Diary	1 mile
Rendering Plant	1 mile

Source: SJVAPCD GAMAQI, 2015, http://valleyair.org/transportation/GAMAQI_12-26-19.pdf

3.2.4 AFFECTED ENVIRONMENT

This section describes the affected environment related to air quality.

San Joaquin Valley Air Basin

The proposed Project is located in the central portion of SJVAB. SJVAB consists of eight counties: Fresno, Kern (western and central), Kings, Tulare, Madera, Merced, San Joaquin, and Stanislaus. SJVAB is bordered by the Sierra Nevada in the east, the Coast Ranges in the west, and the Tehachapi mountains in the south.

Climate

SJVAB is in a Mediterranean climate zone and is influenced by a subtropical high-pressure cell most of the year. Mediterranean climates are characterized by sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100 degrees Fahrenheit in the San Joaquin valley.

The subtropical high-pressure cell is strongest during spring, summer, and fall and produces subsiding air, which can result in temperature inversions in the valley. A temperature inversion can act like a lid, inhibiting vertical mixing of the air mass at the surface. Any emissions of pollutants can be trapped below the inversion. Most of the surrounding mountains are above the normal height of summer inversions (1,500 to 3,000 feet). Winter-time high pressure events can often last many

weeks, with surface temperatures often lowering to 30 Fahrenheit. During these events, fog can be present, and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet.

Wind Patterns

Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing and transporting it to other locations. Especially in summer, winds in the valley most frequently blow from the northwest. The region's topographic features restrict air movement and channel the air mass towards the southeastern end of the valley. The Coastal Range is a barrier to air movement to the west and the high Sierra Nevada range is a significant barrier to the east. Marine air can flow into the basin from the San Joaquin River Delta and over Altamont Pass and Pacheco Pass, where it can flow along the axis of the valley, over the Tehachapi pass, into the Southeast Desert Air Basin. This wind pattern contributes to transporting pollutants from the Sacramento Valley and the Bay Area into SJVAB. Many days in the winter are marked by stagnation events where winds are very weak. Transport of pollutants during winter can be very limited.

Temperature

SJVAB averages over 260 sunny days per year. Photochemical air pollution (primarily ozone) is produced by the atmospheric reaction of organic substances (such as volatile organic compounds) and nitrogen dioxide under the influence of sunlight. Ozone concentrations are very dependent on the amount of solar radiation, especially during late spring, summer, and early fall. Generally, the higher the temperature, the more ozone formed, since reaction rates increase with temperature. However, extremely hot temperatures can "lift" or "break" the inversion layer. Typically, if the inversion layer does not lift to allow the buildup of contaminants to be dispersed, the ozone levels will peak in the late afternoon. If the inversion layer breaks and the resultant afternoon winds occur, the ozone will peak in the early afternoon and decrease in the late afternoon as the contaminants are dispersed or transported out of SJVAB. Ozone levels are low during winter periods when there is much less sunlight to drive the photochemical reaction.

Precipitation and Fog

Precipitation and fog may reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog can block the required solar radiation. In fogs with less water content, the moisture acts to form secondary ammonium nitrate particulate matter. This ammonium nitrate is part of the San Joaquin valley's $PM_{2.5}$ and PM_{10} problem. The winds and unstable air conditions experienced during the passage of winter storms result in periods of low pollutant concentrations and excellent visibility. Wintertime conditions favorable to fog formation are also conditions favorable to high concentrations of $PM_{2.5}$ and PM_{10}.

Air Pollutants of Concern

Criteria Air Pollutants

The pollutants emitted into the ambient air by stationary and mobile sources are categorized as primary and/or secondary pollutants. Primary air pollutants are emitted directly from sources. CO, ROG, NO_X, SO_2, PM_{10}, $PM_{2.5}$, and Pb are primary air pollutants. ROG and NO_X are criteria pollutant precursors that form secondary criteria air pollutants such as O_3 through chemical and photochemical reactions in the atmosphere. Each of the primary and secondary criteria air pollutants and its known health effects is described below.

- O_3 is commonly referred to as "smog" and is a gas that is formed when ROGs and NO_X, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Breathing O_3 can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground-level O_3 also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. O_3 also affects sensitive vegetation and ecosystems, including forests, parks, wildlife refuges, and wilderness areas. SJVAB is designated severe nonattainment under the CAAQS (1-hour and 8-hour) and extreme nonattainment under the NAAQS (8-hour).
- ROG is a reactive chemical gas, composed of hydrocarbon compounds that may contribute to the formation of smog by their involvement in atmospheric chemical reactions. ROGs are emitted from a variety of sources, including liquid and solid fuel combustion, evaporation of organic solvents, and waste disposal. There are no ambient air quality standards established for ROGs. However, because they contribute to the formation of O_3, SJVAPCD has established a significance threshold for this pollutant.
- NO_X are a by-product of fuel combustion and contribute to the formation of ground-level O_3, PM_{10}, and $PM_{2.5}$. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. The principal form of NO_2 produced by combustion is NO, but NO reacts with oxygen quickly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. NO_2 is a reddish-brown gas that acts as an acute irritant and is more injurious than NO in equal concentrations. NO_2 exposure concentrations near roadways are of concern for susceptible individuals, including people with asthma, children, and the elderly. Short-term NO_2 exposures, ranging from 30 minutes to 24 hours, are known to result in adverse respiratory effects, including airway inflammation in healthy people and increased respiratory symptoms in people with asthma. SJVAB is designated an attainment area for NO_2 under the NAAQS and CAAQS.
- CO is a colorless, odorless gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. The primary adverse health effect associated with

CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation. SJVAB is designated under the NAAQS and CAAQS as being in attainment of CO criteria levels.

- SO_2 is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. When SO_2 forms sulfates in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_X). Thus, SO_2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. Short-term exposures to SO_2, ranging from 5 minutes to 24 hours, are known to result in adverse respiratory effects including bronchoconstriction and increased asthma symptoms. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. SJVAB is designated as attainment for SO_2 under the NAAQS and CAAQS.
- Suspended Particulate Matter (PM_{10} and $PM_{2.5}$) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. EPA is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Inhalable coarse particles, or PM_{10}, include particulate matter with a diameter of 10 micrometers or less. Fine particles, or $PM_{2.5}$, have a diameter of 2.5 micrometers or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. Health effects of particulate matter include premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (for example, irritation of the airways, coughing, or difficulty breathing). Particulate matter can also cause environmental effects such as visibility impairment, environmental damage, and aesthetic damage. SJVAB is a nonattainment area for PM_{10} under the CAAQS and nonattainment for $PM_{2.5}$ under the NAAQS and CAAQS. SJVAB is a maintenance area for PM_{10} under the NAAQS.
- Pb is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the EPA's regulatory efforts to remove lead from on-road motor vehicle gasoline, emissions of lead from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of lead in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of lead in air are usually found near lead smelters. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen-carrying capacity of the blood. The lead effects most commonly encountered in current populations are neurological effects in children and cardiovascular effects (for example, high blood pressure and heart disease) in adults. SJVAB is designated in attainment of the CAAQS and NAAQS for lead.

Toxic Air Contaminants

California law defines a TAC as an air pollutant that "may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human

health." TACs are pollutants that cause or may cause cancer or other serious health effects such as birth defects, neurological and reproductive disorders, or chronic eye, lung or skin irritation. TACs also may cause adverse environmental and ecological effects. California's Air Toxics Inventory includes more than 244 substances considered TACs (City of Stockton 2018b). They include such substances as volatile organic compounds, chlorinated hydrocarbons, asbestos, dioxin, toluene, gasoline engine exhaust, particulate matter emitted by diesel engines, and metals such as cadmium, mercury, chromium, and lead compounds, among many others.

Diesel engines emit a complex mixture of pollutants, including very small carbon particles, or "soot" coated with numerous organic compounds, known as DPM. Diesel exhaust also contains more than 40 cancer-causing substances, most of which are readily adsorbed onto the soot particles. Diesel engine emissions are responsible for about 70 percent of California's estimated cancer risk attributable to TACs (ARB 2020). In 1998, the ARB identified DPM as a TAC. A primary source of DPM emissions is combustion from diesel engines, such as those in trucks and other motor vehicles. DPM is of concern because it is a potential source of both cancer and non-cancer health effects, and because it is present at some concentration in all developed areas of the state. DPM contributes to numerous health impacts that have been attributed to particulate matter exposure, including increased hospital admissions, particularly for heart disease, but also for respiratory illnesses, and even premature death.

Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics, particulate matter, and CO are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The majority of the sensitive receptors within or adjacent to the RSA are residential uses.

3.2.5 ENVIRONMENTAL ANALYSIS

CEQA Significance Findings

An environmental analysis of each threshold identified is provided below:

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

Less than Significant Impact. An air quality management plan describes air pollution control strategies to be taken by counties or regions classified as nonattainment areas. The air quality management plan's main purpose is to bring the area into compliance with the requirements of Federal and State air quality standards. The air quality management plan uses the assumptions and projections by local planning agencies to determine control strategies for regional compliance status. Therefore, any projects causing a significant impact on air quality would impede the progress of the air quality management plan.

Air quality models are used to demonstrate that the project's emissions will not contribute to the deterioration or impede the progress of air quality goals stated in the local air quality management plans. The air quality models use project-specific data to estimate the quantity of pollutants generated from the implementation of a project.

As discussed in the CEQA threshold analysis below, after implementing Measure BMP AQ-1, which ensures that all off-road, diesel-powered construction equipment greater than 50 horsepower shall comply with EPA's Tier 4 Final exhaust emission standards (40 CFR Part 1039) and all construction equipment shall be outfitted with the best available control technology devices certified by the California ARB, and Measure BMP AQ-2, which requires compliance with a dust control plan to demonstrate compliance with SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibition), the annual construction emissions associated with all three design options would be reduced to below SJVAPCD significance thresholds. The proposed Project, in and of itself, would not increase the projected number of freight and passenger trains or change the regional VMT during operation.

Therefore, the proposed Project is considered consistent with the objectives of the air quality management plans and would not affect their implementation. As such, short-term and long-term impacts are considered less than significant, and no mitigation is required.

b) Would the project result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less than Significant Impact. Project construction activities have the potential to generate emissions from equipment used during construction, as well as to generate dust. Likely air pollutants from construction include the following: PM dust and criteria pollutants from fuel combustion.

The modeled construction emissions of criteria air pollutants for the soil embankment, precast concrete panel system with lightweight cellular concrete fill, and viaduct bridge structure design options of the proposed Project are summarized below in Table 3.2-5, Table 3.2-6, and Table 3.2-7, respectively.

Table 3.8-6 through Table 3.8-8 indicate that prior to minimization the annual emissions associated with construction of all three design options would exceed SJVAPCD thresholds for NO_X.

The modeled minimized construction emissions of criteria air pollutants for the soil embankment, precast concrete panel system with lightweight cellular concrete fill, and viaduct bridge structure design options of the proposed Project are summarized below in Table 3.2-8, Table 3.2-9, and Table 3.2-10, respectively. As shown, after implementing Measures BMP AQ-1 and AQ-2, the annual construction emissions associated with all three design options would be reduced to below SJVAPCD thresholds.

Table 3.2-5. Annual Construction Emissions – Soil Embankment Design Option (tons/year)

Year	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_X	CO_2e
2023	0.73	7.59	5.62	1.67	0.45	0.02	2,071
2024	1.60	15.50	12.30	2.05	0.74	0.05	4,328
2025	2.33	19.21	18.71	2.56	1.01	0.06	5,445
2026	0.49	3.84	4.10	0.24	0.17	0.01	1,069
Peak Construction Emissions (tons/year)	2.33	19.21	18.71	2.56	1.01	0.06	5,445
SJVAPCD Significance Threshold	10	10	100	15	15	27	N/A
Exceeds SJVAPCD Significance Threshold?	No	Yes	No	No	No	No	N/A
SJVAB de minimis Threshold	10	10	N/A	100	100	N/A	N/A
Exceeds SJVAB de minimis Threshold?	No	Yes	N/A	No	No	N/A	N/A

ROG = reactive organic gases; N/A= not applicable; NO_X = nitrogen oxides; CO = carbon monoxide; CO_2e = carbon dioxide equivalent; PM_{10} = particles of 10 micrometers and smaller; $PM_{2.5}$ = particles of 10 micrometer and smaller; SO_X = sulfur oxides.

Table 3.2-6. Annual Construction Emissions – Precast Panel Walls with Lightweight Cellular Concrete Fill Option (tons/year)

Year	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_X	CO_2e
2023	0.44	4.39	3.35	0.54	0.21	0.02	1,389
2024	0.86	8.28	6.41	0.64	0.33	0.03	2,754
2025	1.96	15.58	15.69	0.91	0.66	0.05	4,279
2026	0.49	3.83	4.09	0.21	0.16	0.01	1,067
Peak Construction Emissions (tons/year)	1.93	15.58	15.69	0.91	0.66	0.05	4,279
SJVAPCD Significance Threshold	10	10	100	15	15	27	N/A
Exceeds SJVAPCD Significance Threshold?	No	Yes	No	No	No	No	N/A
SJVAB de minimis Threshold	10	10	N/A	100	100	N/A	N/A
Exceeds SJVAB de minimis Threshold?	No	Yes	N/A	No	No	N/A	N/A

ROG = reactive organic gases; N/A= not applicable; NO_X = nitrogen oxides; CO = carbon monoxide; CO_2e = carbon dioxide equivalent; PM_{10} = particles of 10 micrometers and smaller; $PM_{2.5}$ = particles of 10 micrometer and smaller; SO_X = sulfur oxides.

Table 3.2-7. Annual Construction Emissions – Viaduct Bridge Structure Option (tons/year)

Emissions Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_X	CO_2e
2023	0.46	3.98	3.56	0.31	0.17	0.01	976
2024	1.40	11.50	10.47	0.74	0.51	0.03	2,864
2025	1.22	9.45	10.37	0.66	0.43	0.03	2,655
2026	0.45	3.48	3.90	0.22	0.15	0.01	985
Peak Construction Emissions (tons/year)	1.40	11.50	10.47	0.74	0.51	0.03	2,864
SJVAPCD Significance Threshold	10	10	100	15	15	27	N/A
Exceeds SJVAPCD Significance Threshold?	No	Yes	No	No	No	No	N/A
SJVAB de minimis Threshold	10	10	N/A	100	100	N/A	N/A
Exceeds SJVAB de minimis Threshold?	No	Yes	N/A	No	No	N/A	N/A

ROG = reactive organic gases; N/A= not applicable; NO_X = nitrogen oxides; CO = carbon monoxide; CO_2e = carbon dioxide equivalent; PM_{10} = particles of 10 micrometers and smaller; $PM_{2.5}$ = particles of 10 micrometer and smaller; SO_X = sulfur oxides.

Table 3.2-8. Minimized Annual Construction Emissions – Soil Embankment Design Option (tons/year)

Year	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_X	CO_2e
2023	0.25	2.27	7.65	1.45	0.25	0.02	2,071
2024	0.54	4.53	17.21	1.59	0.31	0.05	4,328
2025	0.81	4.78	27.30	1.90	0.41	0.06	5,445
2026	0.16	0.81	5.91	0.10	0.04	0.01	1,069
Peak Construction Emissions (tons/year)	0.81	4.78	27.30	1.90	0.41	0.06	5,445
SJVAPCD Significance Threshold	10	10	100	15	15	27	N/A
Exceeds SJVAPCD Significance Threshold?	No	No	No	No	No	No	N/A
SJVAB de minimis Threshold	10	10	N/A	100	100	N/A	N/A
Exceeds SJVAB de minimis Threshold?	No	No	N/A	No	No	N/A	N/A

ROG = reactive organic gases; N/A= not applicable; NO_X = nitrogen oxides; CO = carbon monoxide; CO_2e = carbon dioxide equivalent; PM_{10} = particles of 10 micrometers and smaller; $PM_{2.5}$ = particles of 10 micrometer and smaller; SO_X = sulfur oxides.

Table 3.2-9. Minimized Annual Construction Emissions – Precast Panel Walls with Lightweight Cellular Concrete Fill Option (tons/year)

Year	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_X	CO_2e
2023	0.16	1.62	4.97	0.43	0.11	0.02	1,389
2024	0.33	3.43	9.84	0.41	0.14	0.03	2,754
2025	0.67	3.52	22.99	0.35	0.15	0.05	4,279
2026	0.16	0.81	5.90	0.07	0.03	0.01	1,067
Peak Construction Emissions (tons/year)	0.67	3.52	22.99	0.43	0.15	0.05	4,279
SJVAPCD Significance Threshold	10	10	100	15	15	27	N/A
Exceeds SJVAPCD Significance Threshold?	No	No	No	No	No	No	N/A
SJVAB de minimis Threshold	10	10	N/A	100	100	N/A	N/A
Exceeds SJVAB de minimis Threshold?	No	No	N/A	No	No	N/A	N/A

ROG = reactive organic gases; N/A= not applicable; NO_X = nitrogen oxides; CO = carbon monoxide; PM_{10} = particles of 10 micrometers and smaller; $PM_{2.5}$ = particles of 10 micrometer and smaller; SO_X = sulfur oxides.

Table 3.2-10. Minimized Annual Construction Emissions – Viaduct Bridge Structure Option (tons/year)

Emissions Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_X	CO_2e
2023	0.14	0.63	5.12	0.17	0.04	0.01	976
2024	0.47	2.39	15.11	0.31	0.12	0.03	2,864
2025	0.44	2.05	14.61	0.31	0.12	0.03	2,655
2026	0.16	0.72	5.49	0.10	0.04	0.01	985
Peak Construction Emissions (tons/year)	0.47	2.39	15.11	0.31	0.12	0.03	2,864
SJVAPCD Significance Threshold	10	10	100	15	15	27	N/A
Exceeds SJVAPCD Significance Threshold?	No	No	No	No	No	No	N/A
SJVAB de minimis Threshold	10	10	N/A	100	100	N/A	N/A
Exceeds SJVAB de minimis Threshold?	No	No	N/A	No	No	N/A	N/A

ROG = reactive organic gases; N/A= not applicable; NO_X = nitrogen oxides; CO = carbon monoxide; CO_2e = carbon dioxide equivalent; PM_{10} = particles of 10 micrometers and smaller; $PM_{2.5}$ = particles of 10 micrometer and smaller; SO_X = sulfur oxides.

The proposed Project, in and of itself, would not increase the projected number of freight and passenger trains or change the regional VMT. Therefore, the proposed Project's short-term and long-term impacts would be considered less than significant, and no mitigation is required.

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

Less than Significant Impact. Earthwork and construction activities would result in short-term, Project-generated emissions of DPM from the exhaust of off-road, heavy-duty diesel equipment. DPM contains gaseous hazardous air pollutants including acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde and polycyclic aromatic hydrocarbons. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer time period. Health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, are typically based on a 30 to 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the Project.

A screening level health risk assessment using AERSCREEN (v16216) was been conducted to determine the long-term risks associated with the short-term construction emissions. The DPM ($PM_{2.5}$) emissions for all emission sources, during the construction period, were compiled and added together to represent worst-case emission source for DPM. Due to the long-term nature of health risks, the modeling used the total emissions instead of the peak day emissions.

The DPM emissions from diesel-powered construction equipment and on-site diesel-powered trucks that would be used during construction were calculated using the CalEEMod model. Total emissions of construction-related exhaust $PM_{2.5}$, as a surrogate for DPM, during the overall construction period were calculated and then converted to grams per second for use in the AERSCREEN model. Table 3.2-11 identifies the modeled annual average concentrations, and the associated cancer risks, at the closest sensitive receptor for each of the three design options. As shown, without minimization, the peak cancer risks exceed SJVAPCD's threshold of 10 in 1 million.

Table 3.2-11. Modeled Cancer Risks – Before Minimization

Design Option	Modeled Annual Concentrations ($\mu g/m^3$)	Cancer Risk (per million)
Soil Embankment	0.16	50.06
Precast Panel Walls	0.11	35.03
Viaduct Bridge Structure	0.11	34.85

Table 3.2-12 identifies the modeled annual average concentrations, and the associated cancer risks, at the closest sensitive receptor for each of the three design options after implementing Measure BMP AQ-1, requiring all off-road equipment to meet or exceed EPA's Tier 4 Final emission standards. As shown, minimization would reduce the peak cancer risks to below SJVAPCD's threshold of 10 in 1 million.

Table 3.2-12. Modeled Cancer Risks – After Minimization

Design Option	Modeled Annual Concentrations ($\mu g/m^3$)	Cancer Risk (per million)
Soil Embankment	0.021	6.42
Precast Panel Walls	0.016	4.78
Viaduct Bridge Structure	0.014	4.22

Table 3.2-13 identifies the maximum chronic hazard index at the closest sensitive receptor under both the before and after minimization conditions. A chronic hazard index is calculated by dividing the annual average concentration of a toxic pollutant by the chronic REL for that pollutant. For DPM the chronic REL is 5.0. As shown, the chronic hazard index at this location is lower than the SJVAPCD significance threshold of less than 1.0.

Table 3.2-13. Chronic Hazard Index

Design Option	Chronic Hazard Index	
	Before Minimization	After Minimization
Soil Embankment	0.032	0.0042
Precast Panel Walls	0.022	0.0032
Viaduct Bridge Structure	0.022	0.0028

Once complete, the proposed Project would provide an overall benefit, by reducing the local and regional air quality emissions, because the reduction in crossing occupancy would improve on-road traffic flow and reduce vehicle idling in the Project Study Area. Therefore, the proposed Project's long-term impact would be considered less than significant, and no mitigation is required.

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

Less than Significant Impact. Construction of the proposed Project could result in emission of odors from construction equipment and vehicles (for example, diesel exhaust). It is anticipated that these odors would be short-term, limited in extent at any given time, and distributed throughout the Project Study Area during the duration of construction, and, therefore, would not affect a substantial number of individuals. Therefore, short-term impacts would be considered less than significant, and no mitigation is required.

Once complete, the proposed Project would provide an overall benefit, by reducing the local and regional air quality emissions because the reduction in crossing occupancy would improve on-road traffic flow and reduce vehicle idling in the Project Study Area. Therefore, based on the discussion above, there would be no long-term odor impacts from the operation of the proposed Project; long-term impacts would be considered less than significant, and no mitigation is required.

3.2.6 BEST MANAGEMENT PRACTICES AND/OR MITIGATION MEASURES

The following BMP measures associated with air quality would be applied to the proposed Project.

BMP AQ-1: **Compliance with EPA's Tier 4 Exhaust Emission Standards.** During construction, SJRRC will ensure that all off-road diesel powered construction equipment greater than 50 horsepower shall comply with EPA's Tier 4 Final exhaust emission standards (40 CFR Part 1039). In addition, if not already supplied with a factory-equipped diesel particulate filter, all construction equipment shall be outfitted with Best Available Control Technology devices certified by the California ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by California ARB regulations.

BMP AQ-2: **Fugitive Dust.** Prior to issuance of a grading or building permit, SJRRC shall submit the dust control plan to SJVAPCD for review and approval, and shall provide the plan to the County, to demonstrate compliance with SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibition). The plan shall address construction-related dust as required by SJVAPCD.

3.3 Biological Resources

3.3.1 INTRODUCTION

This section describes the regulatory setting and affected environment for biological resources and identifies potential temporary and permanent effects of the proposed Project during construction and operation. This section addresses biological resources that are known to occur or have the potential to occur in the proposed biological resources RSA and describes the potential effects of the proposed Project on those resources. Biological resources include common vegetation and habitat types, sensitive communities, aquatic resources, and special-status botanical and wildlife species. This section also addresses the proposed Project's consistency with federal, state, and local regulations, policies, and goals related to biological resources.

3.3.2 REGULATORY SETTING

This section identifies the federal, state, and local laws, regulations, and orders that are relevant to the analysis of biological resources in this EIR. It also states whether the proposed Project would be in compliance with the regulations described herein.

Federal Plans, Policies, and Regulations

Endangered Species Act

The Endangered Species Act (ESA) provides protective measures for federally listed endangered or threatened species and their habitats, from unlawful take (16 USC 1531–1544). The ESA defines "take" to mean to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." In 50 CFR Part 222, harm is further defined as an act that actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including feeding, spawning, rearing, migrating, feeding, or sheltering.

ESA Section 7(a)(1) requires federal agencies to use their authority to further the conservation of listed species. ESA Section 7(a)(2) requires consultation with U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) if a federal agency undertakes, funds, permits, or authorizes any action that may impact endangered or threatened species or designated critical habitat (referred to as a federal nexus). For projects that may result in the incidental take of endangered or threatened species or designated critical habitat, and that lack a federal nexus, a Section 10(a)(1)(b) incidental take permit would be obtained from USFWS and/or NMFS.

Magnuson-Stevens Fishery Conservation and Management Act

Magnuson-Stevens Fishery Conservation and Management Act of 1976 (revised in 1996 and reauthorized 2007) is the primary law governing marine fisheries management in US federal waters. The primary objectives of the Magnuson-Stevens Act are to prevent overfishing, rebuild overfished stocks, increase long-term economic and social benefits, and ensure a safe and sustainable supply of seafood. To this end, the federal government is responsible for considering direct and indirect fishery habitat losses or other impacts that may result in a diminished capacity to support existing fish populations and stocks.

Among other items, the Sustainable Fisheries Act revision in 1996 specifically outlined the responsibility of the US to conserve and facilitate long-term protection of Essential Fish Habitat (EFH), defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (16 USC 1801). The 1996 revision also designated Habitat Areas of Particular Concern (HAPC), which are subsets of EFH for more focused consideration.

Under the act, federal agencies that fund, permit, or carry out activities that may adversely impact EFH or HAPCs are required to consult with NMFS regarding the potential adverse effects of proposed project activities, as well as to respond in writing to NMFS project-specific recommendations.

Clean Water Act Section 404

CWA Section 404 (33 USC 1344) established the program to regulate the discharge of dredged or fill material into waters of the US, including wetlands. Under this regulation, certain activities proposed in waters of the US require a permit prior to initiation. These activities include, but are not limited to, placement of fill for the purposes of development, water resource projects (for example, dams and levees), infrastructure development (for example, railways and bridges), and mining operations.

The primary objective of this program is to stipulate that the discharge of dredged or fill material is not permitted if a practicable alternative to the proposed activities exists that would result in less impact on waters of the US, or if the proposed activity would result in significant adverse impacts on these waters. To comply with these objectives, a permittee must document the measures taken to avoid and minimize impacts on waters of the US and provide compensatory mitigation for any unavoidable impacts.

Clean Water Act Section 401

Under CWA Section 401 (33 USC 1341), federal agencies are not authorized to issue a permit or license for any activity that may result in discharges to waters of the US unless a state or tribe where the discharge originates either grants or waives CWA Section 401 certification. CWA Section 401 provides states or tribes with the ability to grant, grant with conditions, deny, or waive certification. Granting certification, with or without conditions, allows the federal permit or license to be issued and remain consistent with any conditions set forth in the CWA Section 401 certification. Denial of the

certification prohibits the issuance of the federal permit or license, and a waiver allows the permit or license to be issued without state or tribal comment. Decisions made by states or tribes are based on the proposed Project's compliance with EPA water quality standards as well as applicable effluent limitations guidelines, new source performance standards, toxic pollutant restrictions, and any other appropriate requirements of state or tribal law. In California, the State Water Resources Control Board (SWRCB) is the primary regulatory authority for CWA Section 401 requirements.

Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act of 1918 (MBTA; 16 USC 703–711). In December 2020, USFWS signed a Record of Decision completing the NEPA process for a proposed rule change to the MBTA and Environmental Impact Statement process. On January 7, 2021, USFWS published the final regulation defining the scope of the MBTA in the *Federal Register* (FR); this rule became effective on February 8, 2021 (86 FR 1134; 50 CFR 10). The rule defines the scope of the MBTA as it applies to conduct resulting in the injury or death of migratory birds protected by the act. USFWS determined that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to actions directed at migratory birds, their nests, or their eggs (86 FR 1134; 50 CFR 10).

A list of species protected by the MBTA is currently codified in 50 CFR 10.13). In its current form, section 2(a) of the MBTA provides in relevant part that, unless permitted by regulations, it is unlawful:

> At any time, by any means of in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act of 1958 (16 USC 661 et seq) requires that whenever any body of water is proposed or authorized to be impounded, diverted, or otherwise controlled or modified, the lead federal agency must consult with USFWS, the state agency responsible for fish and wildlife management, and NMFS. Section 662(b) of the act requires the lead federal agency to consider the recommendations of USFWS and other agencies. The recommendations may include proposed measures to mitigate or compensate for potential damage to wildlife and fisheries associated with a modification of a waterway.

Executive Order 13112 – Invasive Species

Executive Order 13112 directs all federal agencies to refrain from authorizing, funding, or carrying out actions or projects that may spread invasive species. The order further directs federal agencies to prevent the introduction of invasive species, control and monitor existing invasive species

populations, restore native species to invaded ecosystems, research and develop prevention and control methods for invasive species, and promote public education on invasive species.

National Invasive Species Act

The National Invasive Species Act of 1996 reauthorized and amended the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 with a number of findings that highlighted a need for additional management measures to prevent further introduction and infestation of destructive species. This act reauthorized the ballast water management program to demonstrate efficacy of technologies and practices for preventing the introduction of nonnative species.

Executive Order 11990 – Protection of Wetlands

Executive Order 11990 (42 FR 26961) requires federal agencies to provide leadership and take action to minimize destruction, loss, or degradation of wetlands and to preserve and enhance the natural qualities of these lands. Federal agencies are required to avoid undertaking or providing support for new construction located in wetlands unless (1) no practicable alternative exists and (2) all practical measures have been taken to minimize harm to wetlands.

State Plans, Policies, and Regulations

California Endangered Species Act (California Fish and Game Code, Section 2070)

Under the California Endangered Species Act (CESA), CDFW is responsible for maintaining a list of endangered or threatened species. CDFW also maintains a list of candidate species, which are species formally noticed as being under review for potential addition to the list of endangered or threatened species, and a list of species of special concern, which serves as a species watch list.

Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present and must determine whether the proposed project would have a potentially significant impact on such species. In addition, CDFW encourages informal consultation on any proposed project that may impact a candidate species.

Proposed project-related impacts on species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of the CESA. Take of protected species incidental to otherwise lawful management activities may be authorized under California Fish and Game Code (FGC) Section 206.591. Authorization from CDFW would be in the form of an incidental take permit.

Lake and Streambed Alteration (California Fish and Game Code, Sections 1600–1607)

State and local public agencies are subject to Fish and Game Code (FGC) Section 1602, which governs construction activities that would substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated as waters of the state by CDFW. Under FGC Section 1602, a discretionary Streambed Alteration Agreement

must be issued by CDFW to the project proponent prior to the initiation of construction activities within lands under CDFW jurisdiction. As a rule, this requirement applies to any work undertaken within the 100-year floodplain of a stream or river containing fish or wildlife resources.

Native Plant Protection Act (California Fish and Game Code, Sections 1900–1913)

The California Native Plant Protection Act prohibits the taking, possessing, or sale within the state of any plants with a state designation of rare, threatened, or endangered (as defined by CDFW). An exception in the act allows landowners, under specified circumstances, to take listed plant species if the owners first notify CDFW and give that state agency at least 10 days to retrieve the plants before they are plowed under or otherwise destroyed (FGC Section 1913). Project impacts on these species are not considered significant unless the species are known to have a high potential to occur in the area of disturbance associated with construction of the proposed project.

Birds (California Fish and Game Code, Sections 3503 and 3503.5)

FGC Sections 3503 and 3503.5 provide regulatory protection to resident and migratory birds and all birds of prey in the state of California, including the prohibition of the taking of nests and eggs, unless otherwise provided for by the FGC. Specifically, these sections of the FGC make it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code.

Fully Protected Species (California Fish and Game Code, Sections 3511, 4700, 5050, 5515)

The FGC designates 37 fully protected species and prohibits the take or possession at any time of such species with certain limited exceptions. Fully protected species are described in FGC Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish). These protections state that "…no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected [bird], [mammal], [reptile or amphibian], [fish]."

Natural Community Conservation Planning Act (California Fish and Game Code, Sections 2800–2835)

In 1991, the Natural Community Conservation Planning Act (NCCPA) was enacted to encourage broad-based planning to provide for effective protection and conservation of the state's wildlife resources while continuing to allow appropriate development and growth. Pursuant to the NCCPA, local, state, and federal agencies are encouraged to prepare Natural Community Conservation Plans (NCCP) to provide comprehensive management and conservation of multiple species and their habitats under a single plan rather than through preparation of numerous individual plans on a project-by-project basis. The NCCPA is broader in its orientation and objectives than are the ESA and CESA. To be approved by CDFW, an NCCP must provide for the conservation of species and protection and management of natural communities in perpetuity within the plan area. Conservation is defined by the NCCPA and the FGC as actions that result in the delisting of state-listed species.

The 1991 NCCPA was replaced with a substantially revised and expanded NCCPA in 2002. The revised NCCPA established new standards and guidance on many facets of the program, including scientific information, public participation, biological goals, interim project review, and approval criteria. The new NCCPA took effect on January 1, 2003. To approve an NCCP under the new NCCPA, CDFW must make a series of findings, as follows:

- The plan must be consistent with the Planning Agreement.[1]
- The plan must provide for the conservation and management of the covered species (conservation is defined to mean that the plan must contribute to species recovery).
- The plan must protect habitat, natural communities, and species diversity on the landscape level.
- The plan must conserve the ecological integrity of large habitat blocks, ecosystem function, and biodiversity.
- The plan must support sustainable populations of covered species.
- The plan must provide a range of environmental gradients and habitat diversity to support shifting species distributions.
- The plan must sustain movement of species among reserves.
- Mitigation and conservation must be roughly proportional to impacts in timing and extent.
- Funding for conservation, monitoring, and adaptive management must be adequately assured.

California Wetlands and Other Policies

The California Natural Resources Agency and its various departments do not authorize or approve projects that fill or otherwise harm or destroy coastal, estuarine, or inland wetlands. Exceptions may be granted if all the following conditions are met:

- The project is water dependent.
- No other feasible alternative is available.
- The public trust is not adversely affected.
- Adequate compensation is proposed as part of the project.

Porter-Cologne Water Quality Control Act (California Water Code, Section 13000 et seq.)

The Porter-Cologne Water Quality Control Act provides for implementation of the federal CWA by the SWRCB, including issuance of CWA Section 401 Certifications and Section 402 NPDES permits. Issuance of a Section 401 Certification requires documenting compliance with state water quality standards, including watershed plans, designated beneficial uses, and the Total Maximum Daily Limit (TMDL) program.

[1] Prior to development of an NCCP, plan participants (any person or public entity) and CDFW must develop and sign a planning agreement that commits them to take specific actions in the development of the NCCP.

The Porter-Cologne Water Quality Control Act also regulates discharges that could affect the quality of waters of the state and requires that a waste discharge requirements form be obtained for discharges, including fill of wetlands that are not otherwise authorized by CWA Section 404 or CWA Section 402.

Local Plans, Policies, and Regulations

Envision Stockton 2040 General Plan

The Envision Stockton 2040 General Plan (City of Stockton 2018a), Chapter 3, Land Use, includes the following goals and policies that are applicable to the terrestrial biological resources that could be affected by the proposed Project:

- **Goal LU-5:** Protected Resources – Protect, maintain, and restore natural and cultural resources.
- **Policy LU-5.1** – Integrate nature into the city and maintain Stockton's urban forest.
    - **Action LU-5.1A** – Require projects to provide open spaces, as appropriate.
    - **Action LU-5.1B** – Protect, preserve, and improve riparian corridors and incorporate them in the City's parks, trails, and open space system.
    - **Action LU-5.1C** – Incorporate native and drought-tolerant plants in an effort to preserve the visual integrity of the landscape, conserve water, provide habitat conditions suitable for native vegetation, and ensure that a maximum number and variety of well adapted plants are maintained.
- **Policy LU-5.2** – Safeguard natural resource areas, fish and wildlife habitat, scenic areas, and open space areas from encroachment or destruction by incompatible development.
    - **Action LU-5.2A** – Coordinate with the San Joaquin Council of Governments and comply with the terms of the SJMSCP.
    - **Action LU-5.2B** – For projects on or within 100 feet of sites that have the potential to contain special-status species or critical or sensitive habitats, including wetlands, require preparation of a baseline assessment by a qualified biologist following appropriate protocols, such as wetland delineation protocol defined by USACE. Impacts shall be minimized through project design or compensation identified in consultation with a qualified biologist.
    - **Action LU-5.2C** – Require new development to implement best practices to protect biological resources, including incidental take minimization measures and other federal and State requirements and recommendations that are consistent with the SJMSCP.
    - **Action LU-5.2H** – Comply with applicable water conservation measures.
    - **Action LU-5.2I** – Coordinate with water agencies and non-profit organizations to promote public awareness on water quality and conservation issues and consistency in water quality impacts analyses.

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

The San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) is the only NCCP that the proposed Project overlaps. The SJMSCP was developed in 2000 to offer an approach for balancing the conservation of open space and the need to convert open space as a result of development while simultaneously protecting the region's economy; preserving property rights; providing for the long-term management of plant, fish, and wildlife species, especially special-status species; and providing and maintaining multiple-use areas. Additionally, the plan addresses other species of concern recognized by CDFW and the California Native Plant Society (CNPS).

The SJMSCP, in accordance with ESA Section 10(a)(1)(B) and CESA Section 2081(b) Incidental Take Permits, provides reparation for the conversion of open space to non-open space uses that affect the plant, fish, and wildlife species covered by the SJMSCP. Species coverage varies under the SJMSCP and ranges from full coverage under federal and state law to CEQA coverage only. The SJMSCP covers 97 species, of which 25 are federally and/or state-listed species. The species covered in the SJMSCP include: 27 plants (6 listed), 4 fish (2 listed), 4 amphibians (1 listed), 4 reptiles (1 listed), 33 birds (7 listed), 15 mammals (3 listed), and 10 invertebrates (5 listed).

Project applicants are given the option of participating in the SJMSCP as a way to streamline compliance with required local, state, and federal laws regarding biological resources, and typically avoid having to approach each agency independently. Participating applicants pay mitigation fees or provide land in-lieu of fees on a per-acre basis according to the measures needed to mitigate impacts to the various habitat and biological resources. Development occurring on land that has been classified under the SJMSCP as "no-pay" would not be required to pay a fee but fulfill the biological requirements of the plan to minimize impacts to species.

Stockton Municipal Code and Tree Ordinance

Stockton Municipal Code Title 12 – Streets, Sidewalks, and Public Places

Stockton Municipal Code Chapter 12.64 includes the following regulations pertaining to the planting, care, and removal of trees in street rights-of-way, public utility easements adjacent to street rights-of-way, parks, and other public places:

- **12.64.020** – It is unlawful for any person, including any utility company operating under a franchise granted by the City of Stockton, to plant, remove or effectively remove, replace or relocate any street tree without first obtaining a permit therefor from the Community Development Director or a designated representative in compliance with Chapter 16.162 of the Stockton Municipal Code.
- **12.64.050** – No person shall allow, cause, authorize or procure any brine, oil, liquid or other substance, deleterious to the life of any tree, to lie, leak, pour, flow or drip upon or into the soil around the base of any street tree or any tree, shrub, or other landscaping in any park or other public place, or onto any sidewalk, road, pavement or other improvement, within a street right-of-way, public utility easement adjacent to street right-of-way, park or other public place owned or

controlled by the City of Stockton, at a point from which such substances may, by lying upon or by flowing, dripping or seeping into such soil, injure any such tree or shrub.

- **12.64.070** – During the erection, repair or alteration of any building or structure, any street tree or tree or shrub in any park or other public place owned or controlled by the City of Stockton, in the vicinity of such building or structure, shall be provided with adequate protection so as to prevent injury or damage thereto, while any such construction work is being performed.

Stockton Municipal Code Title 16 — Development Code

In accordance with Municipal Code Chapter 16.130, Heritage Oak trees are protected in the City of Stockton. Section 16.130.030, Permits, governs the removal of heritage oak trees regardless of location on a property or condition of the tree(s). Heritage trees are defined as:

> Any Quercus lobata (commonly known as "Valley Oak"), Quercus agrifolia (Coast Live Oak), and Quercus wislizenii (Interior Live Oak) tree which is located on public or private property within the limits of the City, and which has a trunk diameter of 16 inches or more, measured at 24 inches above actual grade. For oak trees of the species mentioned above, with multiple trunks, the combined total trunk diameter shall be used for all trunks measuring six (6) inches or greater measured at 24 inches above actual grade.

Prior to removal of a Heritage Oak tree, the Community Development Department must be contacted to obtain permit information and requirements.

Other Guidance

California Native Plant Society

The California Native Plant Society (CNPS) is a non-governmental agency that classifies native plant species according to current population distribution and threat level concerning extinction. These data are used by the CNPS to create and maintain a list of native California plants that have low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the *Inventory of Rare and Endangered Plants of California* (CNPS 2020). Potential impacts on populations of CNPS-listed plants receive consideration under CEQA review.

The following identifies the definitions of the CNPS listings:

- List 1A: Plants believed to be extinct
- List 1B: Plants that are rare, threatened, or endangered in California and elsewhere
- List 2: Plants that are rare, threatened, or endangered in California, but are more numerous elsewhere

All the plant species on Lists 1 and 2 meet the requirements of the California Native Plant Protection Act, Section 1901, Chapter 10, or FGC Section 2062 and Section 2067, and are eligible for state listing. Plants appearing on List 1 or 2 are considered to meet the criteria of CEQA Guidelines Section 15380, Endangered, Rare, or Threatened Species, and effects on these species are considered significant. Classifications for plants on List 3 (plants about which we need more

information) and/or List 4 (plants of limited distribution), as defined by the CNPS, are not currently protected under state or federal law. Therefore, no detailed descriptions or impact analysis was performed on species with these classifications.

Consistency with Plans, Policies, and Regulations

The proposed Project would comply with all relevant federal, state, and local policies and regulations as they relate to biological resources. The proposed Project would ensure that all biological resource regulations are followed, which includes compliance with the ESA and CESA and all applicable goals and policies set forth by San Joaquin County and the City of Stockton.

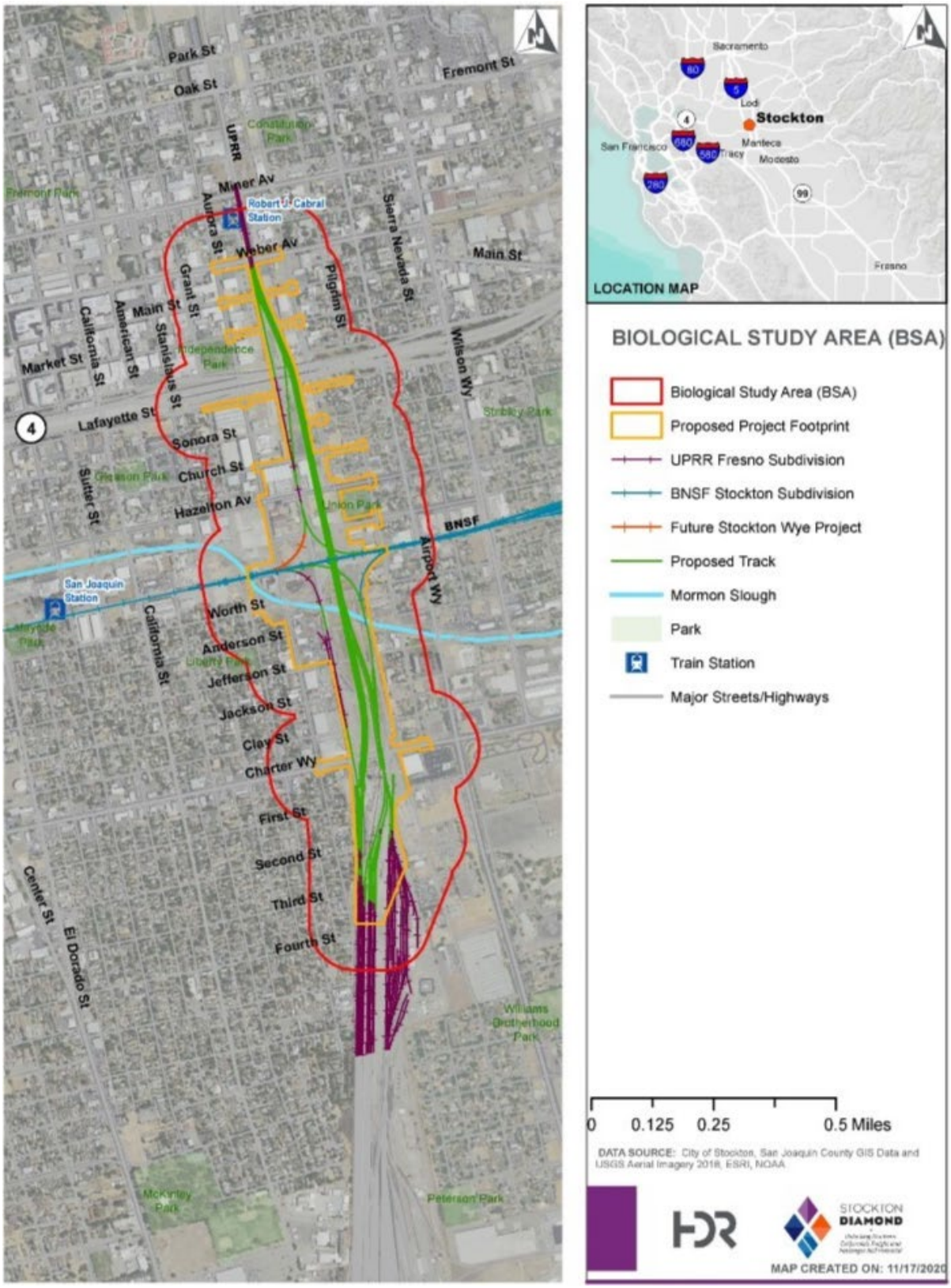
3.3.3 METHODS FOR EVALUATING IMPACTS

This section defines the biological resources RSA and describes the methods used to analyze the impacts on biological resources within the RSA.

Definition of Resource Study Area

As defined in Section 3.1, *Introduction*, RSAs are the geographic boundaries within which the environmental investigations specific to each resource topic were conducted. The RSA (or biological study area [BSA]) for impacts on biological resources encompasses the areas that would be directly and indirectly affected by Project construction and operations. This BSA includes all areas within the proposed Project construction limits and includes all proposed Project components, as well as a buffer of 500 feet for the assessment of indirect impacts on vegetation communities, jurisdictional features, and special-status botanical and wildlife species (see Figure 3.3-1).

Figure 3.3-1: Proposed Project Construction Limits and Biological Study Area



Methods for Data Collection and Analysis

Desktop Review

The following database queries were performed during the desktop review to gather preliminary information on special-status species, their habitats, and potential sensitive communities and aquatic resources (Appendix C, *Supporting Biological Resources Information*):

- USFWS Information for Planning and Consultation System (USFWS 2020a) – Biologists obtained official lists of federal candidate, proposed, threatened, and endangered plant and wildlife species potentially affected by activities in the proposed Project BSA.
- USFWS Critical Habitat Mapper (USFWS 2020b) – Biologists researched federally designated critical habitat in the BSA by accessing this online tool. The mapper contains spatial data for active proposed and final critical habitat for USFWS-regulated species.
- USFWS National Wetlands Inventory (USFWS 2020c) – Biologists reviewed the National Wetlands Inventory to obtain information on aquatic resources that may occur in the BSA.
- NMFS West Coast Region, California Species List Tools (NMFS 2020) – Biologists obtained an official list of federal candidate, proposed, threatened, and endangered fish species potentially affected by activities in the BSA from NMFS. The tool also provided information on critical habitat and EFH in the BSA.
- CDFW California Natural Diversity Database (CNDDB) QuickView Tool in BIOS 5 (CDFW 2020b) – Biologists queried the CNDDB GIS dataset for occurrences of special-status plant and wildlife species within the Stockton West, California, USGS 7.5-minute quadrangle.
- CNPS Inventory of Rare and Endangered Plants of California (CNPS 2020) – To research additional special-status plants not captured by the official USFWS species list or CNDDB, botanists queried the Stockton West, California, USGS 7.5-minute quadrangle. From this list, botanists checked for species with very localized distributions (that is, limited to only a few known localities) outside the special-status plant study area and eliminated them from further consideration; and
- Google Earth aerial imagery (Google Earth Pro 2020).

Site Reconnaissance Survey

This section describes the reconnaissance surveys conducted for the proposed Project. A reconnaissance-level survey was conducted on October 1, 2020, to supplement the findings of the desktop review. Biologists drove on publicly accessible roads and walked throughout the BSA to record localized information on existing site conditions, vegetation communities, aquatic resources, and species observed. Special attention was paid to those species and resources that were queried in the desktop review or were determined to have the potential to occur based on site features or habitat, including, but not limited to, Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), special-status bats, elderberry (*Sambucus spp.*), potential burrowing owl (*Athene cunicularia*) habitat, and any aquatic resources. Photo documentation from this reconnaissance survey is provided in Appendix C, *Supporting Biological Resources Information*. A

list of wildlife and botanical species observed during the reconnaissance survey was also recorded and is provided in Appendix C, *Supporting Biological Resources Information*. A second site visit was conducted on November 24, 2020, to perform a full visual survey for elderberry shrubs (*Sambucus* spp.) within the BSA. A focused elderberry survey was conducted to confirm or deny the presence of the species in the BSA. No elderberry shrubs were observed.

Impact Analysis

The impact analysis is based on the proposed Project description, the environmental setting, and federal, state, and local regulatory requirements regarding impacts on biological resources. In addition, the impact analysis used data collected from the literature and data review, as well as site reconnaissance survey and a focused elderberry survey. When information about the presence of a special-status species was unknown but suitable habitat was present, the impact analysis took a conservative approach by inferring the presence of special-status species within the BSA until pre-construction or protocol-level surveys determine otherwise. Impacts on specific biological resources are identified, and appropriate avoidance, minimization, and/or mitigation measures are discussed further in the impact analysis section.

As discussed in Chapter 2, construction of the proposed Project would require a clear span flyover bridge, a bridge with in-channel piers, or a multi-cell box culvert to span the Mormon Slough and associated floodplain. For the purposes of this analysis, the design option with the multi-cell box culvert spanning Mormon Slough and associated floodplain was used to identify and calculate impacts on biological resources, as this is the design option that would have the largest footprint in areas supporting protected biological resources.

For the purpose of this analysis, direct effects are characterized by changes in the physical environment caused by the proposed Project that are immediately related to the proposed Project and occur at the same time and place as the proposed Project (for example, grading associated with construction or permanent conversion of habitat). Indirect effects are changes to the physical environment that occur later in time or are farther removed in distance than direct effects (for example, offsite impacts from noise, dust, lights). Both direct and indirect effects could be considered temporary or permanent depending on the situation and activity.

Direct effects on vegetation communities (including sensitive natural communities), special-status botanical and wildlife species, and jurisdictional features can include vegetation clearing, site grading, excavating, paving, placing fill, and stockpiling. Indirect effects on vegetation communities (including sensitive natural communities), special-status plant and wildlife species, and jurisdictional areas can include soil compaction, dust, runoff, the introduction and spread of invasive plant species, construction noise and lighting, habitat conversion, and changes in hydrology.

Further, temporary impacts on vegetation communities include those of short duration (less than 1 year) in areas that are subject to disturbance during construction, but that can be re-contoured and revegetated following construction. Temporary impacts that cover a period longer than 1 year are typically considered long-term temporary impacts and could involve additional mitigation measures

to account for the loss of habitat function during the construction period. Permanent impacts on vegetation communities include those that involve placing materials, such as concrete or rock, which would result in converting one vegetation community to another. Temporary impacts on wildlife species can include indirect effects such as noise or disturbance from operating construction equipment. Permanent impacts on wildlife include those that convert suitable habitat to the extent that it is no longer suitable for wildlife, or cause mortality or take of individuals.

Methods for Determining Significance under CEQA

The thresholds of significance for impacts were developed consistent with the CEQA Guidelines to determine the significance of potential impacts in relation to biological resources that could result from the implementation of the proposed Project. The biological resources analysis is based on CEQA Guidelines, Appendix G, Biological Resources criteria. Accordingly, the following criteria were assessed:

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 California Fish and Wildlife or US Fish and Wildlife Service?

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, and regulations or by California Fish and Wildlife or USFWS?

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?

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 wildlife nursery sites?

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

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan (HCP), NCCP, or other approved local, regional, or state habitat conservation plan?

3.3.4 AFFECTED ENVIRONMENT

Regional Setting

The proposed Project is in the Great Valley ecological section of the California Dry Steppe ecological province (McNab et al. 2007). The landscape of the Great Valley ecological section is characterized by low-elevation fluvial plain formed on non-marine sedimentary rocks. Cover type in this section is characterized primarily as agricultural with smaller stands of natural cover types that include annual grasslands, western hardwoods, and wet grasslands. Surface water is characterized by gently flowing streams and rivers flowing west toward the Suisun Bay and the California coast. Local reservoirs store seasonal rainfall for municipal water supply and flood control, and streams are often

channelized, especially in urban areas. In addition, the province is described as having a Mediterranean-like climate with mild, wet winters and dry, hot summers (McNab et al. 2007).

Local Setting

The proposed Project is in the heart of the City of Stockton just east of the Sacramento-San Joaquin Delta. The proposed Project lies in the Central Valley between the Diablo Range and the Sierra Nevada Range. Topography across the BSA is mostly flat. Elevation in the BSA ranges from sea level to approximately 20 feet above mean sea level.

The Mormon Slough hydrologic unit (1804000303) encompass the northern portion of the BSA and the Five-Mile Creek-San Joaquin River hydrologic unit (1804000305) encompasses the southern portion of the BSA (CDFW 2020a). The Calaveras River, the Port of Stockton, and the Delta are the major water bodies near the proposed Project. The Calaveras River flows west toward Suisun Bay, just north of the proposed Project. Historically, Mormon Slough conveyed water frequently and acted as a flood channel, but with the implementation of the Stockton Diverting Canal that re-routed flows, Mormon Slough is now fed mainly through intermittent surface water runoff and does not convey water year-round. The Stockton Diverting Canal's southern end is roughly 2.5 miles east of the BSA and connects Mormon Slough to the Calaveras River. Portions of Mormon Slough, along with the Stockton Diverting Canal, become wetted and passable for aquatic species after October 15th, when flashboard dams are pulled, up until flashboard dams are installed again around April 15th of the following year; however, this does not include the section of Mormon Slough within the BSA. Additionally, several smaller urbanized and channelized drainages occur near the BSA.

San Joaquin Multi-Species Habitat Conservation and Open Space Plan

SJRRC plans to participate in the SJMSCP for the proposed Project. Since the proposed Project is anticipated to require permits for potential impacts to CWA Section 401 and 404 waters and CFGC Section 1600 Streambed, SJRRC will have to submit a "Request for Project Coverage Form" to the SJMSCP Habitat Technical Advisory Committee (HTAC) for approval to participate. SJRRC will initiate the approval process prior to final EIR approval. As part of participation in the SJMSCP, SJRRC will comply with all applicable standards and regulations set forth in the SJMSCP.

Based on the results of the biological resources survey and analysis conducted in 2020, the following Incidental Take Mitigation Measures (ITMMs) in the SJMSCP are applicable to the proposed Project and will be implemented as required:

MEASURE 5.2.4.8 GIANT GARTER SNAKE; SECTION (B)[2]

1. Construction shall occur during the active period for the snake, between May 1 and October 1. Between October 2nd and April 30th, the Joint Powers Authority, with the concurrence of the

[2] SJRRC will request approval from HTAC to modify Incidental Take Avoidance Measures 5.2.4.8 and 5.2.4.10 due to the lack of suitable habitat for giant garter snake and pond turtles. However, SJRRC will comply with these measures as written unless a variance is approved.

Permitting Agencies' representatives on the HTAC, shall determine if additional measures are necessary to minimize and avoid take.

2. Limit vegetation clearing within 200 feet of the banks of potential giant garter snake aquatic habitat to the minimal area necessary.
3. Confine the movement of heavy equipment within 200 feet of the banks of potential giant garter snake aquatic habitat to existing roadways to minimize habitat disturbance.
4. Prior to ground disturbance, all on-site construction personnel shall be given instruction regarding the presence of SJMSCP Covered Species and the importance of avoiding impacts to these species and their habitats.
5. In areas where wetlands, irrigation ditches, marsh areas, or other potential giant garter snake habitats are being retained on the site:
    a. Install temporary fencing at the edge of the construction area and the adjacent wetland, marsh, or ditch;
    b. Restrict working areas, spoils and equipment storage, and other project activities to areas outside of marshes, wetlands and ditches; and
    c. Maintain water quality and limit construction runoff into wetland areas through the use of hay bales, filter fences, vegetative buffer strips, or other accepted equivalents.
6. If on-site wetlands, irrigation ditches, marshes, etc. are being relocated in the vicinity, the newly created aquatic habitat shall be created and filled with water prior to dewatering and destroying the pre-existing aquatic habitat. In addition, non-predatory fish species that exist in the aquatic habitat and which are to be relocated shall be seined and transported to the new aquatic habitat as the old site is dewatered.
7. If wetlands, irrigation ditches, marshes, etc. will not be relocated in the vicinity, then the aquatic habitat shall be dewatered at least two weeks prior to commencing construction.
8. Pre-construction surveys for the giant garter snake (conducted after completion of environmental reviews and prior to ground disturbance) shall occur within 24 hours of ground disturbance.
9. Other provisions of the USFWS Standard Avoidance and Minimization Measures during Construction Activities in Giant Garter Snake Habitat shall be implemented (excluding programmatic mitigation ratios which are superseded by the SJMSCP's mitigation ratios).

MEASURE 5.2.4.10 POND TURTLES[2]

When nesting areas for pond turtles are identified on a project site, a buffer area of 300 feet shall be established between the nesting site (which may be immediately adjacent to wetlands or extend up to 400 feet away from wetland areas in uplands) and the wetland located near the nesting site. These buffers shall be indicated by temporary fencing if construction has or will begin before nesting

periods are ended (the period from egg laying to emergence of hatchlings is normally April to November).

MEASURE 5.2.4.11 SWAINSON'S HAWK

The Project Proponent has the option of retaining known or potential Swainson's hawk nest trees (that is, trees that hawks are known to have nested in within the past three years or trees, such as large oaks, which the hawks prefer for nesting) or removing the nest trees.

If the Project Proponent elects to retain a nest tree, and in order to encourage tree retention, the following Incidental Take Minimization Measure shall be implemented during construction activities:

> If a nest tree becomes occupied during construction activities, then all construction activities shall remain a distance of two times the dripline of the tree, measured from the nest.

If the Project Proponent elects to remove a nest tree, then nest trees may be removed between September 1 and February 15, when the nests are unoccupied.

MEASURE 5.2.4.15 BURROWING OWLS

The presence of ground squirrels and squirrel burrows are attractive to burrowing owls. Burrowing owls may therefore be discouraged from entering or occupying construction areas by discouraging the presence of ground squirrels. To accomplish this, the Project Proponent should prevent ground squirrels from occupying the Project site early in the planning process by employing one of the following practices:

A. The Project Proponent may plant new vegetation or retain existing vegetation entirely covering the site at a height of approximately 36" above the ground. Vegetation should be retained until construction begins. Vegetation will discourage both ground squirrel and owl use of the site.

B. Alternatively, if burrowing owls are not known or suspected on a project site and the area is an unlikely occupation site for red-legged frogs, San Joaquin kit fox, or tiger salamanders:

    1. The Project Proponent may disc or plow the entire project site to destroy any ground squirrel burrows. At the same time burrows are destroyed, ground squirrels should be removed through one of the following approved methods to prevent reoccupation of the project site. Detailed descriptions of these methods are included in Appendix A of the MSHCP, Protecting Endangered Species, Interim Measures for Use of Pesticides in San Joaquin County, but have been summarized below:

        i. **Anticoagulants.** Establish bait stations using the approved rodenticide anticoagulants Chlorophacinone or Diphacinone. Rodenticides shall be used in compliance with EPA label standards and as directed by the San Joaquin County Agricultural Commissioner.

        ii. **Zinc Phosphide.** Establish bait stations with non-treated grain 5-7 calendar days in advance of rodenticide application, then apply Zinc Phosphide to bait stations.

Rodenticides shall be used in compliance with EPA label standards and as directed by the San Joaquin County Agricultural Commissioner.

iii. **Fumigants.** Use below-ground gas cartridges or pellets and seal burrows. Approved fumigants include Aluminum Phosphide (Fumitoxin, Phostoxin) and gas cartridges sold by the local Agricultural Commissioner's office. NOTE: Crumpled newspaper covered with soil is often an effective seal for burrows when fumigants are used. Fumigants shall be used in compliance with EPA label standards and as directed by the San Joaquin County Agricultural Commissioner.

iv. **Traps.** For areas with minimal rodent populations, traps may be effective for eliminating rodents. If trapping activities are required, the use of traps, shall be consistent with all applicable laws and regulations.

If the measures described above were not attempted or were attempted but failed, and burrowing owls are known to occupy the project site, then the following measures shall be implemented:

i. During the non-breeding season (September 1 through January 31) burrowing owls occupying the project site should be evicted from the project site by passive relocation as described in the California Department of Fish and Wildlife's Staff Report on Burrowing Owl Mitigation (October 17, 1995)

ii. During the breeding season (February 1 through August 31) occupied burrows shall not be disturbed and shall be provided with a 75-meter protective buffer until and unless the HTAC, with the concurrence of the Permitting Agencies' representatives on the HTAC, or unless a qualified biologist approved by the Permitting Agencies verifies through noninvasive means that either: 1) the birds have not begun egg laying, or 2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. Once the fledglings are capable of independent survival, the burrow can be destroyed.

MEASURE 5.2.4.17 GROUND NESTING OR STREAMSIDE/LAKESIDE NESTING BIRDS (NORTHERN HARRIER, HORNED LARK, WESTERN GREBE, SHORT-EARED OWL)

A setback of 500 feet from nesting areas shall be established and maintained during the nesting season for the period encompassing nest building and continuing until fledglings leave nests. This setback applies whenever construction or other ground-disturbing activities must begin during the nesting season in the presence of nests which are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing.

MEASURE 5.2.4.18 BIRDS NESTING IN ISOLATED TREES OR SHRUBS OUTSIDE OF RIPARIAN AREAS (SHARP-SHINNED HAWK, YELLOW WARBLER, LOGGERHEAD SHRIKE)

A setback of 100 feet from nesting areas shall be established and maintained during the nesting season for the period encompassing nest building and continuing until fledglings leave nests. This setback applies whenever construction or other ground-disturbing activities must begin during the

nesting season in the presence of nests which are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing.

MEASURE 5.2.4.19 BIRDS NESTING ALONG RIPARIAN CORRIDORS (COOPER'S HAWK, YELLOW-BREASTED CHAT, OSPREY, WHITE-TAILED KITE)

A. For white-tailed kites, preconstruction surveys shall investigate all potential nesting trees on the project site (that is, especially tree tops 15-59 feet above the ground in oak, willow, eucalyptus, cottonwood, or other deciduous trees), during the nesting season (February 15 to September 15) whenever white-tailed kites are noted on site or within the vicinity of the project site during the nesting season.

B. For the Cooper's hawk, yellow-breasted chat, osprey, and white-tailed kite, a setback of 100 feet from nesting areas shall be established and maintained during the nesting season for the period encompassing nest building and continuing until fledglings leave nests. This setback applies whenever construction or other ground-disturbing activities must begin during the nesting season in the presence of nests which are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing.

MEASURE 5.2.4.28 BATS (ALL)

A. Prior to the nursery season (indicated in Table 3.3-4) for bat species, nursery sites shall be sealed.

B. Seal hibernation sites, prior to the hibernation season (November through March) when hibernation sites are identified on the project site. Alternatively, grating may be installed as described in 5.5.9(E)(1) of the SJMSCP.

C. When colonial roosting sites which are located in trees or structures must be removed, removal shall occur outside of the nursery and/or hibernation seasons and shall occur during dusk and/or evening hours after bats have left the roosting site, unless otherwise approved pursuant to Section 5.2.3.2 of the SJMSCP.

Land Use

Land use within the BSA is comprised mainly of industrial, transportation (existing rail rights-of-way), and residential. The majority of the BSA is disturbed ruderal and developed landscapes; however, small scattered areas of eucalyptus, urban parks, annual grassland, and vegetated areas occur along Mormon Slough in the BSA. The BSA is bisected by the slough, which runs east to west. Results of a site reconnaissance survey and focused elderberry survey determined that the section of Mormon Slough that the BSA crosses is highly disturbed, littered with trash, and home to a large established transient population.

Biological Setting

The vegetation communities and sensitive biological resources, such as special-status species, critical habitat, EFH, aquatic resources, and wildlife corridors, in the BSA are described in the following sections.

Vegetation Communities

The desktop review and reconnaissance survey identified five vegetation communities present in the BSA: urban, urban parks, ruderal/disturbed, annual grassland, and Mormon Slough, as described in Table 3.3-1 and shown in Figure 3.3-2. Acreages of each vegetation community mapped within the BSA are provided in Table 3.3-1.

Table 3.3-1. Vegetation Communities within the Biological Study Area

Vegetation Community	Acres within BSA
Urban	299.63
Urban Parks	4.35
Ruderal/Disturbed	69.38
Annual Grassland	4.34
Mormon Slough	1.39
Total	379.09

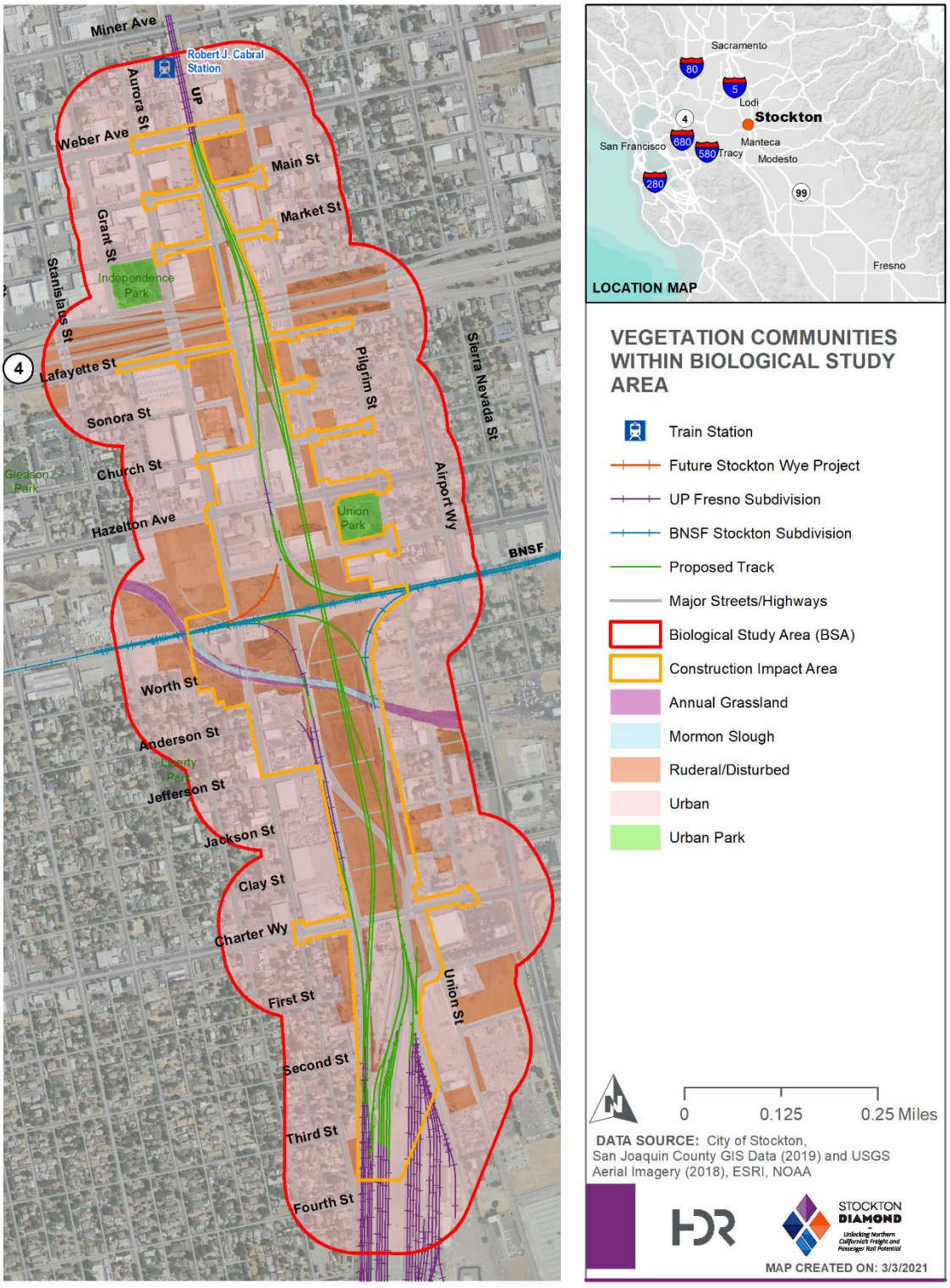
URBAN

A total of 299.63 acres of urban areas were mapped within the BSA. Urban portions of the BSA include the existing rail right-of-way, industrial and residential properties, existing roads and road shoulders, recreational areas, and various other areas with a history of disturbance supporting ruderal, ornamental, or introduced vegetation. A few trees and shrubs, such as tree of heaven (*Ailanthus altissima*) and eucalyptus (*Eucalyptus* sp.) are sparsely scattered within various portions of the BSA. Urban areas generally provide only marginal habitat value for native plants and wildlife.

URBAN PARKS

A total of 4.35 acres of urban parks areas were mapped within the BSA, associated with a few city parks that include a mix of ornamental and introduced tree species and mowed lawn. These city parks are in highly trafficked areas and can be considered highly disturbed. Because of the high degree of disturbance, these areas generally have a low habitat value for wildlife, although a few species adapted for urban conditions can use these areas, including special-status species such as Swainson’s hawk and white-tailed kite.

Figure 3.3-2: Vegetation Communities within Biological Study Area



RUDERAL/DISTURBED

A total of 69.38 acres of ruderal/disturbed areas were mapped within the BSA. These include areas within the BSA that are not currently developed, but have been altered or disturbed by development, but are still able to support some vegetation. Ruderal/Disturbed portions of the BSA include the track ballast and surrounding right-of-way, undeveloped portions of residential and industrial properties unpaved road shoulders, and various other areas with a history of disturbance which currently support ruderal vegetation.

These areas are a mix of human-made structures, hardscape, rocky substrates, and semi-barren areas with sparse vegetation consisting primarily of nonnative annual grasses and invasive weeds. Associated species include crabgrass (*Cynodon dactylon*), telegraphweed (*Heterotheca grandiflora*), Canadian horseweed (*Conyza canadensis*), wild radish (*Raphanus* spp.), jimsonweed (*Datura stramonium*), Russian thistle (*Salsola tragus*), yellow star-thistle (*Centaurea solstitialis*), and brome (*Bromus* spp.).

ANNUAL GRASSLAND

A total of 4.34 acres of annual grassland areas were mapped in scattered locations throughout the BSA. The dominant species are non-native annual grasses, including wild oats (*Avena* sp.) and a variety of bromes. Additional potential species include Russian thistle, ripgut brome (*Bromus diandrus*), Bermuda grass (*Cynodon dactylon*), English plantain (*Plantago lanceolata*), longbeak stork's bill (*Erodium botrys),* and prickly lettuce (*Lactucaserriola*). Invasive species, such as yellow star thistle and mullien (*Verbascum* sp.), were also observed.

MORMON SLOUGH

A total of 1.39 acres were mapped within the Mormon Slough. The section of Mormon Slough within the BSA is extremely disturbed, mostly devoid of vegetation, and does not convey enough water to support riparian vegetation or aquatic wildlife species. Within the BSA, vegetation within the Mormon Slough is characterized as ruderal/disturbed with some annual grassland and a few small, scattered patches of giant reed (*Arundo donax*). The slough may have once supported more aquatic wildlife and botanical species, but with the implementation of the Stockton Diverting Canal, the area is dry most of the year and receives water mainly through surface runoff during large storm events. Further, the section of the Mormon Slough that runs through the BSA is inhabited by a large transient population with structures, litter and debris prevalent throughout the BSA.

Special-Status Natural Communities

Sensitive habitats considered are those that are of special concern to resource agencies or those that are protected under CEQA, FGC Sections 1600–1603, and/or CWA Sections 401 and 404.

Critical Habitat and Essential Fish Habitat

In 2000, NMFS designated the Calaveras River and the Mormon Slough as critical habitat for Central Valley steelhead (NMFS 2014). Additionally, EFH occurs in the BSA for two special-status fish species: Central Valley Steelhead and Chinook salmon. While these species are not present

within the BSA at this time, preservation of fish passage and important habitat characteristics would be important to future restoration efforts of Mormon Slough as fish habitat. Informal Section 7 consultation was initiated with NOAA on February 25, 2021, this section will be updated to include the final determination is received from NOAA in the Final EIR.

Central Valley Steelhead

Mormon Slough does not support regular flows at this time and does not have any connectivity to perennial water sources. Therefore, Central Valley steelhead cannot access the section of Mormon Slough that runs through the BSA. Additionally, the portion of the Mormon Slough within the BSA does not support any of the Primary constituent elements (PCEs) for Central Valley Steelhead, which include 1) freshwater spawning sites with suitable water quality and quantity conditions and substrate supporting spawning; 2) freshwater rearing sites with suitable water quantity and floodplain connectivity; 3) freshwater migration corridors free of obstruction with suitable water quantity and quality conditions; 4) estuarine areas free of obstruction with suitable water quality, water quantity and salinity conditions; 5) nearshore marine areas free of obstruction with suitable water quality and quantity conditions and forage; and 6) offshore marine areas with suitable water quality conditions and forage.

Central Valley steelhead are not expected to occur in the portion of the Mormon Slough within the BSA at this time. This species would only be able to recolonize the area with restoration of water connectivity and removal of passage barriers in areas outside of the BSA.

Chinook salmon

The portion of the Mormon Slough within the BSA has been identified as EFH for Chinook salmon. As with Central Valley steelhead habitat, Chinook salmon cannot access the section of Mormon Slough that runs through the BSA due to lack of flowing water and/or connectivity with perennial water sources. Areas identified as EFH within the BSA do not support any of the habitat requirements for Chinook salmon at this time and this species is not expected to occur in the portion of the Mormon Slough within the BSA at this time. Fish species would only be able to recolonize the area with restoration of water connectivity and removal of passage barriers in areas outside of the BSA.

Mormon Slough does not support regular flows at this time and does not have any connectivity to perennial water sources. Therefore, Chinook salmon cannot access the section of Mormon Slough that runs through the BSA. Additionally, the portion of the Mormon Slough within the BSA does not support any of the PCEs for Chinook salmon, which include 1) freshwater spawning sites with suitable water quality and quantity conditions and substrate supporting spawning; 2) freshwater rearing sites with suitable water quantity and floodplain connectivity; 3) freshwater migration corridors free of obstruction with suitable water quantity and quality conditions; 4) estuarine areas free of obstruction with suitable water quality, water quantity and salinity conditions; 5) nearshore marine areas free of obstruction with suitable water quality and quantity conditions and forage; and 6) offshore marine areas with suitable water quality conditions and forage.

Chinook salmon are not expected to occur in the portion of the Mormon Slough within the BSA at this time. This species would only be able to recolonize the area with restoration of water connectivity and removal of passage barriers in areas outside of the BSA.

Aquatic Resources

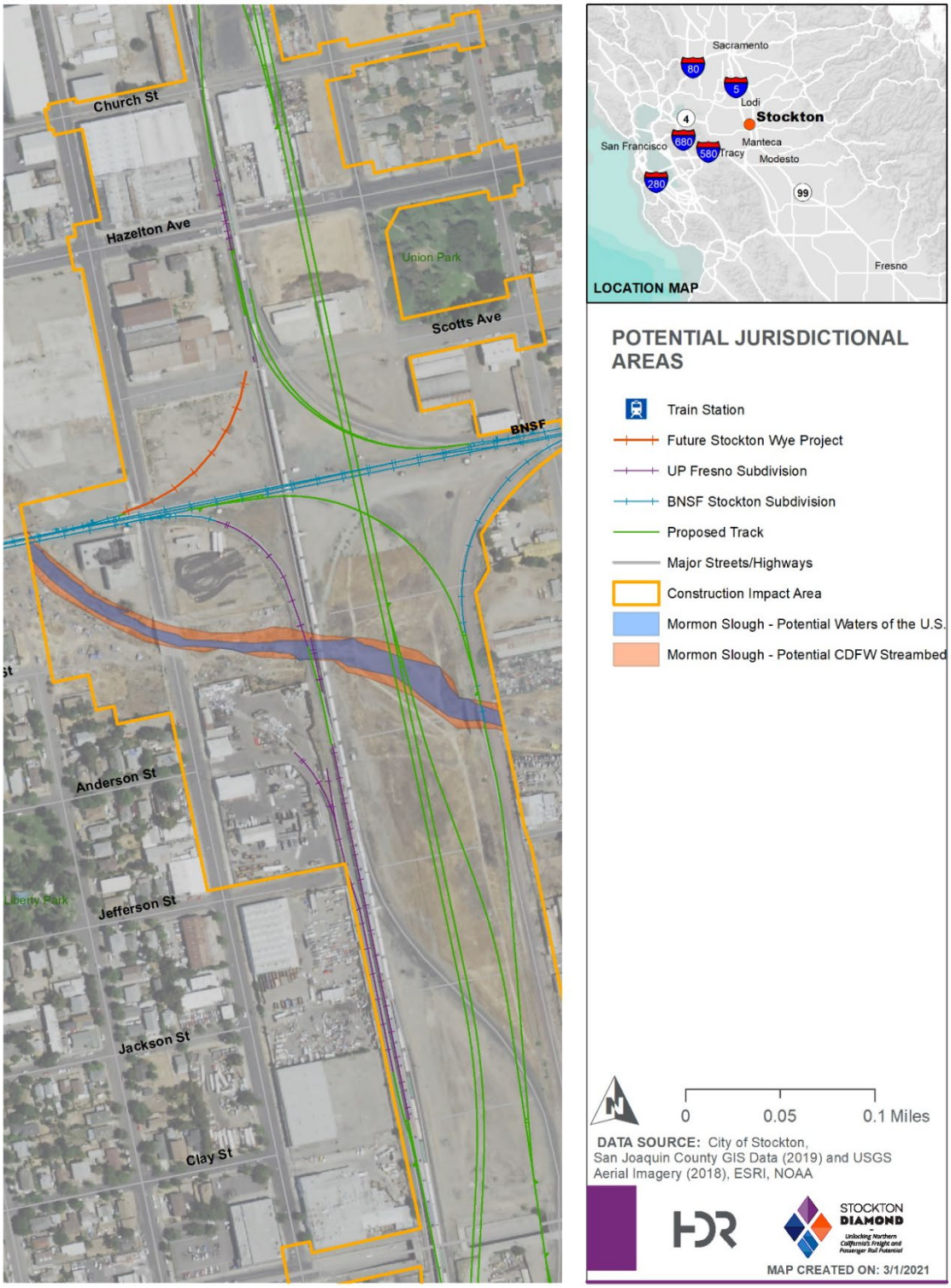
Due to the lack of site access, it was not possible to conduct a field-based delineation of aquatic resources in support of the proposed Project. The discussion of aquatic resources within the BSA is based on a review of current and historic aerial imagery and street-view photographs. Determinations provided here are preliminary and subject to change following a formal delineation of aquatic resources and/or submittal to agencies for jurisdictional determination.

Historically, the Mormon Slough acted as a flood channel that supported intermittent or perennial flows. With the completion of the Stockton Diverting Canal that re-routed flows, the portion of Mormon Slough running through the BSA is now fed exclusively through surface water runoff and does not convey water most of the year. As described above, the section of the Mormon Slough within the BSA is dry most of the year, extremely disturbed, and mostly devoid of vegetation. Due to the lack of water, most of the Mormon Slough is expected to support non-wetland, non-riparian areas that are potentially protected under Clean Water Act (CWA) Sections 401 and 404 and/or California Fish and Game Code (FGC) Sections 1600–1603.

A total of 1.41 acres of potential non-wetland waters of the U.S. subject to protection pursuant to CWA Sections 401 and 404 have been mapped within the BSA. Due to lack of property access, aerial photography was used for the purposes of this analysis. 2.47 acres of potential unvegetated streambed subject to protection as streambed pursuant to FGC Sections 1600-1603 have been mapped within the BSA using aerial photography for the purposes of this analysis[3]. Potential jurisdictional areas within the BSA are shown on Figure 3.3-3.

[3] This acreage is provided as the maximum area of potential jurisdictional resources within the BSA and is anticipated to be reduced following completion of a formal field-based delineation during final design.

Figure 3.3-3: Potential Jurisdictional Resources within Biological Study Area[4]



[4] Potential jurisdictional resources within the BSA were mapped based on aerial photography and have not been field-verified.

Special-Status Species

Candidate, sensitive, or special-status species are commonly characterized as species that are at potential risk or actual risk to their persistence in a given area or across their native habitat. These species have been identified and assigned a status ranking by governmental agencies such as USFWS, NMFS, and CDFW, and non-governmental organizations such as CNPS. For the purposes of this biological review, special-status species are defined by the following regulations:

- Listed, proposed, or candidates for listing under the ESA (listed: 50 CFR 17.11; candidates: 61 FR 7591, February 28, 1996)
- Listed or proposed for listing under the CESA (FGC Section 2050 et seq.; 14 CCR Section 670.1 et seq.)
- Designated as species of special concern by CDFW
- Designated as fully protected by CDFW (FGC Sections 3511, 4700, 5050, 5515)
- Species that meet the definition of rare or endangered under CEQA (14 CCR Section 15380) including CNPS rare plant rank Lists 1b and 2

The results of the USFWS, NMFS, CDFW, and CNPS database queries identified 11 special-status plant species and 33 special-status wildlife species with the potential to occur in the BSA. Raw data from the queries are provided in Appendix C, *Supporting Biological Resources Information*. Table 3.3-2 and Table 3.3-3 summarize all special-status plant and wildlife species, respectively, identified in the database results and describes the habitat requirements for each species, providing conclusions regarding the potential for each species to be affected by proposed Project components. In cases where a determination was made that no suitable habitat for a given species is present in the BSA (see Appendix C, *Supporting Biological Resources Information*), that species is not analyzed further in this document.

Of the 44 species, 41 were determined not to occur in the proposed Project BSA because of the limited types of habitat in the BSA. Based on the results of the literature review and reconnaissance surveys, the following three special-status bird species have the potential to occur in, or directly adjacent to, the BSA: burrowing owl, Swainson's hawk, and white-tailed kite. No special-status bat species were identified during desktop queries, but bat maternity roosts are generally protected under CEQA and several bat species are covered under the SJMSCP. Because of the highly urbanized area and proximity to Mormon Slough, roosting bats, or those covered under the SJMSCP, have the potential to occur within the BSA, as discussed below. Although suitable habitat for giant garter snake and western pond turtle is absent from the BSA, the SJMSCP identifies Mormon Slough as suitable habitat for these species; therefore, a discussion of each of these species is provided below. No habitat for special-status plants was found to occur in or directly adjacent to the BSA.

Table 3.3-2. Special-Status Plants Known to Occur within Vicinity of Biological Study Area

Scientific Name	Common Name	Status				Habitat Characteristics	Potential for Occurrence	Rationale
		Federal	State	CRPR	SJMSCP			
Astragalus tener var. tener	alkali milk-vetch	None	None	1B.2	CEQA	Alkaline soils in playas, adobe clay grassland, and vernal pools. Elevation: 0–195 feet. Blooming period: March–June	N	Suitable habitat not present in the BSA.
Atriplex cordulata var. cordulata	heartscale	None	None	1B.2	CEQA	Saline or alkaline soils in chenopod scrub, meadows, seeps, and sandy grassland. Elevation: 0–1,837 feet. Blooming period: April–October	N	Suitable habitat not present in the BSA.
Blepharizonia plumosa	big tarplant	None	None	1B.1	None	Usually clay soils in grassland. Elevation: 95–1,655 feet. Blooming period: July–October	N	Suitable habitat not present in the BSA.
Brasenia schreberi	watershield	None	None	2B.3	None	Freshwater marshes and swamps. Elevation: 95–7,220 feet. Blooming period: June–September	N	Suitable habitat not present in the BSA.
Chloropyron palmatum	palmate-bracted bird's-beak	FE	SE	1B.1	None	Alkaline soils in chenopod scrub and grassland. Elevation: 15–510 feet. Blooming period: May–October	N	Suitable habitat not present in the BSA.
Extriplex joaquinana	San Joaquin spearscale	None	None	1B.2	None	Alkaline soils in chenopod scrub, meadows, seeps, playas, and grassland. Elevation: 0–2,740 feet. Blooming period: April–October (synonym of *Atriplex joaquiniana*)	N	Suitable habitat not present in the BSA.
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	None	None	1B.2	ESA, CESA, CEQA	Often in riprap on sides of levees in freshwater marshes and swamps. Elevation: 0–395 feet. Blooming period: June–September	N	Suitable habitat not present in the BSA.
Lathyrus jepsonii var. jepsonii	Delta tule pea	None	None	1B.2	ESA, CESA, CEQA	Freshwater and brackish marshes and swamps. Elevation: 0–16 feet. Blooming period: May–September	N	Suitable habitat not present in the BSA.
Sagittaria sanfordii	Sanford's arrowhead	None	None	1B.2	ESA, CESA, CEQA	Fresh water marshes and swamps that are typically shallow. Elevation: 0–2,132 feet. Blooming period: May–October	N	Suitable habitat not present in the BSA.
Symphyotrichum lentum	Suisun Marsh aster	None	None	1B.2	ESA, CESA, CEQA	Brackish and freshwater marshes and swamps. Elevation: 0–9 feet. Blooming period: (April)May–November (synonym of *Aster chilensis* var. lentus and A. lentus)	N	Suitable habitat not present in the BSA.
Trifolium hydrophilum	saline clover	None	None	1B.2	None	Marshes, swamps, vernal pools, and grassland with mesic or alkaline soils. Elevation: 0–985 feet. Blooming period: April–June	N	Suitable habitat not present in the BSA.

LEGEND

Species Status:

Federal (USFWS and USDA)	*State (CDFW)*
FE Endangered	SE Endangered

CRPR: California Rare Plant Ranking

1A Plants presumed extirpated in California and either rare or extinct elsewhere

1B Plants Rare, Threatened, or Endangered in California and elsewhere

2A Plants Presumed extirpated in California, but more common elsewhere

2B Plants Rare, Threatened, or Endangered in California, but more common elsewhere

3 Plants about which we need more information - review list

4 Plants of limited distribution - watch list

CRPR Threat Code Extension

None: Plants lacking any threat information

.1 Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)
.2 Moderately threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)
SJMSCP: San Joaquin Multi-Species Habitat and Open Space Conservation Plan
None: Species not covered under the SJMSCP
CEQA: Impacts to species considered significant under CEQA are covered under participation in the SJMSCP
ESA: Take of species pursuant to Federal Endangered Species Act covered under participation in the SJMSCP
CESA: Take of species pursuant to California Endangered Species Act covered under participation in the SJMSCP

Table 3.3-3. Special-Status Wildlife Known to Occur in the Vicinity of the Biological Study Area

Scientific Name	Common Name	Status			Habitat Characteristics	Potential for Occurrence	Rationale
		Federal	State	SJMSCP			
Invertebrates							
Branchinecta lynchi	vernal pool fairy shrimp	FT	None	ESA, CESA, CEQA	Endemic to the grasslands of the Central Valley and the Central and South Coast Range mountains of California, and the Agate Desert of southern Oregon. Found only in cool water vernal pools and vernal pool-like habitats; does not occur in riverine, marine, or other permanent bodies of water (USFWS 2007).	N	Vernal pool habitat not present within the BSA.
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT	None	ESA, CESA, CEQA	Dependent on host plant, elderberry (Sambucus spp.), which most commonly grows in riparian woodlands, but also in some upland habitats such as oak savannas and annual grasslands. Current presumed range in Central Valley extends from Shasta County south to Fresno County, including the valley floor and lower foothills up to about 500 feet in elevation (USFWS 2017).	N	No elderberry shrubs were documented during visual surveys conducted on November 24, 2020.
Lepidurus packardi	vernal pool tadpole shrimp	FE	None	ESA, CESA, CEQA	Found only in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands. Patchily distributed across the Central Valley from Shasta County south to Tulare County with isolated occurrences in the East Bay Area (USFWS 2007).	N	Vernal pool habitat not present within the BSA.
Fish							
Acipenser medirostris	green sturgeon (southern DPS)	FT	SSC	CEQA	Spawning occurs primarily in the Sacramento River, but those that spawn in the Feather and Yuba Rivers are also part of the southern DPS. Oceanic waters, bays, and estuaries during non-spawning season. Enters San Francisco Bay late winter through early spring, and spawn occurs from April through early July. Spawn in cool sections of river mainstems in deep pools containing small to medium-sized gravel, cobble, or boulder substrate (NMFS 2015).	N	Hydrology of Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and there is no consistent connection to other fish bearing water bodies.
Acipenser transmontanus	white sturgeon	None	SSC	None	Saltwater from Ensenada to Alaska. Spawn in large river systems along the west coast. Currently, self-sustaining populations only occur in the Sacramento, Columbia, and Fraser Rivers. Spawn in large, deep pools (Moyle 2002).	N	Hydrology of Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and there is no consistent connection to other fish bearing water bodies.
Entosphenus tridentatus	Pacific lamprey	None	SSC	None	Cold, clear water for spawning and incubation. Peak spawning appears to be closely tied to water temperatures that are suitable for early development but can occur at temperatures above 72ºF. Adults use gravel areas to build nests, while ammocoetes need soft sediments in which to burrow during rearing. Nests are generally associated with cover, including gravel and cobble substrates, vegetation and woody debris. Ammocoetes burrow into larger substrates as they grow. Ammocoetes also need detritus that produces algae for food and habitats with slow or moderately slow water velocities, such as low gradient riffles, pool tailouts and lateral scour pools (CDFW 2015).	N	Hydrology of Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and there is no consistent connection to other fish bearing water bodies.
Hypomesus transpacificus	delta smelt	FT	SE	ESA, CESA, CEQA	Endemic to open waters of San Francisco Bay and Sacramento-San Joaquin River Delta. Distribution includes San Pablo Bay up through Suisun Bay, upstream through the delta to the Sacramento River below Isleton, and the San Joaquin River below Mossdale. Spawning has not been observed in the wild but is thought to take place in sloughs and shallow edge-water channels in the upper delta and in Montezuma Slough near Suisun Bay. (USFWS 2010).	N	Hydrology of Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and there is no consistent connection to other fish bearing water bodies.
Lampetra ayresii	river lamprey	None	SSC	None	Occurs in the Sacramento-San Joaquin River systems, although it likely occurs elsewhere. Small lampreys that spend most of their lives in freshwater, with about 3 to 4 months in saltwater. Adults migrate into freshwater for spawning in autumn (Moyle 2002).	N	The section of Mormon Slough that occurs within the proposed Project area does not hold water year-round; therefore, does not provide suitable habitat for special-status fish.

Scientific Name	Common Name	Status			Habitat Characteristics	Potential for Occurrence	Rationale
		Federal	State	SJMSCP			
Lavinia exilicauda exilicauda	Sacramento hitch	None	SSC	None	Has a scattered distribution within the Central Valley, from the Tulare Lake Basin to Shasta Reservoir (Moyle 2002).	N	Hydrology of Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and there is no consistent connection to other fish bearing water bodies.
Oncorhynchus mykiss irideus (pop. 11)	steelhead (central valley DPS)	FT	None	None	Includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Sacramento and San Joaquin Rivers and their tributaries; excludes such fish originating from San Francisco and San Pablo Bays and their tributaries. This DPS does include steelhead from two artificial propagation programs: Coleman National Fish Hatchery Program and Feather River Fish Hatchery Program. Spawning habitat includes gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Non-spawning habitat includes estuarine and marine waters (NOAA 2019).	N	Hydrology of Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and there is no consistent connection to other fish bearing water bodies.
Oncorhynchus tshawytscha (pop. 6)	chinook salmon (Central Valley spring-run ESU)	FT	ST	None	Currently found in the Sacramento-San Joaquin River Delta, the Sacramento River and its tributaries, including American, Yuba and Feather Rivers, and Mill, Deer, and Butte Creeks. The numbers of adults are dependent on pool depth and volume, amount of cover, and proximity to gravel. Water temperatures greater than 80°F are lethal to adults (NMFS 2016).	N	Hydrology of Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and there is no consistent connection to other fish bearing water bodies.
Oncorhynchus tshawytscha (pop. 13)	chinook salmon (Central Valley fall / late fall-run ESU)	None	SSC	None	Currently found primarily in the Sacramento River, where most spawning and rearing of juveniles takes place in the reach between Red Bluff Diversion Dam and Redding's Keswick Dam. The specific habitat requirements of late fall-run chinook salmon have not been determined but they are presumably similar to other Central Valley chinook salmon runs. It is believed that optimal conditions fall within the range of physical and chemical characteristics of the unimpaired Sacramento River above Shasta Dam (CDFW 2015).	N	The section of Mormon Slough that occurs within the proposed Project area does not hold water year-round; therefore, does not provide suitable habitat for special-status fish.
Oncorhynchus tshawytscha (pop. 30)	chinook salmon (upper Klamath and Trinity Rivers ESU)	None	SCE	None	Found in all major tributaries above the confluence of the Klamath and Trinity Rivers and raised in hatcheries below Iron Gate and Lewiston Dams. Enter the Klamath Estuary for only a short period prior to spawning. Unfavorable temperatures may exist in the Klamath Estuary and lower river during summer and chronic exposure of migrating adults to temperatures of even 62 to 68°F is detrimental (CDFW 2015).	N	Hydrology of Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and there is no consistent connection to other fish bearing water bodies.
Pogonichthys macrolepidotus	Sacramento splittail	None	SSC	ESA, CESA, CEQA	The Sacramento splittail is endemic to California's Central Valley. Splittail are now largely confined to the Delta, Suisun Bay, Suisun Marsh, Napa River, Petaluma River, and other parts of the San Francisco Estuary, while spawning on upstream floodplains and channel edges. The species is adapted for estuarine and are tolerant of a wide range of salinities and temperatures. Splittail require a rising hydrograph for upstream migration and flooded vegetation for spawning and rearing areas. Flooded areas need to be at least 1 m deep with deeper, more open, areas as refuges from predation (CDFW 2020).	N	Hydrology of Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and there is no consistent connection to other fish bearing water bodies.

Scientific Name	Common Name	Status			Habitat Characteristics	Potential for Occurrence	Rationale
		Federal	State	SJMSCP			
Spirinchus thaleichthys	longfin smelt	FCT	ST	None	Considered pelagic and anadromous, though anadromy in this species is poorly understood, and certain populations are not anadromous, completing their life cycle in freshwater lakes and streams (USFWS 2012).	N	Hydrology of Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and there is no consistent connection to other fish bearing water bodies.
Amphibians							
Ambystoma californiense	California tiger salamander	FT	ST	ESA, CESA, CEQA	Breeds in fish-free ephemeral ponds which form in winter and dry in summer. Some also breed in slow streams and semi-permanent waters, including cattle ponds. Spends most of the year underground in small mammal burrows, especially those of California ground squirrel (*Otospermophilus beecheyi*). Typical habitat associations include grassland, oak savanna, edges of mixed woodland, and lower elevation coniferous forest (Nafis 2020).	N	Suitable habitat not present within the BSA. The section of Mormon Slough that bisects the BSA does not provide adequate aquatic habitat and is dry the majority of the year. The closest known occurrence is documented roughly 2 miles northwest of the BSA near Victory Park, but is outdated (1923) and presumed extirpated.
Rana draytonii	California red-legged frog	FT	SSC	ESA, CESA, CEQA	Ponds and streams in humid forests, woodlands, grasslands, coastal scrub, and streamsides with plant cover in lowlands or foothills. Breeding habitat includes permanent or ephemeral water sources; lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. Ephemeral wetland habitats require animal burrows or other moist refuges for estivation when the wetlands are dry. Occurs from sea level to 5,000 feet in elevation. Occurs along the Coast Ranges from Mendocino County south to northern Baja California, and inland across the northernmost reaches of the Sacramento Valley and locally south through portions of the Sierra Nevada foothills as far south as northern Tulare County (Nafis 2020).	N	Suitable habitat not present within the BSA
Spea hammondii	western spadefoot	None	SSC	ESA, CESA, CEQA	Generally found in grasslands, oak woodlands, coastal sage scrub, and chaparral in washes, floodplains, alluvial fans, playas, and alkali flats. Natural and artificial water bodies are used for breeding. Specifically, vernal pools used by this species have an average ponding duration of 81 days, and successful recruitment occurs in ponds that last on average 21 days longer than larval development time. Pool temperature requirements are from 48 to 90oF. Pools with invasive species, such as crayfish (*Pacifasticus* spp.), or bullfrogs (*Lithobates catesbeianus*) often, but not always, exclude this species. (Thomson et al. 2016).	N	Suitable habitat not present within the BSA

Scientific Name	Common Name	Status Federal	Status State	SJMSCP	Habitat Characteristics	Potential for Occurrence	Rationale
Reptiles							
Emys marmorata	western pond turtle	None	SSC	ESA, CESA, CEQA	Ranges throughout California except for Inyo and Mono Counties. Generally occurs in various water bodies including permanent and ephemeral systems either natural or artificial. Upland habitat that is at least moderately undisturbed is required for nesting and overwintering, in soils that are loose enough for excavation (Thomson et al. 2016).	N	Hydrology of the Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and is dry a majority of the year. Additionally, suitable upland habitat is not present in the BSA. The upland habitat along the edges of the Slough is highly disturbed, urbanized, and inhabited by a large homeless population.
Phrynosoma blainvillii	coast horned lizard	None	SSC	None	Known to occur in open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains. Furthermore, grasslands, coniferous forests, woodlands, and chaparral, with patches of loose soil in open habitat. Frequently found in sandy washes with scattered shrubs and along dirt roads, and frequently found near ant hills. Ranges up onto the Kern Plateau east of the crest of the Sierra Nevada.	N	All known occurrences are documented in the foothills surrounding the Central Valley (with the exception of one near Merced). The highly urban/industrial conditions of the BSA and surrounding areas make movement of individuals into the City center very unlikely. Additionally, soils appear to be mainly loam/clay, which is not ideal.
Thamnophis gigas	giant garter snake	FT	ST	ESA, CESA, CEQA	Marshes, sloughs, ponds, small lakes, low gradient streams, irrigation and drainage canals, rice fields and their associated uplands. Upland habitat should have burrows or other soil crevices suitable for snakes to reside during their dormancy period (November- mid March). Formerly ranged in the Central Valley from Butte County to Buena Vista Lake in Kern County, but now thought to be absent south of Fresno and in Stanislaus County (USFWS 2012).	N	Suitable habitat not present within the BSA. Hydrology of the Slough is completely dependent on intermittent stormwater runoff. Water is only present for short periods of time and is dry a majority of the year. The closest known occurrences are documented near the Calaveras River to the east and the Port of Stockton to the west. Additionally, the upland habitat along the edges of the Slough is highly disturbed, urbanized, and inhabited by a large homeless population and does not provide suitable habitat.
Birds							
Agelaius tricolor	tricolored blackbird	None	ST, SSC	ESA, CESA, CEQA	Mostly a year-round resident in California. Common locally throughout Central Valley and in coastal districts from Sonoma County south. Breeds locally in northeastern California. In winter, becomes more widespread along the central coast and San Francisco Bay area, and can be found in portions of the Colorado Desert (Hamilton 2004). Preferred nesting habitat includes cattails (*Typha* spp.), bulrushes (*Schoenoplectus* spp.), Himalayan blackberry (*Rubus armeniacus*), and agricultural silage. Dense vegetation is preferred but heavily lodged cattails not burned in recent years may preclude settlement. Need access to open water. Strips of emergent vegetation along canals are avoided as nest sites unless they are about 30 feet or more wide but in some ponds, especially where associated with Himalayan blackberries and deep water, settlement may be in narrower fetches of cattails. (CDFW 2020).	N	Suitable habitat not present within the BSA

Scientific Name	Common Name	Status			Habitat Characteristics	Potential for Occurrence	Rationale
		Federal	State	SJMSCP			
Asio flammeus	short-eared owl	None	SSC	CEQA	Found in open, treeless areas with elevated sites for perches, and dense vegetation for roosting and nesting. Associated with perennial grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands. Breeds in coastal areas in Del Norte and Humboldt Counties, San Francisco Bay Delta, northeastern Modoc plateau, east Sierras from Lake Tahoe to Inyo County and San Joaquin Valley. Winters in the Central Valley, western Sierra Nevada foothills and along the coastline (CDFW 2020).	N	Suitable habitat not present within the BSA.
Athene cunicularia	burrowing owl	None	SSC	ESA, CESA, CEQA	Resident in much of the state in open, dry grasslands and various desert habitats. Requires open areas with mammal burrows; especially those of California ground squirrel (*Otospermophilus beecheyi*) Inhabits rolling hills, grasslands, fallow fields, sparsely vegetated desert scrub, vacant lots and other open human disturbed lands such as airports and golf courses. Absent from northwest coast and elevations above 5,500 feet (CDFW 2020).	Y	Suitable habitat may be present in the BSA.
Buteo swainsoni	Swainson's hawk	None	ST	ESA, CESA, CEQA	Nests in oak savanna and cottonwood riparian areas adjacent to foraging habitat of grasslands, agricultural fields, and pastures where they often follow farm equipment to gather killed and maimed rodents. Increasingly also nests in sparse stands of gum trees (*Eucalyptus* spp.) and Australian pines (*Casuarina equisetifolia*) and often forage along roadsides and grassy highway medians. Breeding resident in the Central Valley, Klamath Basin, Northeastern Plateau, and in juniper-sagebrush flats of Lassen County. Limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley. Winters primarily in Argentina, with most birds absent from California October through February, though a few overwinter in the Sacramento-San Joaquin River Delta. Prolific migrant through southern California in spring and fall, with large mixed-age groups of birds frequently observed kettling high overhead on thermals or foraging together on freshly cut agricultural fields (CDFW 2020).	Y	Suitable foraging and nesting habitat is present in the BSA.
Charadrius montanus	mountain plover	None	SSC	ESA, CESA, CEQA	Does not nest in California. Present in the state November through March in open grasslands and plowed fields with no or very short vegetation. Found in flocks mostly on the west side of the Central Valley from Colusa County south to Kern County, Carrizo Plain, Antelope Valley, Imperial Valley, and western Riverside County. Single individuals are rarely found on beaches or offshore islands (CDFW 2020).	N	Suitable habitat not present within the BSA.
Elanus leucurus	white-tailed kite	None	FP	ESA	Fairly common resident of the Central Valley, coast, and Coast Range Mountains. Nests in oak savanna, oak and willow riparian, and other open areas with scattered trees near foraging habitat. Forages in open grasslands, meadows, farmlands, and emergent wetlands. Often seen hover foraging over roadsides or grassy highway medians (CDFW 2020).	Y	Suitable habitat may be present within the BSA.
Icteria virens	yellow-breasted chat	None	SSC	CESA, CEQA	Nests in early-successional riparian habitats with a well-developed shrub layer and an open canopy. Restricted to narrow borders of streams, creeks, sloughs, and rivers. Often nest in dense thickets of blackberry (*Rubus* spp.) and willow (*Salix* spp.) (Shuford and Gardali 2008).	N	Suitable habitat not present within the BSA.
Melospiza melodia	song sparrow (Modesto population)	None	SSC	None	Often found in emergent freshwater marshes dominated by bulrushes (*Scirpus* spp.), cattails (*Typha* spp.), and willow (*Salix* spp.). Also nests in riparian forests of valley oak (*Quercus lobata*) with a sufficient understory of blackberry (*Rubus* spp.), along vegetated irrigation canals and levees, and in recently planted valley oak restoration sites. Found throughout the Sacramento Valley, from the delta north to Chico (Shuford and Gardali 2008).	N	Suitable habitat not present within the BSA.
Progne subis	purple martin	None	SSC	None	Present in California from mid-March through late September. Requires concentrations of nesting cavities, relatively open-air space above accessible nest sites, and relatively abundant aerial insect prey. In the coastal mountains, Cascade Range, and Sierra Nevada foothills, inhabits open forests, woodlands, and riparian areas. Extirpated as a breeder from most of the Central Valley except the Sacramento area where it has taken to nesting in hollow-box bridges. In southern California, now only a rare and local breeder on the coast and in interior mountain ranges, with few breeding localities. Absent from higher desert regions except as a rare migrant (Shuford and Gardali 2008).	N	Suitable habitat not present within the BSA.

Scientific Name	Common Name	Status Federal	Status State	SJMSCP	Habitat Characteristics	Potential for Occurrence	Rationale
Setophaga petechia	yellow warbler	None	SSC	CESA, CEQA	Usually found in riparian deciduous habitats in summer: cottonwoods (*Populus* ssp.), willows (*Salix* ssp.), alders (*Alnus* ssp.), and other small trees and shrubs typical of low, open-canopy riparian woodland. Also breeds in montane shrubbery in open coniferous forests (CDFW 2020).	N	Suitable habitat not present within the BSA.
Vireo bellii pusillus	least Bell's vireo	FE	SE	None	Once occupied much of the Central Valley, but has disappeared from most its former range, and is now restricted to southern California from southern Inyo and Monterey Counties south through the South Coast and Inland Empire regions. Obligate riparian breeder, favoring cottonwood (*Populus* spp.), willow (*Salix* spp.), and oak (*Quercus* spp.) woodlands, and mule fat (*Baccharis salicifolia*) scrub along watercourses (USFWS 2006).	N	Suitable habitat not present within the BSA.
Mammals							
Sylvilagus bachmani riparius	Riparian brush rabbit	FE	SE	ESA, CESA, CEQA	Found only at Caswell Memorial State Park on the Stanislaus River, San Joaquin County. Occur in relatively small areas of shrub/herbaceous edge, and in early successional stages of many habitats. Prefer dense brush cover of thickets, vines, brambles, or dense riparian habitat (CDFW 2020).	N	Suitable habitat not present within the BSA.

LEGEND

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; DPS: Distinct Population Segment; San Joaquin Multiple Species SJCMS Conservation Plan

Species Names and Status Follows; California Department of Fish and Wildlife. August 2019. Special Animals List. Available on-line: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals CDFW Biogeographic Data Branch. Sacramento, CA.

Species Status:

Federal (USFWS)	State (CDFW)
FE Endangered	SE Endangered
FT Threatened	ST Threatened
FCT Candidate Threatened	SCE Candidate Endangered
	FP Fully Protected
	SSC Species of Special Concern

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Swainson's Hawk

Despite the urban surroundings, Swainson's hawk have been documented nesting in the vicinity of the proposed Project and have a high likelihood of occurring in the BSA. Swainson's hawk tend to prefer oak (*Quercus* spp.), pine (*Pinus* spp.), and sometimes eucalyptus or other tall tree species for nesting. It prefers nesting habitat adjacent to suitable foraging habitat, which can include riparian areas, grasslands, agricultural fields, open space, and often along roadsides and grassy highway medians. City street trees and mature trees that occur within city parks may provide suitable nesting habitat for Swainson's hawk. There is a high density of Swainson's hawk occurrences documented in the CNDDB within 0.5 mile of the proposed Project construction limits (CDFW 2020a), many of which were documented in the last 15 years (CDFW 2020b). This species has potential to nest in trees within areas mapped as Urban and Urban Parks within the BSA, which together comprise a total of 303.98 acres.

White-tailed Kite

White-tailed kite is a common resident of the Central Valley and prefers to nest in oak savanna, oak and willow riparian, and other open areas with scattered trees. It prefers nesting habitat adjacent to suitable foraging habitat, which can include riparian areas, grasslands, agricultural fields, open space, and often along roadsides and grassy highway medians. City street trees and mature trees that occur within city parks may provide suitable nesting habitat for white-tailed kite. CNDDB shows one known white-tailed kite occurrence near the BSA in the last 15 years (CDFW 2020b). This species has potential to nest in trees within areas mapped as Urban and Urban Parks within the BSA, comprising a total of 303.98 acres.

Burrowing Owl

Burrowing owl is a known resident throughout California and prefers dry grasslands, various desert and upland habitats, vacant lots, disturbed lands, and sparsely vegetated scrub habitat. The species requires open areas with associated mammal burrows for nesting, especially those of California ground squirrel (*Otospermophilus beecheyi*). Suitable habitat may be present in the BSA. Mammal burrows were noted along the edges of the Mormon Slough during the reconnaissance survey, and some of the open lots in the BSA may support the species as well. Additionally, a handful of occurrences of burrowing owl have been documented in the vicinity in the CNDDB in the last 15 years (CDFW 2020b). Burrowing owl has potential to occur in areas mapped within the BSA as Ruderal/Disturbed, Annual Grassland, and the Mormon Slough, comprising a total of 75.11 acres.

Migratory Birds and Raptors

The BSA and immediate surroundings may provide nesting and/or foraging habitat for several special-status bird and raptor species, including burrowing owl, Swainson's hawk, and white-tailed kite, as well as nesting, wintering, and/or foraging habitat for other migratory birds and raptors not identified in Table 3.3-3. All native breeding birds (except game birds during the hunting season), regardless of their listing status, are protected under FGC Section 3503. The SJMSCP identifies Incidental Take Avoidance Measures for various classifications of nesting birds. In addition to the

three species discussed above, the BSA has potential to support the following classes of nesting birds as discussed in the SJMSCP: *Ground Nesting or Streamside/Lakeside Nesting Birds* and *Birds Nesting in Isolated Trees or Shrubs Outside of Riparian Areas*.

Roosting Bats

Bats roost in a wide variety of habitats, including buildings, mines, under bridges, rock crevices, caves, under tree bark, and in snags. Although no special-status bat species were identified in the queries during the desktop review, the BSA may provide suitable habitat for bat species covered under the SJMSCP, as shown in Table 3.3-4. Bridges, culverts, industrial buildings, other existing infrastructure, and trees throughout the BSA may provide suitable roosting habitat for several bat species, as shown in Table 3.3-4. While none of these bat species are provided special status pursuant to federal or state regulations, all of these species are covered under the SJMSCP.

Table 3.3-4. San Joaquin Multi-Species Conservation Plan Covered Bat Species with Suitable Habitat in BSA

Scientific Name	Common Name	Status		Preferred Occupation Site	Nursery Season
		Federal	State		
Eumops perotis californicus	Greater western mastiff bat	None	None	Cliff or rock crevice (usual), tree or snag (occasionally)	April-September
Myotis ciliolabrum	Small-footed myotis	None	None	Cave, adit, cliff, rock crevice, building	May-August
Myotis evotis	Long-eared myotis	None	None	Cave, adit, tree, snag	May-August
Myotis thysanodes	Fringed myotis	None	None	Cave, adit, cliff, rock crevice, building	May-August
Myotis volans	Long-legged myotis	None	None	Cave, adit, cliff, rock crevice, tree, snag, building	May-August
Lasiurus blossevillii	Red bat	None	None	Tree, snag, cave (occasionally)	May-August
Myotis yumanensis	Yuma myotis	None	None	Cave, adit, cliff, rock crevice, structure, cistern, bridge, tree, snag	May-August
Corynorhinus townsendii pallecens	Pale big-eared bat	None	None	Cave, adit, cliff, rock crevice, structure, cistern, bridge	May-August
Corynorhinus townsendii townsendii	Pacific western big-eared bat	None	None	Cave, adit, cliff, rock crevice, structure, cistern, bridge	April-August

Giant Garter Snake

As indicated in Table 3.3-3, the BSA does not currently support suitable habitat for giant garter snake. While the SJMSCP identifies the Mormon Slough as suitable habitat for giant garter snake, the Mormon Slough no longer supports the specific habitat requirements for this species as identified in the SJMSCP, most importantly, permanent water. However, since the Mormon Slough is identified in the SJMSCP as suitable habitat, Incidental Take Measures identified in the SJMSCP for giant

garter snake would apply to this Project unless otherwise approved by the SJMSCP's Habitat Technical Advisory Committee (HTAC).

Western Pond Turtle

As indicated in Table 3.3-3, the BSA does not currently support suitable habitat for western pond turtle. As with giant garter snake, while the SJMSCP identifies the Mormon Slough as suitable habitat for western pond turtle, the Mormon Slough no longer supports the specific habitat requirements for this species as identified in the SJMSCP, most importantly, permanent water. However, since the Mormon Slough is identified in the SJMSCP as suitable habitat, Incidental Take Measures identified in the SJMSCP for western pond turtle would apply to this Project unless otherwise approved by the HTAC.

Wildlife Movement Corridors

Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link otherwise fragmented acres of undisturbed area. Maintaining the continuity of established wildlife corridors is important to (1) sustain species with specific foraging requirements, (2) preserve a species' distribution potential, and (3) retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource.

Available data on movement corridors and linkages was accessed via the CNDDB BIOS 5 Viewer (CDFW 2020a). Data reviewed included the Essential Connectivity Areas [ds620] layer, the Natural Landscape Blocks [ds621] layer, the Wildlife Movement Barrier Priorities [ds2867] layer, and the Missing Linkages in California [ds420] layer. No essential habitat connectivity areas, natural landscape blocks, wildlife movement barrier priorities, or missing linkages occur within or adjacent to the BSA. However, the Mormon Slough and its associated upland banks may provide a corridor for common terrestrial wildlife movement through the BSA. As mentioned above, the Mormon Slough does not hold water year-round and does not provide adequate habitat for aquatic species; therefore, the Mormon Slough does not act as a movement corridor for fish or other aquatic species.

3.3.5 ENVIRONMENTAL ANALYSIS

This section describes the potential environmental impacts on biological resources as a result of implementation of the proposed Project. Specifically, this section evaluates the direct and indirect effects on vegetation, aquatic resources, and wildlife resources from implementing the proposed Project.

CEQA Significance Findings

An environmental analysis of each threshold identified is provided, below:

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 regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less Than Significant Impact with Mitigation Incorporated. Construction and demolition of existing and new tracks would require ground disturbance, grading, construction traffic (both vehicular and foot), possible removal of vegetation, relocation of existing utilities, and staging of equipment and materials. Additionally, indirect impacts in the form of noise and dust may occur as a result of construction activities within the BSA.

Although the BSA is highly urbanized and disturbed in nature, direct impacts to special-status species, such as burrowing owl, Swainson's hawk, white-tailed kite, and bats covered under the SJMSCP, could occur. However, with the implementation of Measure BMP BIO-1, requiring environmental awareness training be conducted prior to construction, and if necessary, a qualified biologist monitor present during construction activities; Measure BMP BIO-2, requiring Swainson's Hawk nest surveys to be conducted prior to construction; Measure BMP BIO-4, requiring Burrowing Owl surveys during peak breeding season (April 15 to July 15) prior to construction activities and avoidance measures in the event Burrowing Owls are encountered during construction; Measure BMP BIO-5, requiring bat roost surveys to be conducted during the maternity season prior to construction; and Measure MM BIO-6, which requires Project compliance with applicable Incidental Take Avoidance Measures identified in the SJMSCP, short-term impacts to species, such as burrowing owl, Swainson's hawk, white-tailed kite, and bats would be avoided, minimized and/or mitigated.

Further, birds that nest within the BSA and vicinity are likely acclimated to a high level of ongoing disturbance. Construction of new structures, demolition of existing structures, ground disturbance, and any vegetation removal (including trees) during the nesting season could result in temporary direct and indirect impacts on nesting birds, should they be present in or adjacent to construction or staging areas. Increased noise from construction activity, increased use of open areas for staging, construction of new facilities, tree removal, ground disturbance, and other human activity could result in nest abandonment if nesting birds are present near the Project construction limits during construction activities. However, with the implementation of Measures BMP BIO-1 and BMP BIO-3, requiring preconstruction migratory bird and raptor surveys, if construction were to occur during the migratory bird season (February 1 to September 15), these temporary impacts would be avoided and/or minimized.

Additionally, construction activities would temporarily impact SJMSCP-identified habitat for giant garter snake and pond turtles, associated with the Mormon Slough. However, with the implementation of Measure MM BIO-6, temporary impacts to areas identified in the SJMSCP as giant garter snake and pond turtle habitat would be mitigated.

Based on the discussion above, with the implementation of Measures BMP BIO-1 through BMP-5 and MM BIO-6, short-term impacts would be considered less than significant with mitigation incorporated.

Permanent impacts to special-status species and/or SJMSCP-identified habitat for special status species would occur as a result of the proposed Project. A summary of permanently impacted resources is provided below.

White Tailed Kite

The proposed Project would result in permanent impacts to up to 70.16 acres of Urban and Urban Park areas that contain scattered trees suitable to support white-tailed kite nests. However, with the implementation of Measures BMP BIO-1 and BMP BIO-3, no direct take of white-tailed kite nests would occur and any potential Project impacts on white-tailed kite as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of required mitigation fees consistent with Measure MM BIO-6.

Swainson's Hawk

The proposed Project would result in permanent impacts to up to 70.16 acres of Urban and Urban Park areas that contain scattered trees suitable to support Swainson's hawk nests. However, with the implementation of Measures BMP BIO-1 and BMP BIO-3, no direct take of Swainson's hawk nests would occur. Any potential Project impacts on Swainson's hawk as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of required mitigation fee consistent with Measure MM BIO-6.

Burrowing Owl

75.11 acres of suitable burrowing owl habitat were mapped within the BSA. The proposed Project would result in permanent impacts to up to 34.84 acres of suitable burrowing owl habitat. However, with the implementation of Measure BMP BIO-4, no direct take of Burrowing owl would occur. Any potential project impacts on Burrowing owl as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of required mitigation fees consistent with Measure MM BIO-6.

Migratory Birds and Raptors

Nesting birds have the potential to occur throughout the BSA. However, long-term operation and maintenance of the proposed Project is not expected to differ substantially from existing operations. With the implementation of Measure BMP BIO-3, no direct take of active migratory bird nests would occur. Any potential Project impacts on migratory nesting birds as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of required mitigation fees consistent with Measure MM BIO-6.

Roosting Bats

All habitats within the BSA have the potential to support roosting bats. Project implementation would result in up to 105 acres of permanent impacts to suitable bat roosting habitat. With implementation of Measure MM BIO-6, any potential Project impacts on roosting bats as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of required mitigation fees.

Giant Garter Snake

As previously discussed, the BSA does not currently support suitable habitat for giant garter snake. However, the SJMSCP identifies the Mormon Slough as suitable habitat for this species based on its prior condition as a perennial waterway. The proposed Project would result in permanent impacts to up to 1.35 acres of land associated with the Mormon Slough. However, with the implementation of Measure MM BIO-6, any potential project impacts on giant garter snake as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of the required mitigation fee.

Pond Turtles

The BSA does not currently support suitable habitat for pond turtles. However, the SJMSCP identifies the Mormon Slough as suitable habitat for this species based on its prior condition as a perennial waterway. The proposed Project would result in permanent impacts to up to 1.35 acres of land associated with the Mormon Slough. However, with the implementation of Measure MM BIO-6, any potential project impacts on pond turtle as a result of permanent habitat loss would be mitigated through participation in the SJMSCP and payment of the required mitigation fee.

Based on the discussion above, with the implementation of Measures BMP BIO-1, BMP BIO-3, BMP BIO-4, BMP BIO-5, and MM BIO-6, long-term direct and indirect impacts would be considered less than significant with mitigation incorporated.

Critical Habitat and Essential Fish Habitat

While the proposed Project would not result in any direct impacts on Central Valley steelhead or Chinook salmon due to the lack of perennial flows in Mormon Slough within the BSA, the proposed Project would result in direct impacts on designated critical habitat for Central Valley steelhead and EFH for Chinook salmon. Although Mormon Slough does not currently support suitable habitat for either of these species, Project activities in Mormon Slough have potential to affect its long-term restoration potential for use by these species.

The design option that would cause the greatest amount of project impacts to critical habitat and EFH would occur with the construction of a new culvert structure design option, spanning the Mormon Slough. This design option would result in conversion of up to 0.33 acre of earthen areas within Mormon Slough into a concrete culvert structure. This impact would result in the loss of a small amount of potential habitat that in the future, if restored, could provide elements identified in

PCEs 1, 2, and 3 for Central Valley steelhead. However, this is not a substantial amount compared to the overall amount of critical habitat designated for this species.

As shown in Figure 3.3-4 and Figure 3.3-5, the proposed culvert structure would consist of four 12-foot wide openings and would span the entire Mormon Slough. Therefore, only minimal impacts on potential areas usable for fish passage would occur as the result of the three pier walls within the culvert. The slope of the design would be considered minimal and the culvert would be located at-grade with the existing Mormon Slough. Therefore, the culvert would not be too steep or provide any other barriers for fish passage. Culverts that may be replaced upstream and downstream as part of the proposed Project would be designed to carry the same level of flow or higher than current capacities and are therefore not expected to reduce fish passage potential within the BSA.

As discussed in Measure BMP BIO-7**,** consultation with NOAA Fisheries Service is currently ongoing and will be finalized during final design. In addition, with the implementation of Measures BMP BIO-8, which identifies construction BMPs for work in Mormon Slough, BMP BIO-9, which requires Environmentally Sensitive Area fencing around construction limits in Mormon Slough, BMP BIO-10, which requires re-contouring and restoration of temporary impact areas, BMP BIO-11, which addresses project-related vehicle access, and BMP BIO-12, which addresses storage and disposal of excavated materials the project would not result in substantial impacts on Central Valley steelhead critical habitat for Chinook salmon EFH. Since the Project would not result in direct impacts on Central Valley steelhead or Chinook salmon individuals and would maintain fish passage viability within the Project limits in the case of future restoration of the Mormon Slough as a perennial water source, the Project is anticipated to result in a “may affect, but not likely to adversely affect” determination with respect to project impacts on designated critical habitat for Central Valley steelhead and EFH for Chinook salmon. With the implementation of Measures BMP BIO-7 through BMP-12, long-term direct and indirect impacts would be considered less than significant, and no mitigation is required.

Figure 3.3-4. Multi-Cell Box Culvert over Mormon Slough – Plan View

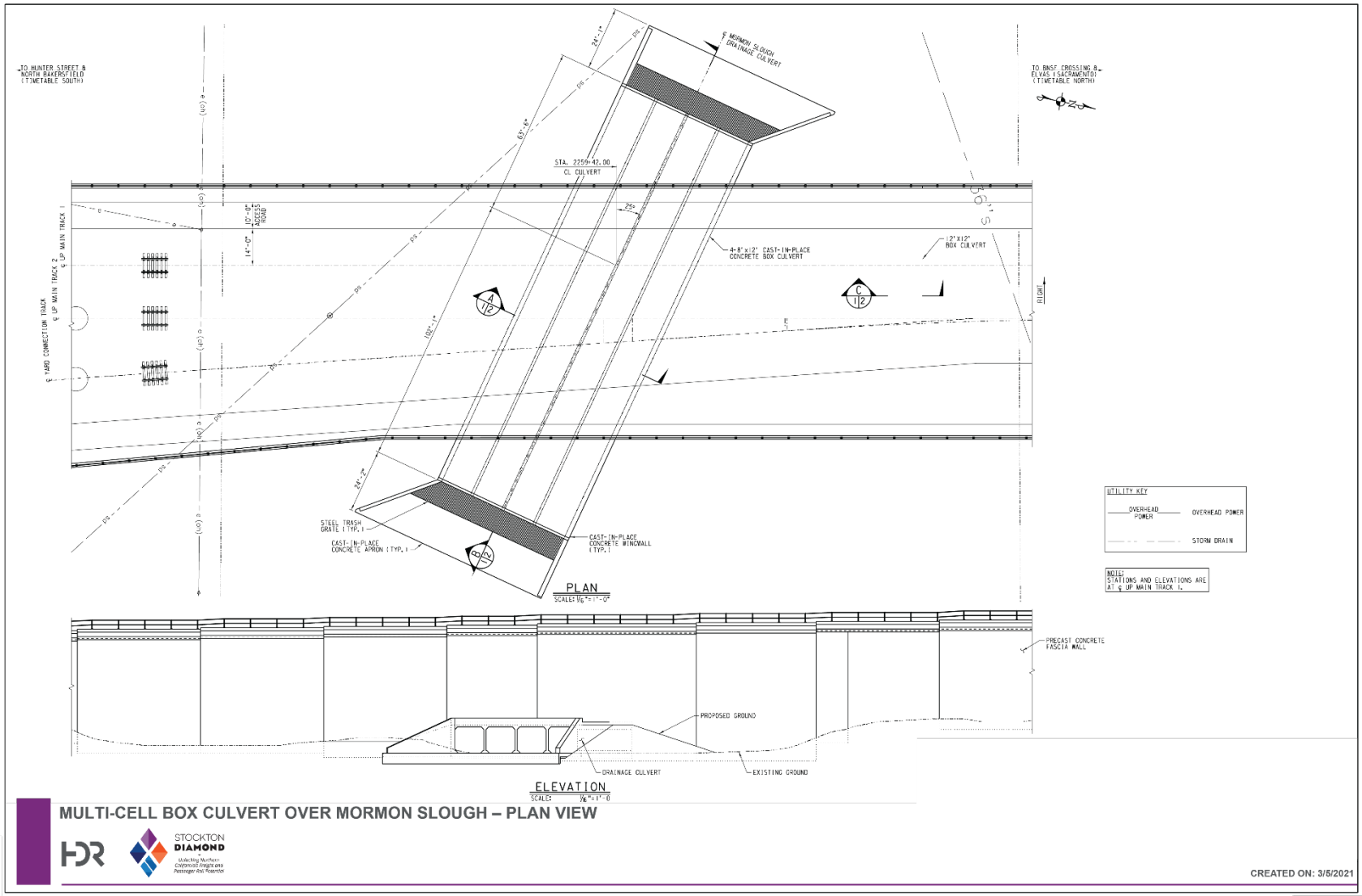
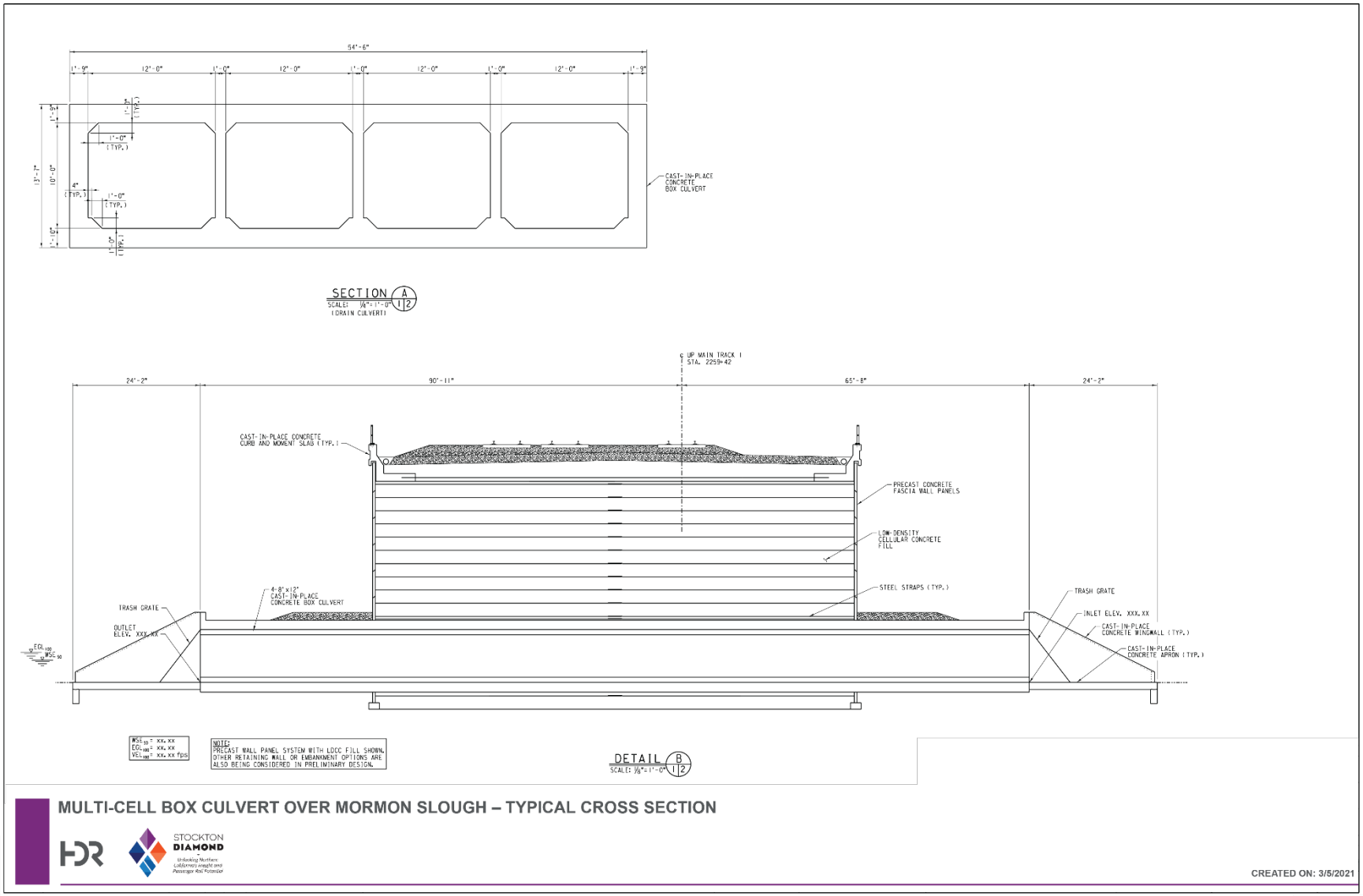


Figure 3.3-5. Multi-Cell Box Culvert over Mormon Slough – Typical Cross Section



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 by the California Department of Fish and Wildlife or the US Fish and Wildlife Service?

Less Than Significant Impact with Mitigation Incorporated. Sensitive habitats include (1) areas of special concern to resource agencies, (2) areas protected under CEQA, (3) areas designated as sensitive natural communities by CDFW, (4) areas outlined in FGC Section 1600, (5) areas regulated under CWA Section 404, and (6) areas protected under local regulations and policies.

The BSA consists mainly of developed and disturbed/ruderal communities, which are not considered to be natural communities of special concern. No sensitive vegetation communities, including riparian vegetation, were observed during the site reconnaissance survey. However, all aquatic resources, such as those associated with the Mormon Slough, are considered sensitive and subject to regulation under Sections 401 and 404 of the CWA and Sections 1600-1603 of the California Fish and Game Code.

Due to lack of site access, the analysis of potential jurisdictional resources was based on a preliminary review of aerial and street view photographs. Based on this review, it appears that the Mormon Slough is the only aquatic resource within the BSA[5]. Aerial and street-view photographs indicate that the Mormon Slough may support potential non-wetland waters of the U.S., Waters of the State, or CDFW-regulated streambed.

Construction of the proposed Project would require one of three flyover design options consisting of a clear span flyover bridge, a bridge with in-channel piers, or a culvert structure to span the Mormon Slough and associated floodplain. Existing drainage structures along the Mormon Slough would remain in place after construction of the proposed flyover structure. Pipe culverts under the existing UP main line immediately downstream (west) of the flyover alignment would also be left in place, or replaced, to support the remaining at-grade connection track to BNSF. New drainage structures for passing flows beneath the railroad flyover may be pipe culverts, box culverts, or a bridge. Pipe and box culverts would require fill within the existing channel. The design option with construction of a new culvert structure spanning the Mormon Slough would result in the greatest footprint impacting potential jurisdictional waters.

For the purposes of this analysis, the design option with construction of a new culvert structure spanning the Mormon Slough was used to determine the temporary and permanent impacts to jurisdictional waters as a result of the proposed Project, in order to identify the maximum potential Project impacts on jurisdictional waters. A breakdown of jurisdictional impacts is provided in Table 3.3-5 and shown in Figure 3.3-6.

[5] A field delineation and determination from regulatory agency will be required prior to Project construction to verify this assessment.

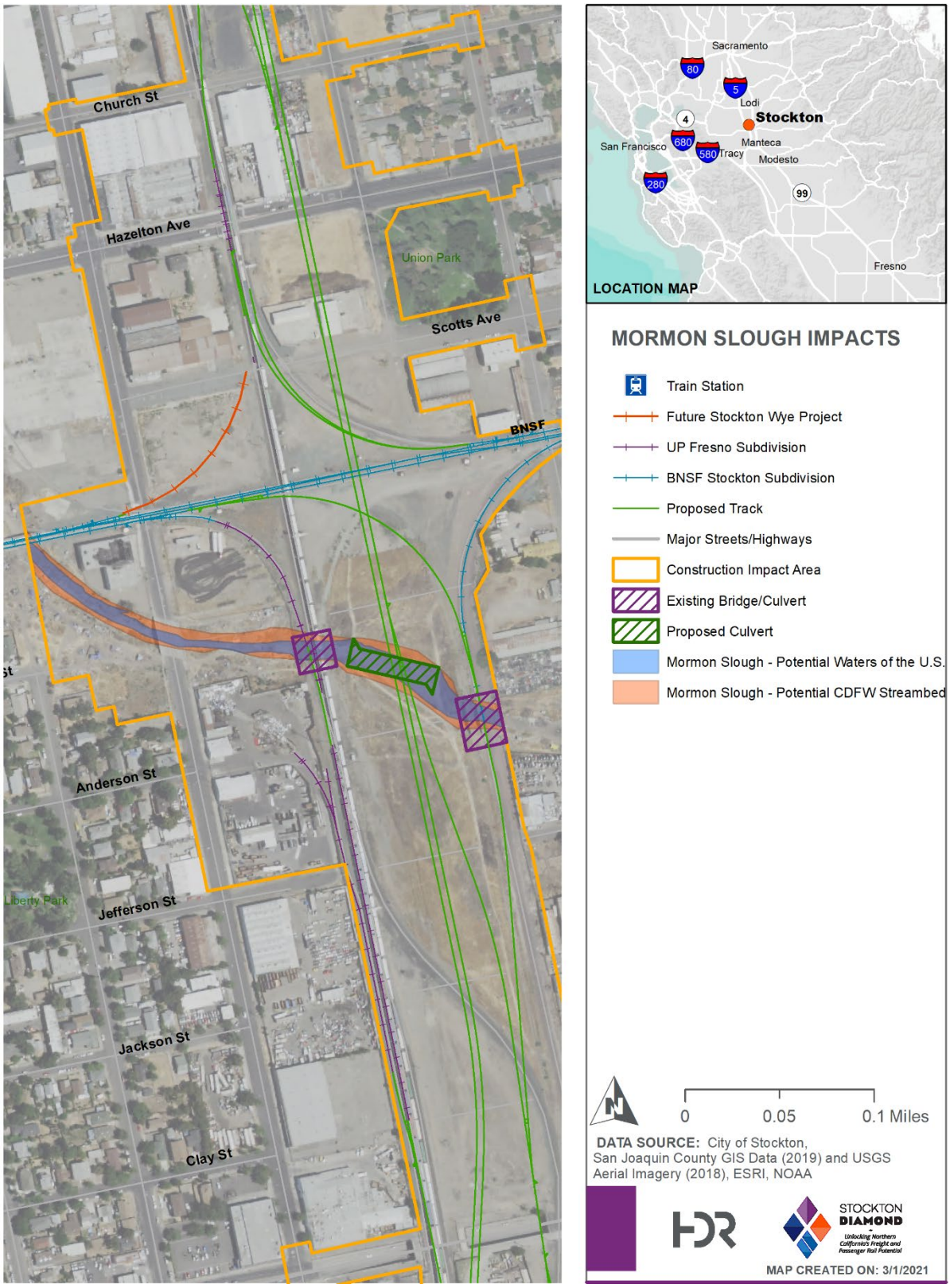
Table 3.3-5. Proposed Project Impacts on Potential United States Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife Jurisdictional Areas

Impact Type	USACE/RWQCB Jurisdiction		CDFW Jurisdiction	
	Temporary Impacts	Permanent Impacts	Temporary Impacts	Permanent Impacts
	Non-wetland Waters of the U.S.	Non-wetland Waters of the U.S.	Unvegetated Streambed	Unvegetated Streambed
Existing Downstream Culvert (Replacement)	0.13	—	0.17	—
Existing Bridge Culvert (Replacement)	0.13	—	0.21	—
New Culvert at Flyover (Construction)	—	0.33	—	0.33
Total	**0.26**	**0.33**	**0.42**	**0.33**

The construction of pipe and box culverts for the proposed Project would cause direct or indirect impacts on potential jurisdictional resources in the BSA. Based on aerial mapping, the Mormon Slough supports an estimated 1.41 acres of potential non-wetland waters of the U.S. and 2.47 acres of potential unvegetated CDFW streambed. While some small areas with potential wetland vegetation were identified on aerial photography, these areas do not appear to occur within potential Project impact areas and were not mapped at this time as a field delineation has not been conducted due to lack of property access.

Construction access required for the proposed Project would temporarily impact all potential waters of the U.S. and potential CDFW streambed mapped within the Mormon Slough. These temporary impacts would be reduced to the greatest extent feasible during Project design. However, the proposed Project would result in temporary impacts to a minimum of approximately 0.26 acre of potential non-wetland waters of the U.S and approximately 0.38 acre of potential unvegetated CDFW streambed within the Mormon Slough. These impacts would occur as a result of replacement of existing culverts upstream and downstream of the proposed new culvert placement. Additional temporary impacts to these resources could occur to allow for construction access. However, with the implementation of Measure BMP BIO-9, requiring minimization of construction access areas and fencing around all permitted work areas within the Mormon Slough, and Measure MM BIO-10, requiring all temporary impacts to aquatic resources as a result of the proposed Project be restored to pre-Project contours, short-term impacts would be considered less than significant with mitigation incorporated.

Figure 3.3-6. Potential Project Impacts on Jurisdictional Areas



The proposed Project would permanently impact approximately 0.33 acre of potential jurisdictional waters of the US and 0.33 acre of unvegetated CDFW streambed. However, with the implementation of Measure MM BIO-13, requiring all permanent impacts to aquatic resources as a result of the proposed Project be mitigated at a minimum 1:1 ratio, and Measure MM-BIO-14, requiring the proposed Project to comply with all mitigation measures identified in regulatory permits issued by CDFW, USACE, and/or RWQCB, long-term impacts would be mitigated. In addition, as stipulated in Measure MM BIO-15, the proposed Project would conduct a formal field-delineation of aquatic resources during final design to be verified by the regulatory agencies, in order to accurately confirm the extent of jurisdictional resources within the BSA. Therefore, with the implementation of Measures MM BIO-13 through MM BIO-15, long-term impacts would be considered less than significant with mitigation incorporated.

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?

Less Than Significant Impact with Mitigation Incorporated. While a formal field-delineation of wetland areas has not been conducted to date for the proposed Project due to property access restrictions, a review of aerial and street view imagery indicates that there are no federally protected wetlands as defined by CWA Section 404 within the BSA. Potential Project impacts on non-wetland waters of the U.S. subject to regulation under Sections 401 and 404 of the CWA and unvegetated streambed subject to regulation under Sections 1600-1603 of the FGC are described below.

During construction, the proposed Project would result in temporary impacts to 0.26 acre of potential non-wetland waters of the U.S as defined by CWA Section 404 (see Table 3.3-5 and Figure 3.3-4). However, with the implementation of Measures BMP BIO-9 and MM BIO-13, temporary impacts on federally protected waters of the U.S., as defined by CWA Section 404, would be avoided, minimized, and/or mitigated; and thus, short-term impacts would be considered less than significant with mitigation incorporated.

The proposed Project would permanently impact 0.33 acre of potential non-wetland waters of the U.S. as defined by CWA Section 404 (see Table 3.3-5 and Figure 3-4). However, with the implementation of Measures MM BIO-13 through MM BIO-15, permanent impacts on federally protected waters of the U.S., as defined by CWA Section 404, would be mitigated; and thus, long-term impacts would be considered less than significant with mitigation incorporated.

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 wildlife nursery sites?

Less Than Significant Impact. The proposed Project is located within a developed, disturbed area that provides little use for wildlife movement. The Mormon Slough does not likely provide habitat, act as a nursery, or function as a migratory route for fish and other aquatic species because of its dry and disturbed condition. However, there is potential that the Mormon Slough serves as a migratory corridor and movement area for common terrestrial wildlife species within the BSA.

While some reduction of wildlife movement within the Mormon Slough is expected during proposed Project construction, all design options being considered would allow for continued movement of terrestrial species within the Mormon Slough following proposed Project completion. With the implementation of Measure BMP BIO-9, which requires fencing around all permitted work areas within the Mormon Slough to minimize the potential impact area, temporary impacts of the proposed Project on wildlife movement would be minimized to the greatest extent possible. With implementation of Measure BMP BIO-9, short-term impacts on wildlife movement would be considered less than significant, and no mitigation is required.

Any permanent structure incorporated into the Mormon Slough constructed as part of the proposed Project, would be designed to allow for continued wildlife movement. As such, the proposed Project would not result in a substantial change of habitat within the BSA for migratory wildlife movement. Therefore, long-term impacts on wildlife movement would be considered less than significant, and no mitigation is required.

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

Less than Significant Impact. The proposed Project would be consistent with the Envision Stockton 2040 General Plan (City of Stockton 2018a), which identifies the City's tree ordinance that prohibits the removal of street trees and heritage oak trees without a permit (City of Stockton 2018c). With implementation of Measure BMP BIO-16, the proposed Project would be consistent with the City of Stockton's tree ordinance. Therefore, with the implementation of Measure BMP BIO-16, the proposed Project would not conflict with any local policies, and short-term and long-term impacts would be considered less than significant.

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?

Less than Significant Impact with Mitigation Incorporated. The proposed Project would not conflict with an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan. Measure MM BIO-6 specifies that SJRRC would work through the approval process and participate in SJMSCP. Therefore, the proposed Project would comply with the standards and regulations set forth in SJMSCP, and all applicable ITMMs identified in the SJMSCP would be implemented. Therefore, with the implementation of Measure MM BIO-6, the proposed Project would not conflict with any local policies, and short-term and long-term impacts would be considered less than significant with mitigation incorporated.

3.3.6 BEST MANAGEMENT PRACTICES AND/OR MITIGATION MEASURES

The following best management practices and/or mitigation measures associated with biological resources would be applied to the proposed Project.

BMP BIO-1: **Biological Monitor and Environmental Awareness Training.** If deemed necessary, SJRRC will ensure that a qualified biologist(s) will monitor activities that could affect special-status species and/or sensitive biological resources within the BSA. The amount and duration of monitoring would depend on the activity and would be determined by the qualified biologist. The duties of the qualified biologist shall comply with all agency conditions outlined in Project-related permits, but could include activities such as clearance surveys, flagging or fencing off environmentally sensitive areas for avoidance, and construction monitoring.

The biological monitor will conduct preconstruction clearance surveys for special-status species prior to the start of Project activities and implement all biological-resources avoidance and minimization measures and applicable SJMSCP Incidental ITMMs.

In addition, a qualified biologist shall be retained to conduct mandatory contractor/worker awareness training for construction personnel. The awareness training will be provided to all construction personnel to brief them on the identified location of sensitive biological resources, including how to identify species (visual and auditory) most likely to be present, the need to avoid impacts on biological resources (for example, plants, wildlife, and jurisdictional waters), and to brief them on the penalties for not complying with biological mitigation requirements. If new construction personnel are added to the Project, SJRRC will ensure that the mandatory training be conducted by the contractor prior to starting work on the proposed Project.

BMP BIO-2: **Swainson's Hawk Nest Surveys.** Prior to construction, a qualified biologist shall conduct surveys for Swainson's hawk nests in accordance with current CDFW-approved guidance, such as the Swainson's Hawk Technical Advisory Committee's 2010 Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (CDFW 2000), or as required by the SJMSCP.

BMP BIO-3: **Migratory Bird and Raptor Surveys and Nest Avoidance.** If vegetation clearing and/or construction activities are scheduled to occur during the migratory bird nesting season (February 1 to September 15), then pre-construction surveys to identify active migratory bird and/or raptor nests will be conducted by a qualified biologist no more than 7 days prior to construction initiation. If active nest sites are identified in the survey area, a no-disturbance buffer will be established for all active nest or burrow sites prior to commencement of any proposed Project-related activities. The size of the no-disturbance buffer would vary and would be determined by a qualified biologist based on the species, activities proposed near the nest, and topographic

and other visual barriers, or as otherwise required through the SJMSCP (as described in SJMSCP ITMM 5.2.4.17, 5.2.4.18, and 5.2.4.19). A qualified biologist will monitor any active nest until the nest is deemed inactive and the no-disturbance buffer can be removed. The amount and duration of the monitoring will be determined by a qualified biologist and will depend on the same factors described above when determining the size of the no-disturbance buffer.

BMP BIO-4: **Burrowing Owl Surveys and Avoidance.** A qualified biologist shall conduct surveys for burrowing owl during the peak breeding season (April 15 to July 15) prior to construction in accordance with current CDFW-approved guidance [*Burrowing Owl Survey Protocol and Mitigation Guidelines or Staff Report on Burrowing Owl Mitigation* (CDFW 2012)].

If no active burrowing owl burrows are located within, or within 500 feet of, the proposed Project construction limits, SJRRC or its construction contractor will proceed with measures A or B identified in SJMSCP ITMM 5.2.4.15 to prevent burrowing owls from subsequently occupying the Project construction limits, if feasible.

If burrowing owl subsequently occupy the Project construction limits prior to construction SJRRC or its construction contractor will proceed with measures C or D identified in SJMSCP ITMM 5.2.4.15 to avoid impacts to breeding burrowing owls. Measure C consists of passive relocation during the non-breeding season (September 1 through January 1). Measure D consists of implementing 250-foot buffers around occupied, active nests/burrows. Once a qualified biologist has determined that young have fledged and are capable of independent survival, the burrow can be destroyed.

BMP BIO-5: **Bat Roost Surveys.** A qualified biologist will conduct a daytime site reconnaissance in the maternity season prior to the construction of new infrastructure or modifications to existing infrastructure of any buildings, bridges, or other structures suitable to support bat roosts. The qualified bat biologist will survey for SJMSCP-protected bats and bat sign, including existing roost sites and bat guano deposits, and will listen for roosting bats. If potential roost sites are identified, a nighttime exit survey will be conducted to determine the species of roosting bats and relative bat activity, and to estimate the number of individual bats. This nighttime survey may be an active or passive acoustic monitoring survey. If SJMSCP-protected bat individuals or roosts are found in, or within 100 feet of, the proposed Project construction limits, SJMSCP ITMM 5.2.4.28 will be implemented.

MM BIO-6: **Compliance with SJMSCP.** Prior to and during construction, SJRRC will ensure compliance of the proposed Project with all applicable standards and regulations set forth in the SJMSCP, as well as all applicable Incidental Take Avoidance Measures identified within the SJMSCP.

BMP BIO-7: **National Oceanic and Atmospheric Administration Consultation.** Prior to the completion of the Final EIR, SJRRC will ensure that consultation with the NOAA Fisheries Service for impacts on designated Critical Habitat for Central Valley steelhead and EFH for Chinook Salmon are finalized and any findings and/or determinations incorporated.

BMP BIO-8: **Construction BMPs at Mormon Slough.** During final design, SJRRC will ensure that construction best management practices will be employed on-site to prevent erosion or runoff of loose soil and dust. Methods will include the use of appropriate measures to intercept and capture sediment prior to entering aquatic resources, as well as erosion control measures along the perimeter of disturbance areas to prevent the displacement of fill material. All best management practices shall be in place prior to initiation of project-related activities and shall remain until activities are completed. All erosion control methods will be maintained until all onsite soils are stabilized.

BMP BIO-9: **Environmentally Sensitive Area Fencing at Mormon Slough.** Prior to and during construction, SJRRC will ensure that work areas will be reduced to the smallest practicable footprint throughout the duration of construction activities. Prior to any ground-disturbing activity, SJRRC will ensure that staging areas for construction equipment be stored in areas that minimize impacts on sensitive biological resources, including aquatic resources. Staging areas (including any temporary material storage areas) will be located in areas that will be occupied by permanent facilities, where practicable. Equipment staging areas will be identified on final project construction plans. SJRRC will ensure to flag and mark access routes to restrict vehicle traffic within the Project footprint to established roads, construction areas and other designated areas.

BMP BIO-10: **Restoration of Temporary Impact Areas.** During construction, SJRRC will ensure that all exposed and/or disturbed areas resulting from Project-related activities will be returned to its original contour and grade, and restored using locally native grass and forb seeds, plugs, or a mix of the two. Areas shall be seeded with species appropriate to their topographical and hydrological character. Seeded areas shall be covered with broadcast straw and/or jute netted, where appropriate.

BMP BIO-11: **Vehicle Access and Speed Limits.** During construction, SJRRC will ensure that all vehicle traffic associated with project-related activities will be confined to established roads, staging areas, and parking areas. Vehicle speeds will not exceed 15 miles per hour on access roads with no posted speed limit to avoid collisions with special-status species or habitats. Additionally, maintenance or refueling of vehicles or equipment must occur in designated areas and/or a secondary containment, located away from aquatic resources.

BMP BIO-12: **Storage and Disposal of Excavated Materials.** During ground-disturbing activities, SJRRC may temporarily store excavated materials produced by construction activities in areas at or near construction sites within the Project footprint. Where practicable, SJRRC will return excavated soil to its original location to be used as backfill. Any excavated waste materials unsuitable for treatment and reuse would be disposed at an off-site location, in conformance with applicable state and federal laws. Stockpiled, disassembled, and hazardous construction material should be stored at least 100 feet from aquatic resources, where possible.

MM BIO-13: **Mitigation for Aquatic Resources.** During final design, SJRRC will ensure that temporary Project impacts on aquatic resources associated with the Mormon Slough will be restored in-place and permanent Project impacts on aquatic resources to the Mormon Slough will be mitigated at a minimum 1:1 ratio. Mitigation can include on-site restoration, in-lieu fee payment, or purchase of mitigation credits at an agency-approved mitigation bank.

MM BIO-14: **Compliance with Permitted Mitigation Measures.** Prior to construction, SJRRC will obtain all required permits and authorizations for Project impacts to the Mormon Slough, which may include the preparation and submittal of the following applications:

- Pre-Construction Notification to USACE to use a Nationwide Permit for any Project impacts to Waters of the US subject to Section 404 of the federal Clean Water Act;
- Water Quality Certification Application to Central Valley Regional Water Quality Control Board (RWQCB) for any Project impacts to Waters of the U.S. subject to Section 401 of the federal Clean Water Act;
- Streambed Alteration Agreement Notification to CDFW.

MM BIO-15 **Preparation of Formal Jurisdictional Delineation.** During final design, SJRRC will ensure that a formal field-delineation of aquatic resources the proposed Project, to be verified by the regulatory agencies, will be conducted in order to confirm the exact extent of jurisdictional resources impacted by the proposed Project.

BMP BIO-16 **City of Stockton Tree Ordinance.** During final design, SJRRC will ensure that the proposed Project will comply with the City of Stockton's tree ordinance which requires a permit issued by the City for the removal of any street trees or heritage oak trees within the City.

3.4 Cultural Resources

3.4.1 INTRODUCTION

This section describes the regulatory setting and affected environment related to cultural resources, evaluates the potential effects on these resources by the proposed Project, and identifies proposed mitigation measures, as applicable. Cultural resources include historic built resources, and prehistoric- and historic-era archaeological sites, objects, and artifacts. The term historic built resources for this Project refers to buildings, engineering structures, districts, or landscapes built in or before 1975. For information on tribal cultural resources, see Section 3.16, *Tribal Cultural Resources*.

3.4.2. REGULATORY CONTEXT AND PROJECT CONSISTENCY

The primary applicable federal and state laws and regulations protecting cultural resources and tribal cultural resources are Section 106 of the NHPA, as amended, CEQA, and California PRC Sections 5024.1 and 21084.1. These and other state laws and regulations that pertain to cultural resources are described below, as are regional and local planning guidance and ordinances.

Federal Plans, Policies, and Regulations

National Historic Preservation Act (54 USC Policy Act Section 300101 et seq.)

The National Historic Preservation Act (NHPA) establishes the federal government policy on historic preservation and the programs, including the National Register of Historic Places (NRHP), through which this policy is implemented. Under the NHPA, significant cultural resources, referred to as historic properties, include any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the NRHP. A property is considered historically significant if it meets one or more of the NRHP criteria and retains sufficient historic integrity to convey its significance. The NHPA also established the Advisory Council on Historic Preservation (ACHP), an independent agency responsible for implementing Section 106 of the NHPA by developing procedures to protect cultural resources included in or eligible for inclusion in the NRHP. Regulations are published in 36 CFR 60, 63, and 800.

Implementing Regulations for Section 106 of the National Historic Preservation Act (36 CFR Part 800)

Section 106 requires that effects on historic properties be taken into consideration in any federal undertaking. The process has five steps: (1) initiating the Section 106 process, (2) identifying historic properties, (3) assessing adverse effects, (4) resolving adverse effects, and (5) implementing stipulations in an agreement document.

Compliance with the act requires that federal agencies must identify and evaluate NRHP eligibility of properties within the area of potential effect and evaluate the effect of the undertaking on eligible properties. The area of potential effect is defined as the area in which eligible properties may be affected by the undertaking, including direct effects (such as destruction of the property) and indirect effects (those effects that are later in time or farther removed in distance but are still reasonably foreseeable).

Section 106 affords the ACHP and the State Historic Preservation Office (SHPO), as well as other consulting parties, a reasonable opportunity to comment on any undertaking that would adversely affect historic properties. SHPOs administer the national historic preservation program at the state level, which includes consulting with federal agencies during Section 106 review, among other responsibilities.

The NRHP uses the NRHP eligibility criteria (36 CFR 60.4) to evaluate historic significance of cultural resources within the undertaking's APE. The criteria for evaluation are as follows:

- **Criterion A**: Association with "events that have made a significant contribution to the broad patterns of our history."
- **Criterion B**: Association with "the lives of persons significant in our past."
- **Criterion C**: Resources "that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction."
- **Criterion D**: Resources "that have yielded, or may be likely to yield, information important to history or prehistory."

Historically, most—but not all—archaeological resources were only evaluated under Criterion D. However, this approach is considered somewhat limited and all applicable criteria should be thoroughly considered and documented.

In addition to meeting one or more of the listed criteria, an eligible property must retain integrity, which is determined through application of seven aspects: location, design, setting, workmanship, materials, feeling, and association. Location and setting relate to the relationship between the property and its surrounding environment. Design, materials, and workmanship relate to construction methods and physical features. Feeling and association pertain to the overall ability of the property to convey a sense of the historical time and place in which it was built.

Generally, cultural properties must be 50 years of age or more to be eligible for listing in the NRHP. Properties less than 50 years old are not eligible for the NRHP unless they are considered of exceptional importance.

The NHPA allows properties of traditional religious and cultural importance to a Native American tribe to be determined eligible for NRHP inclusion (Section 101(d)(6)(A)). In addition, a broader range of traditional cultural properties may be determined eligible for or listed in the NRHP.

Traditional cultural properties are places associated with the cultural practices or beliefs of a living community that are rooted in that community's history and that may be eligible because of their association with cultural practices or beliefs of living communities that (a) are rooted in that community's history, and (b) are important in maintaining its continuing cultural identity.

Section 106 High-Speed Rail Programmatic Agreement

In 2011, the following Programmatic Agreement (PA) was negotiated and executed in order to define how Section 106 compliance will be achieved for the HSR statewide program: *Programmatic Agreement among the Federal Railroad Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California High-Speed Rail Authority Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the California High-Speed Train Project* (Section 106 PA). The Section 106 PA prescribes an alternative process (to the Part 800 regulations described above, National Historic Preservation Act Implementing Regulations) that has been negotiated specifically for the HSR project. This alternative process under the Section 106 PA contains the same key steps as the Part 800 regulations (consultation with interested parties, identification and evaluation of potential historic properties, effects analysis, and treatment of effects), but the scope and timing of these activities have been defined differently under the Section 106 PA in order to account for the size, complexity, and construction method of the proposed Project.

RESOURCE EVALUATION

Section 106 regulations require a "reasonable and good faith effort" to identify historic properties (36 CFR Section 800.4(b)(1)). Attachment D (Properties Exempt from Evaluation) of the HSR Section 106 PA defines categories of properties that do not warrant evaluation. The Section 106 PA states that "Exempted properties do not require documentation." The Section 106 PA lists the following properties as exempt from evaluation:

- Isolated prehistoric finds consisting of fewer than three items per 100 square meters
- Isolated historic finds consisting of fewer than three artifacts per 100 square meters
- Refuse scatters less than 50 years old
- Features less than 50 years old
- Isolated refuse dumps and scatters over 50 years old that lack specific associations
- Isolated mining prospect pits
- Placer mining features with no associated structural remains or archaeological deposits
- Foundations and mapped locations of buildings or structures more than 50 years old with few or no associated artifacts or ecofacts, and with no potential for subsurface archaeological deposits
- Building and structural ruins and foundations less than 50 years old

State Plans, Policies, and Regulations

California Environmental Quality Act (California PRC Section 21083.2) and CEQA Guidelines (CCR Title 14, Section 15064.5)

CEQA applies to all discretionary projects undertaken or subject to approval by the state's public agencies (CCR Title 14(3), Section 15002(i)). CEQA states that it is the policy of the State of California to "take all action necessary to provide the people of this state with…historic environmental qualities…and preserve for future generations examples of the major periods of California history" (California PRC Section 21001(b), (c)). Under the provisions of CEQA, "A project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (CCR Title 14(3), Section 15064.5(b)).

CEQA Guidelines Section 15064.5 provides specific guidance for determining the significance of impacts on historical resources (CEQA Guidelines Section 15064.5(b)), and unique archaeological resources (CEQA Guidelines Section 15064.5(b) and California PRC Section 21083.2). Under CEQA, these resources are called "historical resources" whether they are of historic or prehistoric age. CEQA Guidelines Section 15064.5(a) and CEQA Public Resources Code Section 21084.1 defines historical resources as those

- Listed in, or eligible for listing in, the California Register of Historical Resources (CRHR)
- Listed in a local register of historical resources (as defined at PRC Section 5020.1(k))
- Identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g) of the California PRC; or
- Determined to be a historical resource by a project's lead agency (CCR Title 14(3), Section 15064.5(a)).

"Historic properties" listed in or determined eligible for listing in the NRHP that are located in California are considered historical resources for the purposes of CEQA and are also listed in the CRHR. The CRHR criteria for listing such resources are based on, and are very similar to, the NRHP criteria. CEQA Cal. Public Res. Code Section 21083.2 and CEQA Guidelines Section 15064.5(c) provide further definitions and guidance for archaeological sites and their treatment.

Section 15064.5 also prescribes a process and procedures for addressing the existence of, or probable likelihood, of Native American human remains, as well as the unexpected discovery of any human remains during implementation of a project. This includes consultations with appropriate Native American tribes.

The significance of a historical resource is impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for the CRHR. If an impact on a historical or archaeological resource is significant, CEQA requires feasible measures to minimize the impact (State CEQA

Guidelines Section 15126.4 (a)(1)). Mitigation of significant impacts must lessen or eliminate the physical impact that the proposed Project will have on the resource.

California Register of Historical Resources (California PRC Section 5024.1 and CCR, Title 14, Section 4850)

Section 5024.1 of the Cal. Public Res. Code established the CRHR. Generally, a resource is considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the CRHR (CCR, Title 14(3), Section 15064.5(a)(3)). The eligibility criteria for the CRHR are similar to those of the NRHP, and a resource that meets one of more of the eligibility criteria of the NRHP will be eligible for the CRHR.

State regulations govern the nomination of resources to the CRHR (CCR, Title 14 Section 4850). The regulations set forth the criteria for eligibility, assessing historical integrity, and special considerations for listing of certain resources (for example, moved buildings, reconstructed buildings, and resources achieving significance within the past 50 years).

California Health and Safety Code—Treatment of Human Remains

Under Section 8100 of the California Health and Safety Code (Health & Safety Code), six or more human burials in one location constitutes a cemetery. Disturbance of Native American cemeteries is a felony (Health & Safety Code Section 7052). Section 7050.5 of the Health & Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must then contact the Native American Heritage Commission (NAHC), which has jurisdiction pursuant to Public Resources Code Section 5097.

California State Assembly Bill 52

See Section 3.16, *Tribal Cultural Resources,* for a discussion of Assembly Bill (AB) 52.

Regional and Local Plans, Policies, and Regulations

City of Stockton

The Land Use Section of the Stockton 2040 General Plan contains goals and policies to protect, maintain, and restore natural and cultural resources (City of Stockton 2018). The relevant goals, policies, and actions related to cultural resources include:

- **Goal LU-5**: Protect, maintain, and restore natural and cultural resources
    - **Policy LU-5.2**: Protect natural resource areas, fish and wildlife habitat, scenic areas, open space areas, agricultural lands, parks, and other cultural/historic resources from encroachment or destruction by incompatible development.
        - **Action LU-5.2D**: Require the following tasks by a qualified archaeologist or paleontologist prior to project approval: 1) Conduct a record search at the Central California Information Center located at California State University Stanislaus, the

University of California Museum of Paleontology at Berkeley, and other appropriate historical or archaeological repositories, 2) conduct field surveys where appropriate, 3) prepare technical reports, where appropriate, meeting California Office of Historic Preservation or other appropriate standards, and 4) where development cannot avoid an archaeological or paleontological deposit, prepare a treatment plan in accordance with appropriate standards, such as the Secretary of the Interior's Standards for Treatment of Archaeological Sites.

- **Action LU-5.2E**: Continue to consult with Native American representatives, including through early coordination, to identify locations of importance to Native Americans, including archaeological sites and traditional cultural properties.
- **Action LU-5.2F**: If development could affect a tribal cultural resource, require the developer to contact an appropriate tribal representative to train construction workers on appropriate avoidance and minimization measures, requirements for confidentiality and culturally appropriate treatment, other applicable regulations, and consequences of violating State laws and regulations.
- **Action LU-5.2G**: Comply with appropriate State and federal standards to evaluate and mitigate impacts to cultural resources, including tribal, historic, archaeological, and paleontological resources.

- **Policy LU-5.2**: Protect natural resource areas, fish and wildlife habitat, scenic areas, open space areas, agricultural lands, parks, and other cultural/historic resources from encroachment or destruction by incompatible development.

3.4.2 METHODS FOR EVALUATING IMPACTS

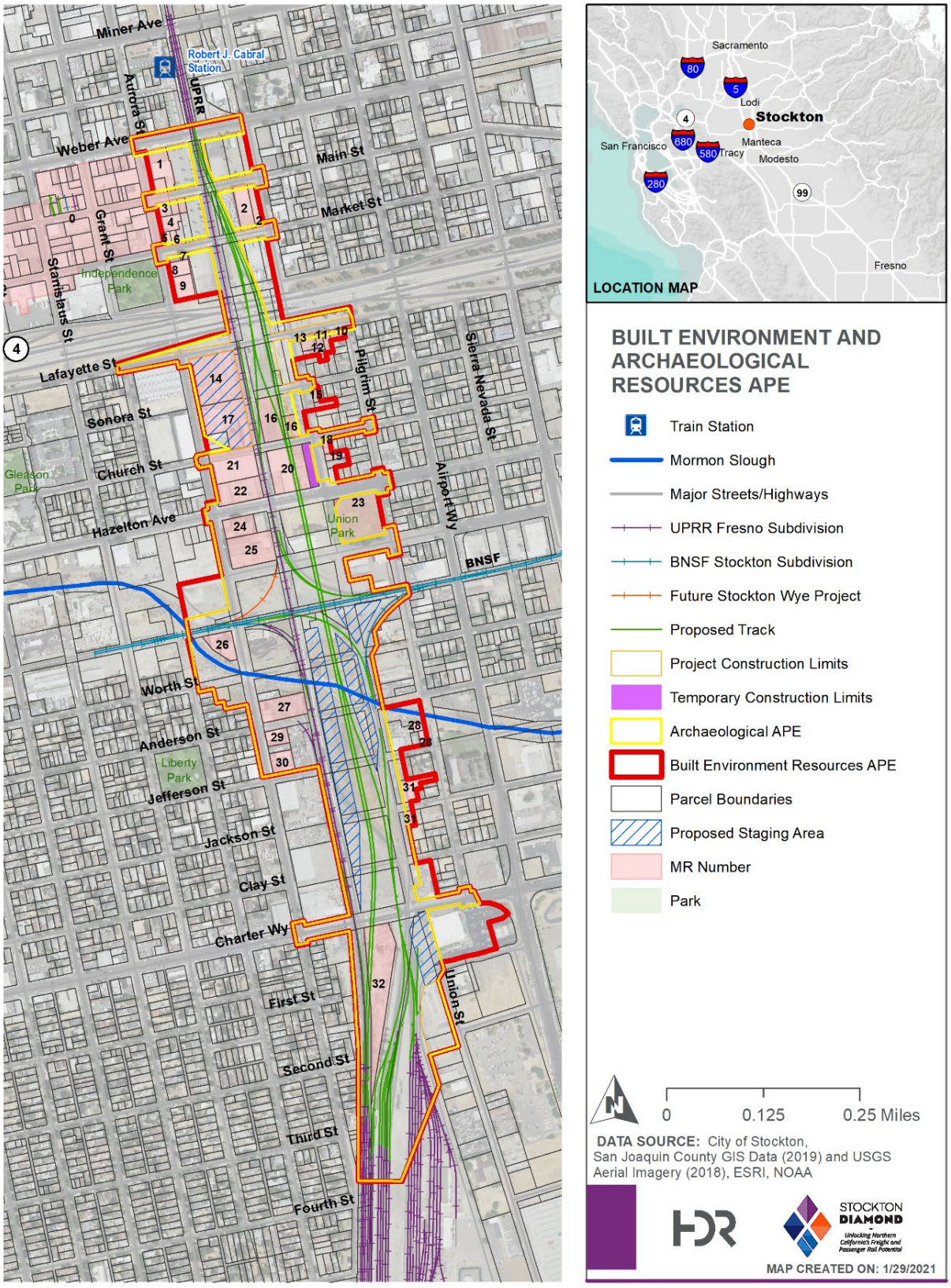
This section provides an overall framework for conducting the cultural resources and tribal cultural resources assessment for the proposed Project, including outreach and consultation efforts, delineation of the APE/cultural RSA, historic built resources and archaeological resources identification procedures, assessment of impacts, and treatment of historic properties.

Definition of Resource Study Area/Area of Potential Effect

As defined in Section 3.1, *Introduction*, RSAs are the geographic boundaries within which the environmental investigations specific to each resource topic were conducted. The cultural RSA, referred to as APE for historic properties under Section 106 of the NHPA, includes a study area for historic built resources that encompasses all legal parcels intersected by the proposed Project and includes adjacent parcels if the built resources on those parcels may be indirectly affected. Indirect effects, such as visual, noise, and vibration impacts, could be caused by the introduction of rail service and/or a rail or roadway grade separation where no such similar structure previously existed. The APE also includes a study area for archaeological resources that was established based on an undertaking's potential for direct effects from ground-disturbing activities, including ground disturbance beyond the immediate footprint, which includes all preconstruction, construction, and operation activities. The horizontal APE for archaeology consists of the current and proposed right-of-way, temporary staging areas, utility easements, and laydown area.

The vertical extent of the archaeological APE for at-grade construction extends from the existing ground surface to the final depth necessary for the railbed and for footings or foundations of structural components. Depths will be determined during final design but are typically expected to be approximately five feet below ground surface (bgs) for at-grade work. Utilities and storm drains are expected to extend between 10 and 12 feet bgs. Under the flyover bridge structures, drilled holes will range from 15 to 20 feet bgs and pile driving could extend to depths beyond 100 feet bgs. The APE is shown on Figure 3.4-1.

Figure 3.4-1: Built Environment and Archaeological Resources Area of Potential Effect



Methods for Data Collection and Analysis

Records Search and Background Research

A records search for the proposed Project was conducted by staff at the Central California Information Center in April 2020 (Record Search File No. 11370L). The records search was conducted to identify previous investigations and previously recorded cultural resources within the APE. Standard sources of information also reviewed included the California Historical Resources Information System operated through the Office of Historic Preservation (OHP); OHP Built Environment Resources Directory; the NRHP; the CRHR; Caltrans Historic Bridge Logs; the City of Stockton's Historic Landmark and Historic Districts, Historic Sites and Structure of Merits listings, as well as previous historic resources inventory and evaluation surveys and reports, including the *Revised Draft Stockton Downtown Historic Resource Inventory* (dated September 1, 2000) prepared by Architectural Resources Group, Inc. for the City of Stockton. In addition, historic maps and aerial photographs of the APE were reviewed to identify potential historic-age resources that may not have been identified from the records search.

The searches and research noted above identified 23 previously inventoried and/or evaluated built historic resources and one historic district within the APE. Two of the 23 properties have been demolished since they were recorded; of these, one was previously identified as a contributor to the Stockton Downtown Commercial Historic District. Four of the 23 properties were previously identified as contributors to the Stockton Downtown Commercial Historic District; of these, three were also previously found eligible for local listing or designation. One property was previously identified as eligible for the NRHP and CRHR. Ten properties were previously identified as eligible for local listing and/or designation. Furthermore, six of the 23 properties were previously found ineligible for the NRHP and/or CRHR.

In addition, the records search identified three previously recorded, archaeological sites within 0.25 mile of the proposed Project APE. One historic-age refuse deposit (P-39-005114/CA-SJO-000338H) is within the APE, the historic-age burial place of John Brown (Juan Flaco: P-39-000532) is immediately adjacent to the APE, and one multi-component site consisting of historic-age refuse and lithic flakes (P-39-004164/CA-SJO-000272/H) is within the 0.25-mile study area outside the archaeological APE.

Interested Parties Consultation

Potential interested local parties for historic built resources were identified for this Project and notification letters sent on November 2, 2020. Follow-up communication was conducted on January 14, 2020 by email with those parties that maintain email addresses. No responses were received. The letters and follow-up communication were sent to:

- San Joaquin County Historical Society and Museum;
- City of Stockton Cultural Heritage Board;
- Haggin Museum; and

- San Joaquin Genealogical Society.

Tribal Consultation and Coordination

A Sacred Lands File search was requested from the NAHC on May 8, 2020, to identify sensitive or sacred Native American resources that could be affected by the proposed Project. The NAHC responded on May 12, 2020 and reported that the search of the Sacred Lands File revealed positive results for the relevant area. No additional information on the location or nature of the positive finding was provided; however, the NAHC recommended that the North Valley Yokuts Tribe be contacted for more information. Because the search does not include an exhaustive list of Native American tribal cultural resources, the NAHC provided a list of two Native American tribal organizations who may have direct knowledge of tribal cultural resources in or near the APE:

- North Valley Yokuts Tribe – Katherine Perez
- The Confederated Villages of Lisjan – Corrina Gould

Outreach letters were sent to tribal governments providing information about the proposed Project and seeking input from the tribal community. AB 52 consultation was conducted by SJRRC in conjunction with Section 106 consultation efforts lead by CHSRA. Formal government-to-government consultation with tribal governments was initiated in November 2020.

See Section 3.16, *Tribal Cultural Resources*, for a discussion of AB 52 consultation.

Field Survey and Results

Survey of historic built resources was conducted October 22-23, 2020 by individuals who meet the Secretary of the Interior Professional Qualification Standards for Architectural History and History. Thirty-two historic built resources (resources that were 45 years or older at the time of survey in 2020) within the APE were evaluated through field survey, along with record search and background research. Of the 32 historic built resources, 20 resources had not been previously studied for historic significance, while 12 were evaluated in previous surveys or inventories and identified as eligible for listing in the NRHP, CRHR and/or a local historic registry.

An archaeological reconnaissance survey was conducted on October 1, 2020 by individuals who meet the Secretary of the Interior Professional Qualification Standards for Archaeology. The field visit consisted of a pedestrian survey of all undeveloped areas of the APE. Specifically, the survey was conducted along the roads and alignment of the APE from Weber Avenue to 4th Street. Some northern portions of the railroad alignment were not walkable due to the narrow right-of-way. Survey of the northern half of the APE was conducted via street access, while the southern half was accessed along the track alignment.

No undisturbed native sediment was observed during the field survey. Most of the alignment has been paved and developed with much of the railway alignment covered with imported gravel. No evidence of historic-age refuse deposit P-39-005114/CA-SJO-000338H was observed during the field survey. No newly identified archaeological resources were identified as a result of the survey.

The archaeological reconnaissance survey was supplemented by a geoarchaeological study to consider the Project's potential for encountering as-yet undocumented prehistoric archaeological sites. The analysis was conducted using the results of the field survey, records search, and a review of geological and topographic maps of the APE and vicinity.

The study area is entirely underlain by early Holocene- to late Pleistocene-age Modesto Formation (Paleo Solutions 2020). While not mapped within the APE, aerial photographs also indicate that recent artificial fill related to previous construction is present.

The overall archaeological sensitivity of the proposed Project APE is moderate for buried archaeological resources. The surface of the APE is heavily disturbed and developed from the construction of railroad lines and infrastructure. These disturbed sediments and fill material within the APE have low potential to contain intact archaeological material. The proposed Project is adjacent to water sources and a historic-age cemetery is adjacent to the northern portion of the Project APE. As a result, undisturbed native soils below the level of disturbed sediments and fill material have a moderate potential of containing subsurface historic-age and prehistoric materials.

Methods for Determining Significance under CEQA

The thresholds of significance for aesthetic impacts were developed consistent with the CEQA guidelines (Appendix G) to determine the significance of potential aesthetic impacts that could result from implementation of the proposed Project. Accordingly, the following criteria were assessed:

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

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

The CEQA Guidelines use the following definitions to analyze impacts on historical or archaeological resources:

- Substantial adverse change in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (Section 15064.5[b][1]).
- The significance of a historical resource would be materially impaired when a project demolishes or materially alters in an adverse manner those physical characteristics that convey its historic significance or justify its inclusion in, or eligibility for, the NRHP, CRHR, or local registers (Section 15064.5[b][2][A–C]).

3.4.3 AFFECTED ENVIRONMENT

Description of Built Historic Resources within the APE

The 12 previously evaluated resources are historical resources under CEQA. Four of these built resources, as described below, as well as the Stockton Downtown Commercial Historic District of which they are contributors, are also historic properties under Section 106 of the NRHP.

Built Historic Resources Eligible for the NRHP and CRHR

There are 4 historic built resources in the APE that are eligible for listing in the NRHP and CRHR (Table 3.4-1). All 4 properties are contributors to the Stockton Downtown Commercial Historic District. The APE includes a small portion of the eastern most area of the historic district. The four resources, along with the historic district itself, are historic properties under Section 106 and are considered historical resources for the purposes of CEQA.

Table 3.4-1: Historic Properties under the NRHP/Historical Resources under CEQA within the APE

MR No.[a]	Historic Name	Address	Year Built	OHP Code[b]
3	Imperial Hotel	902 East Main Street	1896	3D, 5S2
4	Imperial Garage n/a	20 South Aurora Street 30 South Aurora Street	ca. 1915 1918	3D, 5S2
5	Hotel New York	34 South Aurora Street	1910	3D, 5S2
6	n/a	915 East Market Street	ca. 1926	3D, 5S2

[a] *Map Reference Number*

[b] *OHP Codes: 3D=Appears eligible for the NRHP as a contributor to a NHRP eligible historic district (has not yet received SHPO concurrence or agency determination), 5S2=Individually eligible for local listing or designation*

STOCKTON DOWNTOWN COMMERCIAL HISTORIC DISTRICT

The APE intersects the Stockton Downtown Commercial Historic District. Comprised of 84 contributing buildings within its approximate 21 city-block boundary, only four legal parcels at the district's easternmost boundary are within the APE. A previous evaluation of the district concluded that it was eligible for listing in the NRHP and CRHR. The present study updated previous evaluations of four of the district's contributing buildings located along South Aurora and East Market streets in the APE. According to the previous evaluation, the district is significant at the local level under NRHP/CRHR Criterion A/1 within the context of commercial development of Stockton during a period of significance from 1880-1940. The boundary of the district was previously identified as generally extending east-west along Weber, Main, and Market streets between El Dorado and the Union Pacific Railroad. Although no specific character-defining features were identified in the previous evaluation of the historic district, they would include the integrity of its contributing buildings and structures, including the four buildings in the APE.

IMPERIAL HOTEL (MAP REFERENCE NO. 3)

The Imperial Hotel is a one-story, Victorian Eclectic-style building constructed of brick (Figure 3.4-2). The building was formerly evaluated in 2000 and found to be eligible to the NRHP at the local level under NRHP/CRHR Criterion A/1 as a contributor to the Stockton Downtown Commercial Historic District. This building was also previously identified as eligible for local listing or designation. No character-defining features, period of significance, or boundary of this historic property were noted in the previous evaluation. The character-defining features identified for this Project include, but are not limited to, its arched window and door openings, Corinthian columns, terra cotta window and door surrounds, brick work detailing, and corner quoining. The period of significance for this historic property is 1896, the year it was constructed, through 1940, the end of the historic district's period of significance. The historic property boundary of this building is its current legal parcel.

Figure 3.4-2: Imperial Hotel, Map Reference No. 3.

Source: JRP Historical Consulting, LLC

IMPERIAL GARAGE AND 30 SOUTH AURORA STREET (MAP REFERENCE NO. 4)

The Imperial Garage at 20 South Aurora Street (Figure 3.4-3) and the similar, adjacent structure at 30 South Aurora Street are one-story Early Commercial buildings. Both rectangular buildings are of brick construction and have symmetrical facades with stepped parapets. The buildings were formerly evaluated in 2001 and found to be eligible to the NRHP at the local level under NRHP/CRHR Criterion A/1 as a contributor to the Stockton Downtown Commercial Historic District. They were also previously identified as eligible for local listing or designation. No character-defining features, period of significance, or boundary of this historic property were noted in the previous evaluation. Character-defining features identified for this Project include, but are not limited to, their symmetrical facades, stepped parapets, three bays, and decorative brickwork. The period of significance for these buildings is ca. 1915 and 1918, respectively, the years they were constructed, through 1940,

the end of the historic district's period of significance. Located on a single parcel, the historic property boundary for these buildings is their current legal parcel.

Figure 3.4-3: Imperial Garage and 30 South Aurora Street, Map Reference No. 4

Source: JRP Historical Consulting, LLC

NEW YORK HOTEL (MAP REFERENCE NO. 5)

The New York Hotel (Figure 3.4-4) is a four-story brick building with stepped parapets and corbeled cornice. It has a modified first floor with stucco siding. Fenestration is generally symmetrical, with double-hung, wood-frame windows on the upper portion of each facade. The building was formerly evaluated in 2001 and found to be eligible to the NRHP at the local level under NRHP/CRHR Criterion A/1 as a contributor to the Stockton Downtown Commercial Historic District. This building was also previously identified as eligible for local listing or designation. No character-defining features, period of significance, or boundary of this historic property were noted in the previous evaluation. Character-defining features identified for this Project include, but are not limited to, its brick construction, symmetrical fenestration on upper floors, parapeted roof with corbeled cornice, belt courses, window lintels and sills, and construction date plaque. The period of significance for this historic property is 1910, the year it was constructed, through 1940, the end of the historic district's period of significance. The historic property boundary is its current legal parcel.

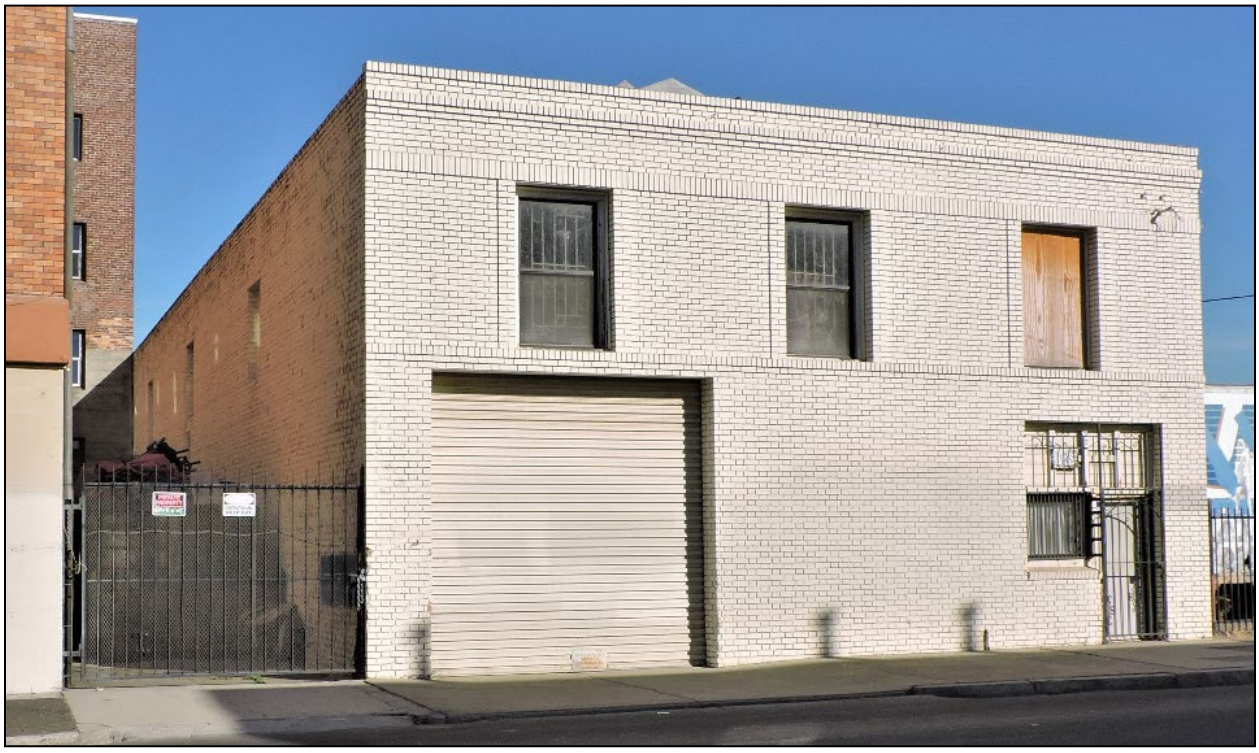
Figure 3.4-4: New York Hotel, Map Reference No. 5

Source: JRP Historical Consulting, LLC

915 EAST MARKET STREET (MAP REFERENCE NO. 6)

The building at 915 East Market Street (Figure 3.4-5) is a two-story brick structure with a hipped roof and parapets with corbeled cornice. The building was formerly evaluated in 2001 and found to be eligible to the NRHP at the local level under NRHP/CRHR Criterion A/1 as a contributor to the Stockton Downtown Commercial Historic District. This building was also previously identified as eligible for local listing or designation. No character-defining features, period of significance, or boundary of this historic property were noted in the previous evaluation. Character-defining features identified for this Project include, but are not limited to, Flemish bond brick construction, brick parapet, and brick window surrounds that incorporate soldier and header courses. The period of significance for this historic property is ca. 1926, the year it was constructed, through 1940, the end of the historic district's period of significance. The historic property boundary is its current legal parcel.

Figure 3.4-5: 915 East Market Street, Map Reference No. 6



Source: JRP Historical Consulting, LLC

Built Historic Resources Eligible for the CRHR

One property, described below in Table 3.4-2, was previously found ineligible for the NRHP but eligible for listing in the CRHR as well as for local listing or designation in a historic building survey.

Table 3.4-2: Historical Resources under the CRHR and CEQA within the APE

MR No.[a]	Historic Name	Address	Year Built	OHP Code[c]
7	Waldemar Apartments	920 East Market Street	1918	3CS, 5S2, 6Z

[a] Map Reference Number

[b] OHP Codes: 3CS=Appears eligible for listing in the CRHR individually, 5S2=Individually eligible for local listing or designation, 6Z=Ineligible for the NRHP or CRHR

WALDEMAR APARTMENTS (MAP REFERENCE NO. 7)

The Waldemar Apartments (Figure 3.4-6) is an early twentieth century, three-story, brick building with Classical details. It has a flat roof, symmetrical façade, corbeled parapet, diamond-patterned belt course, and double-hung wood windows. The building was previously evaluated and found to be potentially eligible for listing in the CRHR. Therefore, this building is presumed eligible for the CRHR at the local level under CRHR Criterion 3, as a representative example of a multi-storied, masonry apartment building constructed in the early twentieth century. Its period of significance is 1918, the year it was constructed, and its character-defining features include, but are not limited to, its scale

and massing; corbeled parapet; diamond-patterned belt course; flat roof; symmetrical fenestration that appears to still contain one-over-one, double-hung wood sash windows with brick lentils and sills; belt course between first and second floors; Flemish-bond, multi-colored brick; and primary and secondary entrances. The boundary of the property is its current legal parcel.[1]

Figure 3.4-6: Waldemar Apartments, Map Reference No. 7

Source: JRP Historical Consulting, LLC

Built Historic Resources Eligible for Local Listing or Designation

Six historical resources were previously identified as eligible for local listing or designation in the OHP California Historical Resources Information System and/or Built Environment Resources Directory; however, no record of the previous evaluations was found (Table 3.4-3). These properties were evaluated for listing in both the NRHP and CRHR for the proposed Project and found ineligible. It is concluded that none of the six historic built resources are eligible for either the state and federal registers because they lack significance and/or historic integrity. Because no previous evaluation was located for these resources, the justifications of eligibility for local listing or designation is unknown and character-defining features cannot be identified, but it is assumed to be the extant

[1] Architectural Resources Group, *Revised Draft Downtown Stockton Historic Resources Survey*, prepared for the City of Stockton, September 1, 2000, Appendix One.

architectural character of each resource. For the purposes of this study, the boundary for each of these historical resources is its legal parcel boundary.

Table 3.4-3: Historical Resources under CEQA within the APE

MR No.[a]	Historic Name	Address	Year Built	OHP Code[c]
1	Oranges Bros. Garage/ Stockton Rollatorium	910 East Weber Avenue	1919	5S2, 6Z
9	Williams & Moore/Berberian Bros.	142 South Aurora Street	1907-ca. 1949	5S2, 6Z
10	Victory Soda Works	1144 East Lafayette Street	1916-1923	5S2, 6Z
13	New Cavour Hotel	302 South Union Street	1914	5S2, 6Z
15	n/a	1104 East Sonora Street	1910	5S2, 6Z
19	n/a	520 South Union Street	1886, ca. 1960	5S2, 6Z

[a] *Map Reference Number*
[b] *OHP Codes: 5S2=Individually eligible for local listing or designation, 6Z=Ineligible for the NRHP or CRHR*

Figure 3.4-7: Oranges Bros. Garage/Stockton Rollatorium, Map Reference No. 1

Source: JRP Historical Consulting, LLC

Figure 3.4-8: Williams & Moore/Berberian Bros., Map Reference No. 9

Source: JRP Historical Consulting, LLC

Figure 3.4-9: Victory Soda Works, Map Reference No. 10

Source: JRP Historical Consulting, LLC

Figure 3.4-10: New Cavour Hotel, Map Reference No. 13

Source: JRP Historical Consulting, LLC

Figure 3.4-11: 1104 East Sonora Street, Map Reference No. 15

Source: JRP Historical Consulting, LLC

Figure 3.4-12: 520 South Union Street, Map Reference No. 19

Source: JRP Historical Consulting, LLC

Ineligible Historic Built Resources

Twenty-one of the 32 historic built resources identified within the APE are ineligible for listing in the NRHP and CRHR because they lack significance and/or do not retain sufficient historic integrity. None of these resources are historic properties under Section 106 or historical resources under CEQA. Table 3.4-4 provides a list of these ineligible resources.

Table 3.4-4: Historic Built Resources Ineligible for the NHRP and CRHR

Map Reference Number	Address	Year Built	OHP Code
2	1026 East Main Street	1902	6Z
8	120-124 South Aurora Street	ca. 1907-1925	6Z
11	1120 East Lafayette Street	ca. 1895	6Z
12	1122 East Lafayette Street	ca. 1888	6Z
14	336 South Aurora Street	ca. 1918-1928	6Z
16	1031 East Church Street	ca. 1917-1928	6Z
17	957 East Church Street	ca. 1949	6Z
18	1104 East Church Street/504 South Union Street	ca. 1895	6Z
20	1020-1030 East Church Street 1021 & 1025 East Hazelton Avenue	ca. 1900-1916, ca. 1918-1928, ca. 1931-1948	6Z
21	924 East Church Street	ca. 1939, ca. 1958	6Z

22	536 South Aurora Street	ca. 1909-1916, ca. 1918-1928	6Z
23	635 South Union Street	1909	6Z
24	920 East Hazelton Avenue	1947	6Z
25	620 South Aurora Street 935 East Scotts Avenue	1939, 1950-1952, 1963-1967	6Z
26	809 South Aurora Street	1961	6Z
27	948 South Aurora Street	ca. 1930-1936	6Z
28	1087 South Pilgrim Street 1145 East Jefferson Street	1970, 1982	6Z
29	1000 South Aurora Street	ca. 1947	6Z
30	1044 South Aurora Street	1959	6Z
31	1100 East Jackson Street 1115 East Jackson Street	ca. 1950-1957, ca. 1964-1967, 1968	6Z
32	10202 East Charter Way	ca. 1952-1957	6Z

Description of Archaeological Resources within or Adjacent to the APE

Two archaeological resources were identified during reconnaissance survey for the proposed Project.

P-39-000532

John Brown, or “Juan Flaco” was an express rider who carried word of the siege of Los Angeles to Commodore Stockton in September 1846. He was a citizen of Stockton from 1851 to his death on December 12, 1859, and was buried in the former Citizen’s Cemetery. When the bodies were taken from this site to a new burial location in the 1890s, Brown had no relatives to pay for the move, thus his remains are said to still be in the Citizen’s Cemetery, which has since been abandoned and occupied by commercial structures. The site of his burial was designated CHL-513, and a marker was erected September 13, 1969 at 1100 East Weber Avenue, reading:

> In 1846, during American conquest of California, John Brown, nicknamed “Juan Flaco,” rode from Los Angeles to San Francisco in four days to warn Commodore Stockton of the siege of Los Angeles. As a result, troops were sent, and the city was secured. The “Paul Revere of California” lived in Stockton from 1851-59 and is buried in the former Citizen’s Cemetery near this site.

The site is located outside of, but immediately adjacent to, the northern portion of the archaeological APE. No additional documentation is necessary.

P-39-005114/CA-SJO-000338H

The site consists of a scatter of approximately ten pieces of coarse aggregate concrete slabs with bricks attached on one side. The bricks did not have any identifiers but appeared to be historic in age due to the heavy aggregate. The scatter extends approximately 65 feet north/south by 60 feet

east/west. No evidence of the site was observed during the field survey. Attachment D of the Section 106 PA exempts isolated refuse dumps and scatters over 50 years old that lack specific associations; therefore, P-39-005114/CA-SJO-000338H is exempt from evaluation and no additional documentation is necessary.

3.6.4 ENVIRONMENTAL ANALYSIS

This section describes the potential impacts to cultural resources and tribal cultural resources from the construction and operation of the proposed Project alternative.

CEQA Significance Findings

An environmental analysis of each threshold identified is provided, below:

a) Would the project cause a substantial adverse change in the significance of a historical resources as defined in Section 15064.5?

Less than Significant Impact. The proposed Project proposes to construct new tracks and at-grade rail crossings, remove some existing tracks, and protect-in-place, relocate, and/or remove various utilities near the following historic resources. Protecting-in-place, relocating, and/or removing utilities (such as storm drains; underground water, sewer, and gas lines; and overhead electrical lines and fiber optic cable) may be required near each historical resource.

Additionally, vibration levels from impact pile driving during Project construction are anticipated to exceed the Federal Transit Administration (FTA) threshold for damage to fragile historic structures located within 75 feet of this type of construction. Therefore, the use of pile driving and/or other heavy construction methods near these historical resources has potential to cause physical demolition, destruction, relocation, or alteration of the historical resources discussed below.

A detailed summary of specific impacts related to each historical resource is provided below.

Oranges Bros. Garage/Stockton Rollatorium, 910 East Weber Avenue (Map Reference No. 1)

The proposed Project improvements would be located more than 125 feet away from this historical resource, and thus would not result in the removal, physical destruction, or damage to this historic building (CCR Section 15064.5[b][1][2]). The Oranges Bros. Garage will retain historic integrity to convey its significance.

A temporary construction area intersects the northernmost and southernmost portion of this historical resource's legal parcel. Both areas affected by the TCE would be more than 75 feet away from the historic building and no construction activity within this temporary construction area is anticipated. Thus, this Project component would not cause any substantial adverse short-term changes to this historical resource.

The proposed Project would not result in substantial adverse changes to this historical resource from the introduction of new visual elements. The removal of tracks, new at-grade tracks, and rail crossing at East Main Street each would be more than 160 feet east of this historic building. The

crossing would include the upgrading of railroad equipment, flashing light signals, gate arms, signing and pavement markings, as well as potential pedestrian upgrades such as ADA-compliant tactile walking surface indicators and streetlights. These types of railroad, roadway, and pedestrian features, and tracks would be located within, or immediately east of, the railroad right-of-way. The new tracks and crossing would be visible when looking east, northeast, and southeast from the building's secondary façades; however, they would not adversely alter the view or setting of this historical resource. The Oranges Bros. Garage building was originally constructed adjacent to this nineteenth-century, at-grade railroad. The introduction of additional at-grade tracks and crossing in the vicinity of this historic building would not adversely alter the view or setting of the historical resource because they are consistent with historic-period and existing railroad infrastructure and would blend in with the setting thus not diminishing the integrity of this historic building. Neither its significance nor its setting would be materially altered in an adverse manner.

All modifications to utilities would be conducted within the public right-of-way, more than 120 feet northeast and southeast of this historic building. This type of Project construction activity would be relatively minor and would not result in an adverse visual impact to the Oranges Bros. Garage building as the views and setting of this historical resource have been already altered by the construction and demolition of adjacent buildings, as well as construction of contemporary infrastructure. Thus, there would be no substantial adverse change from the introduction of new visual elements.

Technical analysis of potential vibration impacts completed for the proposed Project (see Section 3.11, *Noise and Vibration*) indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are no anticipated construction or operational noise impacts because this historical resource is not considered noise sensitive.

Therefore, the proposed Project results in a finding of No Substantial Adverse Change on the Oranges Bros. Garage/Stockton Rollatorium building and no long-term impacts associated with this historical resource are anticipated.

Imperial Hotel, 904 East Main Street (Map Reference No. 3)

The proposed Project improvements would be located outside of the boundary of this historical resource, and therefore, would not result in the physical demolition, destruction, relocation, or alteration of the Imperial Hotel (CCR Section 15064.5[b][1][2]). The Imperial Hotel will retain historic integrity to convey its significance.

A temporary construction area intersects the northernmost portion of this historical resource's boundary. However, no construction activity would be conducted within this temporary construction area. Thus, this Project improvement would not cause any substantial adverse short-term change to this historical resource.

The proposed Project would not result in substantial adverse changes to this historical resource from the introduction of new visual elements. The removal of tracks, new at-grade tracks, and rail crossing at East Main Street each would be more than 270 feet east of this historic building. The crossing would include the upgrading of railroad equipment, flashing light signals, gate arms, signing and pavement markings, as well as potential pedestrian upgrades such as ADA-compliant tactile walking surface indicators and streetlights. These types of railroad, roadway, and pedestrian features, and tracks would be located within, or immediately east of, the railroad right-of-way. While the new tracks and crossing would be visible when looking east and northeast from this property, they would not adversely alter the view or setting of this historical resource. The Imperial Hotel was originally constructed adjacent to this nineteenth-century, at-grade railroad. The introduction of additional at-grade tracks and crossing in the vicinity of this historic building would not adversely alter the view or setting of the historical resource because they are consistent with historic-period and existing railroad infrastructure and would blend in with the setting thus not diminishing the integrity of this historic building. Neither its significance nor its setting would be materially altered in an adverse manner.

All modifications to utilities would be conducted within the public right-of-way, more than 90 feet northeast of the Imperial Hotel. This type of Project construction activity would be relatively minor and would not result in an adverse visual impact to this historical resource as the views and setting of the historical resource have been already altered by the construction and demolition of adjacent buildings, as well as construction of contemporary infrastructure. Thus, there would be no substantial adverse change from the introduction of new visual elements.

Technical analysis of potential vibration impacts indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are no anticipated construction or operational noise impacts because this historical resource is not considered noise sensitive.

The proposed Project results in a finding of No Substantial Adverse Change on the Imperial Hotel building and no long-term impacts associated with this historical resource are anticipated.

Imperial Garage (20 South Aurora Street) & 30 South Aurora Street (Map Reference No. 4)

The proposed Project improvements would be located outside of the boundary of these historical resources. Therefore, the proposed Project would not result in the physical demolition, destruction, relocation, or alteration of these historical resources (CCR Section 15064.5[b][1][2]). These buildings will retain historic integrity to convey their significance.

No temporary construction areas are required at these parcels. Therefore, this proposed Project would not cause any substantial adverse short-term changes to these historical resources.

The proposed Project would not result in substantial adverse changes to these historical resources from the introduction of new visual elements. The track removal, construction of new at-grade tracks and new rail crossings at East Main and East Market streets would be more than 180 feet east of these buildings. The crossings would include the upgrading of railroad equipment, flashing light

signals, gate arms, signing and pavement markings, as well as potential pedestrian upgrades such as ADA-compliant tactile walking surface indicators and streetlights. These types of railroad, roadway, and pedestrian features, and tracks would be located within, or immediately east of, the railroad right-of-way. The new tracks and crossings would only be visible when looking east from these building's rear (east) sides, however, they would not adversely alter the view or setting of this historical resource. These buildings were originally constructed adjacent to this nineteenth-century, at-grade railroad, and the introduction of additional at-grade tracks and crossings in the vicinity of these historic buildings, would not adversely alter the view or setting of these historical resources. The introduction of these Project features is consistent with historic-period and existing railroad infrastructure and would blend in with the setting, thus not diminishing the integrity of these historic buildings. Neither the buildings' significance nor the setting would be materially altered in an adverse manner.

All modifications to utilities would be conducted within the public right-of-way, more than 115 feet north and southeast of theses historic buildings. This type of Project construction activity would be relatively minor and would not result in an adverse visual impact to these historical resources as their views and setting have been already altered by the construction and demolition of adjacent buildings, as well as construction of contemporary infrastructure. Thus, there would be no substantial adverse change from the introduction of new visual elements.

Technical analysis of potential vibration impacts indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are no anticipated construction or operational noise impacts because these historical resources are not considered noise sensitive.

The proposed Project results in a finding of No Substantial Adverse Change on the Imperial Garage and the building at 30 South Aurora Street and no long-term impacts associated with this historical resource are anticipated.

New York Hotel, 34 South Aurora Street (Map Reference No. 5)

The proposed Project improvements would be located outside of the boundary of this property, and thus would not result in the in the physical demolition, destruction, relocation, or alteration of these historical resources (CCR Section 15064.5[b][1][2]). The New York Hotel will retain historic integrity to convey its significance.

A temporary construction area intersects the southernmost portion of this historical resource's boundary. However, no construction activity would be conducted within this temporary construction area. Thus, the proposed Project improvements would not cause any substantial adverse short-term changes to this historical resource.

The proposed Project would not result in adverse impacts to this historical resource from the introduction of new visual elements. The track removal, construction of new at-grade tracks and new rail crossing at East Market Street would be more than 275 feet east of this building. The crossing would include the upgrading of railroad equipment, flashing light signals, gate arms, signing and

pavement markings, as well as potential pedestrian upgrades such as ADA-compliant tactile walking surface indicators and streetlights. These types of railroad, roadway, and pedestrian features, and tracks would be located within, or immediately east of, the railroad right-of-way. The new tracks and crossing would only be visible when looking east from the upper floors of this building's secondary (east) side and southeast from its main (south) façade; however, they not would adversely alter the view or setting of this historical resource. This building was originally constructed adjacent to this nineteenth-century, at-grade railroad, and the introduction of additional at-grade tracks and crossing in the vicinity of this historic building would not adversely alter the view or setting of the historical resource because they are consistent with historic-period and existing railroad infrastructure and would blend in with the setting. Neither the significance nor the setting would be materially altered in an adverse manner.

All modifications to utilities would be conducted within the public right-of-way, more than 75 feet southeast of this historic building. This type of Project construction activity would be relatively minor and would not adversely alter the view or setting of the historic building, which has already been modified by the construction and demolition of adjacent buildings, as well as construction of contemporary infrastructure. Thus, there would be no substantial adverse change from the introduction of new visual elements.

Technical analysis of potential vibration impacts indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are no anticipated construction or operational noise impacts because this historical resource is not considered noise sensitive.

The proposed Project results in a finding of No Substantial Adverse Change on the New York Hotel building, and no long-term impacts associated with this historical resource are anticipated.

915 East Market Street (Map Reference No. 6)

The proposed Project improvements would be located outside of the boundary of this property, and thus would not result in the physical demolition, destruction, relocation, or alteration of these historical resources (CCR Section 15064.5[b][1][2]). The building at 915 East Market Street will retain historic integrity to convey its significance.

A temporary construction area intersects the southernmost portion of this historical resource's boundary. However, no construction activity would be conducted within this temporary construction area. Thus, the proposed Project improvements would not cause any substantial adverse short-term change to this historical resource.

The proposed Project would not result in adverse impacts to this historical resource from the introduction of new visual elements. The track removal, construction of new at-grade tracks and new rail crossing at East Market Street would be more than 200 feet east of this building. The crossing would include the upgrading of railroad equipment, flashing light signals, gate arms, signing and pavement markings, as well as potential pedestrian upgrades such as ADA-compliant tactile walking surface indicators and streetlights. These types of railroad, roadway, and pedestrian features, and

tracks would be located within, or immediately east of, the railroad right-of-way. The new tracks and crossing would only be visible when looking east from the building's secondary (east) side and southeast from its main (south) façade; however, they would not adversely alter the view or setting of this historical resource. This building was originally constructed adjacent to this nineteenth-century, at-grade railroad, and the introduction of additional at-grade tracks and crossing in the vicinity of this historic building would not adversely alter the view or setting of the historical resource because they are consistent with historic-period and existing railroad infrastructure and would blend in with the setting. Neither the significance nor the setting would be materially altered in an adverse manner.

All modifications to utilities would be conducted within the public right-of-way, more than 75 feet southeast of this historic building. This type of Project construction activity would be relatively minor and would not adversely alter the view or setting of the historic building, which has already been modified by the construction and demolition of adjacent buildings, as well as construction of contemporary infrastructure. Thus, there would be no substantial adverse change from the introduction of new visual elements.

Technical analysis of potential vibration impacts indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are no anticipated construction or operational noise impacts because this historical resource is not considered noise sensitive.

The proposed Project results in a finding of No Substantial Adverse Change on the historical resource at 915 East Market Street, and no long-term impacts associated with this historical resource are anticipated.

Waldemar Apartments, 920 East Market Street (Map Reference No. 7)

The proposed Project improvements would be located outside of the boundary of this property, and thus would not result in the physical demolition, destruction, relocation, or alteration of this historical resource (CCR Section 15064.5[b][1][2]). The Waldemar Apartments will retain historic integrity to convey its significance.

A temporary construction area intersects the northernmost portion of this historical resource's boundary. However, no construction activity would be conducted within this temporary construction area. Thus, the proposed Project improvements would not cause any substantial adverse short-term change to this historical resource.

The proposed Project would not result in adverse impacts to this historical resource from the introduction of new visual elements. The track removal, construction of new at-grade tracks and new rail crossing at East Market Street would be more than 160 feet east of this building. The crossing would include the upgrading of railroad equipment, flashing light signals, gate arms, signing and pavement markings, as well as potential pedestrian upgrades such as ADA-compliant tactile walking surface indicators and streetlights. These types of railroad, roadway, and pedestrian features, and tracks would be located within, or immediately east of, the railroad right-of-way. The new tracks and

crossing would be visible when looking north and east from the building's main (north) façade and east from its secondary (east) side; however, they would not adversely alter the view or setting of this historical resource. This building was originally constructed adjacent to this nineteenth-century, at-grade railroad, and the introduction of additional at-grade tracks and crossing in the vicinity of this historic building would not adversely alter the view or setting of the historical resource because they are consistent with historic-period and existing railroad infrastructure and would blend in with the setting. Neither the significance nor the setting would be materially altered in an adverse manner.

All modifications to utilities would be conducted within the public right-of-way, approximately 20 feet or more northeast of this historic building. This type of Project construction activity would be relatively minor and would not adversely alter the view or setting of the historic building, which has already been modified by the construction and demolition of adjacent buildings, as well as construction of contemporary infrastructure. Thus, there would be no substantial adverse change from the introduction of new visual elements. Therefore, the significance of this historical resource would not be materially impaired.

Technical analysis of potential vibration impacts indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are no anticipated construction or operational noise impacts because this historical resource is not considered noise sensitive.

The proposed Project results in a finding of No Substantial Adverse Change on the Waldemar Apartments, and no long-term impacts associated with this historical resource are anticipated.

Williams & Moore/Berberian Bros., 142 South Aurora Street (Map Reference No. 9)

The proposed Project improvements would be located outside of the boundary of this historical resource. Therefore, the proposed Project would not result in the in the physical demolition, destruction, relocation, or alteration of this historical resource (CCR Section 15064.5[b][1][2]) and the integrity of the Williams & Moore building would be unchanged.

No temporary construction areas are required at this parcel. Therefore, this proposed Project would not cause any substantial adverse short-term changes to this historical resource.

The proposed Project would not result in substantial adverse changes to this historical resource from the introduction of new visual elements. The track removal, construction of new at-grade tracks and new rail crossing at East Market Street would be more than 200 feet east of this historical resource. The crossing would include the upgrading of railroad equipment, flashing light signals, gate arms, signing and pavement markings, as well as potential pedestrian upgrades such as ADA-compliant tactile walking surface indicators and streetlights. These types of railroad, roadway, and pedestrian features, and tracks would be located within, or immediately east of, the railroad right-of-way. The new tracks and crossings would only be visible when looking west from this building's rear (east) side, however, they would not adversely alter the view or setting of this historical resource. This building was originally constructed adjacent to this nineteenth-century, at-grade railroad, and the introduction of additional at-grade tracks and crossings in the vicinity of this historic building, would

not adversely alter the view or setting of the resource because they are consistent with historic-period and existing railroad infrastructure and would blend in with the setting thus not diminishing the integrity of this historic building. Therefore, the significance of this historical resource would not be materially impaired.

All modifications to utilities would be conducted on East Market Street within the public right-of-way and more than 170 feet northeast of this historic building. This type of Project construction activity would be relatively minor and would not result in an adverse visual impact to this historical resource. Thus, there would be no substantial adverse change from the introduction of new visual elements.

Technical analysis of potential vibration impacts indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are not any anticipated construction or operational noise impacts because this historical resource is not considered noise sensitive.

The proposed Project results in a finding of No Substantial Adverse Change on the Williams & Moore/Berberian Bros. building, and no long-term impacts associated with this historical resource are anticipated.

Victory Soda Works, 1144 East Lafayette Street (Map Reference No. 10)

The proposed Project improvements would be located outside of the boundary of this property, and thus would not result in the in the physical demolition, destruction, relocation, or alteration of this historical resource (CCR Section 15064.5[b][1][2]). The integrity of the Victory Soda Works building at 1144 East Lafayette Street would be unchanged.

A temporary construction area intersects the northernmost portion of this historical resource's boundary. However, no construction activity would be conducted within this temporary construction area. Thus, the proposed Project improvements would not cause any substantial adverse short-term change to this historical resource.

The proposed Project would not result in adverse impacts to this historical resource from the introduction of new visual elements. The closest new at-grade tracks would be constructed within, or immediately adjacent to, the railroad right-of-way. They would be approximately 140 feet west of South Union Street and 400 feet or more away from this historic building. The closest potential closure location of East Lafayette Street would be at South Union Street (approximately 300 feet west of this historic building) and may include removal of pavement and modifying the intersection to a three-way intersection. These proposed Project components might be visible when looking northwest from this property, however, the view would be mostly obscured by extant adjacent buildings and mature landscaping and would not adversely alter the viewshed or setting of this historical resource. The view and setting of this resource, which has already been altered by the modern construction of SR 4 immediately north of this building and nearby adjacent buildings, would be mostly unchanged. Therefore, the significance of this historical resource would not be materially impaired.

All modifications to utilities would be conducted along East Lafayette Street within the public right-of-way and more than 150 feet northwest of this historic building. This type of Project construction activity would be relatively minor and would not result in an adverse visual impact to the Victory Soda Works building. Thus, there would be no substantial adverse change from the introduction of new visual elements.

Technical analysis of potential vibration impacts indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are not any anticipated construction or operational noise impacts because this historical resource is not considered noise sensitive.

The proposed Project results in a finding of No Substantial Adverse Change on the Victory Soda Works building, and no long-term impacts associated with this historical resource are anticipated.

New Cavour Hotel, 302 South Union Street (Map Reference No. 13)

The proposed Project improvements would be located outside of the boundary of this property, and thus would not result in the physical demolition, destruction, relocation, or alteration of this historical resource (CCR Section 15064.5[b][1][2]). The New Cavour Hotel at 302 South Union Street will retain historic integrity to convey its significance.

A temporary construction area intersects the northernmost portion of this historical resource's boundary. However, no construction activity would be conducted within this temporary construction area. Thus, the proposed Project improvements would not cause any substantial adverse short-term change to this historical resource.

The proposed Project would not result in adverse impacts to this historical resource from the introduction of new visual elements. The flyover structure and at-grade tracks would be constructed within, or immediately adjacent to, the railroad right-of-way west of South Union Street. The flyover would be located approximately 200 feet west of this historical resource; the at-grade tracks would be sited further west, and thus would be obstructed from the view of this historical resource. The exact type of structure for the flyover has not been determined to date. Options under consideration are embankment, retaining wall, and viaduct. The flyover would begin south of East Lafayette Street and reach its greatest height (approximately 32 feet) south of East Scotts Avenue. Near the location of this historical resource the flyover would be at-grade and begin increasing in height as it moves southward. By East Sonora Street (one block south of this historic building), the flyover would be approximately five feet in height. The structure would likely have an earthen embankment and move to retaining wall-construction south of East Sonora Street. The closest closure of East Lafayette Street would be at South Union Street (approximately 60 feet west of this historic building) and may include removal of pavement and modifying the intersection to a three-way intersection.

These proposed Project components would be visible from this historical resource. However, one or more rail lines have historically occupied the land west of South Union Street and have been part of the setting of this historical resource since its construction. The proposed flyover structure would be a few feet high or less in the vicinity of this building and would not significantly obstruct its views

when looking west or southwest from the building. The flyover structure would be a considerable distance away from the New Cavour Hotel building and would not adversely diminish the viewshed or the industrial and rail transportation setting of this building. The view and setting of this resource, which has already been altered by the modern construction of SR 4 immediately north of this building and the demolition of adjacent buildings, would be mostly unchanged. For the same reasons, the closure of East Lafayette Street would not adversely impact this historical resource. Therefore, the none of these proposed construction activities would materially impair the view or setting of this historical resource.

All modifications to utilities would be conducted along East Lafayette Street and/or South Union Street within the public right-of-way. This type of Project construction activity would be relatively minor and would not result in an adverse visual impact to the New Cavour Hotel building. Thus, there would be no substantial adverse change from the introduction of new visual elements.

Technical analysis of potential vibration impacts indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are not any anticipated construction or operational noise impacts because this historical resource is not considered noise sensitive.

The proposed Project results in a finding of No Substantial Adverse Change on the New Cavour Hotel, and no long-term impacts associated with this historical resource are anticipated. See Figure 3.4-13 and Figure 3.4-14 for existing and simulated views.

Figure 3.4-13: New Cavour Hotel (Map Reference No. 13) shown at far left, Existing View

Figure 3.4-14: New Cavour Hotel (Map Reference No. 13) shown at far left, Simulated View

1104 East Sonora Street (Map Reference No. 15)

All of the proposed Project improvements would be located outside of the boundary of this property, and thus would not result in the in the physical demolition, destruction, relocation, or alteration of this historical resource (CCR Section 15064.5[b][1][2]). The integrity of this historical resource would be unchanged.

No temporary construction areas are required at this parcel. Therefore, this proposed Project would not cause any substantial adverse short-term changes to this historical resource.

The flyover structure and at-grade tracks would be constructed within, or immediately adjacent to, the railroad right-of-way west of South Union Street. The flyover would be located approximately 205 feet west of this historical resource. The exact type of structure for this structure has not been determined to date. Options under consideration are embankment, retaining wall, and viaduct. The flyover would begin south of East Lafayette Street and reach its greatest height (approximately 32 feet) south of East Scotts Avenue (more than 1000 feet south of this historical resource). Near the location of this historical resource the flyover would be approximately five feet in height. The structure would have an earthen embankment and move to retaining wall south of East Sonora Street. The construction of the flyover would require the demolition of a modern industrial building west of South Union Street. The additional closure of East Sonora Street at South Union Street would be approximately 70 feet west of this historic building and include the pavement removal and modifying the intersection to a three-way intersection.

The proposed Project would not result in substantial adverse change to this historical resource from the introduction of new visual elements. While the proposed flyover would be relatively low and would be a considerable distance away from the historic building, it would partially obstruct the view when looking north and northwest from the building's primary (north) and secondary (west) façades. However, one or more rail lines have historically occupied the land west of South Union Street and have been part of setting of this historical resource since its construction. The introduction of an additional rail line in the vicinity of this historic building would not substantially diminish the viewshed or the industrial and rail transportation setting of this residence. The setting and views of this resource have already been altered by removal of more than one set of rail tracks that paralleled the west side of South Union Street, construction of modern industrial buildings to the west, and the demolition of both industrial and residential buildings to the north and northwest of this historical resource. The new rail line would be consistent with historic-period and existing railroad infrastructure and would blend in with the industrial setting that has existed in the vicinity of this historical resource since it was constructed. The significance or integrity of this historical resource would not be materially impaired; thus, the construction of the flyover structure would result in a less-than-significant visual impact to this historical resource.

The further closure of East Sonora Street west of South Union Street (including removal of pavement and modifying the intersection to a three-way intersection) would not adversely impact this historical resource. While this Project component would be visible when looking northwest from this property, it would not materially impair the view or setting of this historical resource as the view and setting have already been changed as described above.

The construction of at-grade tracks would be sited west of the flyover, and thus would be obstructed from the view of this historical resource. Therefore, this Project component would not present any adverse visual impacts on this historical resource.

All modifications to utilities would be conducted along East Sonora Street and/or South Union Street within the public right-of-way. This type of Project construction activity would be relatively minor and would not result in an adverse visual impact to the building.

Technical analysis of potential vibration impacts indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are not any anticipated construction or operational noise impacts because this historical resource is not considered noise sensitive.

The proposed Project results in a finding of No Substantial Adverse Change on the residence at 1104 East Sonora Street, and no long-term impacts associated with this historical resource are anticipated. See Figure 3.4-15 and Figure 3.4-16 for existing and simulated views.

Figure 3.4-15: 1104 East Sonora Street (Map Reference No. 15), Existing View

Figure 3.4-16: 1104 East Sonora Street (Map Reference No. 15), Simulated View

520 South Union Street (Map Reference No. 19)

All of the proposed Project improvements would be located outside of the boundary of this property, and thus would not result in the in the physical demolition, destruction, relocation, or alteration of this historical resource (CCR Section 15064.5[b][1][2]). The integrity of this historical resource would be unchanged.

No temporary construction areas are required at this parcel. Therefore, the proposed Project would not cause any substantial adverse short-term changes to this historical resource.

The flyover structure and at-grade tracks would be constructed within, or immediately adjacent to, the railroad right-of-way west of South Union Street. The flyover would be located approximately 205 feet west of this historical resource. The exact type of structure for the flyover structure has not been determined to date. Options under consideration are embankment, retaining wall, and viaduct. The flyover would reach its greatest height (approximately 32 feet) south of East Scotts Avenue (more than 600 feet south of this historical resource). Near the location of this historical resource flyover height would be approximately 12 feet. The structure would have retaining wall-construction south of East Sonora Street and its construction would require the demolition of historic-period industrial buildings west of South Union Street. The closure of East Church Street west of South Union Street would be more than 140 feet northwest of this historic building and include the pavement removal and modifying the intersection to a three-way intersection.

The proposed Project would not result in adverse impacts to this historical resource from the introduction of new visual elements. While the proposed flyover would be a considerable distance away from the historic building, it would partially obstruct the view when looking west from the building's primary (west) façade. However, one or more rail lines have historically occupied the land west of South Union Street and have been part of setting of this historical resource since its construction. The introduction of an additional rail line in the vicinity of this historic building would not substantially diminish the viewshed or the industrial and rail transportation setting of this residence. The setting and views of this building have already been altered by the by removal of more than one set of rail tracks that paralleled the west side of South Union Street, demolition of historic-period industrial buildings to the west and northwest of this building, and construction of modern residences to the south. The new rail line would be consistent with historic-period and existing railroad infrastructure and would blend in with the industrial setting that has existed in the vicinity of this historical resource since the building was constructed. The significance and integrity of this historical resource would not be materially impaired; thus, the construction of the flyover structure would result in a less-than-significant visual impact to this historical resource.

The closure of East Church Street west of South Union Street (including the possible removal of pavement and modifying the intersection to a three-way intersection) would not adversely impact this historical resource. This Project component would be a considerable distance away from this building. While it would be visible when looking northwest from this property, it would not materially impair the view or setting of this historical resource as the view and setting have already been changed as described above.

The construction of at-grade tracks would be sited west of the flyover, and thus would be obstructed from the view of this historical resource. Therefore, this Project component would not present any adverse visual impacts on this historical resource.

All modifications to utilities near this historical resource would be conducted along South Union Street within the public right-of-way. This type of Project construction activity would be relatively minor and would not result in an adverse visual impact to this historical resource. Thus, there would be no substantial adverse change from the introduction of new visual elements.

Technical analysis of potential vibration impacts indicates that the proposed Project would not result in any adverse impacts to historical resources from operational vibrations and there are not any anticipated construction or operational noise impacts because this historical resource is not considered noise sensitive.

The proposed Project results in a finding of No Substantial Adverse Change on the residence at 520 South Union Street, and no long-term impacts associated with this historical resource are anticipated. See Figure 3.4-17 and Figure 3.4-18 for existing and simulated views.

Figure 3.4-17: 520 South Union Street (Map Reference No. 19), Existing View

Figure 3.4-18: 520 South Union Street (Map Reference No. 19), Simulated View.

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

Less Than Significant. Two archaeological resources were identified within or immediately adjacent to the APE during the records search and literature review, Native American outreach and consultation, and pedestrian survey. The historic-age burial place of John Brown (Juan Flaco: P-39-000532) is adjacent to the APE, and one historic-age refuse deposit is within the APE (P-39-005114/CA-SJO-000338H).

Resource P-39-005114/CA-SJO-000338H (historic-age refuse deposit) lacks specific associations and is, therefore, exempt from documentation and evaluation per Attachment D of the Section 106 PA. In addition, no evidence of the resource was observed during the field survey.

Site P-39-000532 (historic-age burial place of John Brown) is located outside of, but immediately adjacent to, the northern portion of the archaeological APE. The resource has been designated CHL-513 and a marker was erected September 13, 1969 at 1100 East Weber Avenue.

The proposed Project is located within an area that has been subject to disruption by railroad and commercial development activities. As a result of previous development activities, archaeological resources that may have existed at the ground surface have likely been displaced or destroyed. There is, however, the possibility that ground-disturbing activities could impact previously undiscovered subsurface prehistoric or archaeological resources. However, with the implementation

of Measures BMP CUL-1 and BMP CUL-2, impacts to archaeological and subsurface prehistoric archaeological resources would be considered less than significant, and no mitigation is required.

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

Less Than Significant. No human remains have been identified within the archaeological APE. However, although the previous Citizen's Cemetery is not mapped within the archaeological APE, subsurface, undocumented remnants of the cemetery or associated features may exist within the boundaries of the archaeological APE. There is the possibility that previously undiscovered and undocumented human remains could be disturbed by ground disturbing activities during construction of the proposed Project. Implementation of Measure BMP CUL-3 would ensure that unknown human remains that could be discovered during construction are properly treated and would avoid or minimize the potential for direct adverse effect. With the implementation of Measure BMP CUL-3, impacts would be considered less than significant, and no mitigation is required.

3.4.3 BEST MANAGEMENT AND/OR MITIGATION MEASURES

The following cultural resources BMPs identified below would be applied to the proposed Project.

BMP CUL-1: **Archaeological and Tribal Monitoring.** Prior to issuance of grading permits, SJRRC will ensure that a qualified archeologist, meeting the Secretary of the Interior's standards for professional archaeology, and Native American monitors from the North Valley Yokuts Tribe and The Confederated Villages of Lisjan shall be retained to monitor earth-moving activities. Native American monitoring shall be conducted on a rotation basis during these activities and attendance is at the discretion of the tribe(s).

The archaeological and Native American monitor shall be present for all ground-disturbing activities within the Project area. The qualified archaeologist shall have the ability to recommend, with written and photographic justification, the termination of monitoring efforts to SJRRC, and should SJRRC and the Native American monitor(s) concur with this assessment, then monitoring shall cease.

If an inadvertent discovery of archaeological materials is made during project-related construction activities, the archaeological and Native American monitor(s) shall have the authority to halt ground disturbing activities within 50 feet of the resource(s) and an Environmentally Sensitive Area physical demarcation shall be established. The qualified archaeologist shall be notified regarding the discovery. If prehistoric or potential tribal cultural resources (TCR) are identified, the Native American monitor(s) shall be notified. Prior to issuance of grading permits, a qualified archaeologist, meeting the Secretary of the Interior's Standards for professional archaeology, shall ensure that a Worker Environmental Awareness Protection (WEAP) training, presented by a Qualified Archaeologist and Native American representative, is provided to all construction and managerial personnel involved with

the proposed Project. The WEAP training shall provide an overview of cultural (prehistoric and historic) and tribal cultural resources and outline regulatory requirements for the protection of cultural resources. The WEAP will also cover the proper procedures in the event an unanticipated cultural resource is identified during construction. The WEAP training can be in the form of a video or PowerPoint presentation. Printed literature (handouts) can accompany the training and can also be given to new workers and contractors to avoid the necessity of continuous training over the course of the proposed Project.

BMP CUL-2: **Archaeological and Tribal Monitor.** Prior to issuance of grading permits SJRRC shall retain an archaeological monitor. The archaeological monitor, working under the direct supervision of the qualified archeologist, shall be present for all ground-disturbing activities that occur in native soil within the archaeological APE. All archaeological monitors shall be familiar with the types of historical and prehistoric resources that could be encountered within the APE. Ground disturbing activities include, but are not limited to, brush clearance, grubbing, excavation, trenching, grading, and drilling. A sufficient number of archaeological monitors shall be present each workday to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. The qualified archaeologist shall have the ability to recommend, with written and photographic justification, the termination of monitoring efforts to SJRRC, and should SJRRC and the Native American participant(s) concur with this assessment, then monitoring shall cease.

If an inadvertent discovery of archaeological materials is made during Project-related construction activities, the archaeological monitor shall have the authority to halt ground disturbing activities within 50 feet of the resource(s) and an Environmentally Sensitive Area physical demarcation shall be constructed. The qualified archaeologist shall be notified regarding the discovery. If prehistoric or potential tribal cultural resources are identified, the interested Native American participant(s) shall be notified.

The qualified archaeologist, in consultation with SJRRC (and Native American participant[s] should the find be prehistoric), shall determine whether the resource is potentially significant as per Section 106 and/or CEQA (that is, whether it is an historical resource, a unique archaeological resource, or tribal cultural resources). If avoidance is not feasible, a qualified archaeologist, in consultation with SJRRC, shall prepare and implement a detailed treatment plan. Treatment of unique archaeological resources shall follow the applicable requirements of PRC Section 21083.2. Treatment for most resources would consist of, but would not be limited to, in-field documentation, archival research, subsurface testing, and excavation.

No work will continue within the 50-foot buffer until the qualified archaeologist, and Lead Agencies (along with the Native American participant[s] should the find be prehistoric) agree to appropriate treatment.

One or more Native American monitors will also be present during all proposed Project ground disturbing activities.

BMP CUL-3: **Inadvertent Discovery of Human Remains During Construction.** In the event of the inadvertent discovery of human remains, SJRRC will ensure that their designated contractor shall immediately notify the county coroner and SJRRC. If the county coroner determines the remains are Native American in origin, the Coroner shall contact the Native American Heritage Commission in accordance with Health and Safety Code Section 7050.5 subdivision c, and Public Resources Code Section 5097.98 (as amended by AB 2641). The Native American Heritage Commission shall designate a Most Likely Descendent for the remains per Public Resources Code 5097.98. Per Public Resources Code 5097.98, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where he Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendent regarding their recommendations, if applicable. If the remains are determined to be neither of forensic value to the Coroner, nor of Native American origin, provisions of the California Health and Safety Code (7100 37 et seq.) directing identification of the next-of-kin will apply.

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3.5 Energy

3.5.1 INTRODUCTION

This section describes the effects of the proposed Project construction and operation on energy resources, including electricity, natural gas, and transportation fuel.

3.5.2 REGULATORY SETTING

This section identifies the federal, state, and local laws, regulations, and orders that are relevant to the analysis of energy in this EIR. It also states whether the proposed Project would be in compliance with the regulations described herein.

Federal Plans, Policies, and Regulations

Energy Policy Act of 2005 (42 USC 13201 et seq.)

The Energy Policy Act addresses energy production in the U.S., including: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) Tribal energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology. For example, the Act provides loan guarantees for entities that develop or use innovative technologies that avoid GHG by-products. Another provision of the Act increases the amount of biofuel that must be mixed with gasoline sold in the U.S.

Executive Order 13211 – Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

Executive Order (EO) 13211 was issued by President Bush in 2001. It is applicable to any significant energy action as defined by the EO. A significant energy action is one that promulgates, or is expected to lead to the promulgation of, a final rule that is a significant regulatory action under EO 12866 and likely to have a significant adverse effect on the supply, distribution, or use of energy or is designated by the Administrator of Office of Management and Budget/Office of Information and Regulatory Affairs as a significant energy action.

State Plans, Policies, and Regulations

California Energy Commission

The Warren-Alquist Act of 1974 established the California Energy Commission (CEC), which is California's primary energy policy and energy planning agency. CEC's core responsibilities include advancing the state's energy policy, achieving energy efficiency, investing in energy innovation,

developing renewable energy, transforming transportation, overseeing energy infrastructure, and preparing for energy emergencies.

Greenhouse Gas Regulations and Plans

In September 2006, the Legislature enacted the California Global Warming Solutions Act of 2006, also known as AB 32. AB 32 required that statewide GHG emissions be reduced to 1990 levels by 2020. In December 2008, the ARB adopted the *Climate Change Scoping Plan* to achieve the goals outlined in AB 32. The *Climate Change Scoping Plan* proposed a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health. AB 32 was updated by Senate Bill (SB) 32. In 2016, the Legislature passed SB 32, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels. To reflect SB 32 goals, the ARB adopted California's *2017 Climate Change Scoping Plan* in November 2017.

Local Plans, Policies, and Regulations

City of Stockton Climate Action Plan

The City of Stockton Climate Action Plan was adopted on December 2, 2014. The Climate Action Plan set a GHG reduction goal of 10 percent reduction below 2005 levels. To achieve the GHG reduction goals, the Climate Action Plan includes strategies to reduce GHG emissions from new development, building energy use, transportation, and off-road vehicles.

Consistency with Plans, Policies, and Regulations

The proposed Project would comply with all relevant federal, state, and local policies and regulations related to energy. The proposed Project would ensure that all energy regulations are followed, which includes compliance with the Energy Policy Act, and all applicable goals and policies set forth by the City.

3.5.3 METHODS FOR EVALUATING IMPACTS

This section defines the energy RSA and describes the methods used to determine the impacts of proposed Project construction and operation on energy.

Definition of Resource Study Area

As defined in Section 3.0, *Introduction*, RSAs are the geographic boundaries within which the environmental investigations specific to each resource topic were conducted. The RSA for impacts on energy (including electricity) is defined by the Project construction limits and areas beyond that, including the electricity grid in the entire state of California and other western states that produce and export energy to California.

Methods for Data Collection and Analysis

Impacts associated with energy resources have been identified from a review of available literature that includes, but is not limited to, the Envision Stockton 2040 General Plan, Envision Stockton 2040 Draft EIR, and energy demand data from CEC and the U.S. Energy Information Administration (EIA).

Methods for Determining Significance under CEQA

The thresholds of significance for impacts were developed consistent with the CEQA Guidelines to determine the significance of potential impacts in relation to energy that could result from implementation of the proposed Project. Accordingly, the following criteria were assessed:

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

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

3.5.4 AFFECTED ENVIRONMENT

This section describes the affected environment related to energy, including energy providers and infrastructure, energy sources, and supply and demand.

Statewide Energy Supply and Use

According to the EIA, in 2018 California consumed approximately 7,898 trillion British Thermal Units (BTU) of energy. Transportation accounted for approximately 39.1 percent of the energy consumed in California, followed by industrial with 23.5 percent, commercial with 19.2 percent, and residential with 18.3 percent. Natural gas accounted for approximately 2,207 trillion BTUs of energy consumed in California, while motor gasoline accounted for approximately 1,716 trillion BTUs (EIA 2020). In 2018, California's total energy consumption was second highest in the nation, but the state's per capita energy consumption of 48 million BTUs was the fourth-lowest, due in part to its mild climate and its energy efficiency programs (EIA 2020).

Electricity is a major energy source for residences and businesses in California. In 2019, total electricity generation for California was 277,704 gigawatt-hours (GWh), down 2.7 percent from 2018, or 7,784 GWh (CEC 2020a). The decrease in annual electricity consumption in California was due, in large part, to an increase in the utilization of energy-efficient and self-generation sources, such as the use of solar photovoltaic power systems.

Natural gas is another major energy source in the state. California consumed approximately 217,261,208 therms (1 therm is equivalent to 100,000 BTUs) of natural gas in 2017, which is the most recent year for which data is available (CEC 2020b). In 2017, natural gas consumption in California was up 9.5 percent, or 18,852,555 therms, from 2016 (CEC 2020b).

The transportation sector is responsible for the largest percentage of the energy consumed in the state. In 2019, Californians consumed approximately 15.3 billion gallons of gasoline and 3 billion gallons of diesel fuel (California Department of Tax and Fee Administration 2020a, 2020b). In 2019,

gasoline consumption was down 1.6 percent (250 million gallons) from 2018, while diesel fuel consumption was down 3 percent (94 million gallons) from 2018.

Regional Energy Use

Electricity consumption in San Joaquin County in 2019 totaled approximately 5,583 million kilowatt-hours (kWh) (CEC 2020c). Of the total electricity consumed in San Joaquin County, approximately 1,893 million kWh were consumed by residential uses, while 3,690 million kWh were consumed by non-residential uses.

Natural gas consumption in San Joaquin County in 2019 totaled approximately 259 million therms (CEC 2020d). Of the total natural gas consumed in San Joaquin County, approximately 89 million therms were consumed by residential uses, while 170 million therms were consumed by non-residential uses.

Motor vehicle use accounts for substantial energy usage. According to SJCOG's *2018 Regional Transportation Plan/Sustainable Communities Strategy Programmatic Environmental Impact Report*, the daily vehicle miles traveled within the SJCOG region in 2015 was 17,868,785. Based on the fuel sales in the SJCOG region for 2015, approximately 511.36 million gallons of fuel, including gasoline and diesel, were consumed.

Stockton Energy Use

PG&E provides electricity and natural gas service to the Stockton area. In 2016, the total electricity demand in the Stockton area was 1,744,878,350 kWh per year and the total natural gas demand in the Stockton area was 57,639,390 therms per year (City of Stockton 2018b).

3.5.5 ENVIRONMENTAL ANALYSIS

CEQA Significance Findings

An environmental analysis of each threshold identified is provided below:

a) Would the project result in wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during construction or operation?

Less than Significant Impact. The temporary increase in energy demand during construction would be minimized by compliance with EPA and ARB regulations. During operations, the proposed Project would provide an overall benefit as a result of improved regional passenger and freight rail efficiency, fewer delays, and reduced fuel consumption, resulting in a beneficial effect on energy resources. Therefore, the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during construction or operation. As a result, the short-term and long-term impacts would be less than significant, and no mitigation is required.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The proposed Project would provide an overall benefit as a result of reduced GHG emissions in the energy RSA. Therefore, the proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. As a result, no short-term or long-term impacts would occur, and no mitigation is required.

3.5.6 BEST MANAGEMENT PRACTICES AND/OR MITIGATION MEASURES

No BMP or mitigation measures are required for energy as a result of the proposed Project.

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3.6 Geology, Soils, and Paleontological Resources

3.6.1 INTRODUCTION

This section describes the effects of the proposed Project on geology, soils, seismicity, and paleontological resources.

3.6.2 REGULATORY CONTEXT AND PROJECT CONSISTENCY

This section identifies the federal, state, and local laws, regulations, and orders that are relevant to geology, soils, seismicity, and paleontological resources in this EIR. It also states whether the proposed Project would comply with the regulations described herein.

Federal Plans, Policies and Regulations

Earthquake Hazards Reduction Act

In October 1977, the United States Congress passed the Earthquake Hazards Reduction Act (EHRA) to reduce the risks to life and property from future earthquakes in the United States. The EHRA established the National Earthquake Hazard Reduction Program. The purpose of this program is to reduce the risks to life and property in the United States from earthquakes through the establishment and maintenance of an effective national earthquake risk reduction program. Member agencies in the National Earthquake Hazard Reduction Program are the United States Geological Survey, the National Science Foundation, the Federal Emergency Management Agency, and the National Institute of Standards and Technology.

In November 1990, the National Earthquake Hazards Reduction Reauthorization Program Act amended the EHRA of 1977 significantly by refining the description of agency responsibilities, program goals, and objectives.

The EHRA's aims include improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; reduced earthquake risks through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results (USGS 2015).

Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act of 2002 codified the generally accepted practice of limited vertebrate fossil collection and limited collection of other rare and scientifically significant fossils by qualified researchers. Researchers must obtain a permit from the appropriate state or federal agency and agree to donate any materials recovered to recognized public institutions, where they will remain accessible to the public and to other researchers.

State Plans, Policies, and Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (California Public Resources Code [PRC] Sections 2621–2630) was enacted in 1972 to reduce the hazard of surface faulting to structures designed for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as Earthquake Fault Zones around the surface traces of active faults and issue appropriate maps, which are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, the permitting agency must require a geologic investigation to demonstrate that buildings intended for human habitation would not be constructed across active faults.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (SHMA) (PRC, Chapter 7.8, Sections 2690 to 2699.6) directs the California Department of Conservation, California Geological Survey to identify and map areas prone to earthquake liquefaction hazards, earthquake-induced landslides, and amplified ground shaking. SHMA is intended to reduce the threat to public safety and to minimize the loss of life and property by identifying and mitigating these seismic hazards. SHMA requires the State Geologist to establish regulatory zones (Zones of Required Investigation) and to issue appropriate maps (Seismic Hazard Zone maps). These maps are distributed to all affected cities, counties, and state agencies for their use in planning and controlling construction and development.

SHMA also requires site-specific geotechnical investigations to identify hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy within the Zones of Required Investigation. Before a development permit can be issued or a subdivision approved, cities and counties must require a site-specific investigation to determine whether a significant hazard exists at the site and, if so, recommend measures to reduce the risk to an acceptable level (California Department of Conservation 2019b). The investigation must be performed by state-licensed engineering geologists and/or civil engineers.

National Pollutant Discharge Elimination System Permit

In California, the SWRCB administers regulations that are mandated by EPA (55 CFR 47990) and require the permitting of stormwater-generated pollution under NPDES. In turn, SWRCB's jurisdiction is administered through nine regional water quality control boards. Under these federal regulations, an applicant must obtain a Construction General Permit through the NPDES Stormwater Program for all construction activities with ground disturbance of one acre or more (SWRCB 2020). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. Compliance with the NPDES

permit requires preparation of a SWPPP by a certified, qualified SWPPP developer. The SWPPP must list BMPs that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Because much of the geology and soils RSA will require grading activities during construction, these regulations are discussed here in the context of erosion. See Section 3.9, *Hydrology and Water Quality*, for more information about NPDES and SWPPP as they pertain to water pollution and runoff BMPs.

California Public Resources Code

The California Public Resources Code (Chapter 1.7, Sections 5097 and 30244) includes additional state level requirements for the assessment and management of paleontological resources. These statutes require reasonable mitigation of adverse impacts to paleontological resources resulting from development on state lands, and define the excavation, destruction, or removal of paleontological "sites" or "features" from public lands without the express permission of the jurisdictional agency as a misdemeanor. As used in Section 5097, "state lands" refers to lands owned by, or under the jurisdiction of, the state or any state agency. "Public lands" is defined as lands owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof.

California Building Code

Title 24 of the California Code of Regulations (CCR), known as the California Building Standards Code (CBC) or "Title 24," contains the regulations that govern the construction of buildings in California. The CBC contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance (Division of the State Architect 2018). Chapter 18, *Soils and Foundations*, of the CBC regulates the excavation of foundations and retaining walls, including the preparation of preliminary soil, geologic, geotechnical, and supplemental ground-response reports. Chapter 18 also regulates expansive soils analysis and the depth to groundwater table determination. For Seismic Design Category C, Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading. For Seismic Design Categories D, E, and F, Chapter 18 requires these same analyses plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also requires that seismic mitigation measures be considered in structural design.

California Environmental Quality Act for Protection of Paleontological Resources

The CEQA statute includes "objects of historic … significance" in its definition of the environment (California PRC Section 21060.5), and Section 15064.5 of the CEQA Guidelines further defines historical resources as including "any object … site, area, [or] place … that has yielded, or may be likely to yield, information important in prehistory." This has been widely interpreted as extending CEQA consideration to paleontological resources. However, neither the CEQA statute nor the CEQA Guidelines define what constitutes a "unique paleontological resource" or a "unique paleontological site." The most relevant guidance appears in CEQA Guidelines Section 15064.5(b)(1), which defines

a "[s]ubstantial adverse change in the significance of an historical resource"—and by extension, a significant impact on such resources, including paleontological resources—as the "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that … [its] significance … would be materially impaired."

Local Plans, Policies, and Regulations

Stockton Municipal Code

Stockton Municipal Code Section 15.48.050, *Construction and Application*, requires that construction activities be designed and conducted to minimize the runoff of sediment and all other pollutants onto public properties, other private properties, and into the waters of the United States. Section 15.48.110, *Erosion Control Requirements*, contains specific provisions for erosion control for those construction projects where a grading permit is not required. Section 15.48.070, *Permit Requirements*, includes requirements for a grading permit that apply to most construction projects. Such permits require implementation of erosion control measures, often referred to as BMPs.

Envision Stockton 2040 General Plan

The following Envision Stockton 2040 General Plan policies and implementing actions are relevant to this Project:

- **Action LU-5.2D**. Require the following tasks by a qualified archaeologist or paleontologist prior to project approval:
    - Conduct a record search at the Central California Information Center located at California State University Stanislaus, the University of California Museum of Paleontology (UCMP) at Berkeley, and other appropriate historical or archaeological repositories.
    - Conduct field surveys where appropriate.
    - Prepare technical reports, where appropriate, meeting California Office of Historic Preservation or other appropriate standards.
    - Where development cannot avoid an archaeological or paleontological deposit, prepare a treatment plan in accordance with appropriate standards, such as the Secretary of the Interior's Standards for Treatment of Archaeological Sites.
- **Action LU-5.2G**. Comply with appropriate state and federal standards to evaluate and mitigate impacts to cultural resources, including tribal, historic, archaeological, and paleontological resources.

Consistency with Plans, Polices, and Regulations

The proposed Project would comply with all relevant federal, state, and local policies and regulations as it relates to geology, soils, seismicity, and paleontological resources. The proposed Project would ensure that all geology, soils, seismicity, and paleontological resource regulations are followed, which includes compliance with the EHRA, Alquist-Priolo Act, California Public Resources Code, and all applicable requirements set forth by the City.

3.6.3 METHODS FOR EVALUATING IMPACTS

This section defines the geology and soils RSA and describes the methods used to determine the impacts of proposed Project construction and operations on geology, soils, seismicity, and paleontological resources.

As defined in Section 3.1, *Introduction*, RSAs are the geographic boundaries in which the environmental investigations specific to each resource topic were conducted. The RSA for impacts on geology, soils, and seismicity is limited to the proposed Project construction limits. The RSA for paleontological resources is defined as including a half-mile buffer surrounding the project construction limits.

Methods for Data Collection and Analysis

Geology, Soils, and Seismicity

Impacts associated with the geotechnical considerations of the proposed Project have been identified from a review of available literature that includes, but is not limited to, the Envision Stockton 2040 General Plan; Envision Stockton 2040 General Plan EIR; official seismic hazard zone maps; and geologic and topographic maps and other publications of the California Geological Survey, the California Department of Conservation, and the United States Geological Survey.

The evaluation also included a review of the *Preliminary Geotechnical Desktop Study Stockton Diamond Grade Separation Altamont Commuter Express Stockton, California*, which was prepared for the proposed Project by Kleinfelder. This study presents preliminary geotechnical recommendations for ground improvement options and the foundation, embankment, and retaining wall designs for the proposed Project.

Paleontological Resources

The paleontological study for the Project included review of geologic maps, literature, and online databases. The geology underlying the paleontological RSA was reviewed, as well as any geologic units occurring within a one half-mile radius. A paleontological pedestrian survey was conducted on October 1, 2020. The results of the reviews and pedestrian survey were used to complete a paleontological sensitivity analysis using the Bureau of Land Management (BLM) Potential Fossil Yield Classification (PFYC) system, which is intended to aid in predicting, assessing, and mitigating paleontological resources (Bureau of Land Management 2016).

SENSITIVITY ANALYSIS

PFYC has been used for many years for projects across the country, regardless of land ownership, because of its demonstrated usefulness as a resource management tool. It is a predictive resource management tool that classifies geologic units on their likelihood to contain paleontological resources using a scale of 1 (very low potential) to 5 (very high potential). The PFYC ranking system is summarized in Table 3.6-1.

Table 3.6-1. Potential Fossil Yield Classification

BLM PFYC Designation	Assignment Criteria Guidelines and Management Summary (PFYC System)
1 = Very Low Potential	Geologic units are not likely to contain recognizable paleontological resources. Units are igneous or metamorphic, excluding air-fall and reworked volcanic ash units. Units are Precambrian in age. Management concern is usually negligible, and impact mitigation is unnecessary except in rare or isolated circumstances.
2 = Low Potential	Geologic units are not likely to contain paleontological resources. Field surveys have verified that significant paleontological resources are not present or are very rare. Units are generally younger than 10,000 years before present. Recent eolian deposits. Sediments exhibit significant physical and chemical changes (that is, diagenetic alterations) that make fossil preservation unlikely. Management concern is generally low, and impact mitigation is usually unnecessary except in occasional or isolated circumstances.
3 = Moderate Potential	Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence. Marine in origin with sporadic known occurrences of paleontological resources. Paleontological resources may occur intermittently, but these occurrences are scattered widely. The potential for authorized land use to impact a significant paleontological resource is known to be low-to-moderate. Management concerns are moderate. Management options could include record searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. Opportunities may exist for hobby collecting. Surface-disturbing activities may require sufficient assessment to determine whether significant paleontological resources occur in the area of a proposed action and whether the action could affect the paleontological resources.
4 = High Potential	Geologic units that are known to contain a high occurrence of paleontological resources. Significant paleontological resources have been documented but may vary in occurrence and predictability. Surface-disturbing activities may adversely affect paleontological resources. Rare or uncommon fossils, including nonvertebrate (such as soft body preservation) or unusual plant fossils, may be present. Illegal collecting activities may impact some areas.

BLM PFYC Designation	Assignment Criteria Guidelines and Management Summary (PFYC System)
	Management concern is moderate to high depending on the proposed action. A field survey by a qualified paleontologist is often needed to assess local conditions. On-site monitoring or spot-checking may be necessary during land disturbing activities. Avoidance of known paleontological resources may be necessary.
5 = Very High Potential	Highly fossiliferous geologic units that consistently and predictably produce significant paleontological resources.
	Significant paleontological resources have been documented and occur consistently.
	Paleontological resources are highly susceptible to adverse impacts from surface disturbing activities.
	Unit is frequently the focus of illegal collecting activities.
	Management concern is high to very high. A field survey by a qualified paleontologist is almost always needed and on-site monitoring may be necessary during land use activities. Avoidance or resource preservation through controlled access, designation of areas of avoidance, or special management designations should be considered.
U = Unknown Potential	Geologic units that cannot receive an informed PFYC assignment.
	Geological units may exhibit features or preservational conditions that suggest significant paleontological resources could be present, but little information is known about the actual paleontological resources of the unit or area.
	Geologic units represented on a map are based on lithologic character or basis of origin but have not been studied in detail.
	Scientific literature does not exist or does not reveal the nature of paleontological resources.
	Reports of paleontological resources are anecdotal or have not been verified.
	Area or geologic unit is poorly or under-studied.
	BLM staff has not yet been able to assess the nature of the geologic unit.
	Until a provisional assignment is made, geologic units with unknown potential have medium to high management concerns. Field surveys are normally necessary, especially prior to authorizing a ground-disturbing activity.

Scientifically significant fossils are generally not known from artificial fill since any discovered resource would lack context. These deposits have a low paleontological potential (PFYC 2) using BLM (2016) guidelines.

The early Holocene- to late Pleistocene-age Modesto Formation, if encountered at unknown depth beneath the surface of artificial fill and disturbed sediment, are considered to have a moderate paleontological potential (PFYC 3) using BLM (2016) guidelines since they have produced scientifically significant vertebrate fossils in the Project vicinity.

Methods for Determining Significance under CEQA

The significance thresholds for impacts were developed consistent with CEQA Guidelines. They determine the significance of potential impacts in relation to geology, soils, seismicity, and paleontological resources that could result from implementing the proposed Project. Accordingly, the following criteria were assessed:

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?
    ii. Strong seismic ground shaking?
    iii. Seismic-related ground failure, including liquefaction?
    iv. Landslides?
b. Would the project result in substantial soil erosion or topsoil loss?
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 proposed Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?
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?
e. Would the project have soils incapable of adequately supporting septic tank use or alternative wastewater disposal systems where sewers are not available for wastewater disposal?
f. Would the project directly or indirectly destroy a unique paleontological resource, site, or unique geologic feature?

3.6.4 AFFECTED ENVIRONMENT

This section describes the affected environment related to regional and Project site geology, geotechnical and seismic hazards, soil quality and erosion potential, and paleontological resources.

Regional Geology

The Project site lies in the San Joaquin Valley in central California. The San Joaquin Valley is located in the southern portion of the Great Valley Geomorphic Province. The Great Valley Geomorphic Province is a topographically flat, northwest-trending, structural trough (or basin) that is approximately 50 miles wide and 450 miles long. It is bordered by the Tehachapi Mountains on the south, the Klamath Mountains on the north, the Sierra Nevada on the east, and the Coast Ranges on the west.

The San Joaquin Valley is filled with thick sedimentary rock sequences that were deposited as much as 130 million years ago. The sediments that form the San Joaquin Valley floor were derived largely

from Sierra Nevada erosion. The smaller and steeper slopes on the west side of the San Joaquin Valley overlie sedimentary rocks more closely related to the Coast Ranges. Large alluvial fans have developed on each side of the San Joaquin Valley. The larger and more gently sloping fans are on the east side of the San Joaquin Valley and overlie metamorphic and igneous basement rocks. These basement rocks are exposed in the Sierra Nevada foothills and consist of meta-sedimentary, volcanic, and granitic rocks.

Project Site Geology

Based on a review of geologic mapping by Wagner et al. (1991), the geology and soils RSA is entirely underlain by the early Holocene- to late Pleistocene-age Modesto Formation. While not mapped within the geology and soils RSA, aerial photographs also indicate that recent artificial fill related to previous construction is present. Therefore, artificial fill is also included in this analysis.

Modesto Formation

The early Holocene- to late Pleistocene-age Modesto Formation has its type section in Stanislaus County, California, within the Ceres 7.5-minute quadrangle. It is exposed along the Tuolumne River in eastern Modesto, as well as east of Modesto and Turlock, almost to the San Joaquin River (Davis and Hall 1959). The Modesto Formation was deposited during the last major series of depositional events during the Pleistocene within the San Joaquin Valley. It was deposited by the San Joaquin River as a series of San Joaquin River alluvial fans and consists of arkosic sand, silt, and clay (Marchand and Allwardt 1981). The Modesto Formation can be divided into upper and lower members. The upper member ranges in age from 26,000 to 9,000 years ago (ka) and consists of unconsolidated coarse sand and silt, while the lower member ranges in age from 73 to 29 ka and consists of consolidated, well-sorted silt and fine-grained sand, silty sand, and sandy silt (Atwater 1982; Marchand and Allwardt 1981).

Artificial Fill

Artificial fill consists of recent deposits of previously disturbed sediments emplaced by construction operations and is found in areas where recent construction has taken place. Color is highly variable, and sediments are mottled in appearance. These sediments are not mapped within the boundaries of the geology and soils RSA but are likely to be encountered within previously disturbed portions of the Project site. Additionally, the preliminary geotechnical memorandum prepared for the Project (Kleinfelder 2021) indicates that artificial fill is present starting at the surface and extending 2- to 15-feet deep in the Project vicinity.

Seismicity

There are several faults and potential fault traces located within San Joaquin County, concentrated along its eastern and western margins. Faults are classified by their potential for seismic activity based on evidence of past activity. An active fault is defined as one along which displacement has been demonstrated to occur during the Holocene period, or the past 11,700 years. A fault is considered potentially active if there is evidence of movement during the Late Quaternary period, or

past 700,000 years, and further movement is considered likely. An inactive fault is one that has shown no evidence of movement during the Pre-Quaternary period, or past 1.6 million years, and renewal activity is not considered likely.

Stockton is close enough to major earthquake faults to be vulnerable to seismic activity. The nearest active fault is the Greenville Fault, located approximately 22 miles west-southwest of Stockton. Other active faults in the vicinity include the Hayward Fault, located approximately 50 miles west of Stockton, and the Calaveras Fault, located approximately 40 miles southwest of Stockton. The estimated likelihood of a magnitude 6.7 or greater earthquake occurring in the Stockton area before 2036 is 63 percent. Individually, the forecasted probabilities are as follows: 31 percent for the Hayward Fault, 7 percent for the Calaveras Fault, and 3 percent for the Greenville Fault (City of Stockton 2018b). None of these active faults traverse the Project site.

Comparatively few subsurface faults have been mapped in the northern part of the San Joaquin Valley, and the largest of these subsurface faults is the Stockton Fault. The Stockton Fault is a south-dipping reverse fault that trends east-west across the Stockton area. According to the Department of Conservation's Fault Activity Map of California, the Stockton Fault is an inactive fault without recognized displacement during the Pre-Quaternary period (California Department of Conservation 2015b).

Fault Rupture

Fault rupture occurs when the ground surface is broken due to fault movement during an earthquake. The location of surface ruptures can generally be assumed to be along an active or potentially active major fault trace. The closest active fault to the Project site is the Greenville Fault. No active faults have been mapped on the Project site. The Alquist-Priolo Act requires active earthquake fault zones to be mapped and provides special development considerations within these zones.

The Project site is not located within an Alquist-Priolo Earthquake Fault Zone (California Department of Conservation 2019c).

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 damage in seismic events. The severity of seismic ground shaking depends on many variables, such as earthquake magnitude, epicenter proximity, local geology (including the properties of unconsolidated sediments), groundwater conditions, and topographic setting. In general, ground shaking hazards are most pronounced in areas that are underlain by loosely consolidated soil or sediment.

Based on the presence of several active faults in Stockton's vicinity, the potential exists for the Project site to experience significant ground shaking during earthquakes on the regional faults identified above.

Liquefaction

Liquefaction is a phenomenon in which saturated granular soil materials transform from a solid to a liquid state when subjected to large, rapid loadings, such as strong ground shaking during an earthquake. The transformation to a liquid state occurs due to the tendency of granular materials to compact, which consequently results in increased pore water pressure accompanied by a significant reduction in the effective stress. The change of state occurs most readily in recently deposited (that is, geologically young) loose to moderately dense granular soils. According to the *Preliminary Geotechnical Desktop Study Stockton Diamond Grade Separation Altamont Commuter Express Stockton, California* (Kleinfelder 2021), the potential for an earthquake capable of promoting liquefaction is a possibility during the proposed Project's design life. It is estimated that preliminary total seismic settlements in the 2 to 4 inches range could be expected during a 2,475-year design-level seismic event (Kleinfelder 2021).

Landslides

Landslides are gravity-driven movements of earth materials that can include rock, soil, unconsolidated sediment, or combinations of such materials. The susceptibility of a given area to landslides depends on many variables, including the following: slope material, slope steepness, structural geometry, moisture, vegetation, eroded soils, and seismic shaking.

Due to the gentle topography and lack of steep slopes throughout the Stockton area, the probability of earthquake-induced landslides is very low (City of Stockton 2018b). Further, the Project site is not located within a landslide zone (California Department of Conservation 2019c).

Project Site Soils

The soils in and around the City of Stockton have been mapped by the United States Department of Agriculture Natural Resources Conservation Service, and the soil types within the Project construction limits include Yellowlark Gravelly Loam. Yellowlark Gravelly Loam, commonly found on 2 to 5 percent slopes, consists of well drained, high runoff soils that originate from alluvium derived from mixed rock sources.

Geologic Hazards

Erosion

Erosion occurs naturally on the Earth's surface as surface materials (that is, rock, soil, debris, etc.) are loosened, dissolved, or worn away, and transported from one place to another by gravity. Two common types of soil erosion include wind erosion and water erosion. The potential for erosion generally increases as a result of human activity, primarily through the development of facilities and impervious surfaces and the removal of vegetative cover.

Potential soil erosion associated with construction and development and the resulting impacts on water quality are addressed by State of California stormwater permit requirements and the

corresponding local implementation plans, ordinances, and standards, including those adopted by the City of Stockton.

Expansive Soils

Expansive soils can undergo significant volume change with changes in moisture content. They shrink and harden when dried and expand and soften when wet. Expansive soil can develop wide cracks in the dry season, and changes in soil volume have the potential to damage concrete slabs, foundations, and pavement. Special structure design or soil treatment is often needed in areas with expansive soils. Much of the Stockton area is underlain by expansive soils that exhibit moderate shrink-swell potential (City of Stockton 2018b).

According to the *Preliminary Geotechnical Desktop Study Stockton Diamond Grade Separation Altamont Commuter Express Stockton, California* (Kleinfelder 2021), near surface soils at the Project site are anticipated to consist of expansive clay.

Subsidence

Subsidence occurs when a large area of ground surface sinks and the material is displaced vertically downward, with little or no horizontal movement. The San Joaquin Valley and the Sacramento-San Joaquin Delta are areas that have experienced subsidence. The main cause of subsidence in valley areas is the withdrawal of groundwater from aquifers. If the amount of groundwater withdrawn exceeds the amount by which the groundwater is replaced, then clay beds in the aquifer may be compressed to the point that they no longer expand to their original thickness after groundwater recharge. When the clay particles in the beds settle, the beds become effectively thinned. This results in permanent land subsidence at the ground surface. Subsidence is not anticipated outside of the Sacramento-San Joaquin Delta area.

Based on a review of the Envision Stockton 2040 General Plan, the Project site is not located within the legally defined Sacramento-San Joaquin Delta area.

Collapsible Soils

Collapsible soils undergo a rearrangement of grains and a loss of cementation, resulting in substantial and rapid settlement under relatively low loads. Soils prone to collapse are commonly associated with manmade fill, wind-laid sands and silts, and alluvial fan and mudflow sediments deposited during flash floods. During an earthquake, even slight settlement of fill materials can lead to a differentially settled structure and significant repair costs.

Due to the presence of predominantly fine-grained materials, interbedded coarse-grained layers, and relatively shallow groundwater (approximately 25 to 30 feet below ground surface), settlement is anticipated to occur at the Project site (Kleinfelder 2021).

Paleontological Resources

A paleontological literature review, UCMP online paleontological database search, and UCMP record search were conducted. While there are no localities within the paleontological RSA, the results indicate that there are three localities within the vicinity of the RSA (Holroyd 2020). UCMP localities V2016003, V2016004, and V2016005 are reported from the Modesto Formation in San Joaquin County. These localities were recorded around the SR 99 and Mariposa Road interchange during the SR 99 South Stockton Six-Lane Widening Project construction (Holroyd 2020 and UCMP 2020). A list of specimens recovered from these localities is not provided in the UCMP database at this time; however, Holroyd (2020) indicated that they include a camelid maxilla, the lower jaw of a bison, and other less diagnostic mammal postcranial bones. These finds ranged in depth from 3.5 to 8 meters below the surface and 2.5 to 5 meters before contact with Modesto Formation containing Holocene-age alluvium.

The UCMP database also contains records of additional localities from the Modesto Formation within the Central Valley that produced scientifically significant vertebrate fossils, including ground sloth (*Megalonyx jeffersoni*), mammoth (*Mammuthus columbi*), horse (*Equus* sp.), camel (*Camelops* sp.), bison (*Bison latifrons*), rodents, reptiles, and plants (UCMP 2020). Additionally, recent basin excavations into the Modesto Formation paleosol and overbank deposits at the Le Grand Road overpass in Merced County resulted in the recovery of 1,667 Pleistocene mammal, bird, reptile, and fish fossils (Gust et al. 2012), which have greatly added to this geologic unit's fossil record.

Field Survey

Cross qualified archaeologist/paleontologist Brooke Hambley, B.A., conducted a field survey on October 1, 2020. The field visit consisted of a pedestrian survey along the roads and RSA alignment from East Weber Avenue to East 4th Street. Some northern portions of the railroad alignment were not walkable due to the narrow right-of-way (see Figure 3.6-1). The northern half of the paleontological RSA field survey was conducted via street access while the southern half was conducted along the track alignment.

No undisturbed native sediment was observed. Most of the alignment has been paved and developed, and much of the railway alignment is covered with imported gravel (see Figure 3.6-2 and Figure 3.6-3). Disturbed silty sands were observed where foot traffic exposed the underlying sediment, primarily between East Worth Street and East Charter Way (see Figure 3.6-4). An electrical box at East Main Street has some disturbed coarse silty sands around it (see Figure 3.6-5).

No paleontological resources where observed.

Figure 3.6-1: Narrow, unsafe right-of-way along the tracks near South Pilgrim Street, view southwest.

Figure 3.6-2: Typical disturbance along the right-of-way at East Hazelton Avenue, view northwest.

Figure 3.6-3: Typical disturbance along the railroad with some exposed disturbed sediment at East Weber Avenue, view southeast.

Figure 3.6-4: Exposed disturbed sediment from area cleared of gravel along the tracks, view southeast.

Figure 3.6-5: Disturbed coarse silty sand by electrical box with some exposed disturbed sediment along the tracks at East Main Street, view northwest.

3.6.5 ENVIRONMENTAL ANALYSIS

This section describes the potential environmental consequences that Project implementation could have on geology, soils, seismicity, and paleontological resources. It includes an analysis of the proposed Project's potential to directly or indirectly cause substantial adverse effects, including the risk or loss of life, injury or death, damage to property, and soil erosion as a result of geologic, soil, and seismic hazards. This section also evaluates the proposed Project's potential to affect paleontological resources.

CEQA Significance Findings

An environmental analysis of each threshold identified is provided below:

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 Impact. The Project site is not located within an Alquist-Priolo Earthquake Fault Zone. The nearest active fault to the City of Stockton is the Greenville Fault, which is located approximately 22 miles west-southwest of Stockton. No active faults have been mapped on the Project site. Therefore, a fault rupture is not anticipated to affect the proposed Project and the proposed Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or

death involving rupture of a known earthquake fault. As a result, no short-term or long-term impacts would occur, and no mitigation is required.

ii. Strong seismic ground shaking?

Less than Significant Impact. The City of Stockton is close enough to major earthquake faults to be vulnerable to seismic activity and could be affected by ground shaking in the event of a major earthquake. The amount of ground shaking depends on the magnitude of the earthquake, the distance from the epicenter, and the type of rock and soil materials between the epicenter and the affected areas.

Violent to very violent ground shaking could occur on the Project site during large magnitude earthquakes on the Greenville and other regional faults. Ground shaking and ground failure can result in structural failure and collapse, local damage to underground utilities, and paved areas cracking, presenting a hazard to structures and people. State-level regulatory protections against these seismic hazards are provided by the Seismic Hazards Mapping Act of 1990. Safeguards afforded through the Stockton Municipal Code would substantially reduce the adverse effects from strong seismic ground shaking.

However, with the implementation of Measures BMP GEO-1 and BMP GEO-2, seismic hazards would be reduced by addressing geologic and seismic constraints during construction and incorporating seismic guidelines and standards into facility design and construction. Compliance with existing state and local laws and regulations would further reduce the potential impacts associated with the seismic hazards. Therefore, the proposed Project would not directly or indirectly cause potential substantial short-term or long-term adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. As a result, a less than significant impact would occur, and no mitigation is required.

iii. Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. As previously noted, there is a possibility for earthquake-induced liquefaction to occur at the Project site. The amount of liquefaction settlement and its influence on the proposed foundations would be highly dependent on the thickness and depths of the liquefiable layers at the site. Additionally, down-drag loads from liquefaction could occur and impact the foundations. Therefore, the proposed Project may potentially directly or indirectly cause potential substantial adverse short-term and long-term effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. However, with the implementation of Measure BMP GEO-3, impacts would be considered less than significant.

iv. Landslides?

No Impact. Due to the gentle topography and lack of steep slopes in the Stockton area, the probability of earthquake-induced landslides is very low. Further, the Project site is not located within a landslide zone. Therefore, the proposed Project would not directly or indirectly cause potential substantial adverse short-term or long-term effects, including the risk of loss, injury, or death involving landslides. As a result, no impact would occur, and no mitigation is required.

b. Would the Project result in substantial soil erosion or topsoil loss?

Less than Significant Impact. Construction activities often increase a disturbed area's runoff potential. Clearing, grubbing, and grading activities during construction would remove ground cover and expose and disturb soil. Exposed and disturbed soils are vulnerable to erosion from runoff during construction. Altered drainage patterns resulting from construction could also cause redirection and concentration of runoff, potentially further exacerbating erosion. As part of the proposed Project, coverage under the NPDES Construction General Permit would be obtained from the SWRCB. As described above, this permit requires SWPPP implementation to control stormwater runoff within the geology and soils RSA, thus minimizing soil erosion to the extent possible. BMPs for erosion and runoff, as outlined in the SWPPP and Construction General Permit, would be implemented during construction to minimize erosion and sediment migration from the construction and staging areas. These erosion and storm water pollution control measures would be consistent with NPDES requirements and would be included in the site specific SWPPP.

The proposed Project would also comply with the applicable erosion control requirements in the City of Stockton Municipal Code. Stockton Municipal Code Section 15.48.050, *Construction and Application*, requires that construction activities be designed and conducted to minimize runoff of sediment and all other pollutants onto public properties, other private properties, and into the waters of the United States. Section 15.48.070, *Permit Requirements*, includes requirements for a grading permit that apply to most construction projects. Such permits require implementation of erosion control measures, often referred to as BMPs.

With the implementation of Measure BMP GEO-1, a Construction Management Plan would be prepared to address geologic hazards during construction, including soil erosion. Compliance with the requirements of the NPDES Construction General Permit and City of Stockton Municipal Code Chapter 15.48 would further reduce potential soil erosion impacts and topsoil loss. Therefore, the proposed Project would not result in short-term or long-term substantial soil erosion or topsoil loss. As a result, the impact would be less than significant, and no mitigation is required.

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 proposed Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less than Significant Impact. As previously noted, the Project site is not located within a liquefaction or landslide zone. Further, the Project site is not located in an area that has experienced subsidence. Due to the presence of predominantly fine-grained materials, interbedded coarse-grained layers, and relatively shallow groundwater (approximately 25 to 30 feet below ground

surface), settlement is anticipated to occur at the Project site. When loaded by fill placement and/or structure pressures, compressible soil undergoes settlement due to soil consolidation and may potentially experience both vertical and lateral displacement due to plastic deformation. Settlement can cause cracking in structure walls and slabs as well as rail and roadbed misalignment.

The Project site is anticipated to contain collapsible soils that would undergo settlement when loaded by fill placement and/or structure pressure. However, with the implementation of Measure BMP GEO-4, impacts associated with unstable soils, on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse would be minimized. Therefore, short-term and long-term impacts would be considered less than significant, and no mitigation is required.

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?

Less than Significant Impact. Much of the Stockton area is underlain by expansive soils that exhibit moderate shrink-swell potential. Near-surface soils at the Project site are anticipated to consist of expansive clay. Expansive soils can undergo significant volume change with changes in moisture content. They shrink and harden when dried and expand and soften when wet. If not properly mitigated, the cyclic volume changes common in expansive soils (that is, shrink-swell) can cause distress and failure of structures, platforms, asphaltic and concrete pavements, slabs-on-grade, and other surfaces.

The Project site is anticipated to consist of expansive clay. Therefore, the proposed Project could create a substantial direct or indirect risk to life or property due to expansive soils. However, with the implementation of Measure BMP GEO-3, impacts associated with expansive soils would be minimized. Therefore, short-term and long-term impacts would be considered less than significant, and no mitigation is required.

e. Would the Project have soils incapable of adequately supporting septic tank use or alternative wastewater disposal systems where sewers are not available for wastewater disposal?

No Impact. The Project does not propose the installation of, or connection to, a septic system or alternative wastewater disposal system. Therefore, no short-term or long-term impacts would occur as a result of soils providing inadequate support to septic tanks or alternative wastewater systems, and no mitigation is required.

f. Would the Project directly or indirectly destroy a unique paleontological resource, site, or unique geologic feature?

Less than Significant Impact. There are no documented paleontological localities within the boundaries of the paleontological RSA; however, fossils are recorded in the vicinity from the early Holocene- to late Pleistocene-age Modesto Formation in San Joaquin County and elsewhere in the Central Valley (Holroyd 2020; UCMP 2020). Based on available excavation information, the Project has the potential to encounter native early Holocene- to late Pleistocene-age Modesto Formation beneath the artificial fill and disturbed sediment during excavations starting at depths as shallow as 2

to 15 feet below the current grade and may result in adverse direct impacts to paleontological resources. Based on the analysis of geologic maps, literature, museum records and online databases, as well as the current Project description and excavation descriptions, construction activities for the proposed Project may result in significant impacts to paleontological resources if the early Holocene- to late Pleistocene-age Modesto Formation is encountered during excavations.

Impacts on paleontological resources can generally be classified as either direct or indirect. Direct adverse impacts on surface or subsurface paleontological resources are the result of destruction by breakage and crushing as the result of surface disturbing actions including construction excavations. In areas that contain paleontologically sensitive geologic units, ground disturbance has the potential to adversely impact scientifically important surface and subsurface paleontological resources. These fossils and the paleontological data they could provide, if properly recovered and documented, could be adversely impacted (damaged or destroyed) by ground disturbance, rendering them permanently unavailable to science and society.

Indirect impacts typically include those effects that result from the continuing implementation of management decisions and resulting activities, including normal ongoing operations of facilities constructed within a given RSA. They also occur as the result of new road and trail construction in areas that were previously less accessible. This increases public access and therefore increases the likelihood that paleontological resources could be lost through vandalism and unlawful collecting. Human activities that increase erosion also cause indirect impacts to surface and subsurface fossils as the result of exposure, transport, weathering, and reburial.

Ground disturbance and excavations associated with the proposed Project have the potential to encounter and disturb paleontological resources. However, with the implementation of Measure BMP GEO-4, impacts associated with the potential to destroy unique paleontological resources, sites, or unique geological features would be minimized. Therefore, short-term and long-term impacts would be considered less than significant, and no mitigation is required.

3.6.6 BEST MANAGEMENT PRACTICES AND/OR MITIGATION MEASURES

The following BMP measures associated with geology, soils, seismicity, and paleontological resources would be applied to the proposed Project.

BMP GEO-1: **Geologic Hazards.** Prior to construction, SJRRC will ensure that the contractor shall prepare a Construction Management Plan addressing how the contractor will address geologic constraints and minimize or avoid impacts to geologic hazards during construction. The plan will be submitted to SJRRC for review and approval. At minimum, the plan will address unstable soils and water and wind erosion.

BMP GEO-2: **Geology and Soils.** Prior to construction, SJRRC will ensure that the contractor will issue a technical memorandum documenting the ways in which the following guidelines and standards have been incorporated into facility design and construction:

- 2015 AASHTO Load and Resistance Factor Bridge Design Specifications and the 2015 AASHTO Guide Specifications for Load and Resistance Factor Seismic Bridge Design, or their most recent versions.

BMP GEO-3: **Implement Geotechnical Recommendations.** During final design, SJRRC will ensure that a project specific *Geotechnical Design Report* will be prepared, which will include final geotechnical recommendations for ground improvement options and foundation, embankment, and retaining wall design for the proposed Project.

BMP GEO-4: **Preparation and Implementation of a Paleontological Resources Management Plan.** Due to the potential for impacts to paleontological resources in the Project subsurface, a Paleontological Resources Management Plan (PRMP) will be prepared during final design. SJRRC will ensure that the PRMP will include provisions for periodic spot checks during excavations to check for the presence of the early Holocene- to late Pleistocene-age Modesto Formation, and the implementation of full-time monitoring if the early Holocene- to late Pleistocene-age Modesto Formation is observed. In the event unanticipated paleontological resources are discovered during Project related activities, SJRRC or their designated contractor will ensure that work in the immediate vicinity of the discovery is halted until it can be evaluated by a qualified paleontologist.

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