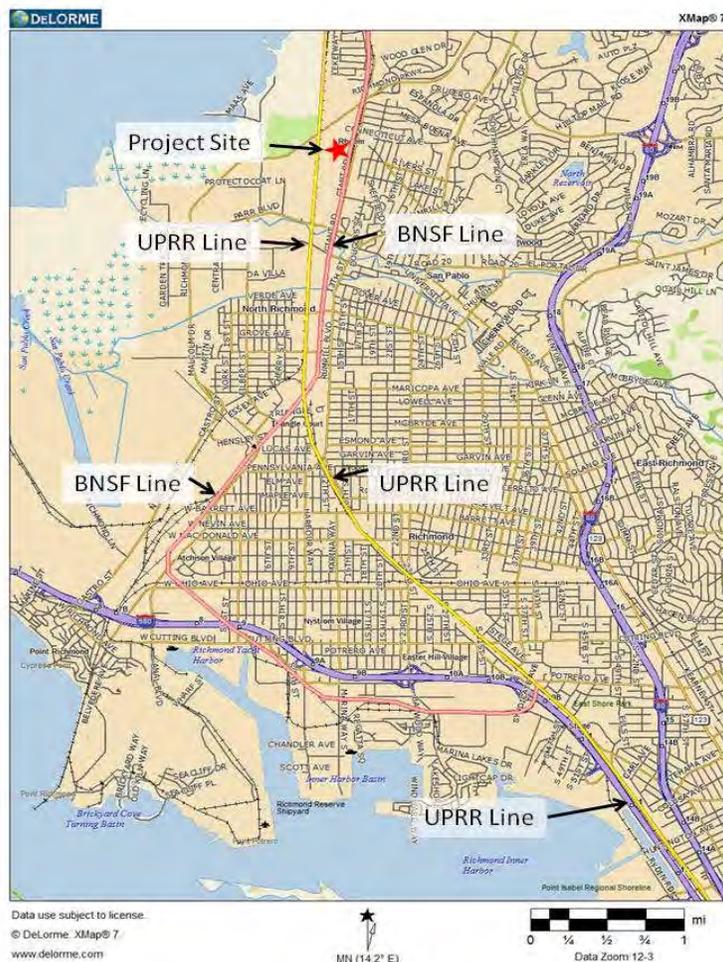


Richmond Rail Connector Project

Located between Parr Boulevard and Richmond Parkway
City of Richmond, California
Project No. 0000020789

Environmental Assessment



September 2012



General Information About This Document

What's in this document?

This Environmental Assessment (EA) examines the potential environmental effects of alternatives being considered for the proposed project located in the City of Richmond, Contra Costa County, California. The document describes the proposed project, the existing environment that could be affected by the project, potential impacts from the project, and the proposed avoidance, minimization and mitigation measures.

What should you do?

- Please read this Environmental Assessment. Additional copies of this document as well as the technical studies are available for review at the Caltrans District 4 office at 111 Grand Avenue, Oakland, CA 94623, the City of Richmond Public Library located at 325 Civic Center Plaza, Richmond, CA 94804 and the San Pablo Public Library located at 2300 El Portal Drive, Suite #D, San Pablo, CA 94806.
- Attend the Open Forum Public Meeting scheduled for October 2, 2012 from 6 p.m. to 8 p.m. in the Bermuda Room at the Richmond Convention Center, 403 Civic Center Plaza, Richmond, CA 94804.
- We welcome your comments. If you have any concerns regarding the proposed project, please attend the public meeting on October 2, 2012 or send your written comments to Caltrans by the deadline. Submit comments via mail at the following address:

Attn: Mr. Howell Chan, Senior Environmental Planner
California Department of Transportation, District 4
Office of Environmental Analysis
P.O. Box 23660
Oakland, CA 94623-0660

Submit comments via email to: howell_chan@dot.ca.gov

- Submit comments by the deadline: October 16, 2012

What happens next?

After comments are received from the public and reviewing agencies: 1) the project may be given environmental approval 2) additional environmental studies may be done, or 3) the project may be abandoned. If the project is given environmental approval and funding is appropriated, all or part of the project could be designed and built.

For individuals with sensory disabilities, this document is available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans at the above address or at by phone at 510-286-5623.

Install a new connector track between the BNSF Railway track and the UPRR tracks in the northern portion of the City of Richmond to facilitate movement of trains between the two tracks and to avoid train movements through downtown Richmond

RICHMOND RAIL CONNECTOR PROJECT
ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to: (Federal) 42 U.S. Code 4332(2)(C)

By the
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION
In coordination with
THE STATE OF CALIFORNIA
Department of Transportation

9/12/2012
Date of Approval

for Michael J. DeMarco
Vincent Mammato
Division Administrator
Federal Highway Administration

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ABBREVIATIONS AND ACROYNMS

ADA	Americans with Disabilities Act
APE	Area of Potential Effect
APN	Assessor Parcel Number
AQMD	Air Quality Management District
BAAB	Bay Area Air Basin
BART	Bay Area Rapid Transit
BMPs	Best Management Practices
BNSF	BNSF Railway Company
BSA	Biological Study Area
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
CWR	Continuously Welded Rail
dB	decibel
db(A)	A-weighted decibel
DNL	day-night level
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EO	Executive Order
FCAA	Federal Clean Air Act
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FTA	Federal Transit Administration
LEDPA	least environmentally damaging practicable alternative
MP	milepost
Mph	miles per hour
NAAQS	national ambient air quality standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

Abbreviations and Acronyms (continued)

NOA	naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PA	Programmatic Agreement
POAQC	projects of air quality concern
RCRA	Resources Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
SAAQS	state ambient air quality standards
SIP	State Implementation Plan
STB	Surface Transportation Board
SWPPP	Storm Water Pollution Prevention Program
SWRCB	State Water Resources Control Board
TIP	Transportation Implementation Plan
UPRR	Union Pacific Railroad
U.S.	United States
U.S. EPA	U.S. Environmental Protection Agency
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
WDRs	waste discharge requirements

CHAPTER 1 Proposed Project

1.1 Introduction

The proposed project would construct an at-grade connection track and related signal improvements between the BNSF Railway Company's (BNSF) Stockton Subdivision and Union Pacific Railroad's (UPRR) Martinez Subdivision. This approximate 1.25-mile rail track connector would be located in the northern portion of the City of Richmond and an unincorporated portion of Contra Costa County (North Richmond), California (see Figure 1). The two track systems parallel each other in this area and are located approximately one-quarter mile apart. A connector would allow BNSF's intermodal freight trains to access the Port of Oakland without having to travel through downtown Richmond. Refer to an aerial view of the project location on Figure 2.

The proposed site of the Richmond Rail Connector is on the rail corridor that connects the Port of Oakland to all points east of the Port - Northern California, the Central Valley, Southern California and the nation. It encompasses the BNSF rail lines from the Port to Barstow, and the Union Pacific rail lines from the Port south to Mojave or northeast to Nevada.

The corridor also serves as a major passenger corridor. Existing Amtrak passenger service includes the Capitol Corridor and the San Joaquin Corridor routes. The Capitol Corridor provides intercity rail service to eight northern California counties. It had 1.7 million passengers in 2008 and is the third busiest Amtrak-operated route in the nation with 32 daily trains. The San Joaquin intercity passenger rail service operates between Bakersfield, Oakland and Sacramento and has the fifth highest ridership of any Amtrak service in the country. The current operating schedule includes eight daily intercity Amtrak trains. In addition, Amtrak runs four long-distance Amtrak passenger trains over the project alignment. In total, 44 passenger trains use this corridor.

The Federal Highway Administration (FHWA) will serve as the Lead Agency for the National Environmental Policy Act (NEPA) for this project. FHWA is serving as the NEPA lead instead of the Federal Railroad Administration because part of the funding for this project is from the Congestion Mitigation and Air Quality Improvement (CMAQ) Program, which is administered by FHWA. The project sponsor is BNSF Railway Company (BNSF). Separate documents are being prepared to comply with the California Environmental Quality Act (CEQA) and NEPA. This document contains solely the NEPA Environmental Assessment (EA), which evaluates the environmental effects of the proposed project.

The proposed connector track and support infrastructure is a public works project that was originally envisioned to be funded entirely through State funds. However, based on a recently established Memorandum of Understanding between the California Department of Transportation (Caltrans) and BNSF, this project will be funded using State funds, federal funds and BNSF funds. The estimated total cost of the proposed connector track and support infrastructure project is \$21,760,000. Funding has been allocated as follows: \$10,880,000 from the Trade Corridors Improvement Fund; \$5,440,000 from BNSF Railway Company; and \$5,440,000 from federal CMAQ funding through the Metropolitan Transportation Commission.

1.2 Purpose and Need

1.2.1 Purpose of Project

The primary purpose of this project is to provide more efficient operations along the BNSF Stockton Subdivision and UPRR Martinez Subdivision north of downtown Richmond.

Currently, BNSF trains have to travel through downtown Richmond to reach the Port of Oakland because there is no connector to the UPRR tracks, which provide a more direct route to the Port. A connector track allowing BNSF trains to access UPRR's Martinez subdivision without going through downtown Richmond would improve the efficiency and competitiveness of goods movement along this corridor. By substantially reducing the number of slow-moving intermodal trains in the center of the city, a connector would also relieve traffic congestion at fourteen at-grade crossings in downtown Richmond. At-grade crossings over both the BNSF and UPRR tracks for the area of interest are shown on Figures 3a and 3b.

The project would benefit the residents of Richmond by reducing air emissions and noise from train air horns and warning signals at the fourteen at-grade crossings on the BNSF track. The new, shorter route along the UPRR tracks has only three at-grade crossings and no speed restrictions. In addition, it would reduce the need for BNSF trains to use tracks north of Richmond on the Martinez Subdivision, freeing up capacity and reducing conflicts for both UPRR and passenger trains.

1.2.2 Need for Project

For the past several years, BNSF voluntarily ran its intermodal freight trains serving the Port of Oakland on the UPRR track between Sacramento and Stege to avoid BNSF's own circuitous route through the center of Richmond. In May 2008, a federal Surface Transportation Board (STB) ruling stated that BNSF does not have the authority to operate its intermodal trains on this segment of the UPRR route. The STB ruling required BNSF intermodal trains to travel through the center of Richmond accessing UPRR's Martinez Subdivision south of Richmond at Stege.

As shown on Figure 3a, the BNSF Stockton Subdivision swings west through downtown Richmond to the BNSF rail yard on the west side of the city. Then, the BNSF tracks swing back east and traverse the length of the city from west to east. At a location called Stege, the BNSF tracks intercept the UPRR Martinez Subdivision, which continues south into the Port of Oakland.

Trains using BNSF tracks through Richmond must travel at low train speeds (less than 20 miles per hour (mph)) that often result in blocking traffic for extended periods of time at the fourteen closely-spaced grade crossings within Richmond. The longer route and slow speeds increase the amount of time it takes BNSF trains to reach the Port of Oakland. The slow-moving BNSF trains accessing the Martinez Subdivision at Stege also impact Capital Corridor and San Joaquin passenger trains and UPRR freight trains, reducing their on-time performance and reliability.

Failure to implement the proposed BNSF and UPRR connection track would have a negative effect because train traffic congestion along this segment would continue to occur. Further, if train operations increase in the future, the slower train movement in this segment from north Richmond to the Port of Oakland would cause greater accumulations of traffic, which would in turn result in related increases in air emissions, noise and congestion on the local circulation system.

1.2.3 Logical Termini and Independent Utility

Both BNSF and UPRR freight rail operations currently serve the Port of Oakland. As a result of the decision by the STB, BNSF was directed to use its own tracks on the Stockton Subdivision from Stege east. The long intermodal freight trains were redirected through the core of the city of Richmond as shown on Figure 3a. With installation of the proposed connector track as shown on Figure 2, the BNSF intermodal freight trains from the Port of Oakland will again be able to avoid the downtown Richmond track alignment and not conflict with UPRR and passenger rail operations on UPRR's Martinez Subdivision north of the proposed connector track. No other improvements are required to achieve the project purpose, which is to avoid intermodal freight train traffic through downtown Richmond. This discrete project fully accomplishes the project purpose.

The specific location for the Richmond Rail Connector was selected based on a review of the alignment of the two railroad tracks. Specifically, once the tracks cross Parr Boulevard in the city of Richmond, the whole alignment to the south is developed and would require displacement of existing development in order to connect the UPRR and BNSF tracks at the desired speed. Also, once north of Richmond Parkway there is no area available with sufficient length (approximately 1.25 miles) to install the rail connector and maintain track speed, before the rails begin to diverge. This is shown on the aerial photo provided in Figure 4. Both railroads conducted an evaluation of alternative locations and the project site located between Richmond Parkway and Parr Boulevard is the only location available that met all of the connector site selection criteria.

1.2.4 Decision Needed

This EA will provide the necessary information to determine if further environmental analyses are needed to fulfill NEPA requirements. This EA evaluates the potential effects on the human environment, physical environment, and biological environment from construction and operation of the proposed improvements in order to support federal funding through FHWA. Once the EA is completed, FHWA will either issue a Finding of No Significant Impact (FONSI) based on the findings in this document, or decide to prepare an Environmental Impact Statement to comply with NEPA. Only after the procedure outlined above is completed can a decision be finalized to proceed with project implementation.

1.3 Project Description

This section describes the proposed action and the design alternatives that were developed by a multi-disciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts.

The proposed project would construct an at-grade connector track and related signal improvements between the BNSF Stockton Subdivision and UPRR's Martinez Subdivision.

BNSF and UPRR identify all points along their tracks by the distance from the point where the track originates. For this project, the installation of the connector track, upgrade of existing siding, and related improvements will begin on the BNSF rail line approximately 364 feet south of the Giant Road-John Road intersection, at about Milepost (MP) 1185.9. The new construction and other proposed improvements will extend southwest, a distance of approximately 1.25 miles, to UPRR MP 14.2, just north of the at-grade intersection of the UPRR tracks and Parr Boulevard, in Richmond.

The project is located within Richmond and an unincorporated portion of Contra Costa County. Figure 1 shows the regional location of the project and it also shows the entire proposed alignment on the pertinent U.S. Geological Survey 7.5' topographic map. Caltrans and BNSF propose to install the rail connector track as part of a program to improve goods movement into the Port of Oakland. In turn this would reduce congestion, air emissions and noise in downtown Richmond.

1.3.1 Alternatives

The alternatives for the project are the Build Alternative and the No-Build Alternative.

1.3.1.1 Build Alternative

The entire length of railway to be improved as part of the BNSF and UPRR Richmond Connection Track Project is located within Contra Costa County. The project improvements are best illustrated on the aerial photo of the connector track alignment, Figure 2, and the Conceptual Track Alignment Schematic (Track Chart, Figure 5a & b).

The location of the Build Alternative was selected based on the proximity of the two tracks and minimal development along the segment proposed for the rail connector. This will help achieve the purpose of the project, while avoiding or minimizing environmental impacts.

The proposed project features include the following:

- a. Installing a new connection track with 15-foot centers adjacent to both BNSF and UPRR existing tracks
- b. Extending or upgrading existing sidings
- c. Upgrading track structure and special track work
- d. Upgrading signal systems
- e. Improving an at-grade crossing at John Avenue
- f. Constructing a bridge over Rheem Creek
- g. Installing a culvert along the south side of the UPRR and proposed connector track
- h. Realigning the UPRR tracks within the existing right-of-way to accommodate the connector track.

The proposed BNSF and UPRR connection track closely follows the existing BNSF track at the north end of the alignment and closely follows the existing UPRR track at the south end of the alignment. The proposed alignment curves west across several industrial parcels for approximately 0.75 miles from just south of John Avenue and converges with the existing UPRR line at about UPRR MP 14.2. Refer to Figures 6a and 6b for an aerial of the land parcels and the proposed property acquisition. The proposed connection track is being designed for a maximum allowable speed of 50 miles per hour (mph) for passenger trains and 45 mph for freight trains.

All connections to sidings and spur tracks from the new track will be made using minimum No. 24 turnouts. The type #24 turnout is the most durable/heavy duty switch used on BNSF that allows a train to move from one track to another. Speed through the diverging side is 50 mph and is 79 mph on the straight side. The proposed connection track will use BNSF standard mono-block concrete ties with a resilient fastening system. Running rail will be 136 Continuously Welded Rail (CWR, 136 lbs per foot of rail) on tangents and curves flatter than

one degree. Sharper curves will be laid with 141# CWR rail. Cross ties through grade crossings, as well as transition ties, will be 10-foot-long wood ties.

The project will include the upgrade of approximately 0.2 mile of the BNSF siding and the upgrade of approximately 0.3 mile of the UPRR siding. Signal improvements, for train flow on the tracks, and the upgrade of turnouts will be installed along the whole approximate 1.25-mile alignment of the project. A feature required to install the new track within the UPRR alignment is a "Turnout Pad" that will be constructed to allow equipment to lift and move the UPRR tracks to meet the new configuration. The Turnout Pad will be retained after construction is completed to facilitate future maintenance activities.

Other Project Aspects

Land Acquisition

The existing BNSF and UPRR rights-of-way vary between approximately 100 feet and 125 feet in width along the Richmond connector track segment. A segment of the proposed connector track alignment is located outside of the existing BNSF and UPRR rights-of-way, as shown on the Figures 6a and 6b. . Approximately 8.32 acres of industrial land will be acquired for the project.

Utility Crossings

There are utility lines that may be affected by construction of the project. Any utility lines located within the alignment will either be left in place and avoided by construction, or relocated within the BNSF or UPRR right-of-way. In a few instances, a utility line may no longer be in use and it will either be removed within the BNSF right-of-way or it will be closed and left in place. All utility relocations or closures will be implemented after close coordination with the owner of the utility line.

Staging Areas

The proposed project will have a number of staging areas to accommodate storage of equipment and material, and to provide parking for employees. The staging areas will occur along the BNSF and UPRR track rights-of-way at least 25 feet from the closest track. Any needed staging areas outside the railroad's right-of-way will be the responsibility of the contractor and cannot be identified at this time. The Turnout Pad will serve as one staging area and another staging area will be located at the terminus of Collins Road, which parallels John Avenue in the project area. The Turnout Pad will also be constructed in order to install the crossover train tracks within the UPRR alignment just prior to placing the new track into operation. Where permits (entitlements or regulatory permits) are required for staging areas, such permits will be obtained by the contractor and any subsequent environmental documentation, if required, will be prepared and processed on a case-by-case basis by the contractor.

Construction Activities

The proposed project will be built in two phases and should be completed within 12 to 18 months. The first phase in the construction process will be to install the fill to elevate the new track surface an average of about 8 feet above existing ground level. Approximately 13,300 cubic yards of fill and aggregate material will be imported to create the fill for the proposed track. Assuming 15 cubic yards per truck delivery, a total of about 900 truck trips will be required to import the required fill material. This equates to an estimated 100 truck trips per day for material import over a 2-week (10-day) period of time. Completion of the engineered fill is expected to require approximately 3 to 6 months from the date construction begins.

During the same period that the fill is being installed, a separate work crew will be installing the proposed bridge over Rheem Creek, drainage pipes, and other support facilities for the track (shown on the Conceptual Track chart, Figures 5a & 5b). In addition, pipelines (such as water, natural gas, etc.) located under the railroad rights-of-way will have to be protected, either by encasement, relocation or other similar measures. It is anticipated that these facilities will be completed within 5 to 9 months. As part of this phase of the project, existing telephone poles within the BNSF and UPRR alignments will be removed by a contractor and the materials removed will be recycled for other uses.

The "Turnout Pad" will require about 4,000 cubic yards of fill material or 270 truck trips. This material will be delivered over a 5-day period, which equates to 54 truck trips per day. Construction of this feature is expected to require about 30 days from start to finish. The "Turnout Pad" will not be constructed concurrent with the new high fill to limit the maximum number of truck trips to 100 per day. It is anticipated that at the end of the project, the "Turnout Pad" will be retained for maintenance purposes.

The second and final phase of construction has been allocated 3 to 5 months for completion. This stage involves laying the new track and installing the new track signal system to ensure safety along the new track. Track laying is carried out by BNSF personnel with material delivered by rail. On top of the fill, concrete rail cross ties and ballast rock will be installed. Then, the new rails will be installed on top of this new base. The new 136 lbs rail (the rail weighs 136 lbs per meter of rail) can be installed at a rate of approximately one mile per day once the track base has been completed. At the same time new signals required for operations and safety will be installed and hooked up to the BNSF and UPRR electrical system that parallels the existing track. Maximum depth of excavation associated with installation of the new signals is approximately 8 feet. Once the new track is installed, the road crossings will be installed. When the track is completed and tested and the signals have been installed and tested, the new track will be available to support operations.

Contracts for construction of new track are typically awarded on an incremental basis. Each construction phase or function may be awarded by separate contracts.

1.3.1.2 No-Build Alternative

In the No-Build Alternative, the existing conditions in the project alignment would remain. No upgrades to the existing rail corridor would occur. No signal or safety improvements would be made and traffic flow would not be improved. The number of trains using the rail corridor segment would remain the same or increase as determined by future economic conditions, but without the addition of the connector track improvements in this segment of the rail corridor to improve efficiency. BNSF intermodal freight trains would continue to travel through downtown Richmond and the benefits of reduced air emissions, elimination of traffic delays, and better overall flow of train traffic through this segment would not be achieved.

1.3.2 Alternatives Considered But Eliminated From Further Discussion

The project stakeholders (Caltrans, BNSF and UPRR) examined alternative locations for installation of the connector track between the BNSF and UPRR tracks. The primary criterion for selection of the connector track was a location that would allow BNSF intermodal trains to access the UPRR tracks at a location that would allow these trains to avoid traversing downtown Richmond and to not utilize capacity on the UPRR Martinez Subdivision east of the City of Richmond. Other criteria included a site within the urbanized portion of the Bay Area

where the two tracks are close together and a site with no occupied structures. Since these three selection criteria for the connector site could not be met at any other location, a decision was made to eliminate alternative locations and limit the analysis to the Build Alternative and the No-Build Alternative in this document. As previously discussed, there are no other locations north of Stege (the location in southeastern Richmond where the BNSF and UPRR tracks converge) where a connector track can be installed that meets the site selection criteria described under the Independent Utility discussion presented above. One additional site was considered north of the proposed site, west of the intersection of Giant Road and Banks Drive. However, a portion of this site is included in the Point Pinole Regional Shoreline Park and it does not have sufficient space to install a connector track. Therefore, this site was rejected from further consideration.

1.3.3 Permits and Approvals Needed

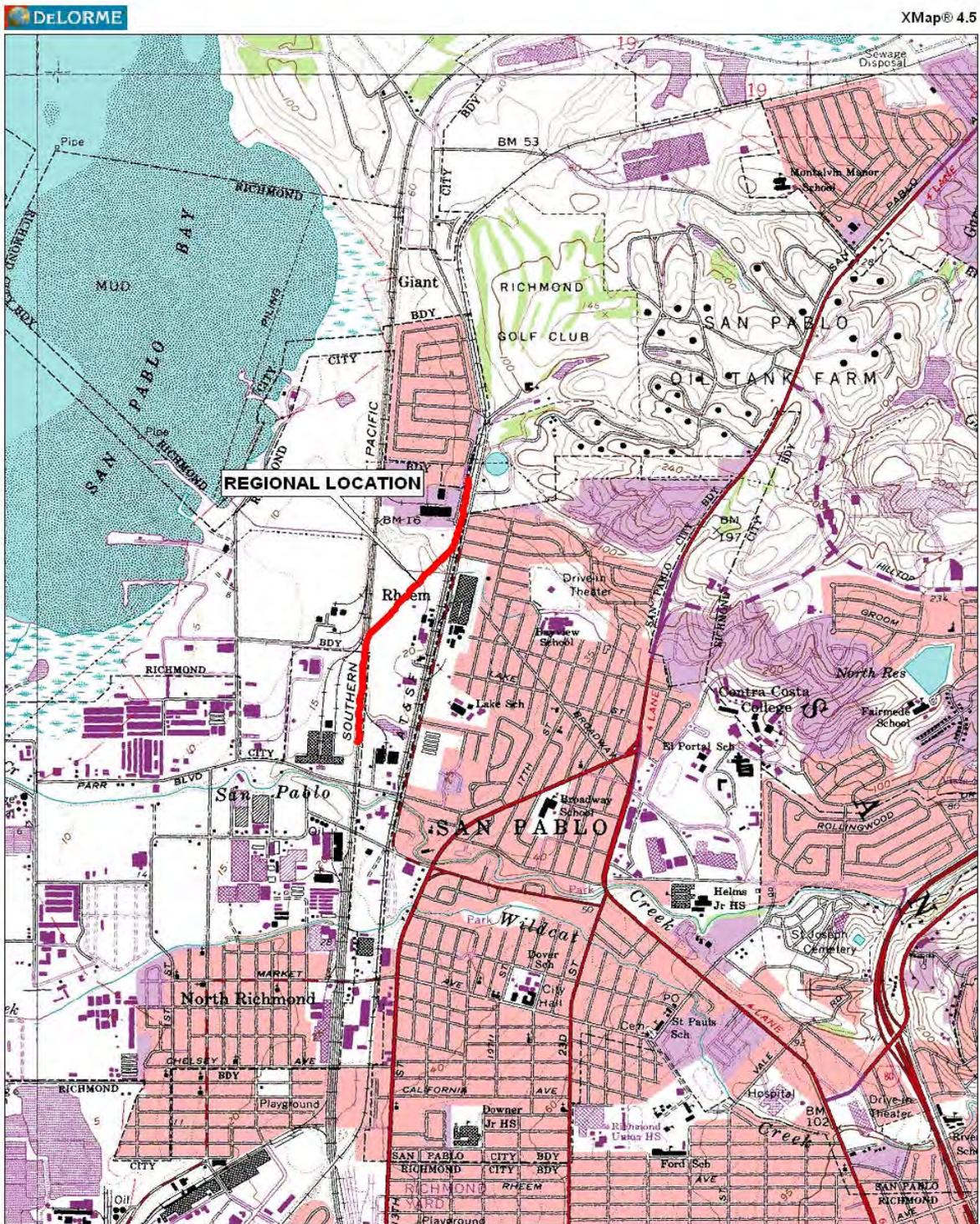
At this stage of the review it is anticipated that the project will be required to obtain several permits including, but not necessarily limited to those shown on Table 1.3.3-1.

**Table 1.3.3-1
PERMITS REQUIRED**

Agency	Permit / Approval
U.S. Army Corps of Engineers	<ul style="list-style-type: none"> • Section 404 Permit
Regional Water Quality Control Board	<ul style="list-style-type: none"> • Section 401 Water Quality Certification • SWPPP Enforcement
California Department of Fish and Game	<ul style="list-style-type: none"> • 1601 Streambed Alteration Agreement
State Water Resources Control Board	<ul style="list-style-type: none"> • Construction NPDES Permit
Contra Costa County	<ul style="list-style-type: none"> • Drainage Modification Permit • Flood Control Encroachment Permit
City of Richmond	<ul style="list-style-type: none"> • Roadway encroachment permit and business licenses

Various encroachment or construction permits from the County, UPRR, BNSF, the City of Richmond, and business licenses in the local jurisdictions may also be required.

FIGURE 1 Regional Location



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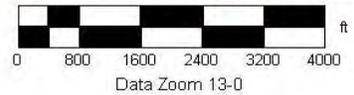


FIGURE 2
Site Location (Aerial Photo)

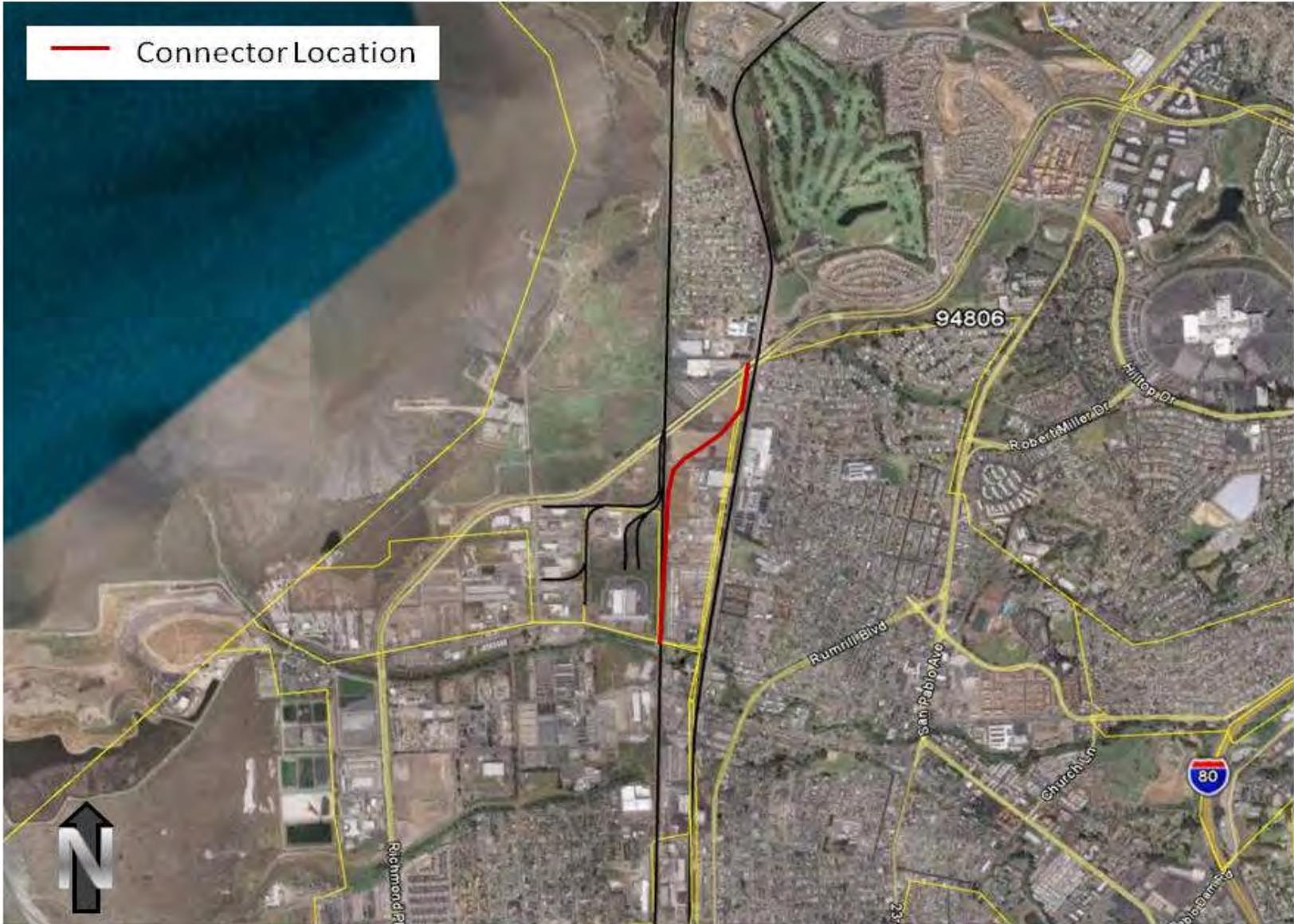
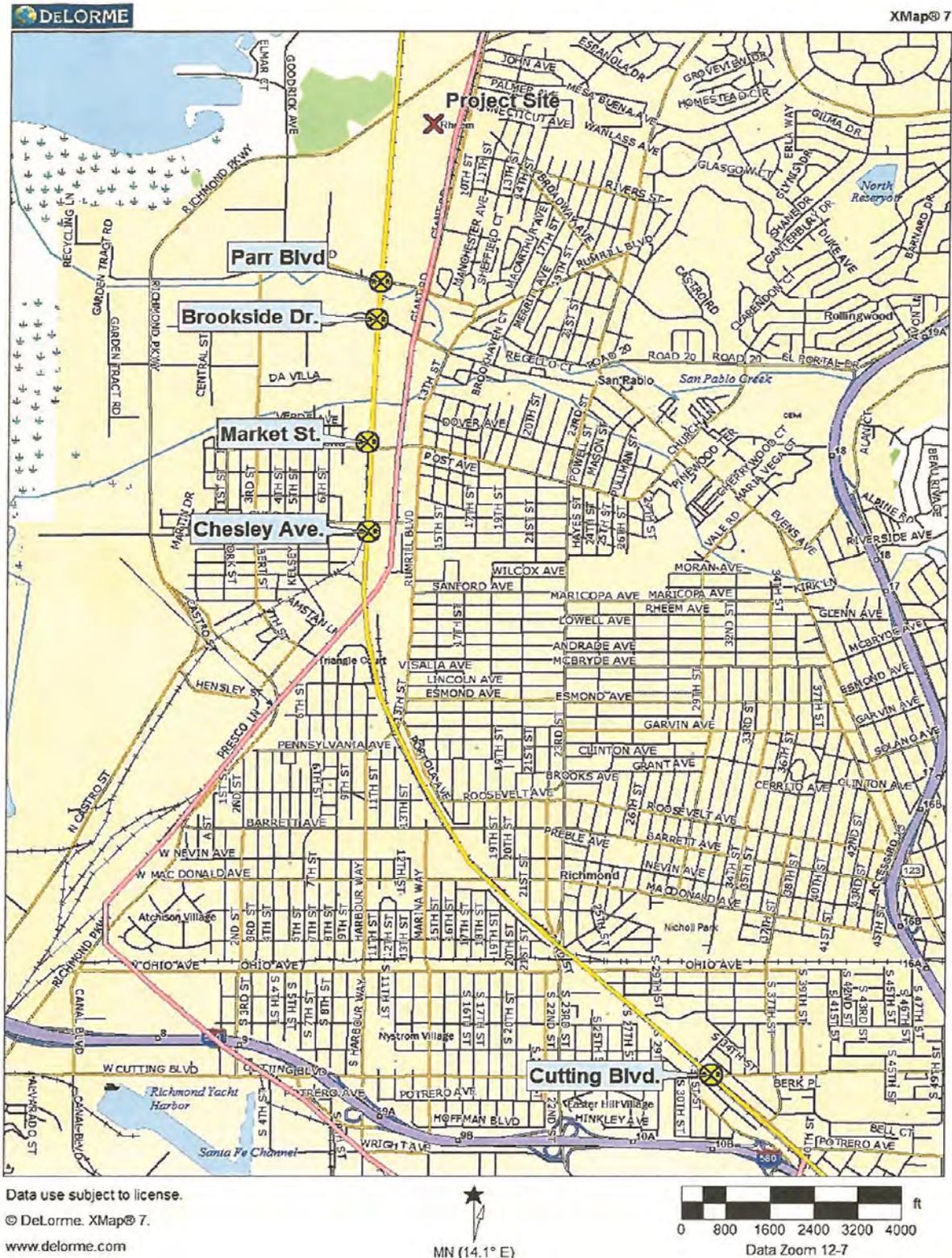


FIGURE 3a
Location of At-Grade Crossings



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MN (14.1° E)

0 800 1600 2400 3200 4000 ft
 Data Zoom 12-7

FIGURE 3b
Location of At-Grade Crossings



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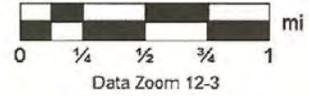
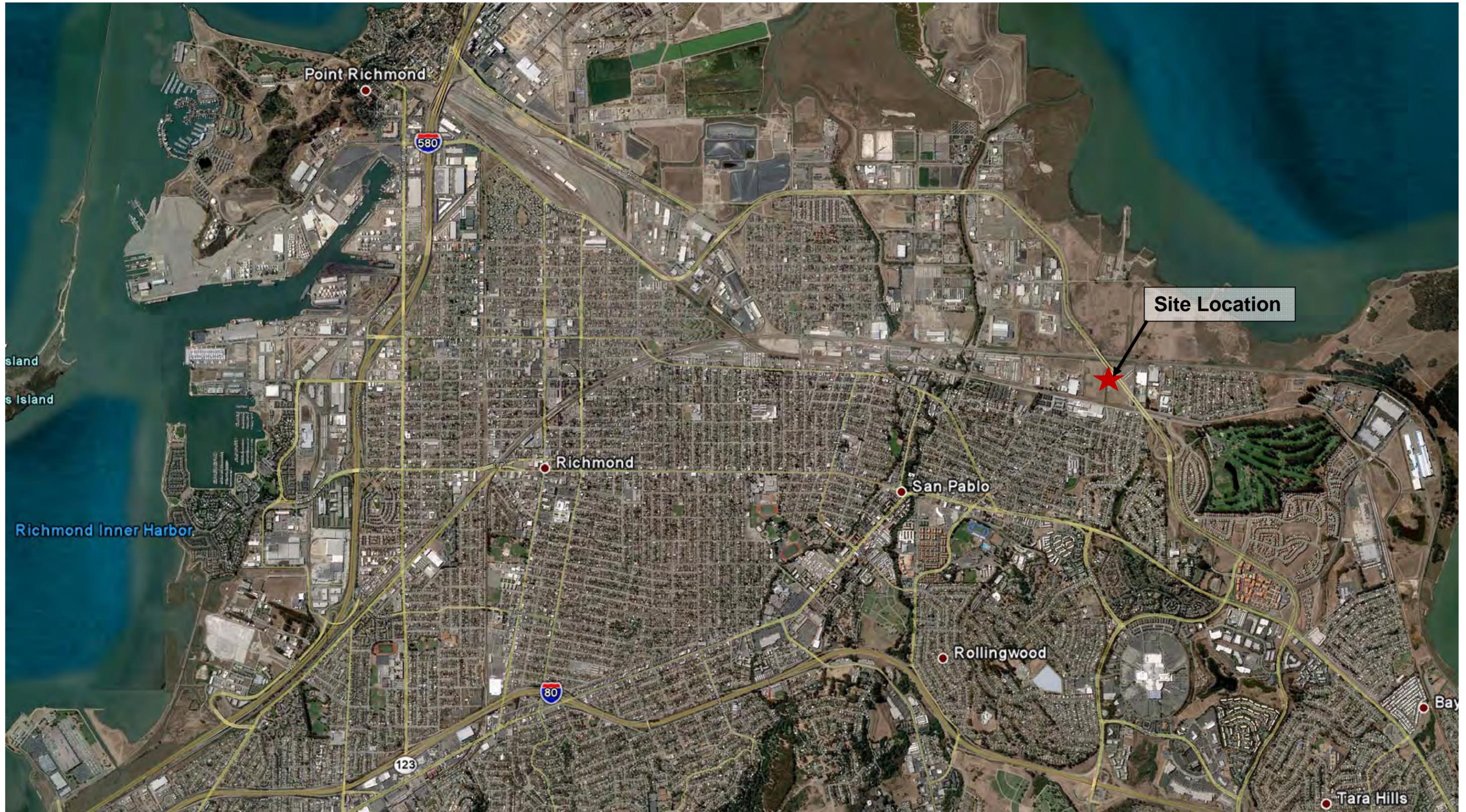


FIGURE 4
Aerial View of City of Richmond and Vicinity



NOT FOR CONSTRUCTION



FIGURE 5a

BNSF RAILWAY
 RICHMOND RAIL CONNECTION
 TRACK PLAN
 CONCEPTUAL TRACK LAYOUT
 AND PARCEL IMPACT

CONTRACT NO.	
DRAWING NO.	RP-01
REVISION	SHEET NO.
SCALE	AS SHOWN

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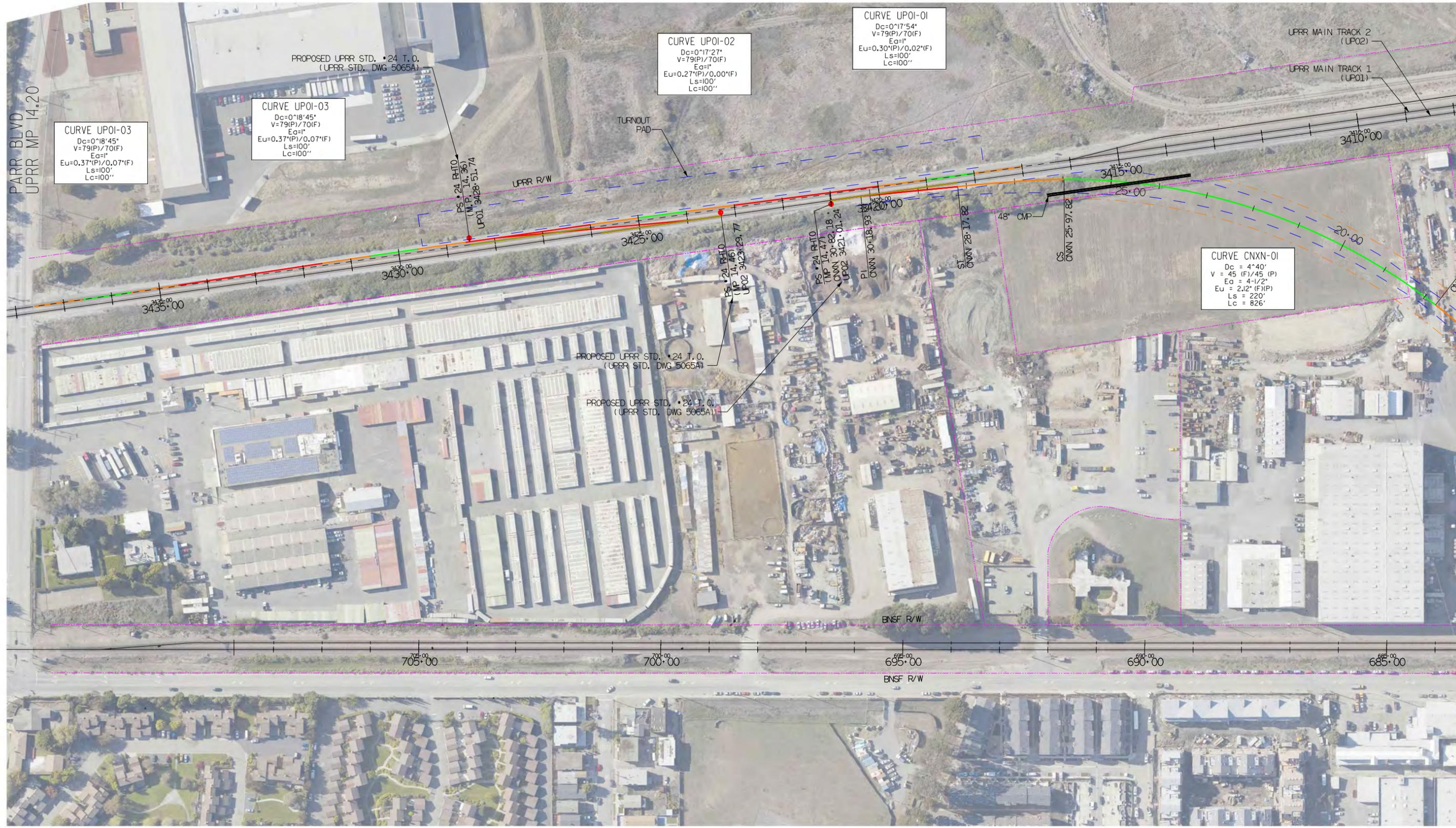


FIGURE 5b

PROJECT NUMBER	DATE	DESCRIPTION	BY	APP
01	10/08	CONCEPTUAL LAYOUT		
02	01/11	PRELIMINARY DESIGN (45 MPH)		
03	02/27	REVISED TURNOUT PAD AND UPRR R/W		
04	09/09	REVISED ALIGNMENT		

LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

DESIGNED BY	
DRAWN BY	
CHECKED BY	
APPROVED BY	
DATE	SEPTEMBER 09, 2011

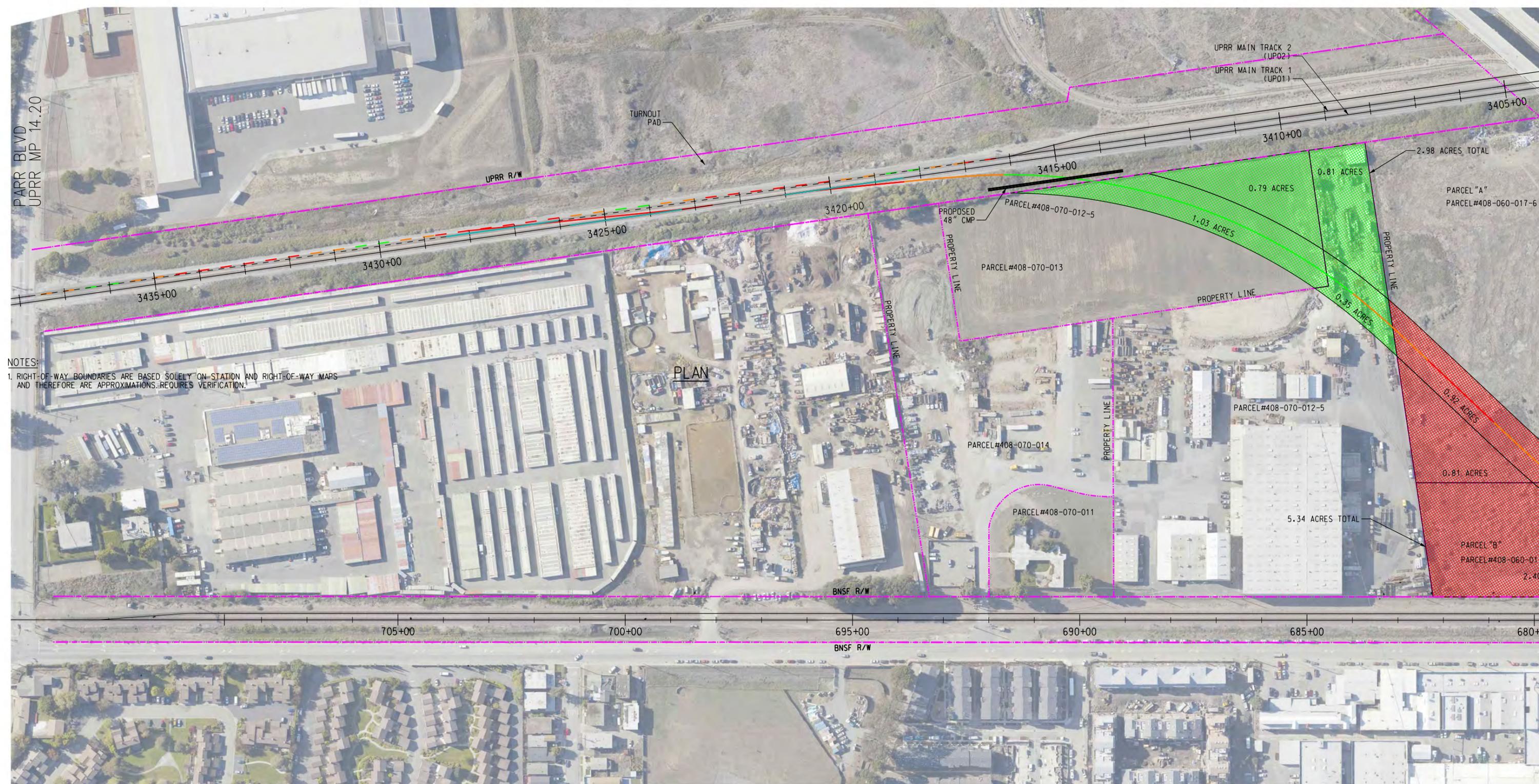
BNSF
RAILWAY

PATTERSON & ASSOCIATES, INC.
 725 TOWN & COUNTRY RD
 SUITE 300
 ORANGE, CA 92668

APPROVALS	DATE	APPROVALS	DATE
M. J. KIRSCHINGER		D. L. FREEMAN	I-24-II
R. W. LEASE	I-24-II		
R. J. BOILEAU	I-24-II		
S. C. SEXHUS			
R. D. BREDEBERG	I-24-II		

Information confidential
 all plans, drawings, specifications, and/or information furnished herewith shall remain the property of the Burlington Northern Santa Fe Railway and shall be held confidentially and shall not be used for any purpose not provided for in agreements with the Burlington Northern Santa Fe Railway.

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3/5/2012



NOTES:
1. RIGHT-OF-WAY BOUNDARIES ARE BASED SOLELY ON STATION AND RIGHT-OF-WAY MAPS AND THEREFORE ARE APPROXIMATIONS. REQUIRES VERIFICATION.

PROFILE

FIGURE 6b

PROJECT NUMBER	REV	DATE	DESCRIPTION	BY	SUB	APP
04	09/09		REVISED ALIGNMENT			
03	02/27		REVISED TURNOUT PAD AND UPRR R/W			
02	01/11		PRELIMINARY DESIGN (45 MPH)			
01	10/08		CONCEPTUAL LAYOUT			

Information confidential
all plans, drawings, specifications, and/or information furnished hereafter shall remain the property of the Burlington Northern Santa Fe Railway and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Burlington Northern Santa Fe Railway

DESIGNED BY
DRAWN BY
CHECKED BY
APPROVED BY
DATE
FEBRUARY 14, 2012

PATTERSON & ASSOCIATES, INC.
725 TOWN & COUNTRY RD
SUITE 300
ORANGE, CA 92868

APPROVALS	DATE
M. J. KIRSCHINGER	
R. W. LEASE	1-24-11
R. J. BOILEAU	1-24-11
S. C. SEXHUS	
R. D. BREDEBERG	1-24-11

APPROVALS	DATE
D. L. FREEMAN	1-24-11

CHAPTER 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization and/or Mitigation Measures

This chapter explains the impacts that the project would have on the human, physical, and biological environments in the project area. It describes the existing environment that could be affected by the project, potential impacts from each of the alternatives, and proposed avoidance, minimization and/or mitigation measures. Any indirect effects are also included in the general impacts analysis and discussions that follow.

As part of the scoping and environmental analysis conducted for this project, the following environmental issues were considered, but no adverse impacts were identified. Consequently, there is no further discussion regarding these issues in this document.

Human Environment

- **Land Use/Coastal Zone:** The proposed Richmond Rail Connector track alignment is not located within a coastal zone and therefore it has no potential to adversely affect any coastal zone resources or values. (City of Richmond General Plan)
- **Land Use/Wild and Scenic River:** The proposed track alignment is not located on or near a stream designated as a Wild and Scenic River. Therefore, it has no potential to adversely impact any Wild or Scenic River resources or values. (City of Richmond General Plan)
- **Land Use/Parks and Recreation:** The proposed track alignment is not located in an area designed for park or recreation uses and no such uses occur within the project area. Therefore, it has no potential to adversely impact any park or recreation resources or values. In addition, no publicly-owned public parks, recreational areas, or wildlife or waterfowl refuges protected under Section 4(f) of the Department of Transportation Act of 1966, as amended, are in the project area. (City of Richmond General Plan)
- **Growth:** The proposed project will not increase population or demand for track capacity. No aspect of the project has any identified potential to cause or contribute to growth or growth inducement if implemented.
- **Land Use/Farmlands/Timberlands:** The project site is designated in the City General Plan for industrial uses. It has been used for industrial purposes for more than 60 years based on a review of the historic aerial photographs in the Phase 1 Environmental Site Assessment. The project site does not and has not supported any farmland or timberland uses that would qualify the proposed track alignment as farmland. (City of Richmond General Plan and Phase 1 Environmental Site Assessment)
- **Visual/Aesthetics:** The connector track site is located within a highly urbanized area that does not have any significant visual resources or aesthetic values. The new connector track will be integrated into an industrial visual setting that already contains two mainline railroad track corridors, BNSF and UPRR. The new track will not substantially modify the visual setting and will not block any sensitive or important scenic vistas. (Site visits and City of Richmond General Plan.)

- Acquisitions: The proposed track alignment will require acquisition of approximately 8.30 acres. This will consist of three partial property acquisitions from two property owners as follows: 1.82 acres will be acquired from Assessor Parcel Number (APN) 408-070-13; 1.16 acre will be acquired from APN 408-070-012-5; and 5.32 acres will be acquired from APN 408-060-017-6. All property consists of open fields or outdoor storage areas, except for the small property acquisition that encompasses Rheem Creek channel. BNSF will purchase the properties required to support the Richmond connector track. Each owner will be offered fair market value for his/her property based on a formal appraisal of the property's value. If necessary BNSF has the power of eminent domain to acquire property that is essential to interstate rail operations. Please refer to Figures 6a and 6b which show the proposed properties to be acquired. The properties that are proposed to be acquired do not have any occupied structures. Therefore, implementation of the proposed project does not have any potential to require the relocation of any residents or the replacement of any structures.

Physical Environment

- Paleontology: The proposed track alignment will not excavate material at the project site. All grading activities will be carried out as fill activities. Therefore, it does not have any potential to adversely impact any paleontological resources at the project site.
- Geology/Soils/Seismic/Topography: The proposed project will not alter site geology or topography. Site soils have already been heavily modified by past development and remediation activities. The connector track alignment is not located near any known active faults and the proposed project does not include any human occupancy structures. Therefore, no adverse effect on geology/soils/seismic/topographic characteristics of the site will result from project implementation. The site geology information was obtained from the City of Richmond General Plan, General Plan EIR and the Geotechnical Phase 1 Environmental Site Assessment.

2.1 Human Environment

2.1.1 Existing and Future Land Use

Affected Environment

Contra Costa County

The Contra Costa County General Plan Land Use Element provides the goals and policies for addressing land use issues within the unincorporated areas of the county. None of the policies apply specifically or exclusively to the rail corridors that traverse the county. The basis for planning is an "urban center" concept model. The urban centered concept is directed at utilizing cities and unincorporated communities or centers to accomplish anticipated urban expansion in an orderly manner, based on the ability of these communities to furnish public services along with land needs based on population demands and in balance with employment-generating land uses.

City of Richmond

The City of Richmond General Plan Land Use Element provides the goals and policies for addressing land use issues within the city. None of the policies apply specifically or exclusively to the rail corridors that traverse the city. Similar to the County, the basis for planning is an

“urban center” concept model. The proposed track alignment is designated for industrial use on the City General Plan and zoned for industrial use in the City Development Code. Regarding relevant land use issues, both the City and County General Plans acknowledge the BNSF and UPRR rail corridors through their jurisdictions and indicate support for alternative modes of travel to on-road vehicular transportation systems, including rail.

The project area is characterized by light industrial uses surrounded by a mix of heavy industrial, commercial, and some residential uses. The existing railroad tracks and the major roadways, Giant Road and Richmond Parkway, constitute a major transportation corridor through the project area. The project area is within the City of Richmond and an unincorporated portion of the county. As noted above, the whole alignment of the Richmond Rail Connector is designated for industrial use.

Environmental Consequences: Build Alternative

Under the Build Alternative the Richmond Rail Connector is being installed to connect two existing rail corridors, BNSF and UPRR, within the project area to allow trains to move from one set of tracks to another. These rail corridors have been in place for 100 years or more, and the intervening land between the two track corridors at the project location have historically been used for industrial uses. The property on which the connector track will be installed is also designated for industrial uses. Thus, the railroad operations already exist in the project area and the installation of the new connector track will not add a new or different use at the project location. The proposed rail connector project is consistent with existing land uses within the project area and it is also consistent with the existing land use designations under the City's General Plan and zoning.

No-Build Alternative

The No-Build Alternative would result in no land use impacts as conditions within the proposed project alignment would remain in their existing condition. An indirect effect of this alternative would be to continue impacts from the conflicts between BNSF intermodal train operations in downtown Richmond and local circulation, including noise, air pollutants, and substantial delays where trains and vehicles intersect at at-grade locations in the city.

Avoidance, Minimization and/or Mitigation Measures

The implementation of the Build Alternative will not cause any adverse land use or zoning impacts. Therefore, no measures are required to avoid, minimize or mitigate land use impacts.

2.1.2 Consistency with State, Regional and Local Plans

Affected Environment

The project alignment occurs within an area that is designated and used for industrial purposes; serves as a major transportation corridor; and does not contain any sensitive biological or cultural resources. The California Transportation Commission, in conjunction with the regional Metropolitan Transportation Commission, selected the proposed project to reduce congestion within the local area and to support goods movement from the Port of Oakland to eastern destinations. The project has been assigned Transportation Implementation Plan (TIP) ID CC-090032 and a Caltrans CTIPS ID of 20600004415. These IDs acknowledge the proposed project's inclusion in regional transportation planning documents. City of Richmond and Contra Costa County planning documents acknowledge and support efficient goods movement as well as the alternative mode of transportation afforded by the passenger trains (36 per day) that utilize this corridor.

Environmental Consequences: Build Alternative

The proposed project is fully consistent with all state, regional and local plans, including the Richmond General Plan and the Contra Costa General Plan. The local plans (County and City) acknowledge the importance of rail operations through the proposed corridor. As noted above, the project is listed in the Federal Transportation Improvement Program for 2011/2012.

No-Build Alternative

The No-Build Alternative would result in no direct conflicts with any of the reference plans that affect the project area. An indirect effect of implementing this alternative would be to continue the impacts from conflicts between BNSF intermodal train operations in downtown Richmond and local circulation, including noise, air pollutants, and substantial delays where trains and vehicles intersect at at-grade locations in the city. The state and regional planning objective of eliminating these conflicts and enhancing the flow of goods from the Port of Oakland would not be achieved by implementing the No-Build Alternative.

Avoidance, Minimization and/or Mitigation Measures

The implementation of the Build Alternative will not cause any conflicts or inconsistencies with any State, regional or local plans. Therefore, no measures are required to avoid, minimize or mitigate such impacts.

2.1.3 Community Impacts

2.1.3.1 Community Character and Cohesion

Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings [42 U.S.C. 4331(b)(2)]. Final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as, destruction or disruption of human-made resources, community cohesion and the availability of public facilities and services.

Affected Environment

This issue concerns the human environment, in terms of defining a community in regards to boundaries and neighborhoods. Local businesses, homes and activity centers also play a part in defining a community, as well as demographic characteristics, economic base, locations of community facilities and other relevant characteristics. The railroad tracks have existed within the community surrounding the connector track alignment for more than 100 years. Industrial uses have been conducted on the property between the two track corridors for at least 50 years. The project site is bounded by two major arterials, Giant Road on the east and Parr Boulevard on the south. Industrial uses occur on the west side of the UPRR tracks. The north end of the project area is bounded by the elevated Richmond Parkway and a storage facility. Residential uses are located on the east side of Giant Road in the City of San Pablo. Thus, the community can be considered an industrial neighborhood bounded by major transportation corridors on all sides.

Both the BNSF and UPRR tracks pass through Richmond. BNSF tracks (refer to Figure 3a) turn southwest near Triangle Court where the tracks ultimately enter the BNSF classification yard in Richmond. A single BNSF track then traverses through the downtown portion of Richmond south of Cutting Boulevard and Interstate 580 until this track connects to the UPRR line at Stege. Stege is the railroad name for the location where the BNSF and UPRR tracks

converge in the southeastern portion of the City of Richmond. Refer to Figure 3. The UPRR and BNSF tracks parallel each other until approximately Triangle Court where the UPRR line crosses the BNSF tracks and heads generally south-southeast until Stege, where the two railroads again converge. The proposed project will not alter any of these existing tracks. The only change will be a shift of several BNSF intermodal freight trains onto the UPRR line between Stege and the project site once the connector track is installed. All other train operations will remain as they are or as future demand will support.

Environmental Consequences: Build Alternative

The construction and operation of the proposed project will not result in the acquisition of any residential property. The proposed alignment is situated within an area designated for industrial land use and which has historically been used for industrial activities. The existing housing areas in the project vicinity are located outside of the proposed project area, east of Giant Road. These developments were built long after the BNSF and UPRR tracks were in operation and were installed with the awareness in each community of the housing proximity to the tracks and rail operations within the rail corridor. The proposed project will not alter the existing physical conditions for these residences.

The proposed project would not have any identifiable adverse long-term effect on the affected communities or neighborhoods. In fact, there would likely be a positive effect on these communities as the connector track project and improvements to signals and train control along with improvements to roads will make it less likely for trains to be delayed, resulting in less waiting and fewer interruptions in the flow of traffic where roads intersect with railroad tracks at at-grade crossings. The only road improvement will occur where the existing BNSF track crosses John Avenue. The new connector track lead will begin north of John Avenue, which will result in improvement of the existing at-grade crossing on John Avenue to accommodate two tracks instead of the existing single track. The new at-grade crossing will be concrete and much smoother than the existing asphalt track crossing on John Avenue.

This will improve the flow of traffic on local streets within the City of Richmond. Additionally, air quality effects of freight trains near the rail corridor should be reduced as fewer train delays result in less idling of trains and lower adverse air quality emissions from vehicles idling at these at-grade crossings. Noise from idling trains would also be reduced. Based on the above information, the Build Alternative would not affect community character and cohesion.

No-Build Alternative

The No-Build Alternative would result in no changes in community character or cohesion at the project site. An indirect effect of implementing this alternative would be to continue impacts from conflicts between BNSF intermodal train operations in downtown Richmond and the neighborhoods along the BNSF track and Stege, including noise, air pollutants, and substantial delays where trains and vehicles intersect at at-grade locations in the city. The state and regional planning objective of eliminating these conflicts and enhancing the flow of goods from the Port of Oakland would not be achieved by implementing the No-Build Alternative.

Avoidance, Minimization and/or Mitigation Measures

The implementation of the Build Alternative will not cause or contribute to substantial changes in community character and cohesion. Therefore, no measures are required to avoid, minimize or mitigate such impacts.

2.1.3.2 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. As documented in the preceding section, the City of Richmond contains a high percentage of minority and low-income populations.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in the project. The California Department of Transportation's commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix 3 of this document.

Affected Environment

According to the Contra Costa County General Plan Housing Element, the county had a relatively high median household income in 2000 of \$79,000. In 2009, the city's median household income was identified as \$50,346, with per capita income at \$23,349. By contrast the City of Richmond General Plan indicates that approximately 50% of the households within the city were considered lower-income households. For 2011, Health and Human Services defined the poverty level for a family of four as \$22,350. In "City Facts," last updated in July 2009, the City provides the following data on household income:

- Less than \$10,000 = 9.2%
- \$10,000-\$14,999 = 5.4%
- \$15,000-\$24,999 = 10.9%
- \$25,000-\$34,999 = 10.3%
- \$35,000-\$49,999 = 13.9%
- \$50,000-\$74,999 = 17.1%
- \$75,000-\$99,999 = 14.2%
- \$100,000-\$149,999 = 12.5%
- \$150,000-\$199,999 = 4.2%
- \$200,000 or greater = 2.2%
- Median Income in the City of Richmond (50% above and 50% below) = about \$50,000
- Median Income in Contra Costa County = about \$78,385

"City Facts" identifies the percentage of populations in Richmond as follows:

- Hispanic or Latino = 33.5%
- Black or African American = 30.0%
- White = 19.4%
- Asian = 14.4%
- Other = 2.7%

Contra Costa County QuickFacts from the US Census Bureau identifies percentage of populations in Contra Costa County as follows:

- Hispanic or Latino = 24.8%
- Black or African American = 9.7%
- White = 47.3%
- Asian = 15.2%
- Other = 3%

The City has a substantially higher proportion of minority residents (80.6%) compared to the County (52.7%). Since the minority community in Richmond is substantially greater than that which occurs in the County, and since a substantial portion of the City population is below the current household poverty level (25.5%) when compared to the County (9%), the proposed project occurs within an environmental justice community.

Environmental Consequences: Build Alternative

The following issues were evaluated to determine if they would affect environmental justice populations:

- Community Character & Cohesion – The proposed project would be constructed in an industrial area between two railroad tracks. No residences would be acquired and no neighborhood would be divided by the project. The industrial property proposed for acquisition contains one small storage structure and no other structures. A portion of the property to be acquired contains a capped contaminated site that has been properly closed. No existing businesses will be acquired; therefore no adverse effects on the environmental justice community in Richmond will result from project implementation. Access to residential and community industrial resources would not change. More information is included in Section 2.1.3.1.
- Air Quality – The detailed evaluation of air quality issues in Section 2.2.4 indicates that the project-related emissions of criteria pollutants will not exceed regional levels established by the Bay Area Air Quality Management District and project-related emissions will meet the Federal conformity levels of the Clean Air Act. A review of the potential for localized impacts (such as fugitive dust, Carbon Monoxide hotspots or diesel particulate concentration) indicates that the project will not expose the local population to project-specific or nuisance hazards from air pollutants with the implementation of minimization measures during construction.
- Noise – As a consequence of shifting an average of 2.4 freight trains to the UPRR tracks per day (this value is based on the total number of trains over the 12-month period from May1, 2011 to June 1, 2011) over the proposed Richmond Rail Connector, the noise environment between the proposed rail connector and Stege, where the new trains will operate, will be altered by a slight increase in train noise and horn noise. The increase in train noise relative to the existing noise environment will add one decibel within the rail corridor and the increase in horn noise will add one decibel at three existing at-grade track/road crossings. The rail corridor from the rail connector is bounded by industrial uses except at one at-grade road crossing location where the increased horn noise between the current condition and the modeled future condition is approximately 1 decibel. This increase in sound level is undetectable. However, because of the existing noise levels, Federal Railroad Administration guidelines consider this is a moderate impact. Noise minimization or attenuation measures were evaluated and determined to be infeasible for the affected residences. Please refer to the detailed noise discussion in Section 2.2.5.

- **Transportation/Traffic** – The proposed project will have no adverse effect on any transportation or traffic issues. The project will benefit goods movement through the community of Richmond and will enhance the flow of local traffic in downtown Richmond by re-routing the slow-moving BNSF intermodal trains that presently traverse the community from Stege to the BNSF yard and then from the yard back to the project area on the existing BNSF mainline track. Refer to Figures 3a and 3b.
- **Hazardous Materials** – The connector track alignment will be constructed on top of a capped contaminated soil site. Specific measures will be implemented to prevent disturbance of this cap and no exposure of the remediated contaminated site will occur from implementing this project. No other substantial exposure of the local community to hazardous conditions will occur from implementing the proposed project.
- **Construction Impacts** – All construction activities, other than delivery of material to the project site, will occur within the proposed connector track alignment and adjacent property. The project will generate fugitive dust, but with implementation of dust control measures, such as application of water and covering trucks, the fugitive dust can be prevented from leaving the project site. No other potential air emissions were identified that could affect people in the area to during construction. Noise effects from construction will be controlled by limiting construction activities to daylight hours and implementing other noise minimization measures during construction. Access exists to the project site from both Parr Boulevard and Giant Road and the maximum of approximately 150 vehicle trips, including truck delivery of fill material, can occur without any adverse effect on the local circulation system. Traffic controls on the local access roads will be used when trucks access and leave the construction area. No on-road detours are anticipated, but if required for short periods during the day, such detours will be coordinated with the local emergency service providers through implementation of a construction traffic management plan approved by the local police, fire and other emergency service providers.

Based on the above discussion and analyses in this document, the Build Alternative will not cause disproportionately high or adverse effects on any minority or low-income populations as per EO 12898 regarding environmental justice.

No-Build Alternative

No direct environmental justice impacts would occur from the No-Build Alternative as conditions would remain the same as under existing conditions. Indirectly, failure to improve the movement of BNSF's Port of Oakland intermodal trains would allow adverse effects on the local circulation system, and related adverse air and noise impacts, to continue to occur in Richmond.

Avoidance, Minimization and/or Mitigation Measures

No measures are required.

2.1.3.3 Utilities and Emergency Services

Affected Environment

Utilities

Kinder Morgan has two high pressure natural gas pipelines within the UPRR right-of-way, an 8" pipeline on the east side of the tracks and a 12" pipeline on the west side of the tracks. A fiber optic line is located within BNSF right-of-way.

Fire Protection

The proposed project area is not in a wildland fire area. The Contra Costa County Fire Protection District administers and provides suppression personnel. Support personnel are Contra Costa County employees. The District is a full service fire department providing emergency services to all unincorporated areas of the county through a network of fire stations, personnel, and equipment. The District's headquarters is located at 2010 Geary Road, in Pleasant Hill, California.

Fire protection services for the City of Richmond are provided by the Richmond Fire Department, which staffs seven fire stations. The Fire Department has 89 sworn personnel and 7 non-sworn personnel.

City of Richmond Fire Stations

Station #61 140 W. Richmond Avenue
Station #62 1065 7th Street
Station #63 5201 Valley View Road
Station #64 4801 Bayview Avenue
Station #66 4100 Clinton Avenue
Station #67 1131 Cutting Blvd.
Station #68 2904 Hilltop Drive

In addition to fire suppression, the City Department provides other services such as emergency medical services, building inspection, fire prevention, building plan review, arson investigation, and public education.

Police Protection

The Contra Costa County Sheriff's Department provides police protection services throughout the county. The Contra Costa County Sheriff's main headquarters is located at 651 Pine Street, in Martinez, California. In the event that the Sheriff's Department requires assistance or is unable to respond within the unincorporated areas surrounding the cities, local Police Departments dispatch officers as needed, upon request of the Sheriff's Department. The Sheriff's Department has full law enforcement authority in the unincorporated areas of Contra Costa County, and the California Highway Patrol also has full traffic enforcement responsibility for state highways in the county.

Police protection services are provided to the City of Richmond by the Richmond Police Department. The Department's headquarters is located at 1701 Regatta Boulevard, in Richmond, California.

Environmental Consequences: Build Alternative

The proposed project may require the relocation of one of the Kinder Morgan pipelines and the fiber optic line because they may conflict with installation and operation of the connector track. The plan at this time is to encase the pipeline on the east side of the tracks, or if necessary relocate it within the UPRR existing right-of-way. No effect is anticipated for the 12" pipeline on the west side of the tracks, but if necessary it may also be encased. The existing fiber optic line will also either be encased to protect it or relocated within the existing BNSF right-of-way. Managing these utilities will not require additional work beyond that already proposed within either railroad right-of-way.

Emergency Services

The existing rail operations place a minimal demand on fire and police protection under routine operations. The proposed project does not alter the number of train operations, and as a result it has a low potential to generate demand for emergency services during construction or future operations. Closure of existing roads for certain periods is not anticipated, but if it must occur, such closure would require development of alternative emergency response routes (detours). Similarly, construction staging areas may experience an increase in trespass and theft activities over the short-term, which can place additional demand on local law enforcement services. These issues are addressed below.

Fire Protection

Along the whole construction route, a minimal potential exists to create a random demand for emergency response services. Implementation of the measure provided in the following section will ensure that potential adverse impacts to emergency fire response capability at the project site and in the immediate project area are maintained.

Over the long term, the installation of the connector track and associated rail improvements will facilitate better emergency response capabilities. The connector track will facilitate better movement of trains along the corridor, thus reducing the amount of time that future BNSF intermodal trains spend at any one point, such as at an existing at-grade road crossing. No mitigation is required for the long-term emergency access and fire protection capability of the affected fire departments. Future access will be equal to or better than the existing condition. The proposed project is not located in or near a wildland fire area. No potential exists to increase fire hazards in wildland areas or in the project area.

Police Protection

Police emergency responses will experience the same short-term impacts during construction of the connector track as fire emergency response. Similar mitigation will be implemented to ensure that police response times are maintained within each jurisdiction's response time guidelines. Implementation of the measure provided in the following section will ensure that potential adverse effects to emergency police response capability are minimized to a level such that the current level of service (as of the date of construction) is maintained to the project site and surrounding area.

Staging and equipment storage areas shall be provided with adequate protection to minimize potential for trespass and theft. Access control shall be implemented by BNSF and the construction contractor during construction to minimize demand for law enforcement response during construction. Implementation of the measures provided in the following section can ensure that potential demand for law enforcement resources during construction is minimal.

The long-term impacts from implementing the proposed project will be beneficial for law enforcement access throughout the city and county for the same reasons as outlined above for fire department emergency access, i.e., fewer slow BNSF trains in downtown Richmond.

Based on the analysis presented above emergency services will not experience substantial adverse impacts from project implementation as long as measures outlined in the next section are implemented.

No-Build Alternative

No direct utility or service impacts would occur as a result of implementing the No-Build Alternative as conditions for all utility and emergency services would remain the same as under

existing conditions. Indirectly, failure to improve the movement of BNSF's Port of Oakland intermodal trains would allow adverse effects on the local circulation system, and related adverse air and noise impacts, to continue to occur within the City of Richmond. The congestion created by delays at intersections in downtown creates a higher potential for impacts to emergency response services than the Build Alternative.

Avoidance, Minimization and/or Mitigation Measures

The following measures will be implemented to avoid, minimize or mitigate project-related effects to utilities and services, including emergency services.

- Prior to initiating relocation of any utility system located within the railroad rights-of-way, BNSF will notify the pertinent utility of the BNSF construction plan. BNSF will work with the utility under the terms of the utilities agreement to occupy the BNSF and UPRR's rights-of-way to limit short-term system relocation effects and minimize outages to the degree feasible. BNSF shall submit sufficient engineering data to verify that remaining utility systems will function as effectively after relocation as it does before relocation.
- Prior to initiating construction of the proposed project, BNSF shall submit and have approved an emergency response access plan for fire, ambulance and police services that meets each affected jurisdiction's response time frame.
- Prior to initiating construction of the proposed project, BNSF shall submit and have approved an access control plan to its staging and equipment storage areas that meets each affected jurisdiction's crime minimization standards.

2.1.3.4 Traffic and Transportation

Regulatory Setting

The Federal Highway Administration (FHWA), directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally-assisted programs is governed by the USDOT regulations (49 CFR part 27) implementing Section 504 of the Rehabilitation Act (29 USC 794). FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to Federal-aid projects, including Transportation Enhancement Activities.

Affected Environment

The proposed project is a non-standard transportation project because it focuses on the rail transport system, not vehicular traffic on federal, state and local roadways. The County General Plan anticipates a year 2020 buildout of Contra Costa County. The movement of people, goods and services through various transportation modes is, and will continue to be, vitally important to the county. Two roadways in the project area provide vehicular access to the proposed

Richmond Rail Connector alignment. Giant Road is located on the east side of the connector rail site. It is an arterial providing north-south access in the project area. Parr Boulevard is a two-lane arterial that provides east-west access and it is located just beyond the southern end of the proposed connector track alignment. Richmond Parkway is a major arterial roadway with limited access in the project area. It is located near the north end of the connector track and the new BNSF track will cross beneath the Parkway adjacent to the existing BNSF track, in the vicinity of the Giant Road/John Avenue intersection.

There are several alternative forms of transportation that serve county residents and businesses. Rail and air services transporting people and freight provide access to the rest of the state and the nation. Public transit systems help ease congestion and provide transportation services locally. The BART system provides fixed route transit services throughout the county.

Bicycle routes make it easier for residents to use bicycles as a form of transportation and also serve a recreational function. The Contra Costa Transportation Authority prepared the Countywide Bicycle and Pedestrian Plan. There are no identified bicycle routes on the roads adjacent to the project site. The future construction of bikeways will be administered by either the Contra Costa County Department of Public Works or Caltrans, depending upon which agency is responsible for a road with a bike route.

Two companies currently provide rail service to Contra Costa County; the UPRR and BNSF. All lines generally traverse the county in a north-south direction. These rail lines are primarily used for the movement of freight, although Amtrak passenger trains, including Capitol Corridor passenger trains, currently run along a portion of both the UPRR and BNSF line. Within the project area, BNSF currently has an average of 18-30 trains per day, all freight trains. Within the project area, UPRR currently has an average of about 50 trains per day, with 40 of these trains being Capitol Corridor and Amtrak passenger trains. Of the 18-30 BNSF trains, an average of 2.4 freight trains per day are intermodal trains that would no longer take the circuitous route through the City of Richmond where these slow-moving trains cause delays on the local circulation system. Refer to Figure 3a which shows the BNSF route through Richmond.

Environmental Consequences: Build Alternative

No increase in train traffic will be generated by the proposed project. The redirection of the BNSF intermodal trains will remove an impediment to travel in downtown Richmond where many at-grade crossings exist, particularly in the Cutting Boulevard vicinity. This would reduce conflicts between freight trains and local traffic, improving travel in downtown Richmond. This would also lead to increases in average rail operational speeds (not maximum speed) and less delays for all trains, including passenger trains.

Construction Impacts

Development of the Build Alternative as described in Chapter 1 may create short-term circulation system impacts and generation of additional construction-related trips, which could adversely affect the area's circulation system.

The adverse impact will typically be limited to about a month at the intersection of Giant Road and John Avenue where trucks transporting fill will access the construction alignment of the proposed connector track. The maximum number of trips per day will occur during import of fill where up to 100 deliveries per day will occur over a ten-day period. There is adequate stacking area on Collins Road and the project staging area to ensure that trucks will not be stacked on Giant Road. Therefore, assuming a maximum of 20 workers on site and 100 truck trips, the

proposed project is forecast to result in approximately 240 trips on the maximum day of operation. Based on the capacity of the local circulation system to access the site, both Giant Road and Parr Boulevard, construction of the proposed project will not cause substantial delays on the adjacent circulation system. Bicycle and pedestrian access to the project area will be maintained during construction. Note that the new rail will be delivered by train, not by trucks on local roadways.

No-Build Alternative

The No-Build Alternative would result in no direct impacts to the transportation system as the existing conditions would not be changed. However, indirectly the No-Build Alternative would force BNSF to continue up to 2.4 train movements through downtown Richmond along the existing BNSF tracks. With up to nine at-grade crossings, this will continue the adverse impact that already exists on the city's circulation system that this project is designed to eliminate.

Avoidance, Minimization and/or Mitigation Measures

Prior to initiating interconnection track construction, a construction traffic management plan shall be submitted and approved by the City of Richmond and Contra Costa County. The standard of review for the submitted plans shall be the provision of safe traffic flow on the local circulation system during construction and the provision of adequate access through construction areas to meet safety and emergency vehicle access and transit through construction areas at all times when construction is underway for any components of the proposed project. At a minimum this plan shall define the following:

- How to minimize disruption of vehicle and alternative modes of traffic at all times, but particularly during periods of high traffic volumes (peak hours on local roadways);
- Adequate signage and other controls, including flagpersons, to ensure that traffic can flow adequately during construction;
- The identification of alternative routes that can meet the traffic flow requirements of a specific area, including communication (signs, webpages, etc.) with drivers and neighborhoods where construction activities will occur; at the end of each construction day roadways shall be prepared for continued utilization without any significant roadway hazards remaining;
- Time of construction activities (e.g., off-peak hours)
- Truck/Haul routes
- Construction employee parking
- Construction equipment staging
- Potential lane closures
- Work zone traffic control
- Control of traffic at any locations where short-term hazards cannot be avoided.

2.1.3.5 Cultural and Historic Resources

The following findings and analysis are based on the Historic Property Survey Report, approved in June 2012 and the Archaeological Survey Report approved in May 2012.

Regulatory Setting

"Cultural resources" as used in this document refers to all "built environment" resources (structures, bridges, railroads, water conveyance systems, etc.), culturally important resources, and archaeological resources (both prehistoric and historic), regardless of significance. Laws and regulations dealing with cultural resources include the National Historic Preservation Act of

1966, as amended, (NHPA), which sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer, and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department.

Affected Environment

Information in this section is based on the "Archaeological Survey Report Rheem BNSF and UPRR Connection Track, May 2012."

The purpose of the study was to identify any archaeological resources within or immediately adjacent to the undertaking's Area of Potential Effects (APE). The scope of the study included a historical/archaeological resources records search, historical background research, Native American contacts, consultation with the local community, and an intensive-level field survey.

Throughout the course of the study, no "historic properties," as defined by Section 106 regulations were encountered within or adjacent to the APE. However, the APE is in close proximity to a number of known Native American shell mounds from which numerous human burials and artifacts have been recovered. In light of those discoveries, coupled with correspondences with the Native American tribes suggesting that similar cultural resources may be present within or in the immediate vicinity of the APE, the potential of encountering such subsurface cultural remains within the project boundaries cannot be overlooked.

Environmental Consequences: Build Alternative

Based on the above analysis, the proposed alignment does not have any historic or archaeological resources on the ground surface along the Richmond Rail Connector alignment. As designed the project will be constructed with minimal excavation on the proposed alignment or in support of the proposed action. However, a potential exists for subsurface resources to be exposed and this potential will require active management during construction to resolve. Two measures are provided below to address the potential for exposure of subsurface resources.

Environmental Consequences: No-Build Alternative

The No-Build Alternative would result in no direct or indirect adverse impacts to the cultural resources of the project site nor would implementation of this project cause any offsite adverse effects to cultural resources.

Avoidance, Minimization and/or Mitigation Measures

- If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.
- If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the

Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the District 4 Environmental Branch so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

2.2 Physical Environment

2.2.1 Hydrology/Floodplain

Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration requirements for compliance are outlined in 23 CFR 650 Subpart A.

In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values impacted by the project.

The 100-year floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the 100-year floodplain.”

Affected Environment

According to the Contra Costa County General Plan, all of Contra Costa County's water drains into the San Francisco Bay/Delta system. Water from the western portion of the county drains into San Francisco Bay or San Pablo Bay, while that from the northern and eastern portions of the county drain into Suisun Bay and the Delta river channels, which eventually flow into the San Pablo and San Francisco Bays. Drainages in the vicinity of the proposed connector track include Rheem Creek and San Pablo Creek. Only Rheem Creek will be affected by the proposed project where a bridge will be placed across this concrete-lined channel. San Pablo Creek is located just south of Parr Boulevard, which is outside the southern extent of the connector track improvements. Please refer to Federal Emergency Management Agency's Flood Insurance Rate Maps (FIRM) that encompasses the project area (Panels 0226F and 0228F (see Appendix 2). The Rheem Creek channel and the western portion of the project site (adjacent to the UPRR tracks) are located within the 100-year flood hazard area as shown on FIRM Panel 226.

The Contra Costa County Flood Control and Water Conservation District is responsible for controlling flood and storm waters throughout the county. The cities within the county and the County Flood Control and Water Conservation District have developed regional drainage plans to guide the implementation of new drainage systems and provide the basis for local and federal flood control projects. Adopted drainage areas allow for the assessment of drainage fees for new developments. According to the County's General Plan, the proposed project area is located outside of a drainage area with established fees.

Environmental Consequences: Build Alternative

The County Flood Damage Prevention Ordinance contains specific requirements for development in various flood zones designated on the FIRM maps. According to the FIRM of the project area, about one-half of the connector track alignment is located within the 100-year floodplain. The Rheem Creek channel is proposed to be bridged with a clear span bridge over the channel, and the remainder of the alignment will be elevated above the 1-2 foot flood elevation adjacent to UPRR tracks along the southern portion of the connector track alignment.

In general, the majority of the project alignment is topographically compatible with all of the proposed project facilities identified in the project description. The topography of the proposed track alignment is essentially flat and drainage from the BNSF and UPRR rights-of-way are already established. Both currently flow into Rheem Creek at different locations. The new track will occupy a portion of the existing rail rights-of-way as well as currently undeveloped industrial properties to be acquired for the proposed connector track alignment. Unlike a paved roadway, the new track high fill (the elevated earthen fill beneath the steel rail concrete ties and rock ballast) is not impervious to precipitation and the high fill combined with adjacent drainage swales ensure that the base floodplain elevation will not be increased as a result of installing the new connector track. Thus, the project is not forecast to substantially increase runoff or cause any major modifications in discharge of runoff from the existing rights-of-way or acquired lands.

No long-term adverse effects to surface or groundwater hydrology is anticipated to result from installing and using the connector track. Permeability will remain relatively the same where the new track replaces the compacted ground within BNSF and UPRR rights-of-way. The new connector track will continue to discharge runoff to the same regional drainage system that presently serves the project alignment. All existing drainage culverts or boxes will be installed at the same or comparable size as the existing culverts.

Drainage from the project site and adjacent properties presently follows an existing drainage swale located on the east side of the UPRR tracks. This drainage will continue to function, but where fill is placed to connect the new rail connector to the UPRR track, the existing swale will be replaced by a 42" culvert. This culvert will convey the existing flows upstream of the fill area to the existing swale downstream of the fill area. No change in the existing drainage pattern will result from this onsite drainage system modification. Consequently, no substantial effect to downstream surface water hydrology is anticipated.

Implementation of the proposed project will place some of the proposed facilities (the western portion of the alignment adjacent to the UPRR tracks) in areas exposed to 100-year flood hazards, as outlined in the existing setting discussion above. Portions of the existing railroad track and facilities already lie within the 100-year flood hazard area as identified on the referenced FIRM panels (0226F and 0228F) (see Appendix 2). The western portion of the new connector track will be similarly exposed. However, the new track is not forecast to impede or redirect flood flows in any different manner than the existing environmental setting. Further, due to the high fill elevating the tracks above the flood hazard elevation on the property, the new connector track will not be exposed to significant flood hazards.

The new bridge over Rheem Creek will clear span the Creek channel (no bridge structures will be placed in the channel) and be placed above the 100-year flood flow elevation within the channel with adequate freeboard to protect the new rail bridge.

The proposed project does not have facilities that will expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

Based on all geologic studies and maps for the region, the location of the BNSF alignment is sufficiently distant from the Bay, such that a seiche or tsunami is unlikely to affect the new connector track.

Construction

A memo to file has been prepared that explains that construction of the project will not change the floodplain based on the following information:

- The track high fill elevates the new track above the 100-year floodplain shown on Flood Insurance Rate Maps from the Federal Emergency Management Agency.
- The high fill would not increase runoff or the elevation of the 100-year floodplain since it is partially pervious to storm water and the connector track property is essentially flat.
- The project would not change the site hydrology because culverts will carry flows from the south end of the project area to the north end, where the surface runoff will continue to flow into the Rheem Creek channel. This flow pattern has functioned successfully in the area for more than 100 years since both BNSF and UP tracks were constructed.

Local effects on drainage would result primarily from the construction activities associated with the proposed action, such as removal of vegetative cover, grading, filling, and re-contouring the surface soil. During construction of the new track high fill, BNSF plans to grade a temporary crossing through the Rheem Creek channel (downstream of the concrete portion of the channel) to facilitate delivery of the fill material along the connector track alignment. Once the construction activities are completed, the channel will be restored to its original condition.

No-Build Alternative

The No-Build Alternative would result in no short- or long-term impacts to existing hydrology or the floodplain.

Avoidance, Minimization and/or Mitigation Measures

Where new track facilities are constructed in a flood zone, the facility will be installed to convey stormwater runoff flows through the track high fill to existing drainage facilities, and the new track shall be a minimum of one foot above the 100-flood hazard elevation or otherwise hardened against flood-related impacts. Bridge structures over Rheem Creek shall safely pass the 100-year design storm for the watershed with adequate freeboard. Storm flows downstream of new track facilities shall not be increased and shall convey flows in essentially the same manner as those leaving the present BNSF and UPRR alignments.

2.2.2 Water Quality and Stormwater Runoff

Regulatory Setting

Federal Requirements: Clean Water Act

In 1972 Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. Known today as the Clean Water Act (CWA), Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and

industrial/construction point sources to comply with the NPDES permit scheme. Important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity, which may result in a discharge to waters of the U.S., to obtain certification from the State that the discharge will comply with other provisions of the act. (Most frequently required in tandem with a Section 404 permit request. See below.)
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

USACE issues two types of 404 permits: Standard and General permits. There are two types of General permits, Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE’s Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA’s Section 404 (b)(1) Guidelines (U.S. EPA CFR 40 Part 230), and whether permit approval is in the public interest. The Section 404(b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA), to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences. Per Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause “significant degradation” to waters of the U.S. In addition every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and regulating discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants, which are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollution Discharge Elimination System (NPDES) Program

Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites which result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The 2009 Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). In accordance with the Department's Standard Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with DSA less than one acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a 404 permit.

In some cases the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as Waste Discharge Requirements (WDRs) under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

Affected Environment

Contra Costa County is bordered by San Francisco Bay and San Pablo Bay to the west, and by Suisun Bay and the channels of the Sacramento and San Joaquin rivers on the north. Groundwater is a significant source of water supply in the proposed project area and throughout the San Francisco Bay region. Surface water within the San Francisco Bay Area is primarily supplied by the Sacramento and San Joaquin rivers, which enter the Bay system through the Delta at the eastern end of Suisun Bay. Many small rivers and streams also convey fresh water to the Bay system.

According to the San Francisco Bay Regional Water Quality Control Board's "San Francisco Bay Basin Water Quality Control Plan," flows in the region are highly seasonal, with more than 90 percent of the annual runoff occurring during the winter rainy season between October and April, while many streams go dry during the middle or late summer. Some of this surface runoff percolates into the ground to replenish groundwater aquifers. Rheem Creek enters the property from the east in a concrete channel, but the channel reverts to a natural channel within the proposed project alignment. Surface flows in Rheem Creek provide limited recharge of the local groundwater table in the vicinity of the connector track alignment.

According to Volume Two of the City of Richmond General Plan, groundwater within Richmond is a limited resource that is found in flatland areas with alluvial soils. The Richmond area is underlain by clay rich soils known as bay mud. According to the EIR prepared for the West Contra Costa Sanitary Landfill's Bulk Materials Processing Center and Related Actions, bay mud is composed primarily of inter-fingering alluvial fan/stream channel and estuarine deposits, which are divided into young bay mud and old bay mud within the project area. Young bay mud has a higher clay content and lower strength than the old bay mud. The young bay mud generally occurs between the surface and depths of about 50 to 70 feet below mean sea level

(msl), while old bay mud occurs at depths ranging from 50 to 70 feet below msl to a depth of about 100 feet. Sand layers up to 20 feet thick occur below the old bay mud.

Due to the presence of bay mud deposits, drainage within the city is poor. As a result, the groundwater basin is very shallow and susceptible to pollution. According to the City of Richmond General Plan, groundwater use is primarily limited to irrigation. Potable water for the city is supplied by the East Bay Municipal Utility District.

Environmental Consequences: Build Alternative

Development of the proposed project will not alter the permanent activities associated with the project area (rail and surface transportation activities), but it will alter their configuration. The RWQCB and the Contra Costa County Flood Control and Water Conservation District have established municipal stormwater discharge standards for surface runoff that apply along the project alignment. The stormwater discharged from the modified track alignment must meet these discharge standards in order to ensure that water quality degradation will not occur. Minimization measures are provided below to ensure that future surface water runoff from the project alignment does not cause substantial water quality degradation from stormwater discharged by BNSF and UPRR facilities over the long term.

Stormwater runoff is not forecast to increase by a measureable amount because the track ballast and the high fill material are not impervious and do not generate substantial additional runoff from the project site. This project will require modifications to existing storm drain facilities and the construction of new stormwater drainage facilities beyond those which currently exist. These systems were designed to convey the same volumes of flows as the existing culverts and channels that occur along the alignment. The aerial photo in Figure 5 shows all of the locations where drainage facilities will be extended within the BNSF and UPRR rights-of-way and proposed connector track alignment. These new stormwater runoff facilities will enhance removal of stormwater from the project site into the Rheem Creek channel.

Construction Impacts

The process of constructing the connector track has a potential to cause erosion, sedimentation and accidental release of pollutants that could violate water quality standards. A SWPPP that includes best management practices (BMPs) will be compiled that will be applicable for all project activities within the connector track alignment. The goal of these BMPs is to protect overall water quality during the installation of the new connector track and support infrastructure. A performance standard for reducing pollutants in stormwater runoff is included in the measures below to ensure that local water quality standards are protected.

The California State Water Resources Control Board (SWRCB) has established a statewide construction General Permit applicable to the project. Under this general permit, it is the responsibility of the project proponent to submit a Notice of Intent to the SWRCB, prepare and implement the SWPPP, and revise the SWPPP BMPs as necessary as construction conditions change. Copies of the SWPPP will be made available to the San Francisco Bay Regional Water Quality Control Board (Region 2 RWQCB). The BMPs must include both structural and non-structural measures, where applicable, and the assignment of long-term maintenance responsibilities. The RWQCB has responsibility for overseeing compliance with the General Permit. These agencies oversee the implementation of the SWPPP and ensure that the BMPs are fully implemented and effective through routine monitoring and enforcement actions.

Over the long term no change in the quality of surface runoff will occur from implementing the proposed project.

No-Build Alternative

Under the No-Build Alternative there will be no change in surface runoff or any new potential for water quality degradation from continued runoff from the project site.

Avoidance, Minimization and/or Mitigation Measures

The following measures shall be implemented to minimize water quality degradation from project construction.

- A Storm Water Pollution Prevention Plan (SWPPP) will be prepared for the project. The best management practices (BMPs) identified in the SWPPP will be used to minimize the potential for accidental releases of any chemicals or materials on the site that could degrade water quality, including solid waste, and require that any spill be cleaned-up, contaminated material properly disposed of and the site returned to pre-discharge condition, or in full compliance with regulatory limits for the discharged material. The portion of the SWPPP that addresses erosion and related sediment discharge shall specify that the measures shall achieve pollutant removal of sediment and other pollutants from disturbed areas to the maximum extent practicable.
- For long-term site disturbances, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.) or areas re-seeded with native vegetation to minimize potential erosion within the alignment, particularly from concentrated flows (rills, gully, etc.) and sediment transport from the alignment will be minimal as part of future surface runoff.
- Typical best management practices that may be implemented along the rail connector alignment include but are not limited to the following:
 - Add protective covering of mulch, straw or synthetic material (erosion control blankets, tacking will be required).
 - Limit the amount of area disturbed and the length of time slopes and barren ground are left exposed. After construction, soil shall be compacted to a level similar to pre-construction conditions.
 - Construct diversion dikes and interceptor ditches to divert water away from construction areas.
 - Install slope drains (conduits) and/or water-velocity-control devices to reduce concentrated high-velocity streams from developing.
 - Apply provisions of erosion and sediment control measures that reduce volume and velocity of flows and content of sediment to levels that do not cause major rill or gully erosion in susceptible areas. In addition, provide for restoration of areas that do become eroded.

These are typical best management practices but the specific measures that will be implemented during construction will be defined when specific construction methods are defined by the construction contractor.

2.2.3 Hazardous Waste/Materials

The following findings and analysis are based on the Phase 1 Environmental Site Assessment.

Regulatory Setting

Hazardous materials including hazardous substances and wastes are regulated by many federal laws. Statutes govern the generation, treatment, storage and disposal of hazardous materials, substances, and waste, and the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). The purpose of CERCLA, often referred to as “Superfund,” is to identify and clean up abandoned contaminated sites so that public health and welfare are not compromised. RCRA provides for “cradle to grave” regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety & Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is encountered, disturbed during, or generated during project construction.

In addition to the above regulatory agencies, BNSF and UPRR maintain their own internal teams to manage hazardous materials and wastes and to respond to train accidents that result in the spill of hazardous or toxic materials into the environment along their rail corridors. Management of hazardous and toxic materials being shipped by rail includes maintaining records of such materials being shipped on each train and standard response procedures and trained personnel to deal with accidental spills when they occur.

Affected Environment

A variety of land uses, including industrial, commercial, and limited residential, are adjacent to the existing right-of-way of the BNSF and UPRR main line tracks within the proposed project segment of rail. The existing rail lines have been present since at least 1915, the earliest historical record reviewed. In between these two existing rail lines, the proposed rail connector crosses the vacant LJR Property, Rheem Creek and a portion of the North Richmond commercial/industrial property. The LJR Property has always been vacant land; however,

recent grading activities have been conducted at the property, resulting in the placement of fill materials on the order of 8 feet thick, within much of the proposed railway alignment.

A detailed Phase I examination of the proposed Richmond Rail Connector alignment has been compiled to provide data on historic contamination of the alignment. This document is titled "Phase I Environmental Site Assessment BNSF Railway Proposed Richmond Rail Connector Richmond Contra Costa County, California, August 2009."

The North Richmond property, at 2801 Giant Road (the former Cooper Chemical Company brownfield site), has been commercial/industrial since 1946. Past environmental practices at this property have lead to localized soil and groundwater contamination. The contamination at this property was addressed by placing and confining the contaminated soil into a deed-restricted area, called "Site R," and covering it with a 1-foot cap of soil. The proposed rail connector route passes over a portion of the "Site R" deed-restricted property at 2801 Giant Road. The Phase 1 site assessment recommends a comprehensive survey be conducted to determine if monitoring wells are within the proposed rail alignment and the amount of grading or ground disturbance that will be required within the "Site R" deed-restricted property. In addition, before acquiring any deed restricted property, BNSF should investigate (Health Hazard Evaluation) for potential health hazards during grading and construction.

Environmental Consequences: Build Alternative

The Phase 1 site assessment revealed recognized environmental conditions associated with some of the properties along the proposed connector track alignment. See Table 2.2.3-1 below. The past releases within the alignment consist of heavy metals and petroleum hydrocarbons. The contamination associated with these properties has been addressed and there are no current reported releases; therefore, no adverse environmental conditions should be encountered along the proposed alignment. However, that portion of the proposed alignment that crosses over Site "R" will need the approval of the Department of Toxic Substances Control (DTSC) prior to any change in ownership or current land use. Any existing groundwater monitoring wells within the proposed alignment will also need to be addressed, i.e., possibly abandoned, relocated, or replaced.

**Table 2.2.3-1
HAZARDOUS WASTE HISTORY**

Facility Name, Address, Direction Relative to the Site	Listed Database(s)	Current Agency Status	Recognized Environmental Condition (REC) Potential
Cooper Chemical, 2801 Giant Road (Within proposed alignment)	Cortese	Soil and groundwater contamination from heavy metals and petroleum hydrocarbons. Capped with 1 foot of soil. Land Use Restrictions, Certified Operations & Maintenance (O&M)	Low , depending on proposed grading
	CA Bond Exp. Plan	Remedial Investigation/Feasibility Study (RI/FS) investigation completed by Responsible Party	See above
	Response	Certified O&M, 5-year review approved, Continue Monitoring of groundwater annually and quarterly site inspections	See above
	Deed	Certified O&M	See above
	EMI	Bay Area AQMD, Listing for Total Hydrocarbon Gases, 0.015 ton/year (2005)	Low , no reported violations
	Envirostor	Certified O&M, Prohibited uses, notify DTSC with changes in use, property owner, prior to development	Low , depending on proposed grading
	Hist. Cal-Sites	Certified O&M, All planned activities implemented, Remediation continues	See above
Triple A Machine, 2801 Giant Road (Adjacent to the east)	HAZNET	Hazardous Waste Generator: waste oil and mixed oil, unspecified oil-containing waste, unspecified organic liquid waste, liquid waste with pH less than 2 with metals	Low , based on no reported violations
Earthquake Protection Systems, 2801 Giant Road (Adjacent to the east)	FINDS	National Emissions Inventory Database, No details were provided	Low , based on no reported violations
	EMI	EMI, Bay Area AQMD, Listing for Total Hydrocarbon Gases, 1 ton/year (2002-2003)	Low , based on no reported violations
Golden State Steel and Stair, Inc., 2801 Giant Road (Adjacent to the east)	Contra Costa County Site List	Hazardous Materials Management Program (HMMP), regulates businesses that store 55 gals. of hazardous materials liquid, 500 pounds of hazardous materials solid, or 200 cubic feet of hazardous materials as a gas, No reported violations	Low , based on no reported violations

Facility Name, Address, Direction Relative to the Site	Listed Database(s)	Current Agency Status	Recognized Environmental Condition (REC) Potential
Western Intermodal Services, 2801 Giant Road (Adjacent to the east)	Contra Costa County Site List	Same as above	Low , based on no reported violations
Richmond Machine and Fabricating, 2801 Giant Road (Adjacent to the east)	ERNS	Emergency Response and Notification System, for 6 gallon spill of anhydrous ammonia from a valve at an aboveground tank in 1991	Low , spill to soil was cleaned up
	HAZNET	Unspecified oil-containing waste	Low , based on no reported violations
Utility Aerial Inc., 2801 Giant Road (Adjacent to the east)	Contra Costa County Site List	HMMP and Aboveground Tank, No reported violations	Low , based on no reported violations
	HAZNET	Other organic solids, waste oil, and mixed oil.	See above
	Historical Cortese	No data provided	See above
RBJ Steel Fabricating, Inc., 2801 Giant Road (Adjacent to the east)	Contra Costa County Site List	HMMP, No reported violations	Low , based on no reported violations
Michael Bondi Metal Design, Inc., 2801 Giant Road (Adjacent to the east)	Contra Costa County Site List	HMMP, No reported violations	Low , based on no reported violations
North Richmond Properties, Inc., 2801 Giant Road (Adjacent to the east)	FINDS	National Emissions Inventory Database, No details were provided	Low , based on no reported violations
Weigmann & Rose International, 2801 Giant Road (Adjacent to the east)	FINDS	Other pertinent environmental activity identified at site	Low , based on lack of data
	RCRA-NonGen	Hazardous materials handler, Generator violations 1986, Achieved compliance 1991	Low , based on achieving compliance
Unspecified Facility Name, 2801 Giant Road (Adjacent to the east)	CHMIRS	2002, Two 2.5-inch natural gas lines were hit during an excavation in the road, and were repaired	None , based on incident

Facility Name, Address, Direction Relative to the Site	Listed Database(s)	Current Agency Status	Recognized Environmental Condition (REC) Potential
Lazy J Ranch, 3002 Giant Road (alignment crosses over a portion of the property)	SLIC	RWQCB Spills, Leaks, Investigations, and Cleanups, site is a cleanup program site	Low , based on completed cleanup
T-Mobile West Corporation, 2777 Giant Road (Adjacent to the south and east)	Contra Costa County Site List	HMMP, No reported violations	Low , based on no reported violations
Brulin Company, Inc., 2775 Giant Road (Adjacent to the south and east)	RCRA-SQG	Small quantity generator of solvents, more than 100 Kg and less than 1,000 Kg per month of hazardous waste	Low , based on no reported violations
	FINDS	California Hazardous Waste tracking System, No data provided	See above
	HAZNET	Unspecified aqueous solution	See above
	Contra Costa County Site List	HMMP, No reported violations	See above
	SLIC	San Francisco Bay RWQCB Spills, Leaks, Investigations, and Cleanups, site was a cleanup program site, Cleanup completed in 2006	Low , based on case completion
	CA WDS	The facility is listed as industrial with continuous or seasonal discharge that is a minor threat to water quality, under Waste Discharge Requirements	Low , based on waste discharge and NPDES requirements
American Standard, Inc., 3002 Giant Road (across Giant Road to the east)	CERC-NFRAP	Preliminary Assessment completed 1987, No further remedial action planned	Low , no further remedial action status
	Cortese	1997, Certified O&M, land use restrictions	Low , based on completed cleanup
	Ca Bond Exp. Plan	Heavy metals discovered at the site, Remedial plan submitted	Low , based on completed cleanup
	Response	5 underground storage tanks (USTs) were discovered and cleanup completed, except under buildings, Certified O&M, land use restrictions in place	Low , based on completed cleanup
	Deed	Land use restrictions	See Above

Facility Name, Address, Direction Relative to the Site	Listed Database(s)	Current Agency Status	Recognized Environmental Condition (REC) Potential
	Envirostor	Certified O&M, land use restrictions in place	See Above
	Hist. Cal-sites	Certified O&M, land use restrictions in place	See Above
Giant Trade Center, 3002 Giant Road (across Giant Road to the east)	HAZNET	Waste oil and mixed oil, other empty containers (30 gallons or more), off specification, aged or surplus organics	Low , based on completed cleanup
	HIST. Cortese	No data provided	See above
	Contra Costa County Site List	Listed in UST program, Inactive in 1987	See above
Broadway Project, American Standard, 3002 Giant Road (across Giant Road to the east)	HAZNET	Disposal of off specification, aged, or surplus organics	Low , based on no reported violations
	SLIC	UST closure, Diesel soil contamination discovered, Case still open	Low , based on the soil only contamination and distance from alignment
FMC Corporation - Richmond, 855 Parr Boulevard (Adjacent to the east)	Cortese	Land Use Restrictions, Certified Operations & Maintenance (O&M)	Low , remedial work completed
	Response	Site Mitigation and Brownfields Reuse Program (SMBRP), Soil and groundwater contamination from pesticides and other chemicals, Capped with asphalt, Certified Operations & Maintenance (O&M)	Low , See above
	DEED	Certified Operations & Maintenance (O&M)	Low , See above
	EMI	3 tons/year of organic hydrocarbon gases emitted (1995 through 2002)	Low , No reported violations
	Envirostor	Land Use Restrictions, Certified Operations & Maintenance (O&M)	Low , remedial work completed
	Hist. CAL-Sites	Deed restricted, Certified Operations & Maintenance (O&M)	See above

Facility Name, Address, Direction Relative to the Site	Listed Database(s)	Current Agency Status	Recognized Environmental Condition (REC) Potential
Crown Cork & Seal, 601 Parr Boulevard (adjacent to the west)	LUST	Leaking Underground Storage tank. Gasoline leak, site cleanup and case closed	Low , based on cased closed status
	CA FID UST	No data reported	See above
	Contra Costa County Site List	In UST program, Inactive in 1996	See above
	NPDES	Construction permit, No additional data supplied	Low , No violations
	Sweeps UST	Historical listing of 3 USTs, two 8,000-gallon and one 3,000-gallon	Low , Case closed status
	Hist. Cortese	No data provided	See above

Based on the above analysis, the proposed alignment does have historic contamination constraints that will require active management during construction to resolve.

No long-term change in hazards related to continued operation of railroad transport of hazardous materials is forecast to occur from project implementation because no new trains or transport activities will be generated as a result of project implementation.

Measures designed to minimize, control or remediate potential accidental releases must be implemented to prevent the creation of new contaminated areas that may require remediation in the future and to minimize exposure of humans to public health risks from accidental releases. Such measures are presented in the following section. These measures are provided to reduce the potential for such accidents to occur (use of spill prevention countermeasure practices to minimize potential for accidental releases as part of construction activities); to immediately collect and store or remove the primary source of contamination, including soils; and to remediate any residual contamination to levels that do not exceed regulatory thresholds for allowable use in the future.

Since the proposed connector track project provides for more efficient flow of rail traffic through this segment of the rail corridor, the potential for rail accidents (which occur rarely) will be reduced relative to the existing situation. BNSF and UPRR's emergency response capabilities will remain the same and the ability to respond to accidents will remain the same after completion of the project as before. Therefore, the net effect of the proposed project is to reduce the potential for accidents relative to the current environmental setting and provide a comparable level of response capability should an accidental release of hazardous or toxic substances occur during future operations.

Construction Impacts

During construction the proposed project has a potential to expose some contaminated soil. However, the known contamination along the proposed alignment can be properly managed to

prevent adverse effects from such exposure to the community and construction employees through the measures described below.

Inherent to the use of hazardous materials during construction, such as diesel fuel and other petroleum products, is the risk of an accidental release. Because of this risk, federal, state and local agencies have established regulations to minimize the likelihood of such occurrences. During construction or maintenance activities in support of the proposed project, fuels, oils, solvents, and other petroleum materials classified as "hazardous" will be used to support these operations.

There are two approaches to managing hazards: (1) minimize the potential release of hazardous or toxic substances into the environment; and (2) if released, have the resources and techniques on hand to respond to an accidental release, including controlling a release, managing any adverse exposure from a release; cleaning up (remediating) a release; and properly disposing of the material contaminated by the release.

No-Build Alternative

No public health or safety impacts would occur at the project site as a result of the No-Build Alternative.

Avoidance, Minimization and/or Mitigation Measures

- BNSF shall implement the Grading Safety Plan prepared for this project as approved by the Department of Toxic Substances Control. The performance standard for this study and remediation effort shall be to protect both humans and the environment from significant exposure to contamination during remediation or construction activities that could harm either people or the environment.
- All contaminated material encountered or exposed within the Richmond connector track segment that exceeds regulatory standards shall be capped as in the present circumstance or identified, collected and delivered to a licensed treatment, disposal or recycling facility that has the appropriate systems to manage the contaminated material.
- BNSF shall identify a qualified professional industrial hygiene firm and have a professional available to monitor all construction and remediation activities within the alignment of the connector track. At the end of construction, a report shall be submitted to the local and state regulatory agencies that summarizes all remediation activities and residual conditions at the completion of connector track installation. This report shall document the findings and basis for determining that there is no residual hazard remaining at the completion of construction.
- All spills or leakage of petroleum products during construction activities will be remediated in compliance with applicable state and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste will be collected and disposed of at an appropriately licensed disposal or treatment facility. Before determining that an area contaminated as a result of an accidental release is fully remediated, specific thresholds of acceptable clean-up shall be established and sufficient samples shall be taken within the contaminated area to verify that these clean-up thresholds have been met.

2.2.4 Air Quality

The following findings and analysis are based on the Air Quality and GHG Impact Analyses, approved in June 2012.

Regulatory Setting

The Federal Clean Air Act (FCAA) as amended in 1990 is the federal law that governs air quality. The California Clean Air Act of 1988 is its companion state law. These laws, and related regulations by the U.S. Environmental Protection Agency (U.S. EPA) and California Air Resources Board, set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and State ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns. The criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM, broken down for regulatory purposes into particles of 10 micrometers or smaller – PM₁₀ and particles of 2.5 micrometers and smaller – PM_{2.5}), lead (Pb), and sulfur dioxide (SO₂). In addition, State standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H₂S), and vinyl chloride. The NAAQS and State standards are set at a level that protects public health with a margin of safety, and are subject to periodic review and revision. Both State and Federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics with their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the NEPA. In addition to this type of environmental analysis, a parallel “Conformity” requirement under the FCAA also applies.

FCAA Section 176(c) prohibits the U.S. Department of Transportation and other Federal agencies from funding, authorizing, or approving plans, programs, or projects that are not first found to conform to State Implementation Plan (SIP) for achieving the goals of Clean Air Act requirements related to the NAAQS. “Transportation Conformity” takes place on two levels: the regional, or planning and programming, level. The proposed project must conform at both levels to be approved. Conformity requirements apply only in nonattainment and “maintenance” (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 CFR 93 govern the conformity process.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the standards set for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and in some areas, sulfur dioxide (SO₂). California has nonattainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO₂, and also has a nonattainment area for lead (Pb). However, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all of the transportation projects planned for a region over a period of at least 20 years for the RTP, and 4 years for the FTIP. RTP and FTIP conformity is based on use of travel demand and air quality models to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that requirements of the Clean Air Act and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA), make determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design

concept, scope, and “open-to-traffic” schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for carbon monoxide (CO) and/or particulate matter (PM₁₀ or PM_{2.5}). A region is “nonattainment” if one or more of the monitoring stations in the region measures violation of the relevant standard and U.S. EPA officially designates the area nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by the U.S. EPA, and are then called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific procedural and documentation standards for projects that require a hot spot analysis. In general, projects must not cause the “hot spot”-related standard to be violated, and must not cause any increase in the number and severity of violations in nonattainment areas. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Affected Environment

The proposed project is located in the Bay Area Air Basin (BAAB). The BAAB encompasses nine counties, including all of Contra Costa County. The Bay Area topography is characterized by complex terrain with coastal mountains, interior valleys and various bays. The major gaps in the Coast Range occur in the Bay Area. The Golden Gate gap facilitates the inflow of marine air. The Carquinez Strait is the opening that allows airflow to leave the Bay Area into the Central Valley. The proposed project is located along the primary outflow from the Bay Area into the Central Valley.

The BAAB’s current attainment status with respect to federal standards is summarized in Table 2.2.4-1. In general, the Bay Area experiences low concentrations of most pollutants when compared to federal standards, except for ozone and particulate matter (PM-10 and PM-2.5), pollutants for which standards are exceeded periodically. The Bay Area’s attainment status for ozone has changed several times over the past decade, first from “nonattainment” to “attainment” in 1995, then back to “unclassified nonattainment” in 1998 for the 1-hour federal ozone standard. In June 2004, the Bay Area was designated as “marginal nonattainment” for the 8-hour ozone standard. In 2008, the U.S. EPA lowered the 8-hour ozone standard from 0.08 part per million (ppm) to 0.075 ppm. Whereas the air basin only marginally exceeded the 0.08 ppm standard, the 0.075 ppm standard is exceeded more frequently.

**Table 2.2.4-1
STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS**

Pollutant	Averaging Time	(State) SAAQS ^a		(Federal) NAAQS ^b	
		Standard	Attainment Status	Standard	Attainment Status
Ozone (O ₃)	1-hour	0.09 ppm	N	NA	See Note (c)
	8-hour	0.07 ppm	N	0.075 ppm	N(d)
Carbon Monoxide (CO)	1 hour	20 ppm	A	35 ppm	A
	8 hour	9.0 ppm	A	9 ppm	A
Nitrogen Dioxide (NO ₂)	1 hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	A	0.053 ppm	A
Sulfur Dioxide (SO ₂)	1 hour	0.25 ppm	A	NA	NA
	24 hour	0.04 ppm	A	0.14 ppm	A
	Annual	NA	NA	0.03 ppm	A
Particulate Matter (PM ₁₀)	24 hour	50 µg/m ³	N	150 µg/m ³	U
	Annual ^e	20 µg/m ³	N	NA	NA
Fine Particulate Matter (PM _{2.5})	24 hour	NA	NA	35 µg/m ³	N
	Annual	12 µg/m ³	N	15 µg/m ³	A
Sulfates	24 hour	25 µg/m ³	A	NA	NA
Lead	30 day	1.5 µg/m ³	A	NA	NA
	Quarter	NA	NA	1.5 µg/m ³	A
Hydrogen Sulfide	1 hour	0.03 ppm	U	NA	NA

Notes: A = Attainment; **N** = Nonattainment; U = Unclassified; NA = Not Applicable or no applicable standard; ppm = parts per million; µg/m³ = micrograms per cubic meter.

- a SAAQS = state ambient air quality standards (California). SAAQS for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.
 - b NAAQS = national ambient air quality standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the three-year average of the fourth highest daily concentration is 0.08 ppm or less. The 24-hour PM₁₀ standard is attained when the three-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour PM_{2.5} standard is attained when the three-year average of 98th percentile is less than the standard.
 - c The national 1-hour ozone standard was revoked by the U.S. EPA on June 15, 2005.
 - d In 2008, U.S. EPA lowered the 8-hour federal standard for ozone to 0.075 ppm. EPA will issue final designations based upon this standard at which point the Bay Area Air Basin is expected to be designated as non-attainment.
 - e State standard = annual geometric mean; national standard = annual arithmetic mean.
- Source: BAAQMD

On June 2, 2010, the U.S. EPA established a new 1-hour SO₂ standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO₂ NAAQS however must continue to be used until one year following U.S. EPA initial designations of the new 1-hour SO₂ NAAQS. EPA expects to designate areas during 2012.

With a marginal non-attainment designation of the federal 8-hour ozone standard, and with attainment of the federal PM-10 standard, no federal attainment planning as part of a State Implementation Plan (SIP) was required over the last several years. EPA lowered the 24-hour PM-2.5 standard from 65 µg/m³ to 35 µg/m³ in 2006. EPA designated the Bay Area as nonattainment of the PM-2.5 standard on October 8, 2009. The effective date of the designation is December 14, 2009 and the Air District has three years to develop a plan, called a State Implementation Plan (SIP) that demonstrates the Bay Area will achieve the revised standard by December 14, 2014. The SIP for the new PM-2.5 standard must be submitted to the U.S. EPA by December 14, 2012.

In September 2005, the BAAQMD, in cooperation with the Metropolitan Transportation Commission and Association of Bay Area Governments, prepared the *Bay Area 2005 Ozone Strategy*. The Ozone Strategy is a roadmap showing how the San Francisco Bay Area will achieve compliance with the state 1-hour ozone standard as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. An update of the 2005 Ozone Strategy was adopted in 2010. The 2010 Clean Air Plan (CAP) has the following objectives:

- Comply with California Clean Air Act requirements
- Develop an integrated plan that addresses multiple pollutants
- Adopt control strategies to minimize public health risk
- Achieve state standards as soon as practical
- Update previously adopted control strategies
- Reduce transport to downwind air basins
- Report on progress and update baseline and trends

The 2010 CAP and associated CEQA documents were adopted in June, 2010. The 2010 CAP is not a SIP document and does not respond to federal requirements for PM-2.5 or ozone planning. However, the CAP control strategies to reduce PM emissions will be mirrored in any mandated federal planning requirements.

Because there is no current SIP for any federal non-attainment pollutants in the BAAB, for purposes of a conformity finding with Section 176(c), it was determined that current compliance with federal clean air standards constitutes that a maintenance plan instead of a SIP is in place. For air basins in which a maintenance plan is valid, the following annual emissions represent a *de minimis* annual emissions threshold for evaluating conformity. If a project's emissions are below the *de minimis* value, then the project is deemed to conform to the SIP and no further analysis of air quality impacts is required.

NOx	-	100 tons/year*
VOC	-	100 tons/year*
CO	-	100 tons/year
PM-10	-	100 tons/year
PM-2.5	-	100 tons/year
Pb	-	25 tons/year

*-50 tons per year if the basin is designated non-attainment for ozone

The proposed project would improve rail efficiency and reduce both train and motor vehicle engine idling over the long term. Operational aspects of the project are air quality positive. The only anticipated source of potentially adverse impact would be during construction. For the

proposed connector track project, construction activity emissions that do not exceed the above annual *de minimis* thresholds would be considered in conformance with Section 176 (c) of the federal Clean Air Act. For purposes of a conservative analysis, the more restrictive level of 50 tons per year for NOx and VOC was used assuming that the BAAB will be designated as federal non-attainment for ozone by the time project construction would occur.

Ozone, PM-10, and PM-2.5 are clearly the "problem" air pollutants in the project area, and in the air basin as a whole. The project area is however, slightly better ventilated than locations farther inland in the San Francisco Bay Area from marine airflow. Ozone levels are lower in comparison to the southern counties in the basin.

If the project-related emissions from construction and operations are less than specified "*de minimis*" levels, no further SIP consistency demonstration is required. The following emissions levels are presumed evidence of SIP conformity presuming that the BAAB will be designated as a non-attainment area for the recently revised 8-hour standard for ozone:

VOC/ROG*	-	50 tons/year
NOx	-	50 tons/year
PM-2.5	-	100 tons/year
PM-10	-	100 tons/year

*VOC/ROG (Volatile Organic Compounds/Reactive Organic Gas)

Environmental Consequences: Build Alternative

The proposed project consists of the installation of a connector track between the existing BNSF track and the UPRR tracks in the northern portion of the City of Richmond. The purpose of this connector track is to allow BNSF intermodal trains serving the Port of Oakland, which currently must wind their way through Richmond, to transfer from the BNSF track to the UPRR tracks, which provide a more direct route to and from the Port (refer to Figures 3a and 3b). The effect of this rail system infrastructure improvement will be to enhance flow of freight (goods movement). It will reduce emissions associated with the longer route through the city on the BNSF tracks and also reduce vehicle emissions and adverse effects on the flow of traffic at approximately fourteen at-grade crossings in Richmond. This project is not forecast to have any effect on future train operations (number of trains) because the actual number of trains is determined by the volume of freight arriving at the Port at any given time and because track capacity is not presently constrained and no overall increase in track capacity will be created by this proposed infrastructure improvement. The effect of the proposed project will be to enhance the overall flow of train traffic through the project area.

Operational Impacts

Vehicle Idle Reduction

Operationally, the proposed connector will allow for more efficient rail operations by reducing idle times for trains on sidings waiting for single tracks to clear. If a portion of BNSF traffic to/from Oakland further shifts to UPRR tracks between Stege Junction and the new connector, a number of Richmond road/rail intersections will experience less delay because almost all BNSF mainline intersections are at-grade while most UPRR intersections south of Chesley Avenue are grade-separated. The comparison between uses of the UPRR versus BNSF mainline in terms of the numbers of at-grade crossings is summarized in Table 2.2.4-2:

**Table 2.2.4-2
LOCAL ROAD AND TRAIN TRACK AT-GRADE CROSSINGS IN RICHMOND**

BNSF	UPRR
Parr Blvd	Parr Blvd
Brookside Dr.	Brookside Dr.
Market St.	Market St.
Chesley Ave.	Chesley Ave.
Richmond Parkway	Cutting Blvd
Ohio Ave	
3 rd St.	
4 th St.	
Cutting Blvd.	
Harbor Way/Wright Ave.*	
Marina Way	
Marina Bay Dr.	
34 th St.	
Regatta Blvd.	

*a track bisected crossing, counted as a single crossing for analysis purposes

Refer to Figure 3a and 3b. Cross-over to the UPRR tracks at the connector eliminates approximately ten at-grade crossings where on-road traffic is delayed for each freight train. Given that freight trains may be as long as one mile and that trains average less than 20 mph, gates often are down for more than 4 minutes. Some of the BNSF at-grade crossings are on low volume streets, but many are on higher volume streets with substantial idling times, such as Cutting Boulevard. Reduction in vehicle idling times from at-grade conflicts is air quality positive. Because freight schedules are variable, it is not possible to accurately quantify any air quality benefit. As an order of magnitude estimate, it was assumed that 2.4 diverted freight trains would reduce daily on-road vehicle idling by 800 minutes (2.4 trains x 10 crossings x 20 vehicles delayed x 2 minute average delay).

The daily emissions benefit from on-road vehicle idling reduction depending upon the vehicle type, delayed is estimated as follows (pounds/day) in Table 2.2.4-3:

**Table 2.2.4-3
DAILY EMISSIONS BENEFIT FROM ON-ROAD VEHICLE IDLING REDUCTION**

Vehicle Type	ROG	CO	NOx	PM-10	PM-2.5
Light duty auto	0.05	0.62	0.04	0.002	0.003
Medium duty vehicle	0.10	1.10	0.14	0.002	0.003
Heavy duty vehicle	0.24	1.69	1.08	0.004	0.004

Source: EMFAC2011 Computer Model

Although the reduction is not a substantial amount, the air pollution emissions reduction benefit is further enhanced by an increase in BNSF freight train travel speed through Richmond, a shorter, more direct route between the proposed connector and Stege Junction on the UPRR mainline rather than the circuitous BNSF tracks through West Richmond, and overall rail freight system efficiency from reduced railroad engine idling times waiting on sidings for the mainline to clear. Some of these efficiencies cannot be quantified with reasonable accuracy. They do attest to the fact that the proposed project is generally air quality positive during operations even if some benefits are not directly quantifiable.

Train Idling Reduction

There are approximately ten freight trains that may experience delay (some UPRR, some BNSF). For purposes of calculations, it was assumed that each freight train was delayed for fifteen minutes each (some longer, some not at all). The daily delay "penalty" because of track conflict is 2.5 hours of train engine idling.

Idling train engines are not substantial polluters. Diesel engines emit mainly CO and NOx whose generation rate depends upon oxidation temperature. At "cool" idle, NOx generation rates are low. The emissions "savings" from a reduction of 2.5 idling hours were calculated using EPA factors for Tier 1 engines and are as follows (lb/day):

CO	0.4
ROG	0.1
NOx	3.1
SOx	<0.1
PM-10	<0.1

These reduced emissions are not necessarily substantial, but any reductions of ozone precursor emissions (NOx and ROG) in a non-attainment airshed are positive.

PM-2.5 and PM-10 Hot Spot Potential

Transportation projects may cause increased levels of particulate emissions at locations where a significant number of diesel vehicles congregate at a single location. A qualitative "hot spot" analysis is required for "projects of air quality concern" (POAQC) located in non-attainment areas if FHWA or Federal Transit Administration funding or approval will occur. The guidelines that characterize a POAQC is a facility that serves 10,000 diesel-fueled trucks (or equivalent) per day. The PM-10 emission factor for heavy duty diesel trucks is approximately 0.05 gram/mile (EMFAC2007). In one mile of travel, 10,000 diesel trucks (the POAQC level) would generate 500 grams of PM-10 emissions per mile.

Line-haul engines average 0.2 grams of PM-10 per brake-horsepower hour (EPA-420-F-09-025, 2009). Four engines running at 500 HP each over a 50 mile stretch would generate 8 grams/mile of PM-10 per train seen as follows:

$$0.2 \text{ g/BHP-HR} \times 500 \text{ HP/engine} \times 4 \text{ engines/50 miles} = 8 \text{ grams/mile}$$

One four-engine train is therefore the PM-10 equivalent emitter of 160 diesel trucks. The proposed project would allow an average of 2.4 freight trains to shift from the BNSF tracks to the UPRR tracks between the new connector and Stege Junction. PM-10 emissions from these 2.4 trains are "new" emissions relative to the existing homes nearest the UPRR tracks. An average of 2.4 trains is the diesel-truck equivalent of 384 trucks per day, or approximately one truck every 4 minutes. The PM-10/PM-2.5 impact is well below the 10,000 truck per day POAQC level.

Actually, overall regional diesel combustion emissions would be slightly reduced by substantial reduction of idling on sidings. PM-10/PM-2.5 emissions will also be reduced from less idling of cars and trucks at approximately ten at-grade crossings along the existing BNSF mainline. The

proposed project is not a POAQC and thus does not require a PM-10/PM-2.5 “hot spot” analysis.

Mobile Source Air Toxics (MSAT)

The control of transportation MSATs at the local, state, and national level has focused on on-road sources. However, any movement of goods or people that requires combustion of fossil fuels generates MSATs (also called hazardous air pollutants, or HAPs) in varying amounts. In response to the Clean Air Act Amendments (CAAA), EPA regulates 188 air toxics. Seven of these compounds are designated as carcinogenic, including acrolein, benzene, 1,3-butadiene, formaldehyde, naphthalene, polycyclic organic matter (POM) and diesel particulate matter (DPM). EPA and the California Air Resources Board (CARB) have long standing programs to reduce MSATs from on-road sources. In 2008, EPA promulgated national rules for locomotives (73 FR 37096, June 30, 2008). Newly manufactured and remanufactured locomotives must meet standards for PM-10, VOC and NOx. The stringency of the standards depends upon the year of original manufacture and ranges from Tier 0 (pre-2001) to Tier 4 (post-2014). For PM-10, for example, a Tier 4 locomotive must be twenty times “cleaner” than a Tier 0 engine. Because these standards are only triggered when engines are replaced or rebuilt, it will take a number of years for these standards to take full effect. However, a dramatic reduction in criteria pollutants and in MSAT’s is projected to occur seen as follows for large line-haul locomotives shown in Table 2.2.4-4:

**Table 2.2.4-4
PROJECTED LOCOMOTIVE EMISSIONS REDUCTIONS (from Year 2012 Baseline)**

Year	PM-10 (1)	VOC (2)	NOx (3)
2012	0.0%	0.0%	0.0%
2014	12.2%	14.1%	6.3%
2016	24.4%	28.2%	16.0%
2018	34.1%	40.8%	25.0%
2020	43.9%	49.3%	31.2%
2025	61.0%	63.4%	48.6%
2030	75.6%	73.2%	63.2%
2035	82.9%	81.2%	74.3%
2040	90.2%	85.9%	80.6%

(1) Including DPM (2) Including gaseous MSATs and smog precursors (3) Smog Precursor
Source: EPA-420-F-09-025 (April, 2009)

The proposed project will create a small reduction in regional MSAT emissions from decreased idling times on sidings, from a reduction in the amount of delay for BNSF at-grade crossings in Richmond, and an increase in travel speed on UPRR tracks for that portion of BNSF freight traffic shifted to UPRR tracks. MSAT emissions in locomotive exhaust will be reduced near the BNSF mainline, but slightly increased along the UPRR tracks.

Increased MSAT emissions along the UPRR tracks were calculated assuming an existing DPM emission rate of 8 grams per mile for freight trains and 2 grams per mile for passenger service. The fractional share of gaseous MSATs was estimated using “speciation factors” for diesel exhaust supplied by the California ARB. If the project is completed and fully operational before 2015, there will be an increase in MSAT exposure along the UPRR tracks compared to existing conditions. By 2015, locomotive emissions reductions will more than compensate for increased freight traffic on the UPRR tracks seen as follows (grams/mile) in Table 2.2.4-5:

**Table 2.2.4-5
LOCOMOTIVE EMISSIONS REDUCTION BY 2015**

MSAT	2012 (a)	2015 (b)	2020 (b)
DPM	160.0	124.0	83.5
Benzene	137.3	106.4	71.0
1,3-Butadiene	25.8	20.0	13.5
Acrolein	3.2	2.5	1.7
Formaldehyde	54.2	42.0	28.3

(a)=10 freight and 40 passenger trains on UPRR tracks

(b)=12.4 freight and 40 passenger trains on UPRR tracks

Source: Speciation data from "Colton Grade Crossing Separation Air Quality Analysis" LSA Associates, 2010

There is no universally accepted methodology that can accurately translate any increase in MSAT exposure into a corresponding public health risk. The generally adopted public health risk guideline for MSAT exposure is an individual lifetime excess cancer risk of 10 in one million (compared to 300,000 in a million from all cancer occurrences). MSAT inhalation risk is estimated by assuming a person remains at one specific outdoor location for 24 hours per day for 350 days per year for 70 years, including the first three months of this exposure *in utero*. The dispersion calculation that converts source emissions into receptor exposure is equally imprecise as are the published cancer potency factors that convert exposure to risk.

Because of multiple limitations in the methodologies for forecasting health impacts for the with-versus no-project alternatives, a health risk assessment (HRA) was not conducted for the proposed action. It should be noted that in a regional sense, a number of small emissions benefits will actually reduce MSAT emissions for the with-project alternative. Given the mobility of the Bay Area population on both a daily and lifetime basis, the cumulative benefit of this project is presumed to off-set any localized impact.

Microscale CO Hot-Spot Analysis

Transportation projects are required to demonstrate that they will not create new CO "hot spots" or worsen existing violations. Analysis guidance documents are focused almost exclusively on roadway CO emissions. The proposed project will not increase on-road congestion, and may reduce vehicular delays at locations where idling or slow-moving trains currently block on-road traffic. Although the proposed action is not a roadway project, a standard CO impact analysis has been developed and used for well over a decade. The CO analysis flowchart was applied to the proposed connector project. The use of the flowchart demonstrates that no detailed CO modeling analysis is required as follows:

CO Protocol Flowchart

3.1.1 Is this project exempt from all emissions analysis?

Response: No

3.1.2 Is this project exempt from regional emissions analysis?

Response: No

3.1.3 Is this project locally defined as regionally significant?

Response: No, regionally significant projects are major roadways or fixed track transit guideways. The proposed cross-over track is not a roadway and is not designed for passenger service.

3.1.9 Examine Local Impacts

Level 1: Is the project in a CO non-attainment area?

NO

Level 1: Was the area redesignated as “attainment” after the 1990 Clean Air Act?

YES

Level 1: Has “continuous attainment” been verified by the local Air District?

YES, Proceed to Level 7

Level 7: Does the project worsen air quality?

NO, the project will reduce on-road vehicular delay at existing at-grade crossings, improve BNSF freight train travel speeds and shorten the cross-Richmond train travel distance.

Project satisfactory, no further analysis required.

Naturally Occurring Asbestos

Naturally occurring asbestos (NOA) is a concern in some parts of California where serpentine rock formations contain high fractions of asbestos-containing materials. However, that concern revolves around the subsequent abrasion and release of such material from roadway paving with NOA aggregates. There is negligible re-suspension of such material from a railroad track bed because there is no mechanical wearing process. Even if the track bed ballast rock contained elevated levels of NOA, there is no mechanism to affect an airborne release.

Regional Conformity

The Richmond Rail Connector project was included in the regional emissions analysis conducted by the Metropolitan Transportation Commission for the Regional Transportation Plan (RTP). The current RTP, which is called the Transportation 2035 Plan, was found to conform to applicable federal air quality standards and implementation plans (Resolution 3976, October 27, 2010). The project’s design concept and scope have not changed from what was analyzed in the Transportation 2035 Plan. This analysis found that the plan and, therefore, the individual projects in the plan, are in conformity with the State Implementation Plan (SIP) to achieve National Ambient Air Quality Standards.

The Richmond Rail Connector project is also included in the federal 2011 Transportation Improvement Program (TIP), (TIP ID CC-090032). The project has no designated funding in the 4-year TIP period (2010-2014), but was considered as part of the conformity determination of the 2011 TIP. The project is included in the current RTP, Transportation 2035, as RTP Number 22089. FHWA and the Federal Transit Administration found the RTP and TIP to conform to the SIP on December 14, 2010.

A proposed 2011 TIP Amendment to reprogram existing funds to include the proposed project has been found by MTC staff to not trigger a new air quality conformity determination given that it was already in the conforming 2011 TIP.

Cumulative Impacts

The proposed connection track may promote an increase in freight and passenger movement by improved rail schedule reliability. However, transport by rail is considered more pollution-efficient than on-road movement. Cargo movement by rail yields an average fuel efficiency of 400 net ton-miles per gallon of fuel (American Railroad Association, 2004). An on-road truck hauling 25 tons of cargo at 5 miles per gallon has a cargo efficiency of 125 net ton-miles per gallon. Rail would generally not induce growth of goods/passenger movement, but only accommodate an existing possible demand. Cumulative air quality impacts are considered incrementally positive within a regional context.

Construction Impacts

During project construction, it is anticipated that the BAAB will be in non-attainment for federal clean air standards for ozone and for particulate matter.

Air pollution emissions during construction were calculated using the URBEMIS2007 computer model. The following prototype construction equipment fleet was assumed as shown in Table 2.2.4-6:

**Table 2.2.4-6
TYPICAL CONSTRUCTION EQUIPMENT**

Track-bed Preparation	1 Grader
	3 Compactors
	1 Dozer
	1 Roller
	1 Backhoe
	1 Water Truck
Bridge Construction and Utilities Installation	2 Concrete Saws
	1 Grader
	2 Signal Boards
	2 Backhoes
	1 Crane
	1 Trencher
Turn Out Pad	4 Cement Mixers
	1 Paver
	1 Paving Equipment
	1 Roller
	1 Backhoe
Track/Signal Installation	1 Crane
	1 Forklift
	1 Generator
	2 Welders

Although bridge construction may occur concurrently with roadbed preparation, the two activities were split to facilitate abstraction of the emissions data. The track installation activity for this project relies on train haul delivery of materials. Utilizing the above equipment fleet the following emissions in Table 2.2.4-7 were calculated by the URBEMIS2007 computer model:

**Table 2.2.4-7
DAILY OFF-ROAD CONSTRUCTION EQUIPMENT EMISSIONS (lbs/day)**

Activity	ROG	NOx	CO	SO ₂	PM-10 Exhaust	PM-2.5 Exhaust	CO ₂
Track-bed Preparation (4.5 months)							
No Minimization	3.3	25.7	15.8	0.0	1.4	1.3	2,794.5
With Minimization	3.3	19.6	15.8	0.0	0.2	1.1	-
Bridge Construction and Utilities Installation (7 months)							
No Minimization	2.6	19.4	12.4	0.0	1.1	1.0	2,246.8
With Minimization	2.6	14.3	12.4	0.0	0.2	0.2	-
Turn Out Pad Construction (30 days)							
No Minimization	2.6	14.8	11.1	0.0	1.3	1.2	1,543.9
With Minimization	2.6	14.8	11.1	0.0	1.3	1.2	-
Track/Signal Installation (4 months)							
No Minimization	1.9	8.7	6.5	0.0	0.6	0.5	1,017.5
With Minimization	1.9	7.4	6.5	0.0	0.4	0.4	-

Truck delivery and commuting for construction crews were calculated separately using the EMFAC2007 computer model and later added to the off-road emissions burden. The following on-road mileage listed in Table 2.2.4-8 and Table 2.2.4-9 was utilized:

**Table 2.2.4-8
ON-ROAD COMMUTING**

Phase	# Employees	RT Distance	Miles per Day
Track-bed Preparation	50	50 miles	2,500
Bridge Construction	75	50 miles	3,750
Turn Out Pad	15	50 miles	750
Track/Signal Installation	50	50 miles	2,500

**Table 2.2.4-9
DAILY DELIVERY TRUCK TRIPS**

Phase	#Truck Trips	RT Distance	Miles per Day	Duration
Track-bed Preparation (Fill Import)	62	20 miles	1,240	10 days
Track-bed Preparation (Deliveries)	26	20 miles	520	10 days
Bridge Construction	10	20 miles	200	130 days
Turn Out Pad	54	20 miles	1,080	5 days
Track/Signal Installation	0	-	-	-

Utilizing EMFAC2007, the following emissions in Table 2.2.4-10 and Table 2.2.4-11 were calculated by activity (pounds/day):

**Table 2.2.4-10
CAR AND LIGHT TRUCK
ON-ROAD EMISSIONS FROM CREW COMMUTING (pounds/day)**

Activity	ROG	NOx	CO	PM-10	PM-2.5	CO ₂
Track-bed Preparation	0.3	1.2	12.6	2.8	2.5	1860.3
Bridge Construction	0.5	1.7	18.7	4.1	3.7	2753.3
Turn Out Pad	0.1	0.3	3.8	0.8	0.8	558.1
Track/Signal Installation	0.3	1.2	12.6	2.8	2.5	1860.3

**Table 2.2.4-11
HEAVY DUTY TRUCK
ON-ROAD EMISSIONS FROM TRUCK DELIVERY TRIPS (pounds/day)**

Activity	ROG	NOx	CO	PM-10	PM-2.5	CO ₂
Track-bed Preparation (Import)	1.1	20.1	9.7	0.6	0.6	3985.5
Track-bed Preparation (Deliveries)	0.5	8.4	4.1	0.3	0.2	388.8
Bridge Construction	0.2	3.3	1.6	0.1	0.1	644.4
Turn Out Pad	1.0	17.5	8.5	0.6	0.5	3471.5

The combined maximum total emissions from mitigated construction equipment emissions (URBEMIS2007), truck activity (EMFAC2007) and commuter activity (EMFAC2007) totaled for each phase as follows in Table 2.2.4-12 with application of specified minimization measures:

**Table 2.2.4-12
CONSTRUCTION, TRUCK HAUL AND EMPLOYEE COMMUTING MAXIMUM (pounds/day)**

Activity	ROG	NOx	CO	PM-10	PM-2.5	CO ₂
Track-bed Preparation	5.2	49.3	42.2	3.9	4.4	9,029.2
Bridge Construction	3.3	19.3	32.7	4.4	4.0	5,644.5
Turn Out Pad	3.7	32.6	23.3	2.7	2.5	5,573.5
Track/Signal Installation**	2.2	8.6	19.1	3.2	2.9	2,877.8

assumes simultaneous delivery of roadbed materials and construction figures represent maximal day when deliveries and construction both occur for indicated activity
** not including emissions from track-laying train

Rail support during track-laying would consist of maneuvering the train into place and then using the on-board crane to place the concrete ties and continuously welded steel 30 minutes per day at 1,000 HP power output, and deposit materials for 7.5 hours at 100 HP average power. Although track-laying sometimes can sometimes proceed at one mile per day, one week was assumed required for this phase. The calculated emissions for the on-track source, assuming a Tier 2-rated locomotive engine, are shown in Table 2.2.4-13:

**Table 2.2.4-13
ON-TRACK SOURCE EMISSIONS**

Rail Support Emissions	ROG	NOx	CO	PM-10	PM-2.5
Daily (lb/day)	0.7	13.8	3.5	0.5	0.4
Annual (tons)	<0.1	<0.1	<0.1	<0.1	<0.1

Since there are no currently applicable CEQA significance thresholds for construction, emissions were annualized for comparison to the Section 176 (c) *de minimis* levels in the Clean Air Act implementation guidelines.

NEPA Analysis

The project, within the NEPA definition of intensity and context, represents a short-term impact in order to achieve a long-term air quality benefit. Its limited intensity is seen in comparing the total project emissions to the Section 176 (c) SIP conformity *de minimis* guidelines. All emissions would be well below the applicable non-attainment area guideline.

The following emissions in Table 2.2.4-14 were calculated by multiplying the daily emissions times the following time spans:

**Table 2.2.4-14
ANNUAL EMISSIONS (tons/year)**

Activity	ROG	NOx	CO	SO ₂	PM-10	PM-2.5	CO ₂
Track-bed Preparation (4.5 months)							
	0.19	1.17	1.48	<1	0.19	0.18	252.29
Bridge Construction and Utilities Installation (7 months)							
	0.25	1.48	2.52	<1	0.34	0.31	434.63
Turn-Out Pad (30 days)							
	0.06	0.51	0.36	<1	0.04	0.04	84.59
Track/Signal Installation (4 months)							
	0.05	0.49	0.35	<1	0.04	0.04	83.60
Total *	0.55	3.65	4.71	0	0.61	0.57	855.11
De Minimis Levels							
	50	50	-	-	100	100	-

*unlikely that all projects would occur in same year but worst case scenario

All annual project-related construction emissions, assuming all activities occur within the same calendar year, are well below the *de minimis* thresholds. Because operational air pollution emissions will be slightly reduced through project implementation from existing conditions, annual construction activity emissions equal maximum project total emissions. Since annual total emissions are below *de minimis* levels, no SIP consistency analysis is required.

No Build Alternative

The No-Build Alternative would result in continuation of the existing pattern of trains forced onto sidings or only slower segments of track because of track demand conflicts. Such a pattern delays train schedules, creates safety issues as trains change speeds where they enter or exit the mainline, blocks surface streets, emits excess air pollutants from idling engines and creates noise impacts at idling engine locations.

Avoidance, Minimization and/or Mitigation Measures

Project construction requires implementation of the following dust control measures to minimize air quality impacts during construction:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off site shall be covered.

- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- Vehicle speeds on unpaved areas shall be limited to 15 miles per hour.

2.2.5 Noise

The following findings and analysis are based on the “Noise and Vibration Impact Analysis,” approved in July 2012.

Regulatory Setting

NEPA provides a broad basis for analyzing and addressing noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of projects.

FTA Guidelines

The Federal Transit Administration (FTA) has developed guidelines for noise/vibration impact assessments from heavy rail projects. In the absence of definitive guidance for general rail projects, the FTA's Transit Noise and Vibration Impact Assessment (May 2006) has been presumed applicable to the proposed project. Although the guidance is not specifically oriented to freight rail projects, the criteria are based on research about community response to noise and have been used to assess potential impacts for a number of rail projects.

Operational Noise: FTA guidelines define three classes of land uses where noise exposure should be evaluated. These are shown in Table 2.2.5-1 below along with the applicable noise metric for each category.

**Table 2.2.5-1
FTA LAND USE CATEGORIES AND NOISE METRICS**

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor Leq(h) ^(a)	A tract of land where quiet is an essential element of their intended purpose. This category includes lands set aside for serenity and quiet and such land uses as outdoor amphitheaters and concert pavilions, as well as national historic landmarks with significant outdoor use. Also included are recording studios and concert halls.
2	Outdoor Ldn ^(b)	Residences and buildings in which people sleep. This category includes homes, hospitals, and hotels, where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor Leq(h) ^(a)	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.

(a) Leq(h) = one-hour average (equivalent) sound level

(b) Ldn = day-night average noise level

The FTA Guidebook characterizes potential noise impacts as having no impact, moderate impact or severe impact. The severity with a proposed rail action depends on the existing noise exposure. In an existing very quiet environment, an increase of 10 decibels (dBA) or more would be considered a moderate impact and increases over 15 dB would be considered severe. As baseline levels increase, the project increment that would trigger a moderate or severe finding becomes progressively smaller.

Construction Noise: FTA Construction Noise Assessment Guidelines state that an appropriate impact threshold for construction noise is a 30-day average Ldn of 75 dBA or the ambient noise plus 10 decibels, whichever is greater.

Affected Environment

A “Noise and Vibration Impact Analysis” (June 21, 2012) was prepared to assess possible noise and vibration impacts from the project.

The study area for impacts includes the current alignment for BNSF intermodal trains, as well as the proposed alignment. The project alignment includes Category 1 and 2 uses, as defined in Table 2.2.5.1, within its potential noise impact corridor of 375 feet. The primary sources of noise in the project area include traffic on major roadways and highways, railroad operations, airports, industrial activities, and the Camp Parks Reserve Forces Training Area near San Ramon.

Roadways in the project area include Richmond Parkway, Giant Road, and Parr Boulevard. According to the City of Richmond General Plan, Richmond Parkway is and will continue to be a predominant source of noise within the project area. According to the County’s 2005 Noise Contour Maps for the project area, the 24-hour average noise level (DNL) along Richmond Parkway was measured at between 60 to 70 DNL in 2005. The County’s General Plan indicates that future development noise levels along Richmond Parkway will be approximately 72 DNL at 100 feet when the County reaches full development. Richmond Parkway and traffic on both Parr Boulevard and Giant Road provide some of the overall background noise experienced within the project area.

Railroads

Railroad operations in Contra Costa County consist of high speed mainline operations on the BNSF railway line and on the UPRR railway line. In addition, the Bay Area Rapid Transit (BART) System, an electrically driven passenger line, operates throughout the county; however, the BART system does not produce substantial noise levels.

Noise levels from railroad operations within the project area were identified in the Contra Costa County General Plan and the City of Richmond General Plan.

Railroad Operations

The proposed construction of an at-grade connection railroad track will allow a portion of BNSF intermodal freight train traffic to shift to a UPRR line. This shift will reduce the frequency of intermodal train traffic passing through a number of at-grade intersections on the BNSF mainline through the City of Richmond. All UPRR (roadway intersections between North Richmond and Stege Junction through Richmond) except for one are grade-separated (at Cutting Blvd.). Between Stege Junction and the Port of Oakland, the tracks are owned by UPRR with BNSF having track rights.

BNSF averages 18 trains (nine each direction) per day through North Richmond. It is currently estimated that approximately one-half of current BNSF freight activity would shift to the UPRR

track and thus avoid fourteen at-grade intersections in Richmond. This action could, however, increase noise levels at sensitive receivers, such as homes, located near the UPRR tracks. Such noise increase could result both from moving trains (locomotives and freight cars) as well as from train horns sounded near at-grade crossings. Because the UPRR tracks already carry approximately 50 trains per day, the addition of 2.4 shifted trains will not increase single event noise, but will increase the daily number of such activities.

Existing Noise Levels

The current railroad noise model supported by federal agencies is the “CREATE” model (HMMH, 2006). The model is a spreadsheet model that can accommodate eleven types of moving sources, eight types of stationary sources (cross-over’s, storage yards, and transit centers), and four types of track conditions (joints, wheel flats, etc.) at any noise-sensitive receivers. The model contains reference noise data for every type of source along with adjustment factors for size, speed, duration or intervening barriers. This model was used to calculate existing train noise along the UPRR tracks and then run again for the added contribution from diverted BNSF freight trains.

Railroad activity levels (train speeds, number of engines/cars, horn use locations, etc.) were provided by UPRR and/or BNSF. Sometimes these inputs can vary substantially from one day to another or from one engineer to another. A series of noise measurements were therefore conducted at three residences along the UPRR tracks whose noise environment may be impacted by the increased freight train traffic. The purpose of these measurements was to establish a real-world baseline noise level for comparison with model predictions.

Measurements were made at three locations in the Shields-Reid neighborhood of Richmond that would be potentially impacted by the project. These receivers were selected because they might be affected by both train movement and horn noise. Chesley Avenue is the only crossing along the UPRR tracks that is non-grade separated and has adjacent residences. Monitoring was conducted near the Chesley Mutual Housing complex and at the eastern dead ends of Alamo Avenue and Duboce Avenue with the UPRR tracks. Monitoring was conducted for 24+ hours on April 16-17, 2012. The results (hourly averages and instantaneous peaks) are shown in Table 2.2.5-2. Evidence of train activity was assumed manifested in peak noise levels over 80 dB at the Alamo Avenue monitor. The data suggest that the existing UPRR tracks had some level of activity on 22 of 24 hours. The hours of 11-12 p.m. and 01-02 a.m. appeared to be the only hours without any track usage.

Inspection of the duration of each noise “pulse” is an indication of whether it was a long freight train or a short commuter rail. A few of the short pulses may be due to contamination from perhaps a dog barking, helicopter over flight or residential activity at the last house before the railroad tracks. The Alamo Avenue meter recorded 14 extended events and 54 short excursions above the normally quiet background. Of the 14 longest events, in 24-hours, nine would appear to have been freight movement by longer trains and five by either short freights or longer passenger trains such as Amtrak.

As noted below in Table 2.2.5-2, measured noise levels were somewhat lower than those predicted by the currently accepted railroad noise model. This may be due to a combination of factors. Freight trains may be shorter, require fewer engines, travel slower on this segment than maximum speed, and shielding by the industrial building north of Chesley Avenue may reduce some noise by shielding it. The difference between model and measurement results was used as a calibration factor to improve the analysis accuracy.

Table 2.2.5-2
SHIELDS-REID NEIGHBORHOOD NOISE MONITORING
(Leq/Lmax, in dBA)
April 16-17, 2012

Time	Chesley Ave.	Alamo Ave.	Duboce Ave.
18:00-19:00	72/93	70/87	62/81
19:00-20:00	69/92	69/89	63/84
20:00-21:00	71/93	68/90	63/80
21:00-22:00	71/93	71/93	70/92
22:00-23:00	68/93	64/88	62/81
23:00-24:00	56/74	45/57	53/56
0:00-1:00	64/87	66/93	60/76
1:00-2:00	56/83	50/71	54/67
2:00-3:00	64/86	66/90	59/84
3:00-4:00	68/92	67/88	59/81
4:00-5:00	59/83	59/87	54/74
5:00-6:00	63/84	60/84	56/81
6:00-7:00	68/85	69/93	57/78
7:00-8:00	70/93	71/90	65/90
8:00-9:00	68/89	71/89	62/84
9:00-10:00	75/93	73/96	64/90
10:00-11:00	72/93	65/87	63/91
11:00-12:00	69/89	66/91	58/77
12:00-13:00	75/93	65/91	59/85
13:00-14:00	73/96	69/89	63/83
14:00-15:00	71/95	72/90	58/78
15:00-16:00	69/92	70/93	59/83
16:00-17:00	70/93	67/94	52/77
17:00-18:00	67/86	66/85	58/76
Peak Hour Leq	75	73	70
Ldn	73	72	66
Distance	60 feet	70 feet	300 feet

Train Horns

Use of train horns is required near at-grade crossings as a safety measure except with very limited exceptions. Train horn noise is a special condition that is not included in the CREATE model because it is a localized effect affecting only limited numbers of receivers near the crossing. Horns can, however, create noise levels exceeding the moving train contribution in close proximity to the crossing. The Federal Railroad Administration (FRA) has supported the development of an At-Grade Crossing Noise Model whose results can be superimposed upon the CREATE output to generate a composite impact. The FRA model is based upon an assumed 104 dB maximum horn noise level at 100 feet, and adjusts that reference level for location, duration, surface conditions and possible shielding.

Environmental Consequences: Build Alternative

The proposed connector track project will generate two sources of noise along its alignment: temporary construction activity noise and continued railroad operation noise. No increase in railway service is forecast to occur as a result of project implementation. Any operational noise impacts would derive from the new track alignment, from possible speed increases associated with reduced delay at existing sidings, and from possible future rail traffic growth.

Short-Term Impacts

Noise from construction activities would be generated by two primary sources during the construction phase: the on-road transport of construction materials and workers driving to work, and the off-road construction itself. Since transportation of personnel and materials will occur on already traveled roadways, background noise conditions will mask any project on-road contributions. Some heavy materials delivery for track improvements is proposed to be via trains such that on-road truck noise will be limited to delivery of fill material and support construction materials.

Construction activities occur in various steps, each of which involves different types of equipment and a distinct noise characteristic. These steps would alter the character of the noise levels surrounding the construction sites as the project is developed

FTA construction noise assessment guidelines recommend that 8-hour Leq levels should not exceed 80 dB (Page 12-8) in residential areas. The industrial land use standard is 90 dB. Noise levels from equipment uses for rail construction are typically slightly above 80 dB at 50 feet from the source. Table 2.2.5-3 abstracted from the FTA guidelines (Table 12-1) lists the following reference noise levels at 50 feet:

**Table 2.2.5-3
EQUIPMENT NOISE REFERENCE LEVELS AT 50 FEET**

Backhoe	80 dB
Ballast Equalizer	82 dB
Ballast Tamper	83 dB
Compactor	82 dB
Mobile Crane	83 dB
Spike Driver	77 dB
Tie Handler	80 dB

If several pieces of equipment operate in close proximity, a reference level of 85 dB at 50 feet is a representative input analysis threshold. The short-term reference level is reduced by intermittent usage, by distance spreading and by any intervening ground effects in determining the 8-hour Leq. Distance spreading alone between track construction and the closest home will be -6 dB. Worst case construction noise will be less than the 80 dB 8-hour Leq impact criterion at the nearest residence. The industrial impact criterion of 90 dB Leq is met at less than 25 feet from the activity. No construction activity noise impacts are associated with the proposed project.

Construction Vibration

The primary concern from construction vibration is typically related to structural damage effects. Track laying does not entail use of heavy equipment that has a potential for any perceptible structural impacts. The accepted construction vibration damage criterion for walls, stucco, or slabs is 0.2 inches/sec (peak particle velocity, or PPV). A loaded truck has a typical PPV of 0.08 inch/second at 25 feet. The damage criterion is met by 14 feet from the source. Construction trucks or similar equipment will not operate within 14 feet of any off-site homes. There will be no vibration impacts from project construction.

Long-Term Impacts

Train Traffic Input Data

Train activity information was obtained from UPRR for their existing trackage. A daily average of 2.4 BNSF freight trains was assumed to be potentially diverted. The various input parameters required for the CREATE and train horn models were as follows for an analysis reference distance of 50 feet from the equivalent source-receiver location:

UPRR Existing

10 freight trains (6 day, 4 night) [50 mph, 4 locomotives, 5,000 feet of cars]

40 passenger trains (30 day, 10 night) [50 mph, 1 locomotive, 5 cars]

BNSF Added by Proposed Project

2.4 freight trains (1.5 day, 0.9 night) [50 mph, 4 locomotives, 5,000 feet of cars]

No wheel flats, no jointed track (CWR), no embedded track, no aerial structures, no barriers, no intervening homes.

Levels of Noise Impact

The Federal Transit Administration has published a comprehensive guidebook on Transit Noise and Vibration (FTA-VA-90-1003-06) updated in May, 2006. The guidebook defines three classes of land use that may be noise sensitive as follows:

Category 1 – Outdoor amphitheaters, national landmarks, etc.

Category 2 – Residences, hospitals/rest homes, hotels

Category 3 – Schools, libraries, theaters, churches

The UPRR trackage to which some BNSF traffic may be diverted only includes Category 2 noise sensitive uses along some segments. The noise metric that best identifies the level of noise sensitivity for Category 2 uses is the day-night level (Ldn). Figure 3-2 of the FTA guidebook characterizes potential noise impacts as having no impact, moderate impact or severe impact. The severity of the difference associated with a proposed rail action depends upon the existing noise exposure. In an existing very quiet environment, an increase of +10 dB or more would be considered a moderate impact and increases over 15 dB would be considered severe. As baseline levels increase, the project increment that would trigger a moderate or severe finding becomes progressively smaller. The distribution of impact severity is shown as follows in Table 2.2.5-4 as a function of the cumulative project contribution to the baseline (dB Ldn):

**Table 2.2.5-4
PROJECT ONLY CONTRIBUTION TO NOISE BASELINE LEVEL**

Project Only Contribution to Noise Baseline Level	Project Only Contribution (dB)		
	No Impact	Moderate Impact	Severe Impact
40 dB	<50	<55	>55
50 dB	<54	54-59	>59
60 dB	<58	58-63	>63
65 dB	<61	61-66	>66
70 dB	<65	65-69	>69
75 dB	<66	66-73	>73
>77 dB	<66	66-75	>75

Source: FTA Guidebook, Table 3-1, 2006

Results

The CREATE and the train horn noise models were run for those homes closest to the Chesley Avenue/UPRR Crossing. The model output is attached. At 60 feet from the track centerline (the closest homes), the following day-night (Ldn) noise levels are calculated in Table 2.2.5-5 using the FRA train noise models from the train activity scenarios shown above (dB):

**Table 2.2.5-5
DAY-NIGHT (LDN) NOISE LEVELS AT 60 FEET FROM TRACK CENTERLINE**

Scenario	No Horns	Horns Only	Moving + Horns
Existing UPRR Freight	74	73	77
Existing UPRR Passengers	65	75	75
Combined Existing Total	75	77	79
BNSF Only	68	70	72
Combined UPRR + BNSF	75	78	80

Based solely on the modeling results, the addition of 68 dB Ldn from added BNSF trains (without horns) to a calculated 75 dB Ldn UPRR baseline is considered a “moderate impact.” At the one UPRR location where warning horns are used near residential uses (Chesley Avenue at-grade crossing), the BNSF contribution is calculated by the computer models to add 72 dB Ldn to a 79 dB Ldn baseline. This is again considered to be a “moderate impact.”

However, the measured existing noise levels were considerably lower than the model predictions. The model predicts that existing UPRR noise levels from moving trains and crossing horns should be 79 dB Ldn at 60 feet from the track centerline. If the calculated reference noise level of 79 dB Ldn is adjusted for distance from the track, the comparison of modeling and measurement is presented in Table 2.2.5-6:

**Table 2.2.5-6
COMPARISON OF MODELED NOISE LEVEL WITH MEASURED NOISE LEVEL**

Parameter	Chesley	Alamo	Duboce
Distance to track	60 feet	70 feet	300 feet
Measured 24-hour Ldn	73 dB	72 dB	66 dB
Modeled@receiver set-back*	79 dB	78 dB	72 dB
Model - measurement	-6 dB	-6 dB	-6 dB

*=dB Ldn for an acoustically “hard” surface

The difference between model and measurement was 6 dB at each monitoring location. If the entire model output is shifted by the measured calibration factor of -6 dB, the results near the Chesley Avenue crossing would be as follows (dB Ldn):

Existing UPRR Freight	(77 dB - 6 dB adj. = 71 dB)
Existing UPRR Passenger Service	(75 dB – 6 dB adj. = 69 dB)
Combined Level at 50 feet	(71 dB + 6 dB adj. = 73 dB)
BNSF Freight only	(72 dB - 6 dB adj. = 66 dB)
Combined UPRR + BNSF	(73 dB + 6 dB adj. = 74 dB)

For a baseline level near 73 dB Ldn for the existing trains (see above), an adjusted project only contribution of 66 dB Ldn is considered a moderate impact. With the use of train horns, even the minor addition of 2.4 trains per day generates a moderate noise impact. At all other UPRR track locations where horns are not used near residential development, the baseline level would be 69 dB Ldn near the tracks if the same - 6 dB off-set were applicable. The adjusted BNSF contribution of 62 dB Ldn (68 dB calculated –6 dB off-set) constitutes a “no impact” situation. Any consideration of possible moderate impact reduction would thus only center on the residential uses near the Chesley Avenue UPRR crossing. Any requirement to mitigate or minimize impacts at the Chesley Avenue UPRR crossing is evaluated below under the Avoidance, Minimization and Mitigation discussion.

Vibration Impact Assessment

The Noise Study included an evaluation of potential vibration impacts. Vibration caused by trains is the result of wheels rolling on the rails. This energy is then transmitted through the track support system into the ballast through the ground to the foundations of nearby buildings, and finally throughout the remainder of the building structure. The level of vibration received at the building is a function of the type of trains, their speeds, track system, structure, support and condition, distance from the tracks, geological condition, and the receiving structure. Ground-borne vibration does not typically annoy people who are outdoors.

The motion due to ground-borne vibration is described in vibration velocity levels, measured in decibels referenced to 1 micro-inch per second. To avoid confusion with the decibel used to describe sound levels, the abbreviation VdB is used. Typical ground-borne vibration levels are presented in Table 2.2.5-7:

**Table 2.2.5-7
TYPICAL GROUND-BORNE VIBRATION LEVELS**

RMS Vibration Velocity	Human or Structural Response
65 VdB	Threshold of human perception
70 VdB	Perceptible to most people
75 VdB	Generally acceptable for residential use
80 VdB	Annoying to people for frequent events
90 VdB	Difficulty with motion-sensitive tasks
95 VdB	Cosmetic damage to older structures
100 VdB	Cracks in walls and Foundations

The FTA has published the most recent guidance manual for the assessment of noise and vibration impacts in transportation projects, Transit Noise and Vibration Impact Assessment, May, 2006. It was assumed that land uses near FRA rail projects would similarly experience the same level of vibration sensitivity as FTA transit projects.

Impacts are determined by estimating future ground-borne vibration levels and comparing those levels to the criteria shown in Table 2.2.5-8:

**Table 2.2.5-8
GROUND-BORNE VIBRATION IMPACT LEVELS**

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

- (1) "Frequent Events" is defined as more than 70 vibration events per day
- (2) "Occasional Events" is defined as between 30 to 70 events per day
- (3) "Infrequent Events" is defined as fewer than 8 vibration events per day

The UPRR tracks currently carry 10 freight trains and 40 passenger trains. The addition of 2.4 diverted BNSF trains would create 60 vibration events (50 existing and 10 added). The post-project condition would continue to be considered "occasional events." The applicable vibration impact criterion for homes adjacent to the existing UPRR tracks is therefore 75 VdB.

Vibration assessment requires detailed knowledge of train speeds, train weights, suspension system stiffness, track structure, sub-surface propagation characteristics, receiver location, and receiver structural features. Along the length of the UPRR tracks from the proposed connector to Stege Junction, many of these parameters are variable. Therefore, the following analysis focuses on representative locations.

The FTA guideline shows the following generalized RMS vibration level in Table 2.2.5-9 as a function of distance from a locomotive powered passenger or freight train traveling at 50 mph:

**Table 2.2.5-9
VIBRATION LEVEL**

Distance to Track Centerline	RMS Vibration Level (Re: 1 microinch/sec)
14'	95 VdB
25'	90 VdB
45'	85 VdB
80'	80 Vdb
140'	75 VdB
250'	70 Vdb

The threshold for cosmetic damage of 95 VdB is reached at 14 feet. Any possible impact would therefore be associated with vibration nuisance and not structural damage. Representative set-backs from the tracks of closest homes along the UPRR tracks may vary from near 50 feet to more than 300 feet. Their vibration level during freight train passage varies accordingly. The

closest homes along the alignment along with the likely vibration level during freight train passage, is shown in Table 2.2.5-10:

**Table 2.2.5-10
VIBRATION LEVEL DURING FREIGHT TRAIN PASSAGE AT CLOSEST HOMES**

Roadway	Set-Back	VdB	Roadway	Set-Back	VdB
Chesley	83 ft	80	Gertrude	124 ft	76
Alamo	185 ft	73	Duboce	327 ft	68
Triangle Ct.	62 ft	82	Lincoln Ave.	90 ft	79
Last Ave.	180 ft	73	Portola	240 ft	70
13 th St.	55 ft	83	Roosevelt Ave.	250 ft	70
Village Way	75 ft	80	Livingston	72 ft	81
Espee Ave	80 ft	80	22 nd St.	117 ft	77
Carlson Blvd.	144 ft	75	S 25 th St.	100 ft	78
S 29 th St.	105 ft	78	Stege Ave.	230 ft	71

Based upon the above vibration significance criterion of 75 VdB, homes within 140 feet of the tracks may experience perceptible vibration, but not at any level of possible structural effects. However, the FTA guidelines state that if impact criteria for existing conditions are already exceeded, receivers are considered to experience additional vibration impact "...if the project significantly increases the number of vibration events. Approximately doubling the number of events is required for a significant increase." (Page 8-5, Section 8.1.2, FTA, 2006).

The number of vibration events perceptible at the closest tier of homes would increase from 50 to 52 or 53 per day from BNSF cross-over traffic. As noted above, this is not considered a significant increase per FTA definition of "significant." No vibration reduction measures are considered necessary.

Construction Vibration

The primary concern from construction vibration is typically related to structural damage effects. Track laying does not entail use of heavy equipment that has a potential for any perceptible structural impacts. The accepted construction vibration damage criterion for walls, stucco, or slabs is 0.2 inches/sec (peak particle velocity, or PPV). A loaded truck has a typical PPV of 0.08 inch/second at 25 feet. The damage criterion is met by 14 feet from the source. Construction trucks or similar equipment will not operate within 14 feet of any off-site homes. There will be no vibration impacts from project construction.

No-Build Alternative

Under the No-Build Alternative there would be no construction. Therefore, there would be no short-term noise or vibration impacts. All long-term noise and vibration impacts would remain the same as occurs at the present time. Under this alternative the noise from the BNSF intermodal freight train operations in downtown Richmond would occur along the BNSF tracks as shown on Figure 3a.

Avoidance, Minimization and/or Abatement Measures

Short-term construction activities will introduce new noise into the environment over a period of approximately one year. Therefore, there are noise effects that require avoidance, minimization and/or mitigation measures. Construction noise effects will be minimized by implementing the following measures:

- Limit construction to the hours of 7 a.m. to 7 p.m. on Mondays through Fridays, and 9 a.m. to 6 p.m. on Saturdays. No construction will be allowed on Sundays and federal holidays, except in emergencies.
- Utilize construction methods or equipment that will provide the lowest level of noise impact, i.e., use newer equipment that will generate lower noise levels.
- Equip all construction vehicles and fixed or mobile equipment with properly operating and maintained mufflers or sound attenuation devices, as specified in regulations at the time of construction.
- Schedule the construction such that the absolute minimum number of equipment would be operating at the same time at the same location.
- Maintain good relations with the school and community, such as keeping people informed of the schedule, duration, and progress of the construction, to minimize the public objections of unavoidable noise. Communities should be notified in advance of the construction and of the expected temporary and intermittent noise increases during the construction period.
- Provide all employees that will be exposed to noise levels greater than 75 dB over an 8-hour period with adequate hearing protection devices to ensure no hearing damage will result from construction activities.
- Install portable noise barriers that are demonstrated to reduce noise levels below hearing damage thresholds if equipment is being used that can cause hearing damage at adjacent noise receptor locations (distance attenuation shall be taken into account). . This may include erection of temporary berms or plywood barriers to create a break in the line-of-sight, or erection of a heavy fabric tent around the noise source.

Long-Term Noise Abatement

Moderate impacts should be reduced if measures are considered reasonable and feasible. Options to reduce moderate noise impacts can include construction of barriers, building grade separations, or closing the at-grade crossing. However, because Chesley Avenue is an at-grade crossing, use of noise walls is not feasible. The cost of constructing a grade separation is perhaps 20 million or more dollars. Grade crossing closure would require a change to the General Plan Circulation Element and would create long detours for Shields-Reid community members. The “typical” noise mitigation options are not considered reasonable and feasible.

A more recently popular train noise reduction measure has been the creation of “quiet zones” that eliminates the sounding of train horns except in special circumstances. Creation of quiet zones is allowed under the final federal train horn rule that became effective on June 24, 2005. Establishing a quiet zone must meet a wide variety of safety considerations. Every public grade crossing in a new quiet zone must be equipped at minimum with the standard or conventional flashing light and gate automatic warning system. A quiet zone may be established to cover a full 24-hour period or only during the overnight period from 10:00 p.m. to 7:00 a.m. when noise events are penalized ten-fold in the Ldn calculation.

Local governments must work in cooperation with the railroad that owns the track, and the appropriate state transportation authority to form a diagnostic team to assess the risk of collision

at each grade crossing where they wish to silence the horn. A determination is made about what type of additional safety engineering improvements is necessary to effectively reduce the risk associated with silencing the horns. The decision is based on localized conditions such as highway traffic volumes, train traffic volumes, the accident history and physical characteristics of the crossing, including existing safety measures.

Examples of additional safety engineering improvements that may be necessary to reduce the risk of collisions include: medians on one or both sides of the tracks to prevent a motorist from driving around a lowered gate; a four-quadrant gate system to block all lanes of highway traffic; converting a two-way street into a one-way street; or use of wayside horns posted at the crossing directed at highway traffic only.

Once all necessary safety engineering improvements are made, the local community must certify to the FRA that the required level of risk reduction has been achieved. A quiet zone becomes effective and train horns go silent only when all necessary additional safety measures are installed and operational.

However, based on the limited change in Ldn along the proposed alignment with the additional BNSF trains, the implementation of a "quiet zone" is not required of this project and no further pursuit of a quiet zone will be carried out by the project proponents. The City may wish to pursue this option and the above information provides the basic outline of how to implement a quiet zone if deemed justified by the City.

2.3 Biological Environment

2.3.1 Natural Communities

The following findings and analysis are based on the "Natural Environment Study (Minimal Impacts)," approved in February 2012. This study prepared for the associated California Environmental Quality Act evaluation.

Regulatory Setting

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species Section 2.3.5. Wetlands and other waters are also discussed below in Section 2.3.2.

Affected Environment

A Natural Environment Study, Minimal Impacts (November 2011) was prepared for the associated California Environmental Quality Act evaluation and is referenced here as a comprehensive evaluation of biological resources for the project.

The Biological Study Area (BSA) is defined as the project's proposed physical ground disturbance footprint, plus a buffer zone where indirect impacts may result from construction. The BSA consists of an approximately 80-foot wide, .75-mile long proposed railway right-of-way corridor and two 0.25-mile long BNSF and UPRR railway segments at either end, located west

of the intersection of Giant Road and the onramp of Richmond Parkway. The proposed alignment traverses southwest-northeast through mostly open fields near a mix of residential, light industrial and commercial buildings. The ground surface is highly disturbed and has been recently disked. The terrain is relatively level, with elevations ranging between 15 to 25 feet above mean sea level.

The vast majority of the alignment is disturbed and characterized by common disturbance oriented species. There are two channels (Rheem Creek and an unnamed channel) where riparian and wetlands habitats occur within the project alignment. The following is a discussion of the general biological characteristics of the natural communities associated with the proposed right-of-way.

Urban/ Disturbed

This community occurs at the top of the slopes and in disturbed areas. Typically the level of disturbance within the connector track right of way is severe. Most of the adjacent areas along the proposed alignment range from undisturbed native habitat to complete urbanization. The community is characterized by storksbill (*Erodium cicutarium*), foxtail chess (*Bromus madritensis*), wild oats (*Avena barbata*), ripgut brome grass (*Bromus diandris*), and foxtail fescue (*Vulpia myuros*). Other species occurring in this community are short-pod mustard (*Brassica geniculata*), barley (*Hordium vulgare*), *Amsinckia sp.*, and star thistle (*Centaurea melitensis*).

Due to the chronic disturbances as well as a recent burn within the proposed alignment, this area does not support a diverse fauna. The most common animal species observed on the site were dogs (*Canis lupus familiaris*) and beachy ground squirrels (*Otospermophilus beecheyi*). Other common species include western meadowlark (*Sturnella magna*), cottontail rabbits (*Sylvalegus audobonii*), and mourning doves (*Zenaida macroura*).

Riparian/Streambed in unnamed channel

This channel is characterized as a highly disturbed drainage ditch that has spotty areas of Wild-berry (*Rubus sp.*) and willow trees (*Salix sp.*), and then other patches of non-native grasses and little or no vegetation.

Environmental Consequences: Build Alternative

BNSF indicates the need for the acquisition of up to about 8.32 acres (consisting of an 80-foot right-of-way for the entire approximate 0.75 mile length of connector track). The entire acquired right-of-way will be disturbed during construction. In addition, about 8.32 acres already within BNSF and UPRR rights-of-way will be disturbed, for a total disturbance area of 14.5 acres. This area includes the turnout pad that will be constructed to install the crossover train tracks within the UPRR alignment. Most of the project area is characterized by ruderal (weedy) fields and industrial areas. There are no sensitive biological habitats within these areas. Impacts to wetlands and other waters in the project area are discussed below.

No-Build Alternative

The No-Build Alternative has no potential to disturb any natural communities on the project site. There would be no indirect impacts on natural communities if this alternative is selected.

Avoidance, Minimization and/or Mitigation

No measures are required.

2.3.2 Wetlands and Other Waters

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act (CWA) (33 United States Code [USC] 1344) is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the United States (U.S.), including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (U.S. EPA).

USACE issues two types of 404 permits: Standard and General permits. There are two types of General permits, Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (U.S. EPA 40 Code of Federal Regulations [CFR] Part 230), and whether permit approval is in the public interest. The 404 (b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practical alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this EO states that a federal agency, such as the FHWA and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

The Regional Water Quality Control Boards (RWQCB) were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the CWA. Please see the Water Quality section for additional details.

Affected Environment

Wetlands in the BSA are typically dominated by erect, rooted, herbaceous hydrophytic plant species adapted to growing in conditions of prolonged inundation. Common plant species present in this wetland type include cattails (*Typha* spp.) and Wild-berry (*Rubus* sp.) This seasonally flooded area consists of freshwater wetlands that support ponded or saturated soil conditions during winter and spring and are dry through the summer and fall until the first substantial rainfall. The vegetation is composed of wetland generalists, such as hyssop loosestrife (*Lythrum hyssopifolia*), cocklebur (*Xanthium* spp.), and Italian ryegrass (*Lolium multiflorum*) that typically occur in frequently disturbed sites, such as along streams.

The result of the jurisdictional determination is that there are two features on the site that would be subject to regulatory jurisdiction by the USACE under Section 404 of the CWA or the Rivers and Harbors Act of 1899; the State Water Quality Control Board under Section 401 of the CWA, and California Department of Fish and Game (CDFG) under Section 1600 of the Fish and Game Code. The first area is located in the Rheem Creek channel where the channel makes a transition from a concrete-lined box channel to a soft bottom natural channel. The Rheem Creek crossing area is characterized by wetland plant species, wetland hydrology, and wetland soils. Therefore, this feature meets the criteria for wetlands, and is regulated as such.

The second area subject to jurisdiction is an unnamed drainage feature that runs parallel to the UPRR tracks on the east side. The surface runoff accumulates at the high fill and flows north until it discharges into Rheem Creek. There is no natural channel, just a low-elevation swale where the surface runoff accumulates and flows under low velocity to the creek channel. This channel is characterized by hydrophytic vegetation using the facultative neutral test. However there are no hydric soils or wetland hydrology associated with this site. Therefore, this channel is characterized as a Waters of the U.S., and a Streambed.

Environmental Consequences: Build Alternative

The Build Alternative will temporarily disturb 0.2 acre of wetlands in Rheem Creek. It will permanently eliminate 0.32 acre of waters of the U.S. in the unnamed drainage feature that runs parallel to the UPRR tracks on the east side. Mitigation is proposed below to offset these impacts. Regulatory permits will be obtained from the USACE (404 Permit), RWQCB (401 Certification) and CDFG (1602 Streambed Alteration Agreement).

Construction Impacts

During construction of the track high fill across the project alignment, a temporary crossing of Rheem Creek channel will be installed to transport the fill material across the site from Giant Road. Once completed, this temporary crossing will be removed and the new bridge will be installed and the disturbed channel area will be revegetated with native species comparable to the existing plant community in the unlined portion of the channel. Approximately 0.2 acres of the wetlands in Rheem Creek will be temporarily affected by construction of the crossing.

No-Build Alternative

The No-Build Alternative has no potential to disturb any wetland resources on the project site. There would be no indirect impacts on wetland resources if this alternative is selected.

Avoidance, Minimization and/or Mitigation

- Mitigation for impacts to jurisdictional waters of the United States and State shall be offset by either or both of the following measures: (a) acquisition of wetland mitigation credits from an authorized wetland mitigation bank in the general area of the project at a ratio of 2:1 for each acre lost; and (b) revegetating the area adjacent to the eastside of the new track, not

directly adjacent to the track but within the new track alignment, with a comparable set of native wetland plants as presently occurs within the proposed alignment. This requirement shall be memorialized in the 1602 Streambed Alteration Agreement and 404 Permit obtained for this project prior to disturbing the wetland habitat that occurs within the project alignment.

- Prior to disturbing the Rheem Creek channel, BNSF shall identify the local native plants that can be used to revegetate the channel following disturbance by the temporary construction activities. The channel shall be returned to pre-disturbance conditions and the soft bottom of the channel shall be revegetated with native plants that already occur within the channel. The revegetation shall be completed prior to the first rainfall following completion of construction activities.

2.3.3 Plant Species

Regulatory Setting

The USFWS is responsible for the protection of federally listed special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. “Special status” is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA). Please see the Threatened and Endangered Species section in this document for detailed information regarding these species. This section of the document discusses all federally protected special-status plant species, including USFWS candidate species.

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et. seq. See also 50 CFR Part 402.

Affected Environment

Urban/ Disturbed

This community occurs at the top of the slopes and in disturbed areas. The community is characterized by storksbill (*Erodium cicutarium*), foxtail chess (*Bromus madritensis*), wild oats (*Avena barbata*), riggut brome grass (*Bromus diandris*), and foxtail fescue (*Vulpia myuros*). Other species occurring in this community are short-pod mustard (*Brassica geniculata*), barley (*Hordium vulgare*), *Amsinckia* sp., and star thistle (*Centaurea melitensis*).

Wetlands in Rheem Creek

Wetlands have the potential to be temporarily impacted within the project's BSA. They are typically dominated by erect, rooted, herbaceous hydrophytic plant species adapted to growing in conditions of prolonged inundation. Common plant species present in this wetland type include cattails (*Typha* spp.) and Wild-berry (*Rubus* sp.) This seasonally flooded freshwater wetland supports ponded or saturated soil conditions during winter and spring and is dry through the summer and fall until the first substantial rainfall. The vegetation is composed of wetland generalists, such as hyssop loosestrife (*Lythrum hyssopifolia*), cocklebur (*Xanthium* spp.), and Italian ryegrass (*Lolium multiflorum*) that typically occur in frequently disturbed sites, such as along streams.

Riparian/Streambed in unnamed channel

This channel on the east side of the UPRR tracks is characterized as a highly disturbed drainage ditch that has spotty areas of Wild-berry (*Rubus* sp.) and willow trees (*Salix* sp.), and then other patches of non-native grasses and little or no vegetation.

A list of special-status plant species from the U.S Fish and Wildlife Service is included in Chapter 3.

Environmental Consequences: Build Alternative

Although the project area of impact contains some riparian/wetland habitat that could support sensitive plant species, there are no sensitive plant species located anywhere on the project site. Therefore, the proposed project has no potential to adversely affect any sensitive plant species or resources.

Construction Impacts

No special-status plant species will be affected during construction.

No-Build Alternative

The No-Build Alternative has no potential to adversely affect any plant species or resources on the project site. There would be no indirect impacts on sensitive or protected plant species if this alternative is selected.

Avoidance, Minimization and/or Mitigation Measures

Because the proposed project will not adversely affect any sensitive plant species or resources, no avoidance, minimization or mitigation measures are required.

2.3.4 Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The USFWS and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in the Threatened or Endangered Species section below. All other federally protected special-status animal species are discussed here, including USFWS or NOAA Fisheries Service candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

Affected Environment

Urban/ Disturbed

This community occurs at the top of the slopes and in disturbed areas. Due to the chronic disturbances as well as a recent burn within the proposed alignment, this area does not support a diverse fauna. The most common animal species observed on the site were dogs (*Canis lupus familiaris*) and beachy ground squirrels (*Otospermophilus beecheyi*). Other common

species include western meadowlark (*Sturnella magna*), cottontail rabbits (*Sylvalegus audobonii*), and mourning doves (*Zenaida macroura*).

A list of special-status animal species from the U.S Fish and Wildlife Service is included in Chapter 3.

Environmental Consequences: Build Alternative

Although the BSA contains some riparian/wetland habitat that could support sensitive animal species, there are no special-status animal species located anywhere on the project site. Therefore, the proposed project has no potential to adversely affect any special-status animal species.

Construction Impacts

Temporary noise and construction activities within the BSA may preclude or disrupt nesting in these areas. Avoidance measures are provided below to ensure that there will be no loss of nesting birds.

No-Build Alternative

The No-Build Alternative has no potential to adversely impact any special-status animal species or resources on the project site. There would be no indirect impacts on special-status or protected animal species if this alternative is selected.

Avoidance, Minimization and/or Mitigation Measures

Because the proposed project will not adversely impact any special-status animal species or resources, no avoidance, minimization or mitigation measures are required. However, due to the potential for native birds to occupy the site during nesting season, measures are identified below to avoid impacts to birds protected by the Migratory Bird Species Act.

- Any grubbing or clearing will be conducted outside of the bird-breeding season of February 15th through September 1. If this is not possible, a qualified biologist must perform a pre-construction survey for active migratory bird nests. Caltrans biologists require 10 - 15 days notice before clearing and grubbing. If no active nests are located, the tree removal or trimming will occur within three days of the survey. The contractor will not remove or trim any tree containing an active nest. Field surveys will be completed no more than two weeks before beginning construction during the migratory bird-nesting season from February 15 to September 1. A report of findings will be provided to the California Department of Fish and Game if construction in the vicinity of bird nests must be conducted during nesting season. If nesting birds are located within or adjacent to construction areas, construction will be redirected to other locations until such nests are abandoned.

2.3.5 Threatened and Endangered Species

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Department, as assigned by the Federal Highway Administration (FHWA), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) to ensure that they are not

undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of any Section 7 consultation is concurrence on a “not likely to adversely affect” (informal consultation) or “likely to adversely affect” (formal consultation). Formal consultation results in the resource agency issuing a Biological Opinion with an Incidental Take Statement. If the action agency determines that there is “no effect,” consultation is not required. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1996, as amended, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

Affected Environment

The results of this survey and evaluation of listed species are that no listed or sensitive species or their associated habitats are present within the proposed alignment. The vast majority of the project area is disturbed vacant field.

Environmental Consequences: Build Alternative

Although the BSA contains some riparian/wetland habitat that could support threatened or endangered species, there are no such species located anywhere on the project site. Therefore, the proposed project has no potential to adversely impact any threatened or endangered plant or animal species or resources. Based on these findings, the proposed project will have “no effect” on any federally listed species and it will not be necessary to obtain an Incidental Take Statement for this project.

Construction Impacts

No threatened or endangered species would be affected by construction.

No-Build Alternative

No threatened or endangered species occur within the BSA. The No-Build Alternative has no potential to adversely impact any threatened or endangered species or resources on the project site. There would be no indirect impacts on threatened or endangered species if this alternative is selected.

Avoidance, Minimization and/or Mitigation Measures

Because the proposed project will not adversely impact any threatened or endangered species or habitats, no avoidance, minimization or mitigation measures are required.

2.3.6 Invasive Species

Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other

biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” The California noxious weed list can be used to define the invasive plants that must be considered as part of the analysis for this project.

Affected Environment

The majority of the project site is disturbed and these portions of the alignment contain a number of invasive species, including noxious weeds as described in Section 2.3.1 through 2.3.4 above.

Environmental Consequences: Build Alternative

The project location is in an urbanizing area at the edge of developed industrial and residential areas. The project alignment is already infested with invasive species in the vicinity of and within the project alignment. The implementation of the project will result in the removal of vegetation and habitat, such that occupation by invasive species will be reduced. Ongoing maintenance by BNSF controls invasive weed species and the same maintenance program will be implemented along the connector track alignment. Any future landscaping along the track alignment to control long-term erosion potential must utilize low-growing native plant species. With implementation of BNSF standard landscape management practices, the proposed project will not increase invasive species.

Construction Impacts

Construction of the project could introduce additional invasive species into the project alignment or spread invasive species already in the project alignment. However, standard landscape management practices described above and minimization measures summarized below would control the spread of invasive species.

No-Build Alternative

The No-Build Alternative would have no effect on invasive species.

Avoidance, Minimization and/or Mitigation Measures

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project will not use species listed as invasive species. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

2.4 Cumulative Impacts

Regulatory Setting

Cumulative impacts are impacts on the environment that result from the incremental impact of a proposed project together with the impacts of other past, present and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant impacts taking place over a period of time.

Cumulative impacts on resources in the project area may result from the impacts of the transportation project together with other past, present, and reasonably foreseeable projects such as residential, commercial, industrial, and other development, as well as from agricultural activities and the conversion to more intensive types of agricultural cultivation. Such land use activities may result in cumulative effects on a variety of natural resources such as species and

their habitats, water resources, and air quality. Additionally, they can also contribute to cumulative impacts on the urban environment such as changes in community character, traffic volume and patterns, increased noise, housing availability, and employment.

Cumulative impacts are best evaluated at a geographic scale that reflects their extent and likelihood of occurrence, such as a watershed or air basin, and must not be artificially limited to jurisdictional boundaries. Additionally, different resources may have different cumulative impact areas.

A definition of cumulative impacts, under NEPA, can be found in 40 CFR, Section 1508.7 of the CEQ Regulations.

Affected Environment

The connector rail alignment is located within an area that has historically been developed and used for industrial land uses. The alignment is bounded by Giant Road on the east, Parr Boulevard on the south, the UPRR tracks on the west, and industrial development and the elevated Richmond Parkway on the north. Thus, the site and surrounding area have been developed and used for industrial purposes for many years. For the cumulative impact analysis, past projects are represented by the existing land uses. A field review of the area surrounding the project area did not identify any additional current development underway within this expanded area. A review of applications for permits with the cities of Richmond and San Pablo did not identify any other proposed projects within the general project vicinity. Therefore, the only cumulative effects that could occur would be based on past projects combined with the proposed project.

Environmental Consequences

As identified at the beginning of Chapter 2, the project will not affect the following resources: coastal zone, wild and scenic rivers, parks and recreation, farmlands, geology, soils or paleontology. Therefore, the project will not have a cumulative adverse effect on any of these resources.

In addition, as discussed earlier in Chapter 2, the proposed project would not adversely affect the following issues: existing and future land use, consistency with state, regional and local plans, community character and cohesion, growth, utilities and emergency services, aesthetics, traffic and transportation, hydrology, water quality, storm water runoff, air quality, emergency services, animals, plants or threatened and endangered species.

Possible cumulative effects are discussed below for cultural resources, environmental justice, floodplain, hazardous waste/materials, noise and wetlands.

Cultural Resources

No archaeological or historic resources were discovered in the project's Area of Potential Effects (APE). However, the APE is close to a number of known Native American shell mounds where numerous human burials and artifacts were discovered and correspondence with Native American tribes suggest that similar cultural resources may be present in the APE. The project does not include substantial excavation below the existing disturbed ground surface, though. In addition, if cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. Therefore, the proposed project would not contribute to cumulative adverse cultural resource impacts.

Environmental Justice

The only cumulative effect identified on the environmental justice community is the 1 dB increase in noise impacts related to shifting BNSF trains to the UPRR track segment between Parr Boulevard and Stege. This change in noise level is evaluated in detail in the Noise Section (2.2.5) of this document and determined to be a moderate impact at the Chesney Road at-grade crossing due to horn noise. The cumulative analysis concluded that this impact does not require mitigation because no reasonable mitigation is feasible at this location. The City may wish to independently seek to establish a quiet zone at this location.

Floodplain

Rheem Creek and the western portion of the project site are located within the 100-year floodplain. Where fill is placed to attach the new rail connector to the existing UPRR track, the existing swale will be replaced by a 42-inch culvert. All existing drainage culverts or boxes will be installed at the same or comparable sizes as the existing ones. The project will also be built on fill, which is not impervious. In addition, the new bridge over Rheem Creek will clear span the channel and be placed above the 100-year flood zone. Therefore, the project is designed to avoid a rise in the Base Flood Elevation and it will not contribute to an adverse cumulative effect on the floodplain.

Hazardous Waste/Materials

A portion of the project site was contaminated in the past and the contamination has been remediated to allow industrial development. As part of the remediation, the contaminated area was capped with clean soil. The proposed connector track project will protect the existing cap and the use of the site to support rail operations is consistent with the allowed uses. Since this project is not designed to support additional train operations, the installation of the connector track does not increase the potential for a train accident and a related spill of hazardous materials being transported by trains. However, during construction petroleum products will be used to support construction activities, and a potential for accidental release of hazardous materials does exist. Specific measures have been incorporated into the project to minimize the potential for damage to the environment or to human health from such an accidental spill of hazardous materials. In summary, the proposed project does not include removal of any soil from the site and the construction program is designed to protect the cap over the contaminated site so no contaminated material will have to be removed from the site for disposal. Thus, this project will not contribute to any cumulative demand for landfill space or create any cumulative effect from hazardous waste.

Noise and Vibration

As described for air quality, noise and vibration issues are also inherently cumulative in nature. Individual emissions of sound from a stationary or mobile source combine with the other sound generators in the immediate area to create a composite or integrated level of sound/noise. Within the immediate project area the number of train operations will not be increased, so the overall sound and vibration level in the project area will not increase. Thus, the project will not cause any change to the cumulative noise environment at the project location.

Along the existing BNSF route, from the project area south through downtown Richmond to Stege, there will be fewer trains and therefore less overall noise within the existing BNSF corridor. From the project area south to Stege on the UPRR tracks, up to 2.4 train trips will be

added to the existing average number of 50 trains per day. The additional trains on the UPRR corridor will increase the existing cumulative noise level by less than 1 dB. The rail corridor from the rail connector is bounded by industrial uses except at one at-grade road crossing location where the increased horn noise between the current condition and the modeled future condition is approximately 1 decibel. This increase in sound level is undetectable. However, because of the existing noise levels, guidelines from the Federal Railroad Administration consider this a moderate impact. Noise minimization or attenuation measures were evaluated and determined to be infeasible for the affected residences. Please refer to the detailed noise discussion in Section 2.2.5.

Wetlands and Other Waters

The majority of the connector track alignment crosses a highly disturbed natural community that has low habitat value. The proposed connector track will temporarily affect about 0.2 acre of Rheem Creek channel that contains some wetland vegetation, but no listed or sensitive species. The new track will also eliminate about 0.32 acre of wetland habitat located adjacent to the UPRR tracks. However, onsite mitigation will offset the temporary loss of habitat in Rheem Creek and acquisition of offsite wetland habitat at a mitigation bank will be acquired to compensate for the onsite loss of habitat. Thus, after mitigation, the proposed connector track project will not cause an adverse cumulative impact.

Based on the evaluation of all potential impact areas posed by the proposed connector track project, no substantial cumulative adverse impacts will be caused or contributed to by implementing the proposed project.

CHAPTER 3 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including project development team meetings and interagency coordination meetings. This chapter summarizes the results of Caltrans' efforts to identify, address, and resolve project-related issues through early and continuing coordination.

Several project development team meetings have been held to date with representatives from various branches within Caltrans. Project development team meetings have occurred since the project's inception in 2009. The initial consultations on this project were held with BNSF Railway staff and Caltrans Division of Rail staff. Participants in this process included Mr. Walt Smith and Mr. John Fleming of BNSF and Mr. Bruce Roberts of Caltrans Division of Rail. These consultations have continued over the past two years on a periodic basis.

Mr. Kevin Osmun of LOR Geotechnical compiled the Phase 1 Environmental Site Assessment. In developing the construction management guidelines for installing the Richmond Rail Connector across the former Cooper Chemical Company brownfield, Mr. Osmun has been coordinating with Mr. Claude Jemison at the Department of Toxic Substances Control (DTSC) Brownfields and Environmental Restoration Program. This coordination was conducted during the last quarter of 2011 and is ongoing into 2012.

In developing the cultural resources report extensive consultation has occurred between Mr. B. Tom Tang and local agencies, historical societies and Native Americans. Contacts and discussions have been held with the following groups.

Local Agencies: Richard Mitchell, Planning Director, City of Richmond; and
Maureen Toms, Supervisor, Department of Community
Development, Contra Costa County

Local Historical Societies: Mildred Dornan, President, Point Richmond History Association;
and El Cerrito Historical Society

Native Americans: Dave Singleton, Native American Heritage Commission; Jean-
Marie Feyling, Amah/Mutsun Tribal Band; Irene Zwierlein,
Chairperson, Amah/Mutsun Tribal Band; Ann Marie Sayers,
Chairperson, Indian Canyon Mutsun Band of Costanoan;
Rosemary Cambra, Chairperson, Muwekma Ohlone Indian Tribe
of the San Francisco Bay Area; Andrew Galvan, The Ohlone
Indian Tribe; Ramona Garibay, Representative Trina Marine
Ruano Family; Jakki Keli, Ohlone/Costanoan; Katherine Erolinda
Perez, Ohlone/Costanoan Northern Valley Yokuts/Bay Miklok; and
Linda G. Yamane, Ohlone/Costanoan.

No pre-historic archaeological resources were identified in response to these communications, but several of the respondents suggested Native American monitoring during

construction. Since Native Americans have not previously identified resources at this location and excavation will be minimal, they will be briefed on the project through the appropriate channels.

In order to compile information regarding current train operations, representatives of both BNSF and UPRR were contacted to obtain this information. Contacts with the staffs of these two rail companies were conducted in early January 2012.

The USFWS was contacted to obtain a sensitive species list and this list was integrated into the presence absence table compiled in the Natural Environmental Study Minimal Impacts (Appendix 1).

CHAPTER 4 List of Preparers

This document was prepared by the following:

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CHAPTER 5 References

- American Factfinder, U.S. Census Bureau, <http://factfinder.census.gov>
- Bay Area Air Pollution Summary – 2007
- California Department of Conservation, Division of Land Resources Protection, Contra Costa County Williamson Act Lands 2007 (map)
- California Department of Conservation, Division of Land Resources Protection, Farmland Mapping and Monitoring Program, Contra Costa County Important Farmland 2008 (map)
- California Department of Toxic Substances Control, Envirostor website, <http://www.envirostor.dtsc.ca.gov/public>
- California Geology Survey, Seismic Hazard Zones – Richmond Quadrangle, February 2003
- California Integrated Waste Management Board, California Waste Stream Profiles, www.ciwmb.ca.gov
- California Regional Water Quality Control Board, San Francisco Bay Region. Water Quality Control Plan (Basin Plan), 2010
- Contra Costa County Community Development Department in cooperation with Public Works Department, Contra Costa County Watershed Atlas, November 2003
- Contra Costa County, Draft EIR on the West Contra Costa Sanitary Landfill Bulk Materials Processing Center and Related Actions, November 2003 (SCH#2002102057)
- Contra Costa County Fire Protection District, Fire Stations and Major Support Facilities, 2005 (map)
- Contra Costa County General Plan 2005-2020, January 2005
- Contra Costa County Public Works Department, Formed and Uniformed Areas Within Cities (map)
- CRM TECH, Historic Property Survey Report for Richmond Rail Connector BNSF 1185.9 to UPRR 14.2, City of Richmond, California, April 28, 2012
- CRM TECH, Archaeological Survey Report for Richmond Rail Connector BNSF 1185.9 to UPRR 14.2, City of Richmond, California, April 28, 2012
- East Bay Municipal Utility District, Urban Water Management Plan (UWMP), 2005
- Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Rate Maps (FIRM) for Contra Costa County, California, Maps #06013C0226F and #06013C0228F
- Giroux & Associates, Air Quality and Greenhouse Gas Impact Analysis for Richmond Rail Connector Project, April 25, 2012
- Giroux & Associates, Noise Impact Analysis for Richmond Rail Connector Project, April 25, 2012
- J.L. Patterson, Preliminary Engineering Design, 2009
- LOR Geotechnical Group, Inc., Phase I Environmental Site Assessment, BNSF Railway Proposed Richmond Rail Connector, Richmond, Contra Costa County, California, August 13, 2009

National Wild and Scenic Rivers website, <http://www.rivers.gov/wildriverslist.html>

City of Richmond, General Plan, Volumes 1 and 2, August 1994

State of California, Department of Finance website: <http://www.dof.ca.gov>

Tom Dodson & Associates, Biological Survey Report for Richmond Rail Connection at Rheem, October 2009

U.S. Department of Agriculture (USDA), Soil Survey Staff, Natural Resources Conservation Service, Web Soil Survey, Contra Costa County, Available online at <http://websoilsurvey.nrcs.usda.gov> (accessed July 7, 2009)

U.S. Geological Survey, Richmond Quadrangle, 7.5 Minute Series topographic (map)

CHAPTER 6 Distribution List

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The Honorable Dianne Feinstein
United States Senator
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The Honorable George Miller
United States Representative, 7th District
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The Honorable Barbara Lee
United States Representative, 9th District
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The Honorable John Garamendi
United States Representative, 10th District
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Elected State Officials

The Honorable Mark DeSaulnier
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The Honorable Susan Bonilla
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Native American Contacts

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Amah/Mutsun Tribal Band
Irene Zwierlein, Chairperson

Amah/Mutsun Tribal Band
Jean-Marie Feyling

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Ann Marie Sayers, Chairperson

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson

The Ohlone Indian Tribe
Andrew Galvan

Trina Marine Ruano Family
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Plains Miwok
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State Agencies

Dale E. Bonner, Secretary
Business, Transportation and Housing Agency
980 9th Street, Suite 2450
Sacramento, CA 95814-2719

State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

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Napa, CA 94558

Bruce Roberts
California Department of Transportation, Division of Rail
P.O. Box 942874 (MS 74)
Sacramento, CA 94274-0001

Elizabeth Wells
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

California Transportation Commission
1120 N Street, Room 2221 (MS-52)
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Native American Heritage Commission
915 Capitol Mall, Room 364
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Regional Agencies

Wil Buller
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The Capitol Corridor Joint Powers Authority
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County and City Agencies

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City of San Pablo
13831 San Pablo Avenue
San Pablo, CA 94806

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651 Pine Street, 11th Floor
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Railroads

Walt Smith
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740 East Carnegie Drive
San Bernardino, CA 92408

John Fleming
BNSF Railway
720 South "B" Street
Stockton, CA 95205

Jerry Wilmoth
General Manager Network Infrastructure
Union Pacific Railroad
10031 Foothills Blvd.
Roseville, CA 95747

Jonathan Hutchison
Director of Government Affairs
530 Water Street
Oakland CA 94607

Local Libraries

Richmond City Library
325 Civic Center Plaza
Richmond, CA 94804

San Pablo Library
2300 El Portal Drive, Suite D
San Pablo, CA 924806

City of San Pablo Library
13831 San Pablo Avenue
San Pablo, CA 94806

Non-Governmental Agencies and Businesses

Pacific Gas & Electric
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