

California High-Speed Rail Authority

Merced to Fresno Section: Central Valley Wye

Hazardous Materials and Wastes Technical Report

December 2016

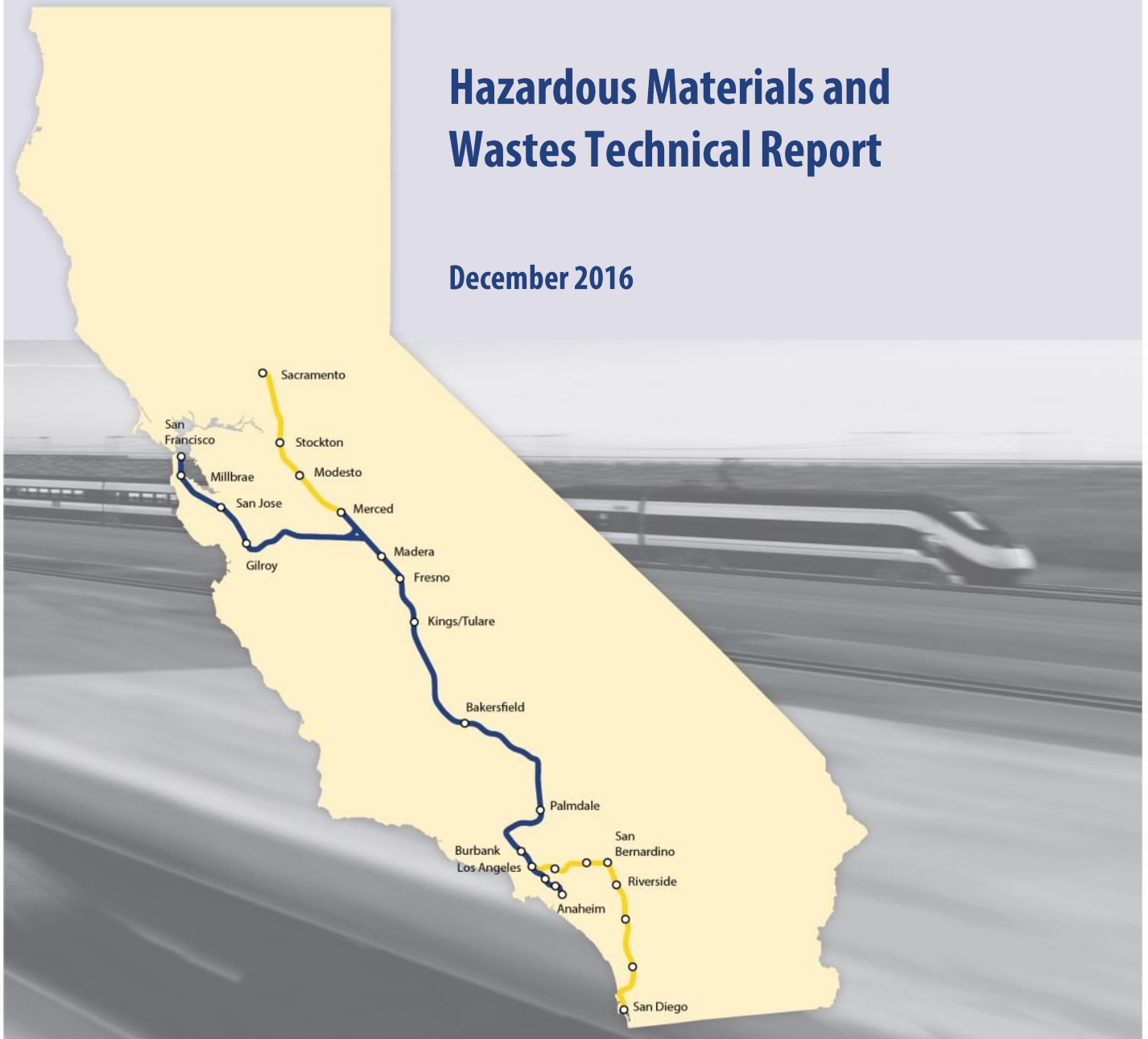


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ACRONYMS AND ABBREVIATIONS

ACM	asbestos-containing material
ADL	aerially deposited lead
Authority	California High-Speed Rail Authority
BMP	best management practices
BNSF	BNSF Railway
CALTRANS	California Department of Transportation
Cal. Code Regs.	California Code of Regulations
Central Valley Wye	Merced to Fresno Section: Central Valley Wye
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
CUPA	Certified Unified Program Agency
DTSC	California Department of Toxic Substances Control
EDR	Environmental Data Resources, Inc.
EIR	environmental impact report
EIS	environmental impact statement
ERM	ERM-West, Inc.
ESA	environmental site assessment
FRA	Federal Railroad Administration
HSR	high-speed rail
LBP	lead-based paint
NEPA	National Environmental Policy Act
NOA	naturally occurring asbestos
PCB	polychlorinated biphenyl
PEC	potential environmental concern
RCRA	Resource Conservation and Recovery Act
RSA	resource study area
RWQCB	California Regional Water Quality Control Board
SR	State Route
UPRR	Union Pacific Railroad
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

The California High-Speed Rail Authority (Authority) has prepared this *Merced to Fresno Section: Central Valley Wye Hazardous Materials and Wastes Technical Report* (Central Valley Wye Hazardous Materials and Wastes Technical Report) to support the *Merced to Fresno Section: Central Valley Wye Draft Supplemental Environmental Impact Report (EIR)/Supplemental Environmental Impact Statement (EIS)* (Supplemental EIR/EIS). The Supplemental EIR/EIS tiers from the original *Merced to Fresno Section Final EIR/EIS* (Merced to Fresno Final EIR/EIS) (Authority and FRA 2012a). When the Authority Board of Directors and the Federal Railroad Administration approved the Merced to Fresno Section in 2012, they deferred a decision on the wye connection for a future environmental analysis. Since then, the Authority and Federal Railroad Administration have identified four new alternatives for consideration.

This technical report characterizes existing conditions and analyzes hazardous materials and wastes effects of the four Central Valley Wye alternatives:

- SR 152 (North) to Road 13 Wye Alternative
- SR 152 (North) to Road 19 Wye Alternative
- Avenue 21 to Road 13 Wye Alternative
- SR 152 (North) to Road 11 Wye Alternative

Effects on hazardous materials and wastes could result from the following activities:

- Transport, use, storage, and disposal of hazardous materials and wastes
- Inadvertent disturbance of hazardous materials and wastes
- Construction on, or near, potential environmental concern (PEC) sites
- Asbestos exposure as a result of building demolition
- construction on, or in proximity to, landfill and gas wells
- Hazardous materials and waste activities near schools

This technical report addresses effects resulting from the high-speed rail track alignment for the Central Valley Wye. The Central Valley Wye alternatives also include electrical interconnections and PG&E network upgrades, which are not evaluated in this technical report. This report identifies relevant federal, state, regional, and local regulations and requirements; methods used for the analysis of effects; the affected environment; potential effects on hazardous materials and wastes in the Central Valley Wye resource study area that could result from construction and operations of the Central Valley Wye alternatives; and impact avoidance and minimization features (IAMF) that would avoid, minimize, or reduce effects..

Summary of Effects

The effects of the Central Valley Wye alternatives from hazardous materials and wastes resource areas include:

Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes

Construction of the Central Valley Wye alternatives would temporarily increase the regional transport, use, storage and disposal of hazardous materials and wastes. The increased use of hazardous materials could result in an incremental increase in hazardous waste generation. Operation of the Central Valley Wye alternatives would require only minor amounts of hazardous materials. The effects from the transport, use, storage, and disposal of hazardous materials and wastes would be minimized by adhering to federal laws that outline procedures on proper handling and preparation for handling hazardous materials, as well as implementing material designations and labeling, packaging requirements, and operational rules. Following these established regulations would minimize potential safety effects on workers and the general

population from the transport, use, storage, and disposal of hazardous materials and wastes. Impact Avoidance and Minimization Features (IAMF) are standard practices, actions, and design features, such as complying with permit conditions and implementing a spill prevention, control, and countermeasure plan incorporated into the Central Valley Wye description. These IAMFs reduce the potential risk of harm from the transport, use, storage and disposal of hazardous materials and wastes. With these features incorporated, the Central Valley Wye is not likely to result in effects from the transport, use, storage and disposal of hazardous materials and wastes.

Inadvertent Disturbance of Hazardous Materials or Wastes

Releases or spills can occur from the improper storage of hazardous materials, improper handling of hazardous materials, negligence, seismic activity, or inclement weather. Aside from accidents possibly occurring on job sites involving workers or observers, off-site accidents during hazardous materials/waste transport to or from the job sites could expose individuals and the environment to risks at some distance from the project site. Accidents could also occur during the transportation of hazardous waste materials generated during construction or during the cleanup of existing contaminated sites before construction prior to the property acquisition phases. The effects from inadvertent disturbance of hazardous materials and wastes would be minimized by implementing standard accident training for cleaning up small spills and creating a written hazard communication program, to make sure that all containers are labeled and employees provided with access to material safety data sheets. Nominal design variances, such as the addition of a plastic barrier beneath the ballast material to limit the potential release of volatile subsurface contaminants related to site investigation or remediation will be implemented, and a construction management plan will be developed during final design that includes provisions for the disturbance of undocumented contamination. Following these established regulations would minimize potential safety effects on workers and the general population from the inadvertent disturbance of hazardous materials and wastes. Additionally, IAMFs—standard practices, actions, and design features, such as implementing design variances and spill prevention plans—are incorporated into the Central Valley Wye to reduce the risk of harm from the inadvertent disturbance of hazardous materials and wastes. With these features incorporated, the Central Valley Wye is not likely to result in effects from the inadvertent disturbance of hazardous materials and wastes.

Construction on, or near Potential Environmental Concern Sites

The numbers of PEC sites in each Central Valley Wye alternative's RSA for hazardous materials and wastes are as follows:

- | | |
|---|-----------------|
| • SR 152 (North) to Road 13 Wye Alternative | Four PEC sites |
| • SR 152 (North) to Road 19 Wye Alternative | Five PEC sites |
| • Avenue 21 to Road 13 Wye Alternative | Five PEC sites |
| • SR 152 (North) to Road 11 Wye Alternative | Three PEC sites |

Construction activities could encounter contaminants or interfere with the ongoing remediation efforts. Effects could include: potential localized spread of contamination; exposure of construction workers and/or the public to chemical compounds in soils, soil gases, and groundwater; exposure of workers, the public, and the environment to airborne chemical compounds migrating from the demolition or construction areas; potential accidents during transportation of contaminated soils or groundwater; potential accidents during remediation as a result of operational failure of treatment systems; and potential interference with ongoing remediation activities. The effects from construction on, or near, PEC sites would be minimized through the careful design and placement of project elements, avoiding contaminated sites where possible. Where effects on PEC sites cannot be avoided, preconstruction activities, such as Phase I Environmental Site Assessments, would address the requirements for constructing at PEC sites in coordination with regulatory agencies. Following these standards and IAMFs would minimize potential safety effects on workers and the general population from construction on, or near, PEC sites. The Central Valley Wye is not likely to result in effects from construction on, or near PEC sites.

Asbestos Exposure as a Result of Building Demolition

When construction of the HSR begins, a number of structures that could contain asbestos could be demolished resulting in the potential release of asbestos fibers into the environment and potential health effects on workers and community members. The effects of potential asbestos exposure from building demolition would be minimized by implementing demolition plans that would evaluate whether the structures proposed for demolition contain asbestos. If the structure contains friable (i.e., brittle) asbestos, a contractor who is state-certified for asbestos removal would comply with the Occupational Safety and Health Administration standards in 29 Code of Federal Regulations (C.F.R.) Part 1926.1101, acquire the appropriate permits, and remove the asbestos. Following these standards would minimize potential safety effects on workers and the general population from asbestos exposure from building demolition. Additionally, the Authority will implement IAMFs such as implementing demolition plans to reduce the risk of harm from asbestos exposure from building demolition. With these features incorporated, the Central Valley Wye is not likely to result in effects from asbestos exposure from building demolition.

Construction on, or in Proximity to, Landfill and Gas Wells

Construction and operation of the Central Valley Wye alternatives near landfills and gas wells may pose a hazard to human health and safety or to the environment if contaminants are released into the workplace or the environment. Release could occur through spills during construction; rupture of a pipeline or well casing hit during construction; or through the disturbance of contaminated soil or groundwater. The effects from construction near landfills and gas wells would be minimized by implementing IAMFs that establish landfill and spill prevention plans. Active wells will be either capped and abandoned or relocated. Appurtenant facilities such as pipelines within the project footprint would also potentially need to be relocated. These features would minimize potential safety effects on workers and the general population from construction near landfills and gas wells. With these features incorporated, the Central Valley Wye is not likely to result in effects from construction near landfills and gas wells.

Hazardous Material and Waste Activities near Schools

Potentially hazardous materials and items containing potentially hazardous materials commonly used in railway construction, operation, or maintenance would be used or stored in the Central Valley Wye alternatives' rights-of-way, in some cases within 0.25 mile of schools, which are considered sensitive receptors. Additionally, demolition of the existing structures within the rights-of-way could require removal of ACM and LBP from the project site. The effects from hazardous material and waste activities near schools would be minimized by adhering to federal, state, and local regulations regarding the transport of hazardous materials and wastes and implementing spill prevention plans. Implementing IAMFs including these standards and plans would minimize potential safety effects on schools from hazardous material and waste activities near schools. The Central Valley Wye is not likely to result in substantial effects from hazardous material and waste activities near schools.

1 INTRODUCTION

1.1 Background of HSR Program

The Authority proposes to construct, operate, and maintain an electric-powered high-speed rail (HSR) system in California. When completed, the nearly 800-mile train system would provide new passenger rail service to more than 90 percent of the state's population. More than 200 weekday trains would serve the statewide intercity travel market. The HSR would be capable of operating speeds of up to 220 miles per hour, with state-of-the art safety, signaling, and automatic train control systems. The system would connect and serve the major metropolitan areas of California, extending from San Francisco and Sacramento in the north to San Diego in the south.

The Authority commenced its environmental planning process with the 2005 *Final Program EIR/EIS for the Proposed California High-Speed Train System* (Authority and FRA 2005) (Statewide Program EIR/EIS), and then began preparing second-tier, project environmental evaluations for sections of the statewide HSR system. The 2012 *Merced to Fresno Section Final EIR/EIS* (Merced to Fresno Final EIR/EIS) (Authority and FRA 2012a) was the first project-level EIR/EIS that the Authority certified and the Federal Railroad Administration (FRA) approved. The Merced to Fresno Final EIR/EIS identified the Hybrid Alignment as the preferred alternative and examined two design options for an east-west connection to the San Jose to Merced Section, referred to as the "wye connection" (Authority and FRA 2012a: pages 2-3 and 2-21). When the Authority Board of Directors and the FRA approved the Merced to Fresno Section later in 2012, they deferred a decision on the wye connection for a future environmental analysis. The Authority and FRA have prepared the Supplemental EIR/EIS as the next step in the environmental review process to select a Central Valley Wye connection. Chapter 2 of the Supplemental EIR/EIS provides a detailed history of how the Authority developed the Central Valley Wye alternatives.

1.2 Organization of this Technical Report

This technical report includes the following sections:

- Section 2, Merced to Fresno Section: Central Valley Wye, provides a description of the Central Valley Wye alternatives.
- Section 3, Laws, Regulations, and Orders, identifies the federal, state, and local laws, guidance, and policies relevant to hazardous materials and wastes for the Central Valley Wye.
- Section 4, Methods for Evaluating Effects, describes the methods used to determine and evaluate potential effects.
- Section 5, Affected Environment, describes existing conditions.
- Section 6, Effects Analysis, describes direct effects, both adverse and beneficial.
- Section 7, Waste Disposal for High-Speed Rail Construction and Operation, discusses how construction and demolition debris from the Central Valley Wye are handled.
- Section 8, References, provides a list of the references cited in this technical report.
- Section 9, Preparer Qualifications, identifies the individuals involved in preparing this report and their credentials.

Additional details on the analysis of hazardous materials and wastes are provided in:

- Appendix A, California High-Speed Rail Impact Avoidance and Minimization Features for Hazardous Materials and Waste
- Appendix B, EDR Radius Map Report
- Appendix C, Historical Topographic Maps
- Appendix D, Potential Environmental Concerns Site Summaries
- Appendix E, Site Reconnaissance Photographs

2 MERCED TO FRESNO SECTION: CENTRAL VALLEY WYE

The Central Valley Wye would create the east-west HSR connection between the San Jose to Merced Section to the west and the north-south Merced to Fresno Section to the east.¹ The four Central Valley Wye alternatives addressed in the Supplemental EIR/EIS (Figures 2-1 to 2-4) are:

- SR 152 (North) to Road 13 Wye Alternative
- SR 152 (North) to Road 19 Wye Alternative
- Avenue 21 to Road 13 Wye Alternative
- SR 152 (North) to Road 11 Wye Alternative

This section describes the common design features of the four alternatives, followed by descriptions of each alternative.

2.1 Common Features

The Central Valley Wye alternatives would cross rural areas in unincorporated Merced and Madera Counties, and would travel through the southern portion of Chowchilla and the rural-residential community of Fairmead. Volume 3 of the Supplemental EIR/EIS provides detailed design drawings that support the descriptions of the Central Valley Wye alternatives.

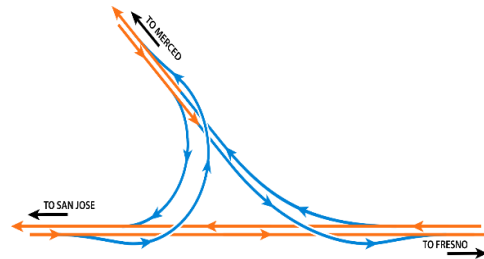
The HSR alignment would be entirely grade-separated, meaning that crossings of roads, railroads, and other transport facilities would use overpasses or underpasses so that the HSR would operate independently of other modes of transport. The HSR right-of-way would also be fenced to prevent public or vehicle access. The Central Valley Wye project footprint would primarily consist of the train right-of-way, which would accommodate two sets of tracks in an area with a minimum width of 100 feet. Additional right-of-way would be required to accommodate grade separations, embankments, traction power facilities, and transitional portions of the Central Valley Wye that allow for bidirectional interface between north-south and east-west trending alignments.

The Central Valley Wye alternatives would include at-grade, below-grade, and above-grade (elevated) track segments. The at-grade track would be laid on an earthen railbed raised 6–10 feet (embankment heights are in excess of 35 feet) off the ground level, set on ties with rock ballast; fill and ballast for the railbed would be obtained from permitted borrow sites and quarries. Below-grade track would be laid in open cut, trench, or cut-and-cover tunnel at a depth that would allow roadway and other grade-level uses above the track. Elevated track segments would span some waterways, roadways, railroad, and other HSR tracks, and would consist of precast, prestressed concrete box girders, cast-in-place concrete box girders, or steel box girders. The height of elevated track sections would depend on the height of existing structures below, or clearances to existing roads or other HSR facilities, and would range from 35 to 90 feet above grade. Columns would be spaced approximately 100–120 feet apart on average.

2.2 SR 152 (North) to Road 13 Wye Alternative

The SR 152 (North) to Road 13 Wye Alternative (Figure 2-1) follows the existing Henry Miller Road and SR 152 rights-of-way as closely as possible in the east-west direction, and the Road 13, SR 99, and BNSF Railway (BNSF) rights-of-way in the north-south direction. Deviations from

Central Valley Wye Schematic



¹ The term *wye* refers to the Y-like formation created at the point where train tracks branch off the mainline to continue in different directions. The transition of mainline track to a wye requires splitting two tracks into four tracks that cross over one another before the wye “legs” (segments) can diverge in opposite directions to allow two-way travel. For the Merced to Fresno Section of the HSR system, the two tracks traveling east-west from the San Jose to Merced Section must become four tracks—a set of two tracks branching toward Merced to the north and a set of two tracks branching toward Fresno to the south.

these existing transportation routes or corridors are necessary to accommodate design requirements; specifically, wider curves are necessary to accommodate the speed of the HSR compared to lower-speed roadway alignments. The SR 152 (North) to Road 13 Wye Alternative would not follow existing transportation rights-of-way where it transitions from following one transportation corridor to another.

2.2.1 Alignment and Ancillary Features

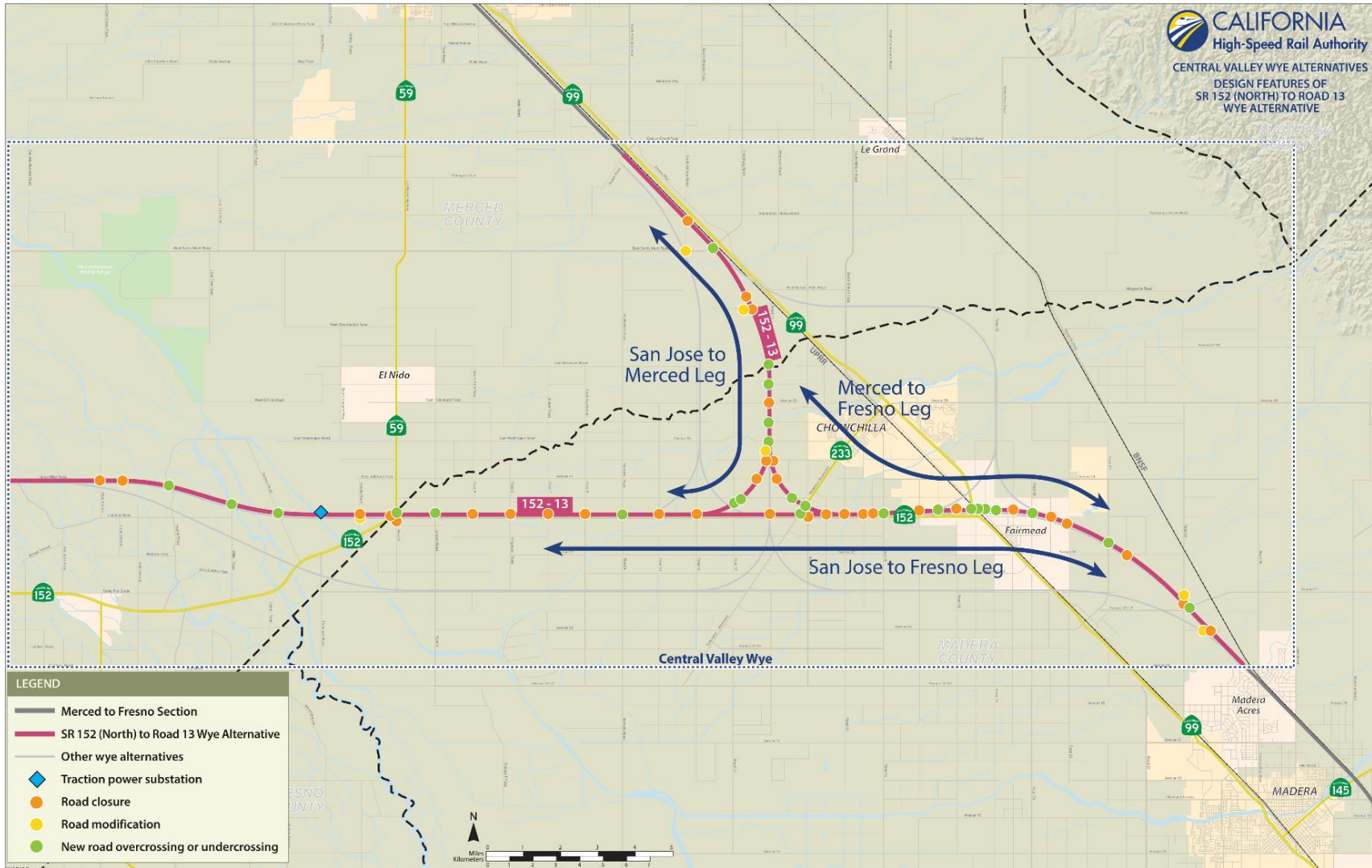
The SR 152 (North) to Road 13 Wye Alternative would extend approximately 52 miles, mostly at-grade on raised embankment, although it would also have aerial structures and a segment of retained cut (depressed alignment). The wye configuration of this alternative would be located southwest of the city of Chowchilla, with the east-west axis along the north side of SR 152 and the north-south axis on the east side of Road 13.

As shown on Figure 2-1, this alternative would begin in Merced County at the intersection of Henry Miller Road and Carlucci Road, and would continue at-grade on embankment due east toward Elgin Avenue, where it would curve southeast toward the San Joaquin River and Eastside Bypass. Approaching Willis Road, the alignment would cross the San Joaquin River on an aerial structure and then would return to embankment. It would then cross the Eastside Bypass on an aerial structure. After crossing the Eastside Bypass, the alignment would continue east and cross SR 59 at-grade just north of the existing SR 152/SR 59 interchange, entering Madera County. The SR 152/SR 59 interchange would be reconstructed a little to the south and SR 59 would be grade-separated to pass above the HSR on an aerial structure. The alignment would continue east at-grade along the north side of SR 152 toward Chowchilla, splitting into two legs (four tracks) near Road 11 to transition to the Merced to Fresno Section: Hybrid Alignment, and would cross Ash Slough on an aerial structure. All but the northbound track of the San Jose to Merced section of the alignment (leg) would then return to at-grade embankment. The northbound track would rise to cross over the tracks of the San Jose to Fresno leg on aerial structure as it curves north toward Merced. The SR 152 (North) to Road 13 Wye Alternative legs would be routed as described below and as shown on Figure 2-1:

- The southbound track of the San Jose to Merced leg² would be at-grade. This split (where tracks separate) would be west of Chowchilla, at approximately Road 11. The two San Jose to Merced tracks would continue north on the eastern side of Road 13, crossing Ash Slough and the Chowchilla River, and then would cross over Road 13 to its west side. As the tracks return to grade, they would curve northwest, crossing Dutchman Creek on an aerial structure, and follow the west side of the Union Pacific Railroad (UPRR)/SR 99 corridor. At Sandy Mush Road, the alignment would descend into a shallow cut (depressed) section for approximately 0.5 mile, with a retained cut-and-cover undercrossing³ at Caltrans' Sandy Mush Road overhead. The alignment would return to grade and continue along the west side of the UPRR/SR 99 corridor, connecting to the Merced to Fresno Section: Hybrid Alignment at Ranch Road.

² A track is included within a leg; e.g., southbound track of the San Jose to Merced leg.

³ An undercrossing is a road or track crossing under an existing road or track.



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Figure 2-1 SR 152 (North) to Road 13 Wye Alternative Alignment and Key Design Features

- The San Jose to Fresno leg of this alternative would continue east from the split near Road 11 and along the north side of SR 152 toward Chowchilla. It would be predominantly at-grade, crossing several roads and Berenda Slough on aerial structures. The alignment would pass south of Chowchilla at-grade then would rise to cross over the UPRR/SR 99 corridor and Fairmead Boulevard on an aerial structure. East of the UPRR/SR 99 corridor, the alternative would extend at-grade through Fairmead, north of Avenue 23. At approximately Road 20, the alignment would curve southeast toward the BNSF corridor and cross Dry Creek on a short aerial structure. The San Jose to Fresno leg would align parallel to the west side of the BNSF corridor as it meets the Merced to Fresno Section: Hybrid Alignment at Avenue 19.
- The Merced to Fresno leg of the alternative would split from the San Jose to Fresno leg near Road 14, where the southbound track of the Merced to Fresno leg would ascend on aerial structure, crossing over the tracks of the San Jose to Fresno leg. The northbound track would curve northwest, rise on a high embankment crossing over several roads, and continue on an at-grade embankment until joining the San Jose to Merced leg near Avenue 25.

Wildlife undercrossing structures would be installed in at-grade embankments along this alternative where the alignment intersects wildlife corridors.

2.2.2 State Highway or Local Roadway Modifications

The SR 152 (North) to Road 13 Wye Alternative would require the permanent closure of 38 public roadways at selected locations and the construction of 24 overcrossings⁴ or undercrossings in lieu of closure. Figure 2-1 shows the anticipated state highway and local roadway closures and modifications. Fourteen of these permanent road closures would be located at SR 152, where roads currently cross at-grade but need to be closed to convert SR 152 to a fully access-controlled corridor. The 14 proposed closures are Road 5, Road 6, Road 7, Road 8, Road 10, Road 11, Road 13, Road 14, Road 14 1/2, Road 15, Road 15 1/2, Road 15 3/4, Road 17, and Road 18. Planned new grade separations along SR 152 at the SR 59/SR 152 Interchange, Road 4/Lincoln Road, Road 12, and Road 17 1/2 would maintain access to, and across, SR 152. These roadways would be reconfigured to two 12-foot lanes with two 8-foot shoulders. Each of the new interchanges would require realigning SR 152. Three new interchanges are proposed between SR 59 and SR 99 to provide access to SR 152: at Road 9/Hemlock Road, SR 233/Robertson Boulevard, and Road 16.

The distance between over- or undercrossings would vary from less than 2 miles to approximately 5 miles where other roads are perpendicular to the proposed HSR. Between these over- or undercrossings, 24 additional roads would be closed, as shown on Figure 2-1. Local roads paralleling the proposed HSR alignment and used by small communities and farm operations may be shifted and reconstructed to maintain their function. Access easements would be provided to maintain access to properties severed by HSR.

2.2.3 Freight or Passenger Railroad Modifications

The SR 152 (North) to Road 13 Wye Alternative would cross over the UPRR right-of-way south of Chowchilla. This alternative would maintain required vertical (at least 23.3 feet) clearance over UPRR operational right-of-way to avoid or minimize impacts on UPRR rights-of-way, spurs, and facilities (BNSF and UPRR 2007). Where the SR 152 (North) to Road 13 Wye Alternative would parallel UPRR operational right-of-way, a horizontal clearance of more than 50 feet would be maintained.

2.2.4 Summary

Table 2-1 summarizes the design features for the SR 152 (North) to Road 13 Wye Alternative.

⁴ An overcrossing is a road or track crossing over an existing road or track.

Table 2-1 Design Features of the SR 152 (North) to Road 13 Wye Alternative

Feature	SR 152 (North) to Road 13 Wye
Total length (linear miles) ¹	52
At-grade profile (linear miles) ¹	48.5
Elevated profile (linear miles) ¹	3
Below-grade profile (linear miles) ¹	0.5
Number of straddle bents	32
Number of railroad crossings	1
Number of major water crossings	12
Number of road crossings	62
Approximate number of public roadway closures	38
Number of roadway overcrossings and undercrossings	24
Traction power substation sites	1
Switching and paralleling stations	3 switching stations, 8 paralleling stations
Signaling and train-control elements	18
Communication towers	9
Wildlife crossing structures	39

Source: Authority, 2015

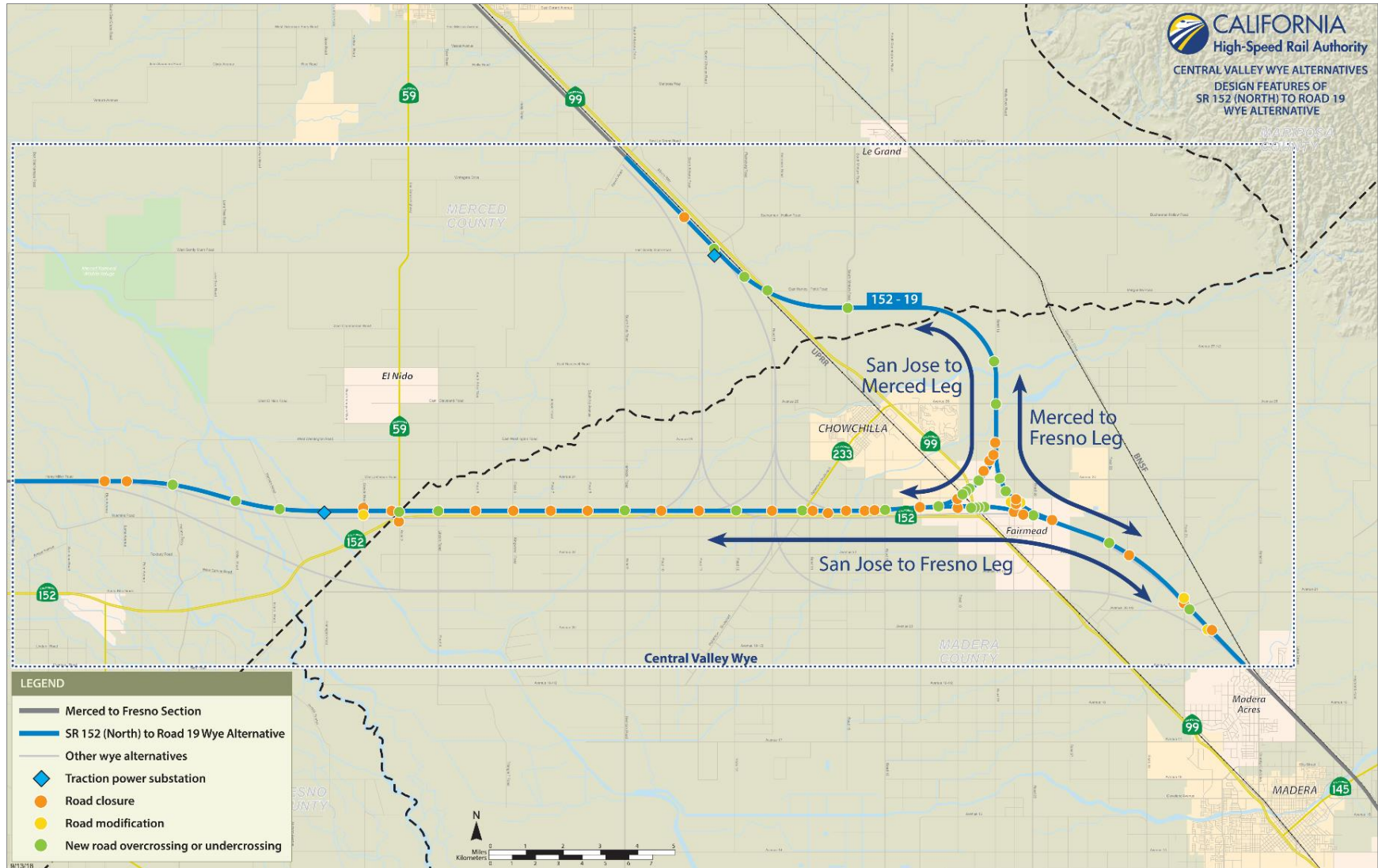
¹ Lengths shown are based on equivalent dual-track alignments and are one-way mileages. For example, the length of single-track elevated structure will be divided by a factor of 2 to convert to dual-track equivalents.

2.3 SR 152 (North) to Road 19 Wye Alternative

The SR 152 (North) to Road 19 Wye Alternative (Figure 2-2) is designed to follow the existing Henry Miller Road and SR 152 rights-of-way as closely as practicable in the east-west direction and Road 19, SR 99, and BNSF rights-of-way in the north-south direction. Deviations from these existing transportation corridors would be necessary to accommodate design requirements; specifically, larger curves would be necessary to accommodate the high speed of the HSR compared to lower-speed roadway alignments. The SR 152 (North) to Road 19 Wye Alternative would not follow existing transportation rights-of-way as it transitions from following one transportation corridor to another.

2.3.1 Alignment and Ancillary Features

The SR 152 (North) to Road 19 Wye Alternative would extend approximately 55 miles, mostly at-grade on embankment, although it would also have aerial structures, retained cut (depressed alignment), and depressed tunnel undercrossings of major railroad and highway corridors. The wye configuration of this alternative would be located southeast of the city of Chowchilla and north of Fairmead, with the east-west axis along the north side of SR 152 and the north-south axis on the east side of Road 19.



Source: Authority, 2016; ESRI, 2013; ESRI/National Geographic, 2015

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Figure 2-2 SR 152 (North) to Road 19 Wye Alternative Alignment and Key Design Features

Beginning at the intersection of Henry Miller Road and Carlucci Road (at the same point in Merced County as the SR 152 [North] to Road 13 Wye Alternative), this alternative would continue east toward Elgin Avenue, where it would curve southeast toward the San Joaquin River. It would cross the river on an aerial structure, returning to an at-grade embankment, then onto another aerial structure to cross the Eastside Bypass. After crossing the Eastside Bypass, the alignment would continue east and cross SR 59 at-grade just north of the existing SR 152/SR 59 interchange, where it would enter Madera County. It would continue east at-grade along the north side of SR 152 toward Chowchilla, crossing Ash Slough and Berenda Slough on aerial structures. As it crosses Road 16, the alignment would split into two legs (four tracks) to transition to the Merced to Fresno Section: Hybrid Alignment. East of Road 17, the San Jose to Merced leg would curve northeast, rising to cross the UPRR/SR 99 corridor on an aerial structure, and then would continue north along the east side of Road 19.

As the alignment approaches Avenue 25, the San Jose to Merced and Merced to Fresno legs would converge, requiring the northbound track of the San Jose to Merced leg to rise on an aerial structure and cross over the tracks of the Merced to Fresno leg.

- The San Jose to Merced leg would continue north to just south of Ash Slough, where it would curve west, cross Ash Slough and the Chowchilla River on aerial structures, and continue west approximately 0.5 mile south of Harvey Pettit Road. West of South Minturn Road, the leg would curve northwest and descend below-grade into a series of three tunnels crossing under the SR 99 and UPRR corridors and the Caltrans Sandy Mush Road overhead. The UPRR tracks would be reconstructed on the roof of the HSR cut-and-cover tunnels, while maintaining the same horizontal and vertical alignment. Construction of this type of below-grade crossing would require temporarily realigning the UPRR tracks. Approximately 0.6 mile north of Sandy Mush Road, the alternative would ascend to grade and continue along the UPRR/SR 99 corridor to connect with the Merced to Fresno Section: Hybrid Alignment at Ranch Road.
- The San Jose to Fresno leg would continue east from Road 16 and, east of Road 18, ascend on an aerial structure to cross SR 99 north of the SR 99/SR 152 interchange. East of the UPRR/SR 99 corridor, the leg would continue north of Avenue 23 through Fairmead, descending to grade east of Road 18 3/4. The alternative would then curve southeast toward the BNSF corridor, crossing Dry Creek on a short aerial structure, and continuing along the west side of the BNSF corridor to join the Merced to Fresno Section: Hybrid Alignment at Avenue 19.
- The Merced to Fresno leg would split from the San Jose to Fresno leg near Road 20 1/2. The southbound track of the Merced to Fresno leg would ascend on an aerial structure and cross over the tracks of the San Jose to Fresno leg. The Merced to Fresno leg would curve northwest, rise on aerial structures over several road crossings, and then continue at-grade to join the San Jose to Merced leg near Avenue 25.

Wildlife undercrossing structures would be provided in at-grade embankments where the alignment intersects wildlife corridors.

2.3.2 State Highway or Local Roadway Modifications

The SR 152 (North) to Road 19 Wye Alternative would require the permanent closure of 36 public roadways at selected locations and the construction of 29 overcrossings or undercrossings. Table 2-2 and Figure 2-2 show the anticipated state highway and local roadway closures and modifications. Fourteen of these permanent road closures would be located at SR 152 where roads currently cross at-grade but must be closed to convert SR 152 to a fully access-controlled corridor. The proposed 14 closures are Road 5, Road 6, Road 7, Road 8, Road 10, Road 11, Road 13, Road 14, Road 14 1/2, Road 15, Road 15 1/2, Road 15 3/4, Road 17, and Road 18. New grade separations are planned along SR 152 at the SR 59/SR 152 interchange, Road 4/Lincoln Road, Road 12, SR and Road 17 1/2. These roadways would be reconfigured to two 12-foot lanes with two 8-foot shoulders, and several of these interchanges would require realigning SR 152. Interchanges between SR 59 and SR 99 that would provide access to SR 152 are Road 9/Hemlock Road, SR 233/Robertson Boulevard, and Road 16.

The distance between over- or undercrossings would vary from less than 2 miles to approximately 5 miles where roads would be perpendicular to the proposed HSR. Between these over- or undercrossings, 22 additional roads would be closed (Figure 2-2). Local roads paralleling the proposed HSR alignment and used by small communities and farm operations may be shifted and reconstructed to maintain their function. Access easements would be provided to maintain access to properties severed by HSR.

The SR 152 (North) to Road 19 Wye Alternative would cross over SR 99 at three locations. South of Chowchilla, both the San Jose to Merced and the San Jose to Fresno legs would rise on aerial structures to cross SR 99. Another crossing of SR 99 would be at the northern end of the alternative, where it descends below-grade into an undercrossing tunnel segment. SR 99 would be temporarily realigned during construction, and would be reconstructed on the roof of the undercrossing tunnel.

2.3.3 Freight or Passenger Railroad Modifications

The SR 152 (North) to Road 19 Wye Alternative would cross over the UPRR corridor at three separate locations. South of Chowchilla, both the San Jose to Merced and the San Jose to Fresno legs would rise on aerial structures to cross the UPRR operational right-of-way. In these instances, the alternative would maintain required vertical (at least 23.3 feet) clearance over UPRR operational right-of-way to avoid or minimize impacts on UPRR rights-of-way, spurs, and facilities (BNSF and UPRR 2007). The third crossing of the UPRR corridor would be at the northern end of the alternative, where the alignment would descend into an undercrossing tunnel. The UPRR tracks would be reconstructed on the roof of the HSR tunnel, maintaining the same vertical alignment. Construction of this crossing would require the temporary detour (shoofly)⁵ of the UPRR tracks. Where the SR 152 (North) to Road 19 Wye Alternative would parallel UPRR operational right-of-way, a horizontal clearance of more than 50 feet would be maintained.

2.3.4 Summary

Table 2-2 summarizes the design features for the SR 152 (North) to Road 19 Wye Alternative.

Table 2-2 Design Features of the SR 152 (North) to Road 19 Wye Alternative

Feature	SR 152 (North) to Road 19 Wye
Total length (linear miles) ¹	55
At-grade profile (linear miles) ¹	48.5
Elevated profile (linear miles) ¹	3.5
Below-grade profile (linear miles) ¹	3
Number of straddle bents	31
Number of railroad crossings	3
Number of major water crossings	13
Number of road crossings	65
Approximate number of public roadway closures	36
Number of roadway overcrossings and undercrossings	29
Traction power substation sites	2
Switching and paralleling stations	3 switching stations, 7 paralleling stations

⁵ A shoofly is a temporary track alignment that detours trains around a construction site.

Feature	SR 152 (North) to Road 19 Wye
Signaling and train-control elements	21
Communication towers	6
Wildlife crossing structures	41

Source: Authority, 2015

¹ Lengths shown are based on equivalent dual-track alignments and are one-way mileages. For example, the length of single-track elevated structure will be divided by a factor of 2 to convert to dual-track equivalents.

2.4 Avenue 21 to Road 13 Wye Alternative

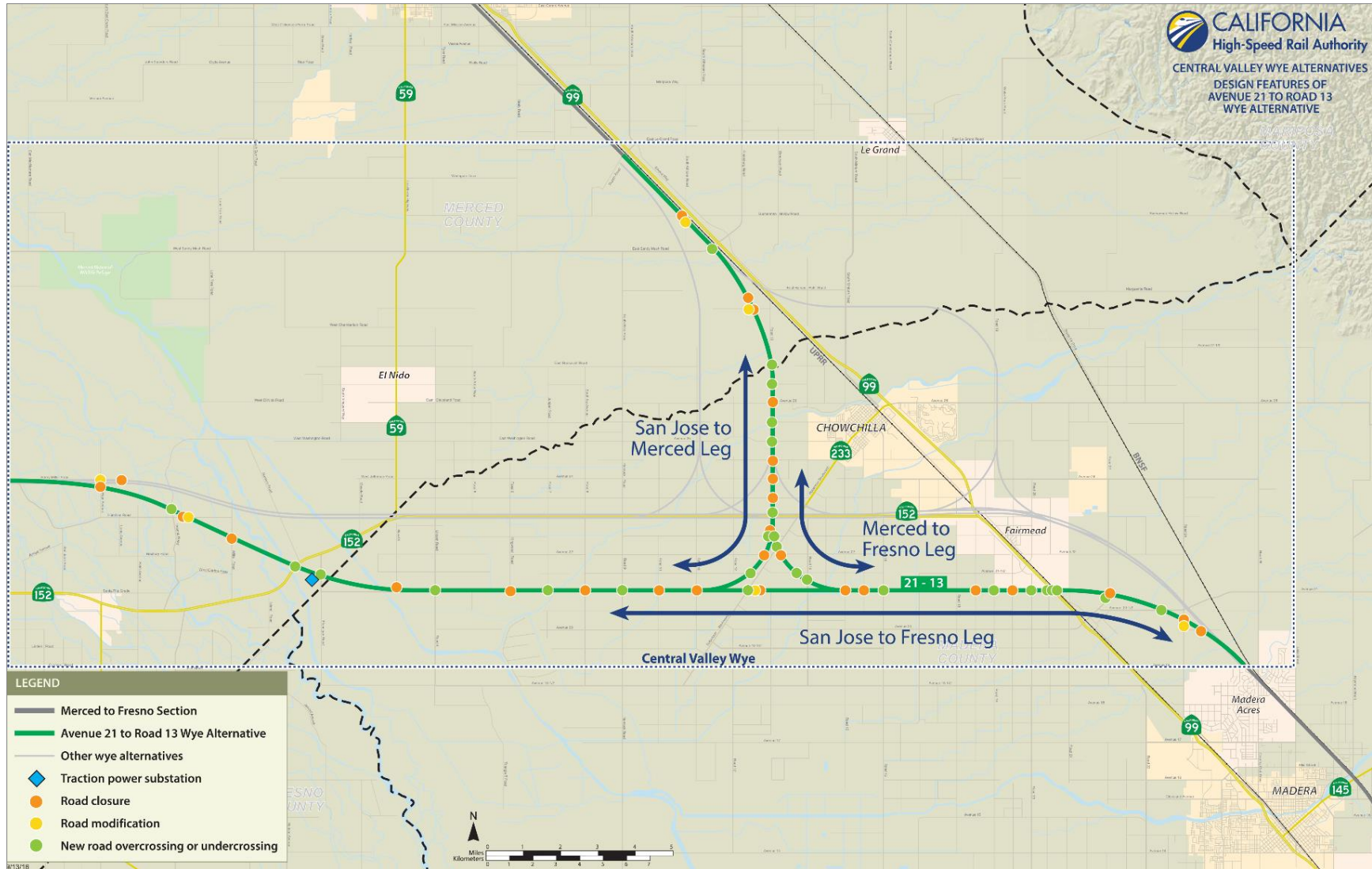
The Avenue 21 to Road 13 Wye Alternative (Figure 2-3) is designed to follow the existing Henry Miller Road and Avenue 21 rights-of-way as closely as practicable in the east-west direction and the Road 13, SR 99, and BNSF rights-of-way in the north-south direction. Deviations from these existing transportation corridors would be necessary to accommodate design requirements; specifically, larger curves would be necessary to accommodate the high speeds of the HSR compared to lower-speed roadway alignments. The Avenue 21 to Road 13 Wye Alternative would not follow existing transportation rights-of-way as it transitions from following one transportation corridor to another.

2.4.1 Alignment and Ancillary Features

The Avenue 21 to Road 13 Wye Alternative would extend approximately 53 miles, mostly at-grade on embankment, although it would also have aerial structures and a short segment of retained cut (depressed alignment). The wye configuration of this alternative would be located approximately 4 miles southwest of the city of Chowchilla, with the east-west axis along the north side of Avenue 21 and the north-south axis on the east side of Road 13.

Beginning at the intersection of Henry Miller Road and Carlucci Road (at the same point in Merced County as the SR 152 [North] to Road 13 Wye Alternative), west of Elgin Avenue this alternative would curve southeast toward the San Joaquin River and Eastside Bypass. East of Willis Road, the alignment would rise to an aerial structure to cross the river, SR 152, and the Eastside Bypass. The alignment would continue east along the north side of Avenue 21, crossing Ash Slough on an aerial structure. Southwest of Chowchilla, near Road 11, the alignment would split into two legs (four tracks) for transition to the Merced to Fresno Section: Hybrid Alignment. The San Jose to Merced leg would curve northeast, cross Road 13, and continue north along the east side of Road 13. At the beginning of the San Jose to Merced leg, the northbound track alternative would rise onto an aerial structure to cross over the tracks of the San Jose to Fresno leg. The Avenue 21 to Road 13 Wye Alternative legs would be routed as described below and shown on Figure 2-3:

- As the San Jose to Merced leg approaches SR 152, it would converge with the Merced to Fresno leg, requiring the northbound track of the San Jose to Merced leg to rise on an aerial structure and cross over the tracks of the Merced to Fresno leg. The San Jose to Merced leg would continue north on an elevated alignment crossing Ash Slough, the Chowchilla River, and Road 13 on aerial structures. As the leg returns to grade, it would curve northwest, cross Dutchman Creek on an aerial structure, and follow along the west side of the UPRR/SR 99 corridor. At Sandy Mush Road, the alternative would descend into a shallow cut (depressed) section for approximately 0.5 mile, with a retained cut-and-cover undercrossing tunnel segment at the Caltrans Sandy Mush Road Overhead. The alternative would return to grade and continue along the UPRR/SR 99 corridor, connecting to the Merced to Fresno Section: Hybrid Alignment at Ranch Road.



Source: Authority, 2016; ESRI, 2013; ESRI/National Geographic, 2015

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Figure 2-3 Avenue 21 to Road 13 Wye Alternative Alignment and Key Design Features

- The San Jose to Fresno leg would continue east from the split near Road 11 along the north side of Avenue 21 toward Chowchilla. It would be predominantly at-grade on embankment, ascending to cross Berenda Slough on an aerial structure. East of the wye configuration, the alignment would extend south of Chowchilla, ascend on an aerial structure east of Road 19 1/2, and cross the UPRR/SR 99 corridor. The alternative would extend south of Fairmead and curve southeast toward the BNSF corridor, cross Dry Creek on an aerial structure, and run adjacent to the west side of the BNSF corridor to its meeting with the Merced to Fresno Section: Hybrid Alignment at Avenue 19.
- The Merced to Fresno leg would split from the San Jose to Fresno leg near Road 15. The southbound track of the Merced to Fresno leg would ascend on an aerial structure and cross over the tracks of the San Jose to Fresno leg. The Merced to Fresno leg would curve northwest, rise on aerial structures over several road crossings, and then continue on an at-grade embankment to join the San Jose to Merced leg near SR 152.

Wildlife undercrossing structures would be provided along this alternative in at-grade embankment portions of the HSR corridor where the alignment intersects wildlife corridors.

2.4.2 State Highway or Local Roadway Modifications

The Avenue 21 to Road 13 Wye Alternative would require the permanent closure of 30 public roadways at selected locations and the construction of 28 overcrossings or undercrossings. Table 2-3 and Figure 2-3 show the anticipated state highway and local roadway closures. This alternative would require the fewest roadway and state highway modifications.

The Avenue 21 to Road 13 Wye Alternative would rise on aerial structures and cross over state highway facilities in three locations: SR 59 at Harmon Road, SR 152 at Road 13, and SR 99 at Avenue 21. Where other roads would be perpendicular to the proposed HSR, over- or undercrossings are planned at distances from less than 2 miles to 5 miles. Between these over- and undercrossings, some roads may be closed. Local roads paralleling the HSR alignment and used by small communities and farm operations may be shifted and reconstructed to maintain their function. Access easements would be provided to maintain access to properties severed by HSR.

2.4.3 Freight or Passenger Railroad Modifications

The Avenue 21 to Road 13 Wye Alternative would cross the UPRR operational right-of-way on an aerial structure south of Fairmead and maintain a vertical (at least 23.3 feet) clearance over UPRR operational right-of-way to avoid or minimize impacts on other UPRR rights-of-way, spurs, and facilities. A horizontal clearance of more than 50 feet would be maintained where the Avenue 21 to Road 13 Wye Alternative would parallel UPRR operational right-of-way.

2.4.4 Summary

Table 2-3 summarizes the design features for the Avenue 21 to Road 13 Wye Alternative.

Table 2-3 Design Features of the Avenue 21 to Road 13 Wye Alternative

Feature	Avenue 21 to Road 13 Wye
Total length (linear miles) ¹	53
At-grade profile (linear miles) ¹	48.5
Elevated profile (linear miles) ¹	4
Below-grade profile (linear miles) ¹	0.5
Number of straddle bents	32
Number of railroad crossings	1
Number of major water crossings	11

Feature	Avenue 21 to Road 13 Wye
Number of road crossings	58
Approximate number of public roadway closures	30
Number of roadway overcrossings and undercrossings	28
Traction power substation sites	1
Switching and paralleling stations	3 switching stations, 7 paralleling stations
Signaling and train-control elements	15
Communication towers	6
Wildlife crossing structures	44

Source: Authority, 2015

¹ Lengths shown are based on equivalent dual-track alignments and are one-way mileages. For example, the length of single-track elevated structure will be divided by a factor of 2 to convert to dual-track equivalents.

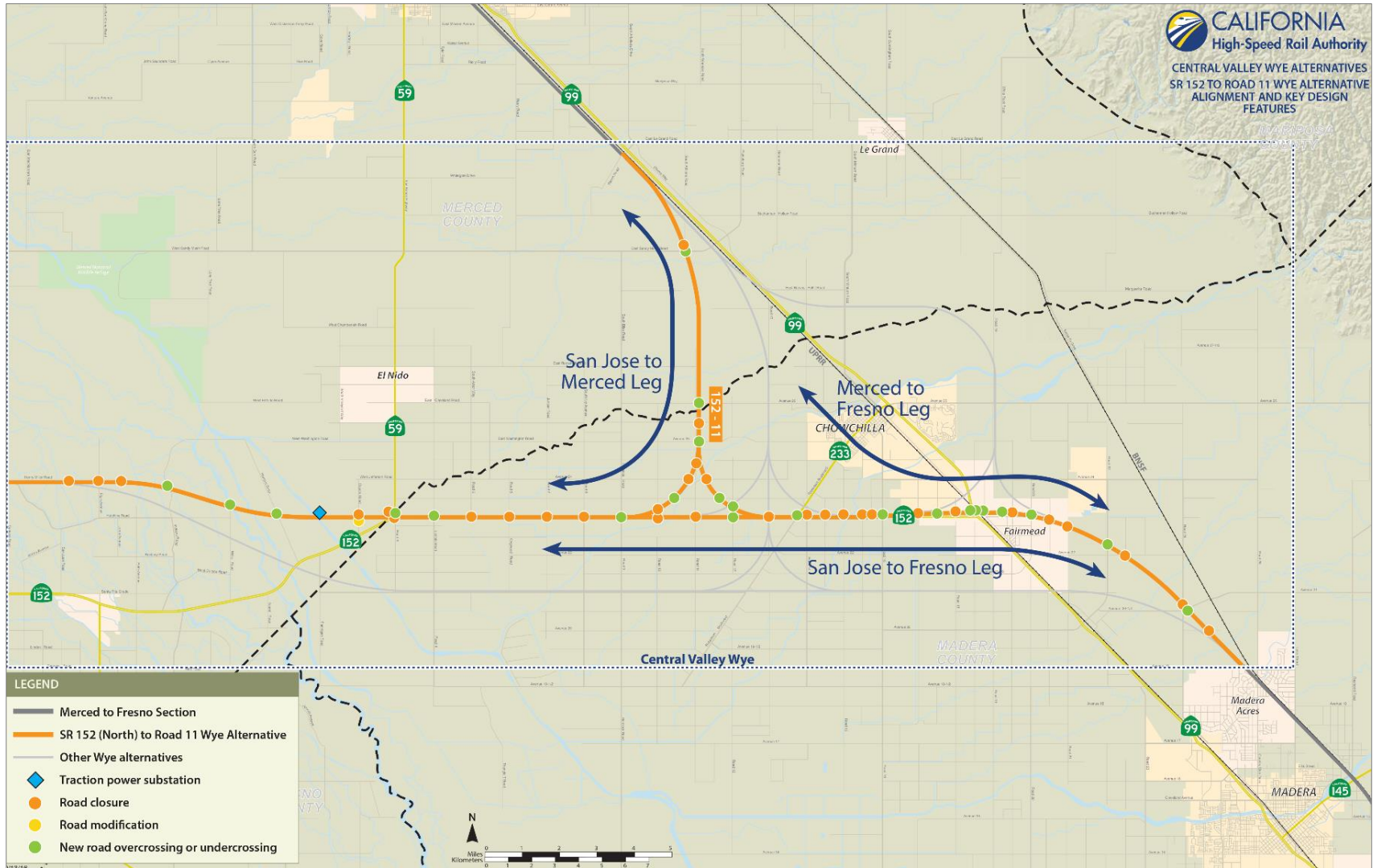
2.5 SR 152 (North) to Road 11 Wye Alternative

The SR 152 (North) to Road 11 Wye Alternative (Figure 2-4) follows the existing Henry Miller Road and SR 152 rights-of-way as closely as practicable in the east-west direction, and the Road 11, SR 99, and BNSF rights-of-way in the north-south direction. Deviations from these existing transportation corridors are necessary to accommodate design requirements; specifically, wider curves are necessary to accommodate the speed of the HSR compared to lower-speed roadway alignments. The SR 152 (North) to Road 11 Wye Alternative would not follow existing transportation rights-of-way where it transitions from following one transportation corridor to another.

2.5.1 Alignment and Ancillary Features

The SR 152 (North) to Road 11 Wye Alternative would extend approximately 51 miles, mostly at-grade on raised embankment, although it would also have aerial structures. The wye configuration of this alternative would be located west-southwest of the city of Chowchilla, with the east-west axis along the north side of SR 152 and the north-south axis on the east side of Road 11.

Like the other three alternatives, this alternative would begin in Merced County at the intersection of Henry Miller Road and Carlucci Road, and would continue at-grade on embankment east toward Elgin Avenue, where it would curve southeast toward the San Joaquin River and Eastside Bypass. Approaching Willis Road, the alignment would rise to cross the San Joaquin River on an aerial structure, return to embankment, then cross the Eastside Bypass on an aerial structure. After crossing the Eastside Bypass, this alternative would continue east, crossing SR 59 at-grade just north of the existing SR 152/SR 59 interchange, entering Madera County. To accommodate the SR 152 (North) to Road 11 Wye Alternative, the SR 152/SR 59 interchange would be reconstructed slightly to the south, and SR 59 would be grade-separated to pass above the HSR on an aerial structure. The alignment would continue east at-grade along the north side of SR 152 toward Chowchilla, splitting into two legs (four tracks) near Road 10 to transition to the Merced to Fresno Section: Hybrid Alignment, and would cross Ash Slough on an aerial structure. All but the northbound track of the San Jose to Merced leg of the alternative would then return to at-grade embankment; the northbound track would rise to cross over the tracks of the San Jose to Fresno leg on an aerial structure as it curves north toward Merced. The SR 152 (North) to Road 11 Wye Alternative legs would be routed as described below and shown on Figure 2-4:



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Figure 2-4 SR 152 (North) to Road 11 Wye Alternative Alignment and Key Design Features

- The southbound track of the San Jose to Merced leg would turn north at-grade. This split would be west of Chowchilla, at approximately Road 10. The two San Jose to Merced tracks would continue north on the eastern side of Road 11, crossing the Chowchilla River, and then would cross over Road 11 to follow its west side. As the tracks return to grade, they would curve northwest, crossing Dutchman Creek on an aerial structure, following the west side of the UPRR/SR 99 corridor. The alignment would continue north, crossing over Sandy Mush Road on an aerial structure. The alignment would return to grade and continue along the west side of the UPRR/SR 99 corridor, connecting to the Merced to Fresno Section: Hybrid Alignment at Ranch Road.
- The San Jose to Fresno leg would continue east from the wye split near Road 10, along the north side of SR 152 toward Chowchilla. It would be predominantly at-grade, ascending on aerial structures at several road crossings and Berenda Slough. The leg would pass south of Chowchilla at-grade then rise to cross over the UPRR/SR 99 corridor and Fairmead Boulevard on an aerial structure. East of the UPRR/SR 99 corridor, the alignment would extend at-grade through Fairmead, north of Avenue 23. At approximately Road 20, the leg would curve southeast toward the BNSF corridor and cross Dry Creek on a short aerial structure. The SR 152 (North) to Road 11 Wye Alternative would align parallel to the west side of the BNSF corridor as it meets the Merced to Fresno Section: Hybrid Alignment at Avenue 19.
- The Merced to Fresno leg would split from the San Jose to Fresno leg near Road 13. The southbound track of the Merced to Fresno leg would ascend on an aerial structure and cross over the tracks of the San Jose to Fresno leg. The Merced to Fresno leg would curve northwest, rise on a high embankment crossing over several roads, and continue at-grade on embankment to join the San Jose to Merced leg near Avenue 25.

Wildlife undercrossing structures would be installed in at-grade embankments along this alternative where the alignment intersects wildlife corridors.

2.5.2 State Highway or Local Roadway Modifications

The SR 152 (North) to Road 11 Wye Alternative would require the permanent closure of 33 public roadways at selected locations and the construction of 24 overcrossings or undercrossings in lieu of closure. Table 2-4 and Figure 2-4 show the anticipated state highway and local roadway closures and modifications. Fourteen of these permanent road closures would be located at SR 152 where roads currently cross at-grade but need to be closed in order to convert SR 152 to a fully access-controlled corridor. The 14 proposed closures are Road 5, Road 6, Road 7, Road 8, Road 10, Road 11, Road 13, Road 14, Road 14 1/2, Road 15, Road 15 1/2, Road 15 3/4, Road 17, and Road 18. Planned new grade separations along SR 152 at the SR 59/SR 152 Interchange, Road 4/Lincoln Road, Road 12, and Road 17 1/2 would maintain access to SR 152. These roadways would be reconfigured to two 12-foot lanes with two 8-foot shoulders. Several of these new interchanges would require realigning SR 152. Three new interchanges are proposed between SR 59 and SR 99 to provide access to SR 152: at Road 9/Hemlock Road, SR 233/Robertson Boulevard, and Road 16.

The distance between over- or undercrossings would vary from less than 2 miles to approximately 5 miles where other roads are perpendicular to the proposed HSR. Between these over- or undercrossings, 19 additional roads would be closed. Local roads paralleling the proposed HSR alignment and used by small communities and farm operations may be shifted and reconstructed to maintain their function. Access easements would be provided to maintain access to properties severed by HSR.

2.5.3 Freight or Passenger Railroad Modifications

The SR 152 (North) to Road 11 Wye Alternative would cross over the UPRR right-of-way as it passes south of Chowchilla. This alternative would maintain required vertical (at least 23.3 feet) clearance over UPRR operational right-of-way to avoid or minimize impacts on UPRR rights-of-way, spurs, and facilities (BNSF and UPRR 2007). Horizontal clearance (greater than 50 feet)

would be maintained where the SR 152 (North) to Road 11 Wye Alternative would parallel UPRR operational right-of-way.

2.5.4 Summary

Table 2-4 summarizes the design features for the SR 152 (North) to Road 11 Wye Alternative.

Table 2-4 Design Features of the SR 152 (North) to Road 11 Wye Alternative

Feature	SR 152 (North) to Road 11 Wye
Total length (linear miles) ¹	51
At-grade profile (linear miles) ¹	46.5
Elevated profile (linear miles) ¹	4.5
Below-grade profile (linear miles) ¹	0
Number of straddle bents	27
Number of railroad crossings	1
Number of major water crossings	13
Number of road crossings	57
Approximate number of public roadway closures	33
Number of roadway overcrossings and undercrossings	24
Traction power substation sites	1
Switching and paralleling stations	3 switching stations, 7 paralleling stations
Signaling and train-control elements	19
Communication towers	9
Wildlife crossing structures	37

Source: Authority, 2015

¹ Lengths shown are based on equivalent dual-track alignments and are one-way mileages. For example, the length of single-track elevated structure will be divided by a factor of 2 to convert to dual-track equivalents.

2.6 Central Valley Wye Impact Avoidance and Minimization Features

The Authority has developed IAMFs that would avoid or minimize potential effects and mitigation measures that would avoid or reduce significant impacts that exist after the application of all appropriate IAMFs. IAMFs are standard practices, actions, and design features that are incorporated into the Central Valley Wye description. Mitigation measures consist of practices, actions, and design features that are applied to the Central Valley Wye after an impact is identified. Appendix A, California High-Speed Rail Impact Avoidance and Minimization Features for Hazardous Materials and Wastes, presents complete descriptions of all IAMFs related to hazardous materials and wastes. Volume 2 of the Supplemental EIR/EIS, Appendix 2-B, California High-Speed Rail: Impact Avoidance and Minimization Features, presents complete descriptions of all IAMFs for the Central Valley Wye.

The Authority and FRA will implement the following IAMFs to address potential Central Valley Wye effects from hazardous materials and wastes:

- HMW-IAMF#1: Property Acquisition Phase I Assessments
- HMW-IAMF#2: Landfill
- HMW-IAMF#3: Work Barriers
- HMW- IAMF#4: Undocumented Contamination

- HMW- IAMF#5: Demolition Plans
- HMW-IAMF#6: Spill Prevention
- HMW-IAMF#7: Transport of Materials
- HMW-IAMF#8: Permit Conditions
- HMW-IAMF#9: Environmental Management Systems
- HMW-IAMF#10: Hazardous Materials Plans

3 LAWS, REGULATIONS, AND ORDERS

This section provides a summary of federal, state, and local laws, regulations, orders, or plans that pertain to hazardous materials and wastes in the geographic area that would be affected by the Central Valley Wye. For complete descriptions, refer to Section 3.10.2, Laws, Regulations, and Orders, of the Merced to Fresno Final EIR/EIS. Where applicable, the summaries that follow identify updates or amendments that have been made since the Merced to Fresno Final EIR/EIS was completed.

3.1 Federal

3.1.1 National Environmental Policy Act (42 U.S. C. § 4321 et seq.)

The National Environmental Policy Act (NEPA) requires consideration of potential environmental effects, including potential hazardous material and waste effects, in the evaluation of any proposed federal agency action. NEPA also obligates federal agencies to consider the environmental consequences and costs of their projects and programs as part of the planning process. General NEPA procedures are set forth in the Council on Environmental Quality regulations at 23 C.F.R. Part 771.

3.1.2 Resource Conservation and Recovery Act (42 U.S.C. § 6901 et seq.)

The Resource Conservation and Recovery Act (RCRA) regulates the identification, generation, transportation, storage, treatment, and disposal of solid and hazardous materials and hazardous wastes. It gives the United States Environmental Protection Agency (USEPA) the authority to control hazardous waste from "cradle-to-grave." RCRA also set forth a framework for the management of nonhazardous solid wastes. The 1986 amendments to RCRA enabled USEPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

3.1.3 Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. § 9601 et seq.)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulates former and newly discovered uncontrolled waste disposal and spill sites. CERCLA established the National Priorities List of contaminated sites, and the "Superfund" cleanup program.

3.1.4 Clean Water Act–National Pollutant Discharge Elimination System (§ 402(p))

The Clean Water Act regulates discharges and spills of pollutants, including hazardous materials, to surface waters and groundwater. The National Pollutant Discharge Elimination System Permit Program controls water pollution by regulating point sources that discharge pollutants into waters of the U.S. Point sources are discrete conveyances such as pipes or ditches. Examples of pollutants include, but are not limited to, rock, sand, dirt, and agricultural, industrial, and municipal waste discharged into waters of the U.S.

3.1.5 Clean Air Act (42 U.S.C. § 7401 et seq.)

The Clean Air Act protects the general population from exposure to airborne contaminants that are known to be hazardous to human health. Under the Clean Air Act, USEPA established National Emissions Standards for Hazardous Air Pollutants, which are emissions standards for air pollutants, including asbestos.

3.1.6 Safe Drinking Water Act (42 U.S.C. § 300(f) et seq.)

The Safe Drinking Water Act regulates discharges of pollutants to underground aquifers and establishes standards for drinking water quality. This law focuses on all waters actually or potentially designed for drinking use, whether from aboveground or underground sources. The Act authorizes USEPA to establish minimum standards to protect tap water and requires all

owners or operators of public water systems to comply with these primary (health-related) standards.

3.1.7 Toxic Substances Control Act (15 U.S.C. § 2601 et seq.)

The Toxic Substances Control Act regulates manufacturing, inventory, and disposition of industrial chemicals, including hazardous materials. Certain substances are excluded from the Toxic Substances Control Act, including, among others, food, drugs, cosmetics and pesticides. The Toxic Substances Control Act addresses the production, importation, use, and disposal of specific chemicals including polychlorinated biphenyls (PCBs), asbestos, radon, and lead-based paint (LBP).

3.1.8 Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. § 136 et seq. and 40 C.F.R. §§ 152.1–171)

The Federal Insecticide, Fungicide, and Rodenticide Act regulates the manufacturing, distribution, sale, and use of pesticides. All pesticides distributed or sold in the United States must be registered (licensed) by USEPA. Before USEPA may register a pesticide under the Federal Insecticide, Fungicide, and Rodenticide Act, the applicant must show, among other things, that using the pesticide according to specifications "will not generally cause unreasonable adverse effects on the environment."

3.1.9 Hazardous Materials Transportation Act (49 U.S.C §§ 1801–1819 and 49 C.F.R §§ 101, 106, 107, and 171–180)

The Hazardous Materials Transportation Act regulates the transport of hazardous materials by motor vehicles, marine vessels, and aircraft. The Act was authorized as a means to improve the uniformity of existing regulations for transporting hazardous materials and to prevent spills and illegal dumping endangering the public and the environment, a problem exacerbated by uncoordinated and fragmented regulations.

3.1.10 Emergency Planning and Community Right to Know Act 40 C.F.R. §§ 350–372)

The Emergency Planning and Community Right to Know Act regulates facilities that use hazardous materials in quantities that require reporting to emergency response officials. The Emergency Planning and Community Right to Know Act institutes requirements for federal, state, and local governments, Indian Tribes and industry regarding emergency planning and community right-to-know reporting on hazardous and toxic chemicals. The community right-to-know provisions add to the public's knowledge and access to information regarding chemicals at individual facilities, their uses, and their releases into the environment.

3.1.11 Federal Compliance with Pollution Control (Executive Order 12088)

This executive order requires federal agencies to take necessary actions to prevent, control, and abate environmental pollution from federal facilities and activities under control by federal agencies. It requires a federal agency to notify and consult with its regulator regarding a compliance plan and schedule when the regulator has violated an applicable pollution control standard. This process is in addition to, and not in lieu of, other present or future enforcement actions taken against a federal facility. It also establishes an administrative process allowing the USEPA to resolve conflicts regarding federal agency environmental violations when the Director of the Office of Management and Budget or the USEPA Administrator is unable to resolve the conflict.

3.2 State

3.2.1 California Environmental Quality Act (§ 21000 et seq.) and CEQA Guidelines (§ 15000 et seq.)

The California Environmental Quality Act (CEQA) requires state and local agencies to identify the significant environmental impacts of their actions, including potential significant impacts

associated with hazardous wastes and materials, and to avoid or mitigate those impacts, when feasible.

3.2.2 California Code of Regulations, Title 14, Section 1724.3, Well Safety Devices for Critical Wells (*New since the Merced to Fresno Final EIR/EIS*)

The regulation governs safety devices required on “critical wells” located within 100 feet of an operating railway. Critical wells that have sufficient pressure to allow fluid-flow to the surface shall have safety devices as specified by the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) (Section 1724.3).

3.2.3 California Code of Regulations, Title 27, Division 2, Chapter 3, Subchapter 4, Gas Monitoring and Control at Active and Closed Disposal Sites (*New since the Merced to Fresno Final EIR/EIS*)

The regulations in Article 6 set forth the performance standards and the minimum substantive requirements for landfill gas monitoring and control as it relates to active solid waste disposal sites. It also outlines standards for proper closure, post-closure maintenance, and ultimate reuse of solid waste disposal sites to protect public health and safety and the environment from pollution caused by the disposal of solid waste.

3.2.4 California Code of Regulations, Title 27, Division 2, Chapter 3, Subchapter 4, Gas Monitoring and Control at Active and Closed Disposal Sites (*New since the Merced to Fresno Final EIR/EIS*)

The regulations within Article 6 set forth the performance standards and the minimum substantive requirements for landfill gas monitoring and control as it relates to active solid waste disposal sites. It also relates to proper closure, post-closure maintenance, and ultimate reuse of solid waste disposal sites to assure that health and safety of the public and the environment are protected from pollution caused by the disposal of solid waste.

3.2.5 California Code of Regulations, Title 27, Division 2, Chapter 3, Subchapter 5, Closure and Post Closure Maintenance of Landfills (*New since the Merced to Fresno Final EIR/EIS*)

This regulation provides post-closure maintenance guidelines, including requirements for an emergency response plan and site security. It regulates post-closure land use, requiring protection of public health and safety and the built environment, as well as the prevention of gas explosions. Construction on the site must maintain the integrity of the final cover, drainage, and erosion control systems, and gas monitoring and control systems. All post-closure land use within 1,000 feet of a landfill site must be approved by the local enforcement agency.

3.2.6 California Public Resources Code Section 21151.4 (*New since the Merced to Fresno Final EIR/EIS*)

This code requires the lead agency to consult with any school district with jurisdiction over a school within 0.25 mile of the project about potential impacts on the school if it is anticipated that hazardous air emissions will be emitted or if an extremely hazardous substance or a mixture containing an extremely hazardous substance will be handled. The school district must be given written notification of the project no less than 30 days prior to the proposed certification of the environmental impact report.

3.2.7 Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.)

The Porter-Cologne Water Quality Control Act regulates water quality through the State Water Resources Control Board (SWRCB) and the California Regional Water Quality Control Boards (RWQCB). It includes oversight of water monitoring and contamination cleanup and abatement.

3.2.8 Hazardous Materials Release Response Plans and Inventory Law (Cal. Health and Safety Code § 25500 et seq.)

This section of the California Health and Safety Code requires facilities using hazardous materials to prepare Hazardous Materials Business Plans. Basic information on the location, type, quantity, and health risks of hazardous materials handled, used, stored, or disposed of in the state, which could be accidentally released into the environment, is required to be submitted to firefighters, health officials, planners, public safety officers, health care providers, regulatory agencies, and other interested persons. The information provided by business and area plans is necessary to prevent or mitigate the damage to the health and safety of persons and the environment from the release or threatened release of hazardous materials into the workplace and environment.

3.2.9 Safe Drinking Water and Toxic Enforcement Act (Proposition 65) (Cal. Health and Safety Code §§ 25180, 2518.7, 25192, 25249.5–25249.13)

The Safe Drinking Water and Toxic Enforcement Act is similar to the Safe Drinking Water Act and Clean Water Act on the federal level in regulating the discharge of contaminants to groundwater. It states that no person in the course of doing business shall knowingly discharge or release a chemical known to the state to cause cancer or reproductive toxicity into water or onto or into land where such chemical passes, or probably will pass, into any source of drinking water.

3.2.10 California Government Code Section 65962.5 (Cortese List)

This regulation, commonly called the “Cortese List,” requires the Department of Toxic Substances Control (DTSC) to compile and maintain lists of potentially contaminated sites throughout California (including the Hazardous Waste and Substances Sites List). The hazardous waste facilities identified are those where DTSC has taken or contracted for corrective action because a facility owner/operator has failed to comply with a date for taking corrective action in an order issued under California Health and Safety Code section 25187, or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment.

3.2.11 California Code of Regulations, Title 5, Division 1, Chapter 13, Subchapter 1, School Facilities Construction (*New since the Merced to Fresno Final EIR/EIS*)

This code regulates where school facilities can be sited and constructed. The site cannot be located near hazardous materials or wastes, such as an aboveground water or fuel storage tank or within 1,500 feet of the easement of an aboveground or underground pipeline. In addition, if the proposed site is on or within 2,000 feet of a significant disposal of hazardous waste, the school district shall contact the DTSC for a determination of whether the property should be considered a Hazardous Waste Property or Border Zone Property. Schools cannot be sited near formerly or acutely hazardous materials or wastes unless it can be proven that the site would not pose a health risk.

3.2.12 Senate Bill 1082 (Cal. Health and Safety Code § 25204)

Senate Bill 1082 (Calderon), passed in 1993, created the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The Unified Program (Cal-EPA 2014) consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. The California Environmental Protection Agency and other state agencies set the standards for their programs, while local governments implement the standards. These local implementing agencies are called Certified Unified Program Agencies (CUPA).

3.2.13 Hazardous Waste Control Act (Cal. Health and Safety Code § 25100 et seq.)

The Hazardous Waste Control Act regulates the identification, generation, transportation, storage, and disposal of materials the State of California has deemed hazardous. This act is similar to the Resource Conservation and Recovery Act on the federal level.

3.3 Regional and Local

In accordance with Senate Bill 1082 (described in Section 3.2.12), the CUPA agencies for each county regulate or oversee the following activities and entities:

- Hazardous materials business plans
- California accidental release prevention plans or federal risk management plans
- The operation of underground storage tanks and aboveground storage tanks
- Universal waste and hazardous waste generators/handlers
- On-site hazardous waste treatment
- Inspections, permitting, and enforcement
- Proposition 65 reporting
- Emergency response

Beyond the statewide regulations that the CUPAs administer, a number of local plans include policies and regulations that address hazardous materials and wastes. This section addresses these policies and regulations and summarizes local systems that have been set up in response to federal and state laws.

3.3.1 Merced County Certified Unified Program Agency

The CUPA for Merced County is the Merced County Department of Public Health, Division of Environmental Health. Under the Merced County CUPA, site inspections for hazardous materials (aboveground storage tanks, underground storage tanks, hazardous waste treatment, hazardous waste generators, hazardous materials management and response plans, and the Uniform Fire Code) are consolidated and accomplished by a single inspection.

Compliance is achieved through routine inspections of all regulated facilities and investigation of citizen-based complaints and inquiries regarding improper handling or disposal of hazardous wastes and hazardous materials. The primary goal of CUPA is hazardous-waste source reduction. CUPA also provides oversight for the remediation of contaminated sites.

3.3.2 Merced County Office of Emergency Services

The Merced County Office of Emergency Services provides preparedness, coordination, and direction during large-scale emergencies and disasters. Merced County Office of Emergency Services, directed by the Merced County Fire Chief, coordinates with partner agencies including the six cities within the county, special districts, and key private agencies in providing planning, response, recovery, and mitigation activities because of disaster-related incidents. This is accomplished through maintenance of the Merced County Emergency Operations Plan, a guidance document that addresses traditional threat areas, including fire, law enforcement, and the Emergency Medical System, but also includes agriculture terrorism, public health threats, cyber terrorism, and other threats. Additionally, the Merced County Office of Emergency Services provides training to all agencies pertaining to the use of the Emergency Operations Plan.

3.3.3 Madera County Certified Unified Program Agency

The CUPA for Madera County is the Resource Management Agency, Environmental Health Department Division. The Madera County CUPA is responsible for implementing a unified hazardous waste and hazardous materials management regulatory program in the county and overseeing the remediation of contaminated sites. Compliance is achieved through routine inspections of all regulated facilities and investigation of citizen-based complaints and inquiries regarding improper handling or disposal of hazardous wastes and hazardous materials.

3.3.4 Madera County Office of Emergency Services

Madera County Office of Emergency Services operates under the direction of the Madera County Sheriff's Department and is responsible for the day-to-day administration of the Madera County disaster preparedness and response program. In addition, it is responsible for maintaining the Madera County Emergency Operations Center and coordinating its activities during a disaster, including activating the emergency alert system for broadcasting emergency information to residents.

3.3.5 Madera County Solid Waste Management Department

The purpose of the Madera County Solid Waste Management Department is to protect the health, safety, and well-being of the public and to preserve and improve the quality of the environment by ensuring proper storage and disposal of solid waste; minimizing the presence of disease-transmitting organisms related to solid-waste handling and disposal methods; and responding to public complaints relating to the accumulation, storage, collection, processing, and disposal of solid waste in Madera County.

3.3.6 General Plan Policies and Other Plans

Table 3-1 lists local plans, policies, and goals that guide the appropriate use of potentially hazardous materials, the cleanup of contaminated sites, and the preparation of emergency response plans. Regional plans have not been prepared for the management and disposal of hazardous materials and wastes.

Table 3-1 General Plans and Other Plans Considered

Policy Title	Summary
Merced County	
2030 Merced County General Plan (2013) (Updated since Merced to Fresno Final EIR/EIS)	<ul style="list-style-type: none"> ▪ Goal PFS-4: Ensure the safe and efficient disposal and recycling of solid and hazardous waste generated in the County. ▪ Policy PFS-4.5: Require all new development to adequately provide solid waste storage, handling, and collection through the development review and permitting process. ▪ Policy HS-5-1: Require new development and redevelopment proposals that have suspected or historic contamination to address hazards concerns and protect soils, surface water, and groundwater from hazardous materials contamination by conducting Phase I Environmental Site Assessments according to the American Society for Testing and Materials standards and applicable Department of Toxic Substances Control remediation guidelines. Also, complete additional Phase II Environmental Site Assessments and soil investigations, and any identified or needed remediation when preliminary studies determine such studies are recommended.
Merced County Multi-Jurisdictional Local Hazard Mitigation Plan (2014) (New since Merced to Fresno Final EIR/EIS)	Prepared to comply with the federal Disaster Mitigation Act of 2000 (Public Law 106-390), this document identifies and profiles relevant hazards, assess the exposure of lives, property and infrastructure to these hazards, and estimates the potential losses from a hazard event. The plan also provides a framework for developing and prioritizing mitigation actions to reduce the risks from future hazard events in Merced County.
County of Merced Emergency Operations Plan (2013) (New since Merced to Fresno Final EIR/EIS)	This plan establishes an Emergency Management Organization, describes the role of the Emergency Response Center, and outlines the county's actions during a response to an emergency and during the recovery process.

Policy Title	Summary
Madera County	
Madera County General Plan Policy Document (1995)	<ul style="list-style-type: none"> ▪ Goal 6.G: To minimize the risk of loss of life, injury, serious illness, damage to property, and economic and social dislocations resulting from the use, transport, treatment, and disposal of hazardous materials and wastes. ▪ Policy 6.G.1: The County shall ensure that the use and disposal of hazardous materials in the county complies with local, state, and federal safety standards. ▪ Policy 6.G.4: The County shall review all proposed development projects that manufacture, use, or transport hazardous materials for compliance with the County's Hazardous Waste Management Plan (CHWMP). ▪ Policy 6.G.7: The County shall require that applications for discretionary development projects that will generate hazardous wastes or utilize hazardous materials include detailed information on hazardous waste reduction, recycling, and storage. ▪ Policy 6.G.10: The County shall identify sites as specified in the County Hazardous Waste Management Plan that are appropriate for hazardous material storage, maintenance, use, and disposal facilities due to potential impacts on adjacent land uses and the surrounding natural environment. ▪ Policy 6.G.11: The County shall work with local fire protection and other agencies to ensure an adequate countywide response capability to hazardous material emergencies.
Madera County, California: Local Hazard Mitigation Plan (2011)	Prepared to comply with the federal Disaster Mitigation Act of 2000 (Public Law 106-390), this document applies to all areas of the county except the City of Chowchilla and the Picayune Rancheria. This plan identifies and profiles relevant hazards, assesses the exposure of lives, property, and infrastructure to these hazards, and estimates the potential losses from a hazard event. The plan also provides a framework for developing and prioritizing mitigation actions to reduce the risks from future hazard events in the county.
Madera County Operational Area Emergency Operations Plan (2010)	This plan establishes an Emergency Management Organization, describes the role of the Emergency Response Center, and outlines the county's actions during a response to an emergency and during the recovery process.
City of Chowchilla	
City of Chowchilla 2040 General Plan (2011)	<ul style="list-style-type: none"> ▪ Objective PS 10: Protect the City of Chowchilla and its environment from harmful effects of hazardous materials. ▪ Policy PS 10.2: The City of Chowchilla shall require, as appropriate and as a component of the environmental review process, a hazardous materials inventory for project sites, including an assessment of materials and operations for any development applications. Particular attention shall be paid to land that previously contained agricultural uses. ▪ Policy PS 10.3: The City of Chowchilla shall ensure the proponents of new development project address hazardous materials concerns through the preparation of a Phase I or Phase II hazardous materials studies for each identified site as part of the design and environmental review process. Recommendations required to satisfy local, state, or federal cleanup standards outlined in the studies shall be implemented as part of the construction phase for each project. ▪ Policy PS 10.5: The City of Chowchilla shall use the development review process to ensure compatibility between hazardous material users and surrounding land use.

Policy Title	Summary
	<ul style="list-style-type: none"> ▪ Policy PS 10.10: Business practices using, storing, or producing hazardous materials shall be located at a safe distance from other uses that may be adversely affected by such activities. Sensitive receptors such as schools, hospitals, day care centers, convalescent homes, and other immobile populations shall be considered during the review process. ▪ Policy PS 10.11: Any risks involving the disposal, transport, manufacture, storage and handling of hazardous material in the City of Chowchilla shall be evaluated in the project review and approval process. ▪ Objective PS 11: Minimize public exposure risks associated with the storage, transport and disposal of hazardous materials. ▪ Policy PS 11.1: Ensure hazardous materials used in business and industry is used, stored, handled and disposed of properly.
<p>City of Chowchilla Local Hazard Mitigation Plan (2011)</p>	<p>This document identifies and profiles relevant hazards, assesses the exposure of lives, property, and infrastructure to these hazards, and estimates the potential losses from a hazard event. The plan also provides a framework for developing and prioritizing mitigation actions to reduce the risks from future hazard events in Chowchilla.</p>

Sources: Merced County, 2013a, 2013b, 2014; Madera County, 1995, 2010, 2011; City of Chowchilla, 2011

4 METHODS FOR EVALUATING EFFECTS

4.1 Definition of Resource Study Area

The RSA for hazardous materials and wastes consists of the Central Valley Wye alternatives' footprints plus a 150-foot buffer to account for hazardous material and waste issues on adjacent properties. For the analysis of PEC sites, the database search used a 1-mile buffer area on either side of the Central Valley Wye alternatives' centerlines, consistent with American Society for Testing and Materials International (ASTM) database-search standard practice (ASTM 2011). PEC sites within the hazardous materials and wastes RSA, as well as large or regionally important PEC sites within the 1-mile buffer where the extent of the site or contamination could affect the RSA, were evaluated.

The RSA for landfills extends to 0.25 mile on either side of the Central Valley Wye alternatives' footprints. This distance allows for an analysis of the potential for a change in land use adjacent to landfills, consistent with California Code of Regulations, Title 27, Subchapter 5, to assess landfill potential to release methane gas, which may present an explosion risk. To evaluate potential effects on schools in a manner consistent with the CEQA significance criteria, the RSA near school locations was 0.25 mile on either side of the Central Valley Wye alternatives' footprints. The RSA for oil and gas wells extends 200 feet from the alternatives' centerlines and the RSA for airports extends 2 miles from the centerlines.

4.2 Definitions of Hazardous Wastes and Substances

The analysis considered hazardous wastes and hazardous substances that collectively are considered hazardous materials. Hazardous materials include, but are not limited to, hazardous waste, hazardous substances, and extremely hazardous substances as defined in this section, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment because of its quantity, concentration, or physical or chemical characteristics. This term includes petroleum products. Hazardous waste, hazardous substances, and extremely hazardous substances are defined as follows:

1. **Hazardous Waste**—In general, a solid waste is defined as a hazardous waste when it qualifies as a "waste" (i.e., is no longer of use and will be disposed of) and when it exhibits a hazardous waste characteristic (toxicity, ignitability, reactivity, or corrosivity), or when it has been specifically listed as hazardous in federal or state law or regulation. Hazardous waste is regulated by the USEPA under the RCRA. Federal hazardous wastes are often referred to as RCRA wastes. California hazardous waste law and regulation is in some cases more stringent than the federal law and, as a result, wastes may be defined as California hazardous wastes but not be RCRA wastes; as such, they may be identified as non-RCRA hazardous wastes.
- **Hazardous Substance**—The term *hazardous substance* refers to any substance or mixture of substances that (1) is toxic, (2) is corrosive, (3) is an irritant, (4) is a strong sensitizer, (5) is flammable or combustible, or (6) generates pressure through decomposition, heat, or other means. Hazardous substances may cause substantial personal injury or substantial illness during or as a proximate result of any customary or reasonably foreseeable handling or use, including reasonably foreseeable ingestion by children. Hazardous substances include petroleum products, certain radioactive substances, and certain substances that present an electrical, mechanical, or thermal hazard. There is no single list of hazardous substances that can be referenced.
- **Extremely Hazardous Substance**—This term refers to those extremely hazardous substances that are subject to additional regulation if they exceed thresholds specified in the regulations. The extremely hazardous substances are listed in Section 302 of the U.S. Emergency Planning and Community Right-to-Know Act (42 U.S.C. § 11002). The list can be found as an appendix to 40 C.F.R. Part 355, or in the California Code of Regulations, title 8, Appendix A to section 5189.

4.3 Methods for Effects Analysis

This report discusses the potential for hazardous wastes and materials or other existing PEC sites to affect construction and operations of the Central Valley Wye. The analysis is based on a regulatory agency database search of the RSA; applicable federal, state, and local regulations related to hazardous wastes and materials; and a visual evaluation of current selected site conditions (i.e., *baseline conditions*).

To identify PEC sites that could affect the RSA, analysts reviewed published databases containing lists of known and significant hazardous waste/hazardous material sites. PEC sites are identified using the definitions for hazardous waste, material, and substances provided in the Caltrans initial site assessment guidance document dated 2016 (Caltrans 2016) and the California Office of State Project Development Procedures and Quality Improvement in Division of Design Project Development Procedures Manual, Chapter 18 (Caltrans 2006).

The purpose of this assessment was to identify, to the extent feasible, pursuant to the processes described herein, PEC sites in connection with selected sites within the hazardous materials and wastes RSA to establish the baseline conditions described in Section 5, Affected Environment. Analysts assessed a site to be a PEC site if it met at least one of three criteria:

- The nature of the site's environmental history indicates a likelihood of subsurface effect by a hazardous material, waste, or substance.
- The site is within the RSA.
- The groundwater flow direction in the vicinity of the site indicates a likelihood that potential subsurface effects could migrate toward the Central Valley Wye alternatives.

This assessment consisted of four primary components: (1) regulatory agency records review, (2) historical information review, (3) site reconnaissance, and (4) preparation of this report. The following subtasks were completed as part of this assessment.

- Acquisition and review of a regulatory agency database search report for American Society for Testing and Materials E1527-specified standard environmental record sources and search distances.
- Review of historical information sources, including aerial photographs and historical topographic maps, to ascertain general uses of selected sites in the hazardous materials and wastes RSA and vicinity back to 1885.
- Review of publically available government agency files for selected sites considered to have the potential to adversely affect the hazardous materials and wastes RSA. Inquiries were made to the SWRCB GeoTracker website, which includes the Cortese List, (SWRCB 2016) and the DTSC Envirostor website (DTSC 2016) for additional information on the selected sites.
- Field reconnaissance of selected sites in the hazardous materials and wastes RSA.

Analysts assessed both the nature and severity of the potential effects and the possibility of minimizing the effects with IAMFs for the selected PEC sites and educational facilities identified during the baseline assessment, using the protocol listed in Table 4-1.

Table 4-1 CEQA Protocol for Evaluating Potential Environmental Concerns

Topic	Environmental Consequences Issues to Evaluate
Effects associated with PEC sites	<ul style="list-style-type: none"> ▪ Identify proximity of Central Valley Wye alternatives to PEC sites ▪ Identify potential effects associated with PEC sites based on: <ul style="list-style-type: none"> ○ Anticipated construction methods (particularly methods with extensive subsurface construction such as trenching, tunneling, cuts) compared against PEC site conditions ○ Geology, hydrogeology, and surface and ground waters in the vicinity of the alternative ○ Regulatory and response status of PEC sites ○ Likelihood that construction or operation would encounter, cause, or worsen hazardous materials contamination
Hazardous materials transport, use, disposal; routine operations and upsets/accidents	<ul style="list-style-type: none"> ▪ Identify whether Central Valley Wye alternatives would involve the generation, use, transport, or disposal of substantial new quantities of hazardous materials ▪ Identify whether Central Valley Wye alternatives would likely result in increased transportation of hazardous materials or relocation of hazardous materials transport such that it creates increased hazard to the public or the environment ▪ Identify whether Central Valley Wye alternatives would potentially increase the likelihood of upsets or accidents that would result in the release of hazardous materials ▪ Conversely, identify whether the Central Valley Wye alternatives would reduce the likelihood of upsets or accidents through features such as new grade separations
Emissions or handling of hazardous materials near schools	<ul style="list-style-type: none"> ▪ Identify proximity of Central Valley Wye alternatives to nearby existing or proposed schools ▪ Identify whether Central Valley Wye alternatives would result in new emissions of hazardous materials or handling of hazardous or acutely hazardous materials within 0.25 mile of existing or proposed schools

Source: Author Compilation, 2016

4.4 Regulatory Database Review

Analysts evaluated readily available records regarding past and current site uses for properties within and adjacent to the hazardous materials and wastes RSA; contacted applicable agencies regarding PEC sites; and reviewed the results of an agency database search for PEC sites at surrounding and nearby properties. The information obtained during the records review is discussed in the following sections and subsections.

Environmental Data Resources, Inc. (EDR) was contracted to conduct a review of applicable regulatory agency lists of known and potential hazardous waste sites; properties or facilities currently under investigation for potential environmental violations; and sites storing or using hazardous materials. EDR compiled the list of these sites and facilities using a 1-mile search distance from the Central Valley Wye alternatives' footprints. The EDR database report is provided in Appendix B, EDR Radius Map Report.

The database search involved a review of federal, state, tribal, and EDR proprietary environmental databases for sites with documented use, storage, or release of hazardous materials or petroleum products. The June 2015 and July 2016 EDR Reports identified historically contaminated properties; businesses that use, generate, or dispose of hazardous materials or petroleum products in their operations; and active contaminated sites that are currently under assessment or remediation (EDR 2015a, 2016). This report addresses identified sites within the hazardous materials and wastes RSA (within 150 feet of the Central Valley Wye alternatives' footprints) and those that had the potential to negatively affect the RSA because of the particular conditions or a spill or suspected hydrogeologic condition.

4.4.1 Standard Historical Environmental Records Sources

The following types of historical records were reviewed for the land area within the hazardous materials and wastes RSA:

- Historical aerial photographs (EDR 2015b)
- Historical topographic maps (EDR 2015c)

4.4.2 Screening Criteria

The results of the database search report in the EDR *Environmental Atlas* were reviewed for reported release sites within 1 mile of the Central Valley Wye alternatives. Analysts reviewed the report for sites that are suspected to affect the RSA, or are known, or likely to, result in PEC sites. (EDR 2015a, 2016). To more fully evaluate sites identified as having the potential to negatively affect the RSA, analysts applied screening criteria for the nature and extent of a given release for each identified site, the distance of the reported release site from the RSA, and the position of a reported release site with respect to known or expected local or regional groundwater flow direction.

Generally, reported release sites within 0.25 mile up-gradient, 0.125-mile cross-gradient, adjacent downgradient of the Central Valley Wye alternatives, or within the hazardous materials and wastes RSA are considered to have the potential to have affected the RSA. Such sites were further assessed by reviewing agency records. Sites that were listed in the database search report, but not identified as a release site (for example, a site listed as a hazardous waste generator but not as having had a release), and sites that were listed as being “closed,” are not considered to have the potential to have affected the property, based on reasonably available information.

Furthermore, using proximity to the Central Valley Wye alternatives, extent of documented contamination, and status of remediation as its basis, analysts assessed the relative likelihood for sites to have potential effects on the hazardous materials and wastes RSA. Sites assessed with a likelihood to affect the RSA were selected for site reconnaissance and additional site assessment. Based on the additional assessment (e.g., type(s) of contamination, severity of release, proximity to the Central Valley Wye alternatives' footprints, direction of groundwater flow [if documented in available sources], and case status) and professional judgment, analysts identified sites as *low-risk*, *medium-risk*, or *high-risk*, using the following criteria:

- **Low-Risk**—A low-risk site is located within or adjacent to the footprint, has no known documented release, and is not identified on databases indicative of environmental concern. However, historical operations indicate a potential for release(s) to the environment.
- **Medium-Risk**—A medium-risk site is located within or adjacent to the footprint, may or may not have a known documented release, historical operations indicate potential for release(s) to the environment, or the site is identified on databases that indicate release(s) to the environment.
- **High-Risk**—A high-risk site is located within or adjacent to the footprint, has a known documented release, has residual contamination that is situated within or adjacent to the footprint, and is identified on databases indicating release(s) to the environment.

4.5 Agency Records Review

During this environmental assessment, analysts contacted state and local regulatory agencies with jurisdiction over the hazardous materials and wastes RSA to assess the following information for selected sites.

- The status of relevant environmental permits.
- Whether there have been any violations, or other similar correspondence from such agencies.
- Whether any corrective action or remediation is pending, currently taking place, or completed at the subject property.
- Whether there have been any reported violations or complaints that the subject property is noncompliant with environmental laws, regulations, or standards.
- Whether the subject property is under investigation for such noncompliance.
- Whether the subject property is listed on any of the regulatory databases.
- Whether any other pertinent documentation is on file with such regulatory agencies regarding selected sites in the RSA or surrounding sites of concern.

The agency responses are discussed further in the following subsections.

4.5.1 California Regional Water Quality Control Board

The RWQCB, Central Valley Region, Fresno, California office were contacted regarding records on file for selected facilities in the hazardous materials and wastes within the RSA. Information gathered from this source is discussed further in Section 5, Affected Environment.

4.5.2 California Department of Toxic Substances Control

The DTSC regional office in Clovis, California was contacted regarding records on file for selected facilities in the hazardous materials and wastes within the RSA. Information gathered from this source is discussed further in Section 5, Affected Environment.

4.5.3 GeoTracker and Envirostor Databases

As a follow-up to the RWQCB and DTSC inquiries, analysts queried the SWRCB GeoTracker website (www.geotracker.waterboards.ca.gov/) (SWRCB 2016) and the DTSC Envirostor website (www.envirostor.dtsc.ca.gov/public/) (DTSC 2016) for additional information on the selected sites. Information gathered from these sources is discussed further in Section 5, Affected Environment.

4.6 Site Historical Use Information

Analysts collected and reviewed historical information pertaining to the hazardous materials and wastes within the RSA for evidence of activities that would suggest the potential presence of hazardous substances in the RSA, and to evaluate the potential for off-site sources of contamination to affect the RSA. The following subsections summarize the information reviewed.

4.6.1 Historical Aerial Photographs

General types of activity and land use can often be discerned from the type and layout of structures visible in an aerial photograph, although specific elements of a site operation cannot readily be determined from the photographs. With this in mind, historical aerial photographs of the hazardous materials and wastes RSA were reviewed for the years noted in the following locales.

- El Nido (Merced County): 1946, 1958, 1968, 1976, 1982, 1984, 1985, 1987, 1993, 1995, and 1998 (EDR 2015b).
- Chowchilla (Madera County): 1946, 1958, 1968, 1978, 1982, 1984, 1985, 1987, 1993, 1995, and 1998 (EDR 2015b).

4.6.2 Sanborn Insurance Company Maps

There were no available Sanborn Insurance Company maps that provided coverage within the hazardous materials and wastes for the RSA.

4.6.3 Historical Topographic Maps

As with aerial photographs, the general types of activity and land use can often be discerned from the type and layout of structures visible on historical U.S. Geological Survey topographic maps. However, specific elements of a site operation cannot normally be determined from the maps. Historical topographic maps for the hazardous materials and wastes RSA and surrounding areas were reviewed to assess the earliest recorded development of locations identified during the regulatory database review. Analysts reviewed topographic maps for the years noted in the following locales. Copies of historical topographic maps are included in Appendix C, Historical Topographic Maps.

- Chowchilla (Madera County): 1918, 1919, 1920, 1946, 1947, 1948, 1960, 1961, 1976, 1981, and 1987 (EDR 2015b).
- El Nido (Merced County): 1918, 1922, 1946, 1948, 1960, 1962, and 1977 (EDR 2015b).

4.7 Previous Site Assessments

Information was gathered from previous site assessments available on the SWRCB GeoTracker website and the DTSC Envirostor website for selected properties within the hazardous materials and wastes RSA. In addition, the *Final Hazardous Materials and Wastes Technical Report, Merced to Fresno Section, Project EIR/EIS* (Authority and FRA 2012b) was reviewed. Findings pertaining to the Central Valley Wye alternatives are included in Appendix D, Potential Environmental Concern Site Summaries, and Section 5.

4.8 Site Reconnaissance

A team of environmental assessors conducted site reconnaissances of the Central Valley Wye alternatives on January 22, 2015 and June 11, 2015 to view PEC sites and learn the current conditions of the properties within the hazardous materials and wastes RSA. The methods for conducting the site reconnaissance were generally based on the Caltrans initial site assessment guidance document (Caltrans 2016). The site reconnaissance, combined with the regulatory database review and agency record review follow the general principals of a Phase I environmental site assessment, but are not conducted at the parcel level. Because the RSA has varying types of land use, including agricultural land, existing transportation corridors, residential uses, and commercial uses, the assessors observed from public rights-of-way only. During the site reconnaissance, the assessors looked for the following conditions:

- Current uses of the RSA and adjacent properties
- Visual evidence of usage, treatment, storage, disposal, or generation of hazardous substances and petroleum products at the RSA and adjacent properties
- Presence of underground storage tanks and aboveground storage tanks
- Presence of pools of liquid, standing surface water, or sumps
- Presence of unidentified containers suspected of containing hazardous substances, including petroleum products
- Odors, noises, or discharges
- Releases of hazardous substances or petroleum products from containers or equipment
- Pits, ponds, or lagoons
- Stained soil or pavement
- Stressed vegetation (from other than insufficient water)

- Wastewater or other liquid (including stormwater) or any discharge into a drain, ditch, underground injection system, or stream on or adjacent to the RSA
- Wells (dry wells, irrigation wells, injection wells, abandoned wells, and other wells)
- Septic systems or cesspools

Overall, the assessors observed that the Central Valley Wye alternatives would extend through primarily agricultural land and dairy farms; irrigation systems, with associated canals and ditches, were common throughout the area. The assessors observed limited residential, commercial, and industrial areas along SR 152 and SR 99 near Chowchilla. PEC sites identified within the hazardous materials and wastes RSA during the site reconnaissance are summarized in Appendix D. Photographs documenting areas of PEC sites in the hazardous materials and wastes RSA are provided in Appendix E, Site Reconnaissance Photographs.

5 AFFECTED ENVIRONMENT

This section discusses baseline conditions, the PEC sites as defined in the Caltrans initial site assessment guidance document dated 2016, and other PEC sites (Caltrans 2016) based on the investigation methods described in Section 4.3, Methods for Effects Analysis. Although PEC sites are typically found in commercial and industrial areas, they also occur in rural areas. Accordingly, contaminated sites could occur within the hazardous materials and wastes RSA of the Central Valley Wye alternatives.

5.1 Regional Geology, Hydrology, and Surface Water

5.1.1 Physiography and Regional Geologic Setting

The Central Valley Wye is located in the Central Valley of California, which is in the Great Valley Geomorphic and Physiographic Province. The Central Valley is a large, nearly flat valley bound by the Klamath and Trinity mountains to the north, the southern Cascade Range and Sierra Nevada range to the east, the San Emigdio and Tehachapi mountains to the south, and the Coast Ranges and San Francisco Bay to the west. The Central Valley consists of the Sacramento Valley in the north and the San Joaquin Valley in the south.

The Central Valley occupies a structural trough created about 65 million years ago by collision of the Pacific and North American tectonic plates. Sediment from ocean water, river deposition, and glacial deposition filled the trough with an approximately 6-mile-thick layer of continental and marine sediments above rock.

The Central Valley Wye alternatives are located in the northern part of the San Joaquin Valley. The topography in this part of the Central Valley is flat. In the region, there are approximately 200 feet of relief within an area approximately 28 miles in an east-west direction and 24 miles in a southeast-northwest direction. The west end of the study area at Carlucci Road is at an elevation of about 100 feet (WGS84 Datum). The northern extent at Ranch Road is at an elevation of about 200 feet, and the southern extent at Avenue 19 is at approximately 280 feet. A general downward gradient occurs in the study area to the west-southwest, determined principally by the gentle slope of the vast alluvial fans extending from the Sierra Nevada in the east to the center of the San Joaquin Valley.

5.1.2 Hydrology

The hazardous materials and wastes RSA crosses a number of groundwater basins delineated by the California Department of Water Resources. The vicinity of the Central Valley Wye alternatives is expected to have relatively uniform, unconfined aquifers and associated water tables. In the San Joaquin Valley, the largest groundwater basin is the San Joaquin Valley groundwater basin, which is composed of the Delta Mendota subbasin, the Merced subbasin, the Chowchilla subbasin, and the Madera subbasin. Groundwater in these subbasins is routinely withdrawn for domestic and agricultural purposes and is subject to long-term fluctuations in water levels because of overdraft and recharge conditions.

Groundwater levels in the San Joaquin Valley groundwater basin fluctuate according to seasonal precipitation levels, withdrawal rates, and surface water appropriations and recharge rates. Recharge occurs naturally from precipitation and snowmelt infiltration or artificially from operations such as direct water injection. Most regions of the San Joaquin Valley do not have high infiltration capacity because clay or hardpan layers in the surface soils or subsurface materials limit infiltration. However, recharge areas do exist along active stream channels that contain substantial amounts of sands and gravels.

Groundwater flow in the San Joaquin Valley groundwater basin is primarily to the southwest. The depth to groundwater in the various subbasins ranges from a few inches to more than 500 feet below ground surface. Most of the RSA in Merced County has a high groundwater table, with groundwater within 10 feet of the ground surface. In the Chowchilla area, depth to groundwater varies from 10 to 190 feet below ground surface (Authority and FRA 2012b). Groundwater

contamination related to the sites with potential environmental concerns located within the RSA is discussed in Table 5-1.

5.1.3 Surface Water

Topographic maps from the U.S. Geological Survey were reviewed to identify surface water features for the RSA. The RSA is located in the San Joaquin River Basin. The Chowchilla River flows in a northeast-southwest direction and crosses the HSR corridor and SR 99 to the north of Chowchilla. Berenda Creek crosses the southern portion of the corridor and SR 99 to the south of Fairmead. Berenda Slough and Ash Slough also cross the corridor and SR 99, to the south and north of Chowchilla, respectively.

5.2 Sites with Potential Environmental Concerns

Based on the evaluation of records from the EDR environmental database report, the GeoTracker database, the Envirostor database, Envirofacts and Enforcement and Compliance History Online databases, regulatory agency file reviews, aerial photographs, topographic maps, and the site reconnaissance, analysts determined 9 specific sites within the RSA that potentially have contamination from hazardous materials releases. Sites listed in Table 5-1 were located within or adjacent to the project footprint, had not been granted regulatory closure, had not undergone remedial activities, and are identified as PECs with low, medium or high risk (Appendix D). These sites, and the rationale for designating them as PEC sites, are presented in Table 5-1 and their locations are depicted on Figure 5-1.

The numbers of these PEC sites in each Central Valley Wye alternative for hazardous materials and wastes are as follows:

- SR 152 (North) to Road 13 Wye Alternative Four PEC sites
- SR 152 (North) to Road 19 Wye Alternative Five PEC sites
- Avenue 21 to Road 13 Wye Alternative Five PEC sites
- SR 152 (North) to Road 11 Wye Alternative Three PEC sites

It should be noted that leaking underground storage tanks and DTSC Envirostor sites closed by the RWQCB or local agencies prior to April 1, 2008, would not necessarily have been closed based on a risk assessment that considered volatile organic compounds and the vapor intrusion pathway. Evaluation of the vapor intrusion pathway is not included in the scope of this hazardous materials and wastes study.

Table 5-1 Specific Areas of Potential Environmental Concern with the Potential to Affect the Resource Study Area

Site Name and Location	Risk	Approx. Distance from Footprint	Chemicals of Concern	Rationale	Affected Alternative(s)
Hugh's Flying Service 14023 South Red Top Road, El Nido	Medium	Within the footprint	Pesticides and herbicides	The site is listed as a land disposal site open since January 1, 1965. The site was used for disposal of product wash water waste including photo reuse wastewater and vegetable wash water. Wastewater or solid wastes may pose a concern to water quality. The site is also listed on the Historical UST database as having had three 550-gallon regular gasoline tanks.	SR 152 (North) to Road 13 Wye SR 152 (North) to Road 19 Wye SR 152 (North) to Road 11 Wye

Site Name and Location	Risk	Approx. Distance from Footprint	Chemicals of Concern	Rationale	Affected Alternative(s)
				Residual contamination in soil and groundwater may still exist.	
PG&E's Dairyland Substation Avenue 21 and Railroad Avenue, Chowchilla	Low	Within the footprint	PCBs, mineral oil	There are no reported releases in agency files or database listings for this site; it was identified during the site reconnaissance. The site is an active substation and equipment potentially containing PCBs may be on-site.	Avenue 21 to Road 13 Wye
CertainTeed Chowchilla Plant	Medium	Adjacent (North)	Heavy Metals, Formaldehyde, Phenol, and Waste Oil	The facility was a former hazardous waste generator facility, and manufactured fiberglass insulation. The facility provided a Closure Plan to DTSC, and ceased operations on March 1, 2009. The closure report for the site indicated no evidence of significant residual contamination at the two former hazardous waste management areas on-site. Although the facility achieved closure for its hazardous waste permit, it is currently an active facility with hazardous materials use and storage, as well as hazardous waste generation.	SR 152 (North) to Road 19 Wye
Minturn Huller Cooperative 9080 S. Minturn Road, Chowchilla	High	Within the footprint	Mineral oil from transformer	A release of 200 gallons of mineral oil affected the soil and asphalt at the site in 2006 when a backhoe struck a transformer. Remedial action was conducted, with PG&E listed as the responsible party. No closure information was available for this release.	SR 152 (North) to Road 19 Wye
Kinder Morgan High-Pressure Petroleum Pipeline UPRR/SR 99	Medium	Within footprint and adjacent	Petroleum products	A Kinder Morgan high-pressure petroleum pipeline was identified generally paralleling the UPRR corridor and SR 99. Potential chemicals of concern if the pipeline is ruptured or leaked include petroleum	SR 152 (North) to Road 13 Wye SR 152 (North) to Road 19 Wye Avenue 21 to Road 13 Wye

Site Name and Location	Risk	Approx. Distance from Footprint	Chemicals of Concern	Rationale	Affected Alternative(s)
				hydrocarbons. There are no documented releases or evidence of residual contamination within 150 feet of the footprint. There is also a potential safety, explosion, and fire hazard if the pipeline is ruptured.	SR 152 (North) to Road 11 Wye
Tony Brasil Dairy 15373 Flanagan Road, Dos Palos	Low	Within the footprint	Nitrates	The site is listed as a landfill for agricultural manure composting operations.	Avenue 21 to Road 13 Wye
Unnamed Facility 14005 Coyote Road, El Nido	High	Within the footprint	Mineral oil, non-PCB-containing oil	In March 2014, it was reported that a transformer fell to the ground, resulting in the release of approximately 75 gallons of non-PCB mineral oil onto the ground and onto two almond trees. The release was contained, cleanup was being scheduled at the time of this review, and no waterways were affected. The lack of closure indicates the potential presence of residual mineral oil from the release.	SR 152 (North) to Road 13 Wye SR 152 (North) to Road 19 Wye SR 152 (North) to Road 11 Wye
Tony Machado Dairy 13611 Avenue 23 Chowchilla	Low	Within the footprint	Feedlot wastewater including nitrates	The site has received multiple violations for waste discharge requirements for existing milk cow dairies. A notice of violation was issued for insufficient wastewater storage capacity and excessive solids in wastewater separation pond. These violations are primarily for environmental compliance rather than releases to the soil and groundwater within the footprint.	SR 152 (North) to Road 13 Wye
Alfred Soares Dairy 21282 Road 6, Chowchilla	Low	Within the footprint	Feedlot wastewater including nitrates	The site received multiple violations for waste discharge requirements for existing milk cow dairies. A notice of violation was issued for not submitting the annual report and updated report of waste discharge. These violations are primarily for environmental compliance rather than	Avenue 21 to Road 13 Wye

Site Name and Location	Risk	Approx. Distance from Footprint	Chemicals of Concern	Rationale	Affected Alternative(s)
				releases to the soil and groundwater within the footprint.	
Rezendes Bros 11270 Avenue 21, Chowchilla	Low	Within the footprint	Feedlot wastewater including nitrates	The site received multiple violations for waste discharge requirements for existing milk cow dairies. Violations were associated with what appeared to be insufficient cropland for the agronomic application of the dairy wastes generated and the inability to retain manured stormwater runoff at the heifer lot. These violations are primarily for environmental compliance rather than releases to the soil and groundwater within the footprint. Additionally, the site was listed on the historical underground storage tank database in the EDR Database Report.	Avenue 21 to Road 13 Wye

Source: Authority and FRA, 2012a; DTSC, 2016; EDR, 2015a; SWRCB, 2016
 SR = State Route
 UST = underground storage tank
 PG&E = Pacific Gas and Electric Company
 PCB = polychlorinated biphenyl
 UST = underground storage tanks
 UPRR = Union Pacific Railroad

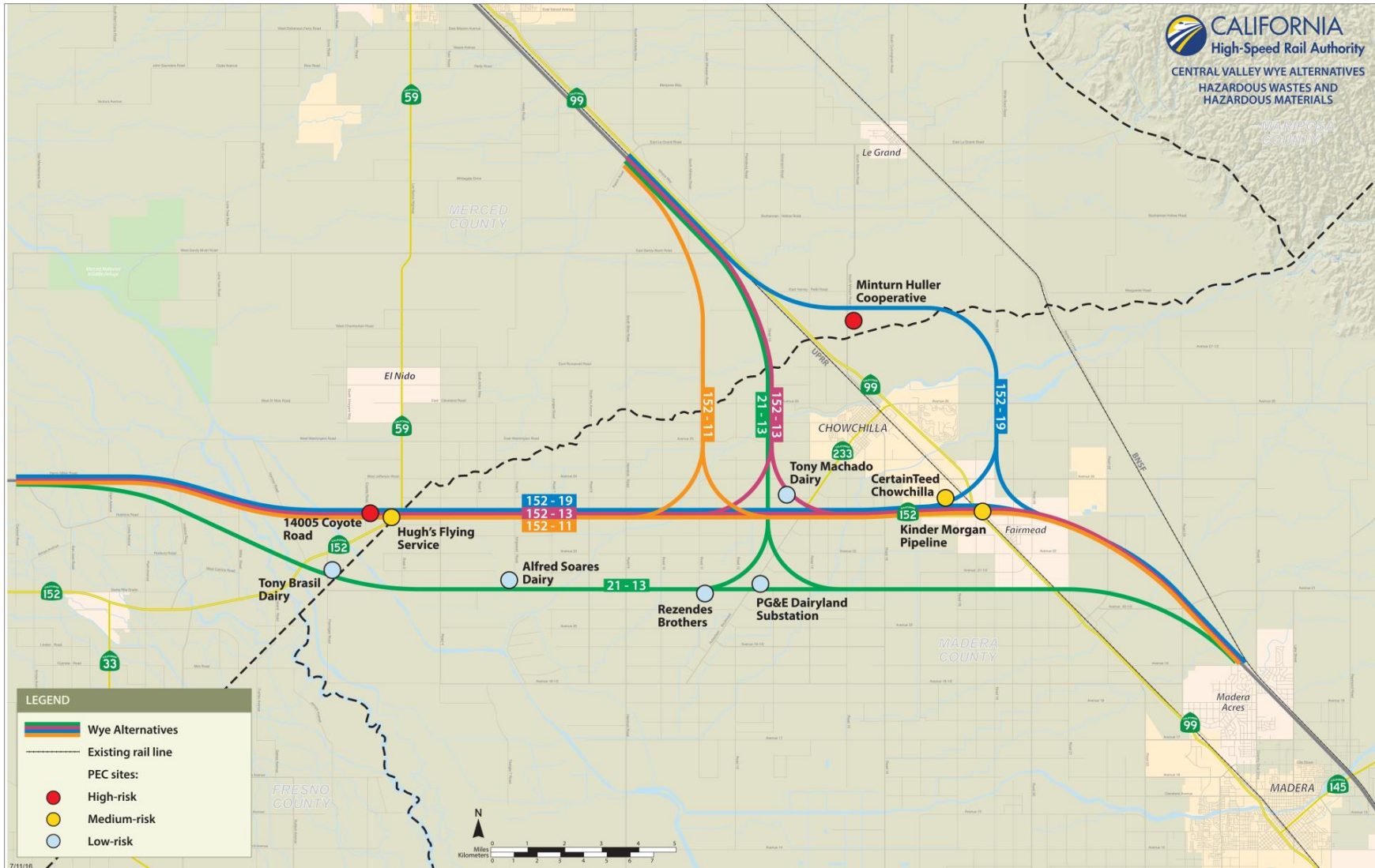


Figure 5-1 Potential Environmental Concern Sites within the Central Valley Wye Alternatives' Resource Study Area

5.3 General Environmental Concerns

General environmental concerns include LBP, asbestos-containing materials (ACM), pesticides, PCBs, aerially deposited lead (ADL), and naturally occurring asbestos (NOA). Other environmental concerns related to hazardous materials and waste are landfills, oil and gas wells, and the location of education facilities.

Analysts identified general areas of environmental concern through the course of this hazardous materials and wastes evaluation. These general concerns are industrial/commercial neighborhoods and agricultural areas through which the Central Valley Wye alternatives pass; existing roads, utility corridors, and railroad corridors; and building materials.

- **Light Industrial/Commercial Neighborhoods**—The Central Valley Wye alternatives pass through various light industrial/commercial areas, mostly in the southern portion of the City of Chowchilla along SR 152. Some of these industrial areas have existed for decades, as shown by the historical records review. Industrial and commercial businesses often use hazardous materials, generate hazardous wastes, or use equipment that may contain hazardous substances. Accidents or poor housekeeping practices at these facilities may have affected the soil and groundwater in the hazardous materials and wastes RSA.
- **Agricultural Areas**—The majority of the Central Valley Wye passes through agricultural lands, mostly used as farmland or orchards, which may have had pesticide and herbicide applications. Residual pesticides and herbicides may be persistent in soil within the hazardous materials and wastes RSA.
- **Existing Roads, Utility Corridors, and Railroad Corridors**—Portions of the Central Valley Wye alternatives are located adjacent to, or pass through, existing roads, utility corridors, and railroad corridors. Hazardous substances potentially associated with roads include diesel, gasoline, motor oil, oil and grease, road base materials, ADL, hazardous materials accidentally released during transport, and lead from the wood preservatives in utility poles and pre-1979 lead-based lane-striping paint. Road base materials can potentially contain hazardous materials if they originate from the excavation of urban or contaminated sites. Caltrans has found ADL resulting from tailpipe emissions during the years in which lead was added as an additive in gasoline is typically present along major roadways. Caltrans has prepared a policy and guidance to evaluate the concentrations of lead adjacent to roadways prior to construction to protect workers and nearby residents (Caltrans 2009). Corridors associated with public utilities and railroads can potentially contain heavy metals in ballast rock, lead (from wood preservatives), herbicides, PCBs, asbestos (from disc brake pads on trains), creosote and arsenic (from railroad ties), and petroleum hydrocarbons.
- **Building Materials**—Structures, including buildings, bridges, and under-crossings, can potentially have ACM. Structures constructed prior to 1978 may also contain LBP. Structures located within the selected Central Valley Wye alternative right-of-way would need to be removed prior to construction.

5.3.1 Lead-Based Paint

Some structures that may have been constructed prior to 1970 and where lead-based paint (LBP) therefore may be present were observed along the Central Valley Wye alternatives. The risk of lead toxicity in LBP varies according to the condition of the paint and the year of its application. The baseline assessment did not include a survey of LBP, which is recognized as a potential health risk because of the known toxic effects on the central nervous system, kidneys, and blood stream. Lead exposure occurs primarily through the ingestion of LBP. Concern for LBP is primarily related to residential structures, though the concern may also apply to commercial structures. The risk of lead toxicity in LBP varies according to the condition of the paint and the year of its application. The U.S. Department of Housing and Urban Development has defined LBP as any paint that contains more than 0.5 percent lead by weight, and has identified the following risk factors:

- Age of the paint on a residential structure

- The maximum risk is from paint applied before 1950.
 - There is severe risk from paint applied before 1960.
 - There is moderate risk from deteriorated paint applied before 1970.
 - There is a slight risk from paint that is intact but applied before 1977.
 - Paint applied in 1977 or later is not expected to contain lead.
- The condition of the painted surfaces
 - The presence of children and certain types of household goods in the building
 - Previously reported cases of lead poisoning in the building or surrounding areas

Some structures that may have been constructed prior to 1970 and where LBP may be present were observed along the Central Valley Wye alternatives.

According to Caltrans Standard Special Provision 14-001 (Caltrans 2009), residue from the removal of yellow thermoplastic and yellow-painted traffic stripes and pavement markings may contain lead chromate. The age and condition of painted structures and the presence of children is expected to be comparable across each Central Valley Wye alternative's RSA for hazardous materials and wastes.

5.3.2 Asbestos-Containing Materials

Asbestos is a mineral fiber. Prior to the 1980s, a variety of building construction materials commonly used asbestos for insulation and as a fire retardant. Some types of nonfriable building materials may still contain asbestos. These products include, but are not limited to, roofing felt, vinyl asbestos floor tile, ceiling tiles, transite flat sheet, transite shingles, roofing coatings, and transite pipe.

There is no health threat if ACM remains undisturbed and does not become airborne. However, if ACM is damaged or disturbed by repair, remodeling, or demolition activities, microscopic fibers become airborne and can be inhaled. Asbestos is linked to cancers of the lung and the lining of internal organs, as well as to asbestosis and other diseases that inhibit lung function (USEPA 2009). State and federal regulations typically require preparation of, and compliance with, ACM abatement plans before disturbing ACM.

An asbestos survey of structures or building materials was not conducted as part of the baseline assessment. Although the use of asbestos in the manufacturing of most building materials has not yet been fully prohibited by federal law, the use of asbestos in building materials has for the most part been discontinued since the late 1970s. Thus, depending on the date of construction, some of the structures along the Central Valley Wye alternatives, including concrete bridge abutments, may have been built with structural and building materials that contain asbestos. The age and type of construction is expected to be comparable across each Central Valley Wye alternative's RSA for hazardous materials and wastes.

5.3.3 Pesticides

Historical aerial photographs and topographic maps document the existence of agricultural development near the Central Valley Wye alternatives dating back to at least 1885. Therefore, the use of agricultural chemicals, such as pesticides, is certain to have occurred in the vicinity of the Central Valley Wye alternatives. A *pesticide* is any substance or mixture of substances that is intended to prevent the presence of, destroy, repel, or mitigate any pest. The term pesticide applies to insecticides and various other substances used to control pests, including herbicides. Examples of the health risks posed by pesticides include cancer, nervous system damage, hormone or endocrine disruption, eye or skin irritation, and reproductive health hazards. Any current or former agricultural lands or landscapes adjacent to or within the hazardous materials and wastes RSA may have been subject to regular applications of fertilizers, pesticides, or other chemicals for maintenance.

The direct application of these chemicals was not observed during the site reconnaissance in adjacent vineyards, row crops, or other crops. Areas that might be of concern include pesticide-

handling areas that lack concrete pads, berms, or cribs to contain spills or leaks during handling and storage, and rinse water from washout facilities for pesticide-application equipment that has not been properly collected and treated before discharge. Equipment-repair and petroleum-storage areas might also be of concern. As each of the Central Valley Wye alternatives extends through predominately agricultural areas, it is likely that there is no significant difference in risks among the Central Valley Wye alternatives for this issue.

5.3.4 Polychlorinated Biphenyls

Electrical transformers, hydraulic equipment, capacitors, and similar equipment may contain PCBs in hydraulic or dielectric insulating fluids within the units. The federal Toxic Substances Control Act has generally prohibited the domestic manufacture of PCBs since 1976; therefore, only equipment manufactured before 1976 has the potential to contain PCBs.

A few pad and pole-mounted transformers in the hazardous materials and wastes RSA were observed during the site reconnaissance. The age of the equipment was not clear, but none of the transformers observed had any discernible leaks. None of the units observed were labeled as containing PCBs.

5.3.5 Aerially Deposited Lead

Historical aerial photographs and topographic maps document the existence of multiple roadways that date back to at least 1937 in the vicinity of the Central Valley Wye alternatives. Areas around freeways, highways, and major thoroughfares have the potential to be affected by ADL from vehicular emissions. In the more-urbanized highway corridors in California, exposed soils have been found to be contaminated with lead, primarily as a result of historical emissions from automobile exhausts. Results of in-situ sampling and laboratory testing from other unrelated projects have shown that some of the soil contains concentrations of lead in excess of state regulatory thresholds, and thus any waste generated from the disturbance of soil in these locations would be considered as a hazardous waste. Because SR 99, SR 152, and multiple city and county roads have existed for decades in areas adjacent to the Central Valley Wye alternatives, soil in the immediate vicinity of the alignments is likely contaminated with ADL. The three Central Valley Wye alternative alignments located adjacent to SR 152 may be more likely to have effects from ADL than the Avenue 21 to Road 13 Wye Alternative, which is near roads that carry less vehicular traffic.

5.3.6 Naturally Occurring Asbestos

NOA is found in serpentine rock and is a potential contamination issue. NOA is a fibrous mineral that often takes the form of long, thin strands; however, NOA can degrade from weathering or excavation activities into microscopic fibers and become airborne. If NOA does not become airborne, it does not pose a threat, but when suspended in the air and inhaled, the thin fibers can irritate tissues and resist the body's natural defenses.

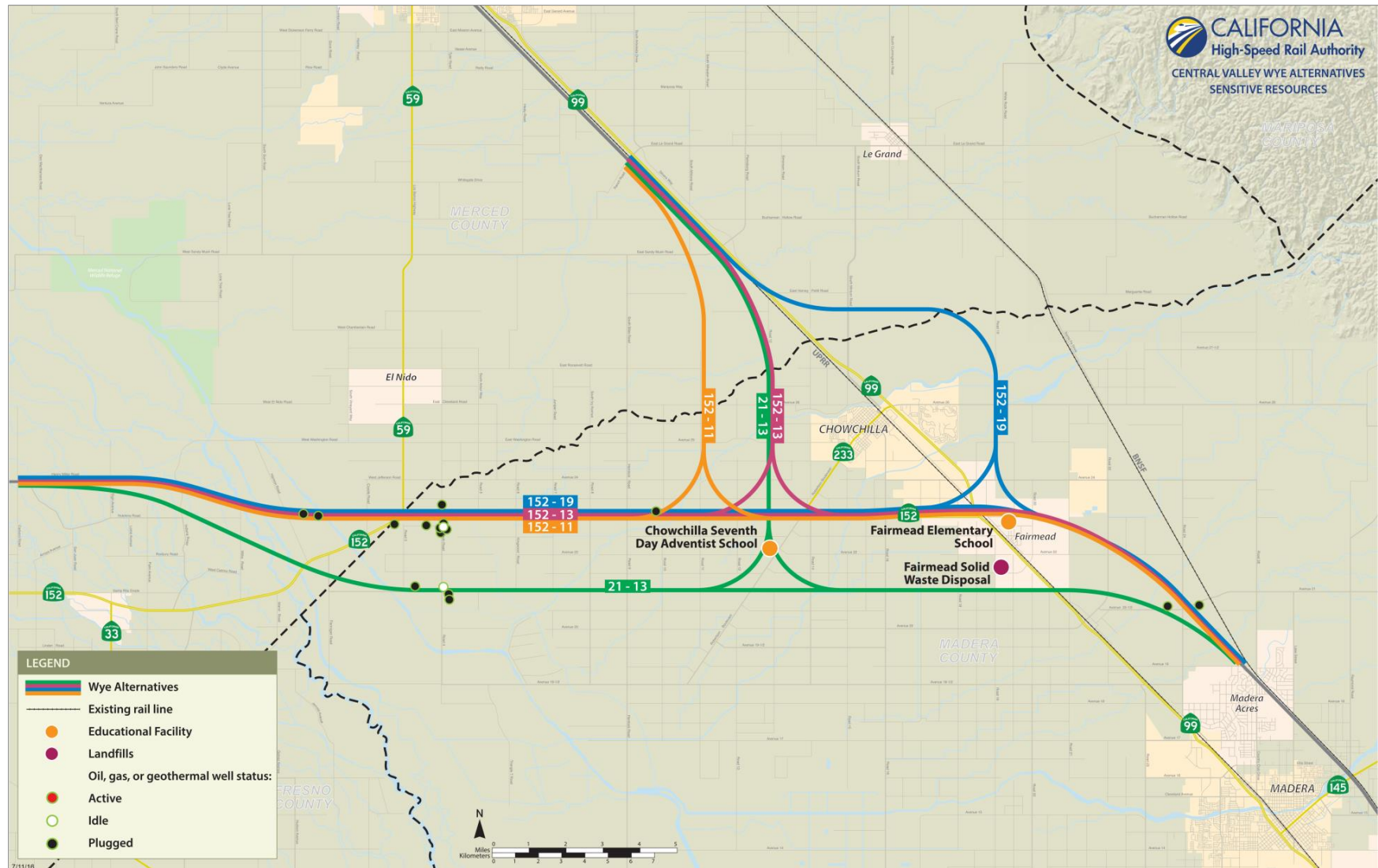
Three NOA areas are within Merced and Madera Counties, approximately 30 miles northeast of the Central Valley Wye alternatives (Van Gosen et al. 2011). The three NOA areas include the Baker Gold Mine, Savannah Gold Mine, and Deep Canyon Claim. Because these three NOA areas are outside of the hazardous materials and waste RSA, NOA is not considered a substantial concern for the Central Valley Wye alternatives.

5.3.7 Landfills

Analysts identified landfills within 0.25 mile of the Central Valley Wye alternatives centerlines (shown on Figure 5-2) due to their potential to release methane gas, which may present an explosion risk. Under current regulations, all operating and most closed landfills are required to have landfill gas migration control systems and monitoring programs. Additionally, most active and many closed landfills have landfill gas capture and treatment/destruction systems. Therefore, the likelihood of methane landfill gas affecting an area beyond the landfill property is low.

The Fairmead Solid Waste Disposal Site is the only active landfill within the landfill RSA and is located along Road 19 in unincorporated Madera County, approximately 0.1 mile north of the

Avenue 21 to Road 13 Wye Alternative's centerline. The facility is a Class III landfill that accepts nonhazardous solid wastes. The permitted disposal capacity is 1,100 tons per day; however, the actual daily disposal volume averages 302 tons. The Fairmead Solid Waste Disposal Site has a remaining capacity of 5.5 million cubic yards and the estimated closure date is December 31, 2028 (CalRecycle 2015).



Source: DOC 2015; CDE 2015; Authority, 2016

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Figure 5-2 Environmental Concern Sites and Schools within 0.25 Mile of the Central Valley Wye Alternatives' Centerlines

5.3.8 Oil and Gas Wells

The Chowchilla Gas Field is within the proposed Central Valley Wye alternatives' oil and gas wells RSA, near the SR 152 crossing of the boundary between Merced Madera Counties. Most of the wells within the Chowchilla Gas Field are dry or plugged and were abandoned between 1930 and 1986. Figure 5-2 shows the oil and gas wells within 200 feet of the Central Valley Wye alternatives.

Analysts plotted the locations of oil and gas wells (both active and abandoned) from data obtained from the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) database, accessed in February 2015 (DOC 2015). The database contained a total of 17 oil and gas wells within 200 feet of the Central Valley Wye alternatives' footprints.

- SR 152 (North) to Road 13 Wye Alternative 12 wells (1 idle, 11 plugged)
- SR 152 (North) to Road 19 Wye Alternative 12 wells (1 idle, 11 plugged)
- Avenue 21 to Road 13 Wye Alternative 5 wells (1 idle, 4 plugged)
- SR 152 (North) to Road 11 Wye Alternative 12 wells (1 idle, 11 plugged)

5.4 Educational Facilities

School locations are important to consider because children, who are particularly sensitive to hazardous materials exposure, use these facilities. Additional protective regulations apply to projects that could use or disturb potentially hazardous products near or at the schools. The California Public Resources Code requires projects that would be located within 0.25 mile of a school and might be reasonably expected to emit or handle hazardous materials to consult with the school district regarding potential hazards. Two educational facilities (defined as colleges, high schools, or elementary schools) are within 0.25 mile of the Central Valley Wye alternatives' centerlines, as shown in Table 5-2. Figure 5-2 shows the names and locations of these schools.

Table 5-2 Educational Facilities within 0.25 Mile of the Central Valley Wye Alternatives

Facility	Approx. Distance from Centerline to Edge of Property (miles)	Direction from Alternative
Fairmead Elementary School	0.2	South of SR 152 (North) to Road 13 Wye
	0.2	South of SR 152 (North) to Road 19 Wye
	0.2	South of SR 152 (North) to Road 11 Wye
Chowchilla Adventist School (private)	<0.1	East (and within the wye) of Avenue 21 to Road 13 Wye

Source: CDE 2015

6 EFFECTS ANALYSIS

6.1 Introduction

This section discusses the use, storage, and handling of hazardous materials during the construction phase; inadvertent disturbance of hazardous materials and wastes; the construction phase effects from existing PEC sites; potential asbestos exposure during structure demolition; potential effects on educational facilities; and hazardous waste generation. Effects related to hazardous wastes and hazardous materials are generally analyzed qualitatively by considering the proximity of features (PEC sites) and operations (routine and upset hazardous materials transport, use, and disposal) in relation to a project. The analysis considers how the proximity and conditions of these features would potentially affect the construction and operation of the Central Valley Wye.

The methodology used in this report combines objective information (e.g., locations of hazardous materials sites) with qualitative hazard assessment and applies professional judgment to consider whether effects would result. Analysts assessed both the nature and severity of the potential effects and the possibility of minimizing the effects with impact avoidance and minimization features for the selected PEC sites and educational facilities identified during the baseline assessment, using the protocol listed in Table 4-1.

The Authority has incorporated into the design of the Central Valley Wye IAMFs that would minimize or avoid environmental or community impacts from hazardous materials and wastes. These IAMFs include HMW-IAMF#1, Property Acquisition; HMW-IAMF#2, Landfill; HMW-IAMF#3, Work Barriers; HMW-IAMF#4, Undocumented Contamination; HMW-IAMF#5, Demolition Plans; HMW-IAMF#6, Spill Prevention; HMW-IAMF#7, Transport of Materials; HMW-IAMF#8, Permit Conditions; HMW-IAMF#9, Environmental Management Systems; HMW-IAMF#10, Hazardous Materials Plans.

This section discusses the effects of the Central Valley Wye alternatives. Unless otherwise stated, effects are the same for all the Central Valley Wye alternatives.

6.2 Sites with Potential Environmental Concerns

The potential severity of the effects from hazardous waste and material releases from existing PEC sites on the construction, operation, and maintenance of the proposed Central Valley Wye alternatives would depend on two factors: the nature and severity of the contamination and the construction, operation, and maintenance activities that would likely occur near the PEC sites. The number and type of PEC sites and associated risks within each Central Valley Wye alternative's RSA for hazardous materials and wastes are presented in Table 5-1.

The majority of these PEC sites are related to agricultural or industrial land uses and public utilities. The PEC sites that pose the greatest concern are those with soil or groundwater contamination in or adjacent to the HSR right-of-way; and those where the HSR right-of-way is adjacent to freeway and highway rights-of-way, where ADL and a history of accidental releases may be a concern.

PEC sites with groundwater contamination would be of concern because dewatering during excavation, trenching, or tunneling could alter local subsurface hydraulic gradients and potentially draw groundwater contamination into excavated areas, trenches, or tunnels. In addition, PEC sites with groundwater contamination near areas where excavation would be necessary would be of concern, although effects would be unlikely because the depth to groundwater is greater than 10 to 100 feet below ground surface along most of the Central Valley Wye alternative alignments. Fuel or chemical vapors from contaminated groundwater or soils at identified PEC sites could

move through the vadose zone⁶ to excavated areas (during construction) or to underground structures associated with the rail line, such as vaults and manholes (during operation). These effects could occur near contaminated sites, depending on the nature and extent of the contamination.

Most of the Central Valley Wye alternative alignments would be within or adjacent to existing transportation rights-of-way, and because of this land-use history, additional unknown contamination from spills and accidental releases are a possibility. Consequently, some unavoidable temporary and permanent hazardous waste and hazardous material effects are expected for any of the Central Valley Wye alternatives.

The cleanup or remediation associated with the presence of a hazardous waste/material site in the hazardous materials and wastes RSA could result in additional construction costs. These additional costs could make a major difference in the practicability or feasibility of an alternative.

This effects analysis assumes that effects related to exposure to hazardous wastes or hazardous materials could occur during construction, operation, or both. Operation effects could occur from pipeline ruptures, transport of hazardous materials or wastes near the Central Valley Wye during operation. The project-level comparison of alternatives in this analysis assesses the relative degree to which sites known to contain hazardous wastes or hazardous materials could constrain the Central Valley Wye alternatives by requiring costly disposal conditions and site cleanup and remediation. The number of such sites gives some indication of the overall level of potential effect; more sites generally imply more potential effects. In this analysis, all types of listing (i.e., USEPA's National Priority List for Superfund Sites, Envirostor, and solid waste landfill) were given equal weight.

This site-count, project-level effect analysis does not provide a detailed assessment of the nature or extent of any hazardous wastes or hazardous materials that may be present at the identified sites. Nor does this analysis specify the degree or nature of the potential effects under the Central Valley Wye alternatives. However, the analysis results are useful for comparing alternatives and identifying areas where avoidance may be possible.

6.2.1 Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes

Hazardous materials are substances that are flammable or combustible, explosive, toxic, noxious, corrosive, radioactive, or are oxidizers or irritants. Potentially hazardous materials are commonly used in railway construction, operation, or maintenance and therefore would be routinely transported to or from the selected Central Valley Wye alternative; they include, but are not limited to, the following types of materials:

- Acids and caustics
- Compressed gases
- Caulking
- Adhesives and glues
- Degreasers
- Refrigerants
- Oils and lubricants
- Batteries and battery acid
- Fuels and additives
- Herbicides and pesticides
- Wood preservatives

⁶ The *vadose zone*, also termed the *unsaturated zone*, is the zone between the land surface and the deepest water table. It includes the capillary fringe. Generally, water in this zone is under less than atmospheric pressure, and some of the voids may contain air or other gases at atmospheric pressure

- Paints, varnishes, and shellacs
- Paint strippers
- Solvents and thinners
- Mineral spirits

The quantities and volumes of hazardous materials anticipated to be used or stored have not been calculated. This list is intended as a general summary, not a comprehensive list of all materials that would be transported, stored, or used in or around HSR railway construction and operations. Materials that are likely to be stored in quantities greater than 5-gallon containers include fuels, oils and lubricants, antifreeze, and some solvents.

Proper hazardous waste disposal, regardless of the method selected, often affects the environment. Waste management strategies that seek to prevent pollution by reducing waste generation at its source are considered the most desirable approach. The Pollution Prevention Act of 1990 (42 U.S.C. § 13101 et seq.) established pollution prevention as a national objective. This priority will be reflected in the goals of waste minimization for the HSR system, thereby reducing the quantity of hazardous wastes that needs to be transported.

Construction Effects

Construction activities have the potential to result in temporary direct and indirect effects from the transport, use, storage, and disposal of hazardous materials and wastes. Building the Central Valley Wye would temporarily increase the regional transport, use, storage, and disposal of hazardous materials. However, these materials present no substantial hazard to the community when properly handled, transported, and stored according to the manufacturers' guidelines and regulatory agency rules and regulations.

The increased use of hazardous materials could in turn result in an incremental increase in hazardous waste generation. Demolition of existing structures within the Central Valley Wye right-of-way would likely require the transportation of ACM, LBP, and, potentially, other chemical wastes such as PCBs, from the construction site to appropriate disposal sites. Additionally, before the construction of facilities at the existing PEC sites, remediation (i.e., cleanup) of contaminated soil could generate hazardous waste for shipping to appropriate off-site disposal facilities. Remediation of ADL-contaminated soil along freeways, highways, and major thoroughfares would generate soil that could be classified as hazardous waste for shipping to off-site disposal facilities. Waste generated from construction activities may include soil or groundwater contaminated by petroleum hydrocarbons, pesticides, herbicides, asbestos, heavy metals, or other hazardous materials. Waste generation may also include demolition materials that contain friable or nonfriable asbestos or lead.

The Authority will implement HMW-IAMF#7, Transport of Materials; HMW-IAMF#8, Permit Conditions, which require consistency with regulations that control the transport, use, and storage of hazardous material and minimize the potential for an accidental release of hazardous materials during construction and transport of these hazardous wastes. State and federal regulations regarding the transportation of hazardous materials would regulate the transportation of hazardous materials or wastes associated with the Central Valley Wye. The transport of hazardous materials and wastes is regulated by federal agencies through the 1975 Hazardous Materials Transportation Act (49 U.S.C §§ 1801–1819 and 49 C.F.R §§ 101, 106, 107, and 171–180). This act regulates the transport of hazardous materials by establishing procedures and policies on the proper handling of hazardous materials, requiring material designations and labeling during transport, establishing packaging requirements, and establishing operational rules that govern the transportation process from pick up to delivery. Caltrans and other state agencies impose regulation through the Hazardous Waste Control Act (Cal. Health and Safety Code § 25100 et seq.), which regulates the identification, generation, transportation, storage, and disposal of materials deemed hazardous by the State of California. These federal and state hazardous materials transportation regulations and response to hazardous materials transportation emergencies are enforced by the California Highway Patrol and Caltrans.

Additionally, the Merced County and Madera County CUPAs provide for the proper management of all hazardous waste in the respective counties (see Section 3.3, Regional and Local).

The accidental release of hazardous materials during construction and transportation would have the potential to result in temporary effects during construction activities; however, these effects would also be minimized through implementation of HMW-IAMF#6 Spill Prevention. HMW-IAMF#6 would implement a spill prevention, control and countermeasure plan that establishes BMPs to clean up any release of hazardous materials. This measure would make certain that any spills or accidental releases of hazardous materials and wastes during construction are responded to quickly and effectively to minimize risk to workers and the public.

Pursuant to HMW-IAMF#9, Environmental Management System, the Authority will also prepare a hazardous materials management business plan, which provides emergency responders with emergency contact information, site-specific chemical inventories, and vicinity and facility maps.

Operations Effects Operation of the Central Valley Wye would require only minor amounts of hazardous materials, such as the periodic use of herbicides in the right-of-way to control weeds and greases to lubricate switching equipment along the trackway. Potential effects from transport, use, storage and disposal of hazardous materials and wastes would be direct and intermittent during operations.

The Authority will implement HMW-IAMF#7: Transport of Materials, to minimize the potential for an accidental release of hazardous materials during transport. The routine transport, storage, use, and disposal of the substances used by the Central Valley Wye are regulated by a number of federal, state, and local laws that require procedures on proper handling and preparation for handling hazardous materials, as well as implementing material designations and labeling, packaging requirements, and operational rules. The Authority will also implement HMW-IAMF#10: Hazardous Materials Plans to manage the transport, storage, use, and disposal of hazardous materials. For example, a California hazardous material business plan would be prepared pursuant to California Health and Safety Code, section 25500 et seq., and would specify requirements for material inventory management, inspections, training, recordkeeping, and reporting.

6.2.2 Inadvertent Disturbance of Hazardous Materials or Wastes

A hazardous material spill or release can pose a risk to safety and health of humans and the environment. An incident can result in the evacuation of the nearby residents and construction workers and could affect construction or operation. A number of federal laws regulate hazardous materials, including Title III of Superfund Amendments and Reauthorization Act, RCRA, Hazardous Materials Transportation Act, the Occupational Safety and Health Act, Toxic Substances Control Act, and the Clean Air Act. Title III of Superfund Amendments and Reauthorization Act regulates the packaging, labeling, handling, storage, and transportation of hazardous materials. The law requires facilities to furnish information about the quantities and health effects of materials used at the facility, and to promptly notify local and state officials whenever a significant release of hazardous materials occurs. Inadvertent disturbance of hazardous materials and wastes has the potential to occur if hazardous materials are encountered during construction activities, which is the focal point of this effect analysis; or during accidental spills or releases from the transport, use, storage and disposal of hazardous wastes and materials, which is discussed in Section 6.2.1. During construction, trenching and other ground-disturbing activities have the potential to disturb undocumented soil or groundwater contamination. Adverse effects can also occur through the inadvertent dispersal of affected media into the environment. Dewatering activities at an undocumented contaminated site, for example, may result in the release of groundwater contamination into nearby waterways or farther into the groundwater table. Construction activities may also disturb ACMs,

Construction Effects

Building the Central Valley Wye would not require transporting, storing, or disposing of hazardous materials in quantities greater than needed to support construction activities, thereby minimizing potential exposure of the public, workers, and the environment. However, inadvertent releases or

spills can occur from the improper storage of hazardous materials, improper handling of hazardous materials, accidents, seismic activity, or inclement weather and have the potential to result in direct and temporary effects.

In addition to the possibility of accidents involving workers or observers occurring on job sites, off-site accidents during hazardous materials/waste transport to or from the job sites could expose individuals and the environment to risks at some distance from the construction site. Although transportation accidents are infrequent, accidents could occur during shipment of hazardous commodities (such as gasoline, diesel, or compressed gases) for construction. Accidents could also occur during the transportation of hazardous waste materials generated during construction or during the cleanup of existing contaminated sites before construction prior to the property acquisition phases.

Additional potential hazardous material releases along rail corridors can also include valve leakage or safety valve releases, which carry the potential of releasing hazardous material in the form of liquids or gases. The degree of effect from a hazardous-material-related release or spill is dependent on the proximity of the release to population densities, concentrated development, and environmentally sensitive areas.

An on-site or off-site accident, collision, or derailment may release hazardous materials/wastes into the environment. In the case of some chemicals, toxic fumes may be airborne away from the accident site. Fire and explosion are also a possibility. Although the state enforces standard accident and hazardous materials recovery training and procedures, which are followed by private state-licensed, certified, and bonded transportation companies and contractors, the Central Valley Wye's location along interstate rail and highway corridors creates a risk of exposure.

Direct and temporary effects from the inadvertent release of hazardous materials or wastes could occur. The pathways through which the community or the environment (e.g., local air quality, biota) could be exposed to hazardous materials include skin contact, ingestion from air emissions, and dust. Other exposures could result from release of hazardous materials caused by improper containment or decontamination procedures and lack of containment during inclement weather, which could result in stormwater runoff and contamination percolation into the soil substrate.

The Authority will implement HMW-IAMF#7, Transport of Materials; HMW-IAMF#4, Undocumented Contamination; to avoid and minimize these effects. Pursuant to Occupational Safety and Health Administration 29 C.F.R. Part 1910.120, standard accident training for cleaning up small spills would be provided to all individuals prior to their work with hazardous substances, and the appropriate types and amounts of spill cleanup materials and personal protective equipment would be immediately available. The Authority will prepare and implement a written hazard communication program to make sure that all containers are labeled, and provide employees with access to material safety data sheets. Hazardous material users would consult the material safety data sheet for the specific material they plan to work with and consider response options beforehand in case of a spill or release.

Pursuant to HMW-IAMF#9, Environmental Management System, the Authority will also prepare a hazardous materials management business plan, which provides emergency responders with emergency contact information, site-specific chemical inventories, and vicinity and facility maps. In addition, IMW-IAMF#5, Demolition Plans, will be implemented; this IAMF includes measures for the safe dismantling and removal of building components and debris, and prevents the accidental release of lead and asbestos, thereby protecting workers and the public from potential exposure to hazardous materials and wastes during demolition.

Furthermore, during final design, the Authority will develop a construction management plan that includes provisions for responding to the disturbance of undocumented contamination (HMW-IAMF#4, Undocumented Contamination). Responsibility for responding to the discovery of undocumented contamination is delegated to the Merced County Environmental Health Department and Madera Environmental Health Division under the state CUPA program. If soil,

groundwater, or other environmental media with suspected contamination is encountered unexpectedly during construction activities (for example, identified by odor or visual staining, or by unearthing any underground storage tanks, abandoned drums, or other hazardous materials or wastes), work will immediately cease in the vicinity of the suspect materials. The area will then be secured as necessary, and all appropriate measures will be taken to protect human health and the environment. Appropriate measures include notifying regulatory agencies and complying with the various agencies' laws, regulations, and policies. HMW-IAMF#4 confirms that the Authority and its contractors will work with these agencies should undocumented contamination be encountered during construction. These provisions will minimize the potential for hazardous materials to be released into the environment.

Operations Effects

The HSR is a passenger transportation system and would not be used to transport freight or hazardous substances. All existing transportation routes that potentially conflict with the Central Valley Wye would be relocated to avoid such conflicts through the use of grade separations. The HSR system would be constructed on tracks separate from slow-speed passenger and freight rail, with physical separation by distance and, potentially, by physical barriers, should FRA standards require them. These separations, as well as design characteristics that would keep any potential HSR derailment within the track guideway would eliminate the potential for collisions with any at-grade transporter of hazardous materials that could result in a release to the environment..

6.2.3 Construction on or near Potential Environmental Concern Sites

Demolition or construction activities are expected to involve earthmoving or excavation in areas of known or potential soil or groundwater contamination. Sites with known or suspected contamination (PEC sites) would be investigated during right-of-way acquisition (HMW-IAMF#1, Property Acquisition). Generally, PEC sites would be remediated prior to acquisition of the property and construction on the site, depending on the arrangement negotiated during the property acquisition process. Nevertheless, portions of the HSR still may be constructed at or near PEC sites with ongoing remediation activities and direct and temporary effects have the potential to occur during construction.

Historical aerial photographs and topographic maps document agricultural development dating back to at least 1885 in proximity to the Central Valley Wye alternatives. Therefore, it is likely that agricultural chemicals such as pesticides and herbicides were used in the area. The greatest likelihood for disturbance of residual agricultural chemicals is in the rural areas, or areas along the Central Valley Wye alternative alignments where agricultural chemicals were stored, mixed, or handled in association with crop application by various means, including dusting.

Multiple highways and other roadways in the vicinity of the Central Valley Wye alternatives also date back to at least 1885, as the historical aerial photographs and topographic maps show. Areas around freeways, highways, and major thoroughfares have the potential to be contaminated by ADL from vehicular emissions. ADL would most likely be encountered along SR 99, SR 152, and multiple well-used city and county roads.

Under Cortese List provisions, Government Code section 65962.5(a) requires that DTSC "shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all the following: hazardous waste facilities subject to corrective action pursuant to section 25187.5 of the Health and Safety Code." Section 65962.5(a)(3) requires that DTSC "shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all the following: information received by the DTSC pursuant to section 25242 of the Health and Safety Code on hazardous waste disposals on public land."

Section 65962.5(a)(4) requires that DTSC "shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all the following: sites listed pursuant to section 25356 of the Health and Safety Code." Section 65962.5(a)(5) requires that DTSC "shall compile and update as appropriate, but at least annually, and shall

submit to the Secretary for Environmental Protection, a list of all the following sites included in the Abandoned Site Assessment Program (formerly identified in the CalSites database, now part of the Envirostor database).”

An evaluation of the online DTSC-listed sites and facilities databases (i.e., Envirostor) indicated that no sites that fit the section 65962.5(a) criteria discussed above were located within the hazardous materials and wastes RSA for any of the Central Valley Wye alternatives. However, it is possible that currently unrecognized or unreported contamination and other affected sites that would meet DTSC criteria for sites identified pursuant to Government Code section 65962.5 exist in the RSA.

6.2.3.1 SR 152 (North) to Road 13 Wye Alternative

Construction of the SR 152 (North) to Road 13 Wye Alternative could occur on or near four PEC sites, including sites on the Cortese List. Construction activities could encounter contaminants or interfere with ongoing remediation efforts. Unless construction activities are coordinated with site remediation activities, there could be an increased risk of damaging or interfering with remediation site controls such as soil containment areas. Construction could also increase the risk of damaging or interfering with groundwater remediation facilities, such as extraction and monitoring wells, pumps, or pipelines. In addition, construction at sites with existing contamination could result in the generation of contaminated waste materials from the project. Effects could include potential localized spread of contamination; exposure of construction workers and the public to chemical compounds in soils, soil gases, and groundwater; exposure of workers, the public, and the environment to airborne chemical compounds migrating from the demolition or construction areas; potential accidents during transportation of contaminated soils or groundwater; potential accidents during remediation as a result of operational failure of treatment systems; and potential interference with ongoing remediation activities. Construction could also result in the discovery of previously unknown contamination.

The effects of hazardous-waste containing chemical compounds would generally be limited to the immediate areas where the materials would be excavated, handled, and stored because exposure would be most likely in these areas. For this reason, the individuals most at risk would be the construction workers, operations personnel, or others in the immediate vicinity during excavation, transportation, or storage of hazardous waste, or during construction. The routes through which these individuals could be exposed include inhalation, ingestion, or skin contact.

The Authority will implement HMW-IAMF#4, Undocumented Contamination; HMW-IAMF#9, Environmental Management System; HMW-IAMF#1, Property Acquisition; and HMW-IAMF#3, Work Barriers, to minimize and avoid these effects. Federal and state regulations and policies, including CERCLA, All Appropriate Inquiry,⁷ California Public Resources Code section 21151.4, and the certified Unified Hazardous Waste and Hazardous Materials Management Regulatory Program administered by city and county agencies, would require environmental site assessment procedures (due diligence) for future development on or near a potentially hazardous or contaminated site. Potential hazards would be minimized through the careful design and placement of project elements, avoiding contaminated sites where possible. All necessary remediation would be conducted by the responsible party before construction. If necessary, regulatory approval for construction at contaminated sites would be sought and planned for.

Interference with any ongoing remediation activities at a given site could increase the risk of a release of contaminants or result in an interruption in cleanup; thus, construction at known PEC sites would require coordination with regulatory agencies before advancing. Where effects on PEC sites cannot be avoided, preconstruction activities as described for HMW-IAMF#1, HMW-IAMF#4, Undocumented Contamination and HMW-IAMF#3, Work Barriers would be implemented, A Phase I Environmental Site Assessment, would be conducted during the right-of-

⁷ *All Appropriate Inquiries* is a process of evaluating a property's environmental conditions and assessing the likelihood of any contamination before its acquisition.

way acquisition phase, and appropriate remediation including removal of contamination, in-situ treatment, or soil capping, would be conducted prior to acquisition. Depending on proposed activities, such as subsurface ground disturbance, and the known extent and type of contamination, requirements for building at contaminated sites could include further evaluation of the level of contamination and associated potential risks to human health and the environment as well as site remediation.

In lieu of remediating the identified sites, design and engineering controls will be implemented to avoid contaminated sites if the extent of the contamination and the components or logistics of remediation are prohibitive. Engineering controls to redesign structural features of the HSR system, such as aboveground spans that avoid contaminated locations, could be installed.

6.2.3.2 SR 152 (North) to Road 19 Wye Alternative

Potential effects related to construction near PEC sites for the SR 152 (North) to Road 19 Wye Alternative would be similar to those described in Section 6.2.3.1 for the SR 152 (North) to Road 13 Wye Alternative. Construction of the SR 152 (North) to Road 19 Wye Alternative could occur on or near six PEC sites, including sites identified on the Cortese List. The Authority will implement HMW-IAMF#4, Undocumented Contamination; HMW-IAMF#9, Environmental Management System; HMW-IAMF#1 Property Acquisition; and HMW-IAMF#3, Work Barriers, to minimize and avoid these effects.

6.2.3.3 Avenue 21 to Road 13 Wye Alternative

Potential effects related to construction near PEC sites for the Avenue 21 to Road 13 Wye Alternative would be similar to those described in Section 6.2.3.1 for the SR 152 (North) to Road 13 Wye Alternative. Construction of the Avenue 21 to Road 13 Wye Alternative could occur on or near six PEC sites, including sites identified on the Cortese List. The Authority will implement HMW-IAMF#4, Undocumented Contamination; HMW-IAMF#9, Environmental Management System; HMW-IAMF#1, Property Acquisition; and HMW-IAMF#3, Work Barriers, to minimize and avoid these effects.

6.2.3.4 SR 152 (North) to Road 11 Wye Alternative

Potential effects related to construction near PEC sites for the SR 152 (North) to Road 11 Wye Alternative would be similar to those described in Section 6.2.3.1 for the SR 152 (North) to Road 13 Wye Alternative. Construction of the SR 152 (North) to Road 11 Wye Alternative could occur on or near three PEC sites. The Authority will implement HMW-IAMF#4, Undocumented Contamination; HMW-IAMF#9, Environmental Management System; HMW-IAMF#1, Property Acquisition; and HMW-IAMF#3, Work Barriers, to minimize and avoid these effects.

6.2.4 Asbestos Exposure as a Result of Building Demolition

Direct and temporary effects from asbestos exposure as a result of building demolition have the potential to occur during construction. Development of the Central Valley Wye would require demolition of structures, which could cause the release of asbestos fibers into the environment and potential health effects on workers and community members. Depending on their date of construction, many of the structures within the hazardous materials and wastes RSA, including concrete bridge abutments, may have been built with structural and building materials that contain asbestos. During the site reconnaissance, exterior building materials were observed that may include transite siding, roofing materials, and other building materials that may contain asbestos. The site assessment did not include a reconnaissance of the interiors of buildings.

The Authority will implement HMW-IAMF#5, Demolition Plans, to minimize effects resulting from asbestos. Prior to demolition activities, the contractor would evaluate whether the structures proposed for demolition contain asbestos, in accordance with 15 U.S.C. section 2601 et seq. and 40 C.F.R. Part 763, Subpart G. If the structure contains friable (i.e., brittle) asbestos, a state-certified asbestos-removal contractor would be hired and would comply with the Occupational Safety and Health Administration standards in 29 C.F.R. Part 1926.1101, acquire the appropriate permits, and remove the asbestos. Depending upon the amount and type of asbestos to be

removed, advanced notification to the appropriate local agencies (i.e., the San Joaquin Valley Air Pollution Control District) and DTSC may be required before asbestos is disturbed or removed. Notification requirements may also include notifying local residents and construction workers close to where asbestos work is being done. Determining the existence of ACMs and removing them safely is important to preserving the long-term health of construction personnel working near or with potentially contaminated structures or sites. General personal protection practices will also be implemented.

Increased exposure to asbestos as a result of building demolition would be temporary during construction. Hazardous wastes and materials may need to be contained, stored, and transported for off-site disposal following structure demolition. With implementation of a hazardous materials and waste plan, including procedures for hazardous waste transport, containment, and storage (HMW-IAMF#7), the potential health effects on workers and community members would be minimized.

6.2.5 Construction on, or in Proximity to, Landfills and Oil and Gas Wells

6.2.5.1 SR 152 (North) to Road 13 Wye Alternative

Construction Effects

There are no landfills within 0.25 mile of the SR 152 (North) to Road 13 Wye Alternative's footprint. Therefore, there would be no risk of project construction activities igniting methane releases from adjacent landfills. As discussed in Section 5.3.8, Oil and Gas Wells, the SR 152 (North) to Road 13 Wye Alternative passes close to numerous active and abandoned gas wells that were once part of the Chowchilla Gas Field. As such, direct and temporary effects from construction near oil and gas wells may occur. One active but idle well and 11 abandoned wells lie within 200 feet of the SR 152 (North) to Road 13 Wye Alternative's footprint. Petroleum products and pipelines, including those for crude oil and refined products (e.g., fuels, solvents, lubricants, and natural gas), are excluded from the definition of a "hazardous substance" in CERCLA, but are considered in this analysis because they may pose a potential hazard to human health and safety, if released into the workplace or the environment. Release could occur through spills during construction; rupture of a pipeline or well casing hit during construction; or through the disturbance of contaminated soil or groundwater.

The Authority will implement HMW-IAMF#2, Landfill, and HMW-IAMF#6, Spill Prevention, to avoid effects from landfills and gas wells. Active wells would need to be either relocated, or capped and abandoned. Appurtenant facilities such as pipelines would also potentially need to be relocated if they fall within the footprint. Contractors would use safe and explosion-proof equipment during construction in areas where explosion hazards exist, and would monitor for gaseous and solvent liquid wastes in accordance with the hazardous materials contingency plan and best management practices (BMP). In addition, a spill prevention plan would be in place, and spill containment equipment would be at the site during removal or decommissioning of any wells.

Operations Effects

There are no landfills within the SR 152 (North) to Road 13 Wye Alternative's RSA for landfills. Operation of the project close to existing gas wells has the potential to increase safety risks to the public in the form of a well blowout.

In conjunction with complying with federal safety directives for the HSR, the Authority has prepared a preliminary hazard analysis, to consider risks to HSR operations that may be posed by oil and gas wells adjacent to the HSR right-of-way. Blowouts occur when a pressurized underground zone is encountered while drilling and the weight of the drilling mud in the wellbore is insufficient to hold back the pressure. The consequences of a blowout range from a spray of crude oil over the surrounding area and the displacement of earth around the wellbore, to a large-scale explosion and fire. Wells in the region are largely inactive and a review of oil and gas well blowouts in the region from 1991 to 2008 revealed a low number of blowouts. The occurrence of such an event can be characterized as highly unlikely. High-speed trains would travel at speeds up to 220 mph, so a high-speed train would be present near any one nearby oil or gas well for

only a matter of seconds. Moreover, the HSR includes automatic train control, which has proven to be an effective technological measure to make certain that the safety of train passengers and crew by halting the train quickly in the event of a nearby well blowout. No effects would occur during operations.

6.2.5.2 SR 152 (North) to Road 19 Wye Alternative

Construction Effects

There are no landfills within 0.25 mile of the SR 152 (North) to Road 19 Wye Alternative's footprint. One active but idle well and 11 abandoned wells lie within 200 feet of the SR 152 (North) to Road 19 Wye Alternative's footprints. Construction of the SR 152 (North) to Road 19 Wye Alternative would have the same effects as described for the SR 152 (North) to Road 13 Wye Alternative in Section 6.2.5.1. With implementation of HMW-IAMF#6 and HMW-IAMF#2, the effects on public safety would be reduced.

Operations Effects

Operation of the SR 152 (North) to Road 19 Wye Alternative would have the same effects as described for the SR 152 (North) to Road 13 Wye Alternative. With the safety features included as part of the project design, the potential for hazards to HSR passengers and crew from nearby oil and gas wells would be correspondingly reduced.

6.2.5.3 Avenue 21 to Road 13 Wye Alternative

Construction Effects

There is one active landfill within 0.25 mile of the Avenue 21 to Road 13 Wye Alternative. The Fairmead Solid Waste Disposal Site is located on the west side of SR 99 in Fairmead, approximately 0.1 mile north of Avenue 21 to Road 13 Wye Alternative's footprint. An analysis of the potential for hazardous materials risks concluded that the likelihood of methane landfill gas affecting an area beyond the landfill property is low because the landfill has gas mitigation control systems and monitoring programs. One active but idle well and four abandoned wells lie within 200 feet of the Avenue 21 to Road 13 Wye Alternative's footprint.

The Authority will implement HMW-IAMF#2 and HMW-IAMF#6, to avoid effects from landfills and gas wells. The active well in this zone would be plugged and relocated and inactive wells would be examined and re-abandoned, as necessary. Contractors would use safe and explosion-proof equipment during project construction in areas where explosion hazards exist, and would monitor for gaseous and solvent liquid wastes in accordance with the hazardous materials contingency plan and BMPs. In addition, a spill prevention plan would be in place, and spill containment equipment would be at the site during removal or decommissioning of any wells.

Operations Effects

Operation of the Avenue 21 to Road 13 Wye Alternative would have the same effects as described for the SR 152 (North) to Road 13 Wye Alternative. With the safety features included as part of the project design, the potential for hazards to HSR passengers and crew from nearby oil and gas wells would be correspondingly reduced.

6.2.5.4 SR 152 (North) to Road 11 Wye Alternative

Construction Effects

There are no landfills within 0.25 mile of the SR 152 (North) to Road 11 Wye Alternative's footprint. One active but idle well and 11 abandoned wells lie within 200 feet of the SR 152 (North) to Road 11 Wye Alternative's footprints. Construction of the SR 152 (North) to Road 11 Wye Alternative would have the same effects as described for the SR 152 (North) to Road 13 Wye Alternative in Section 6.2.5.1. With implementation of HMW-IAMF#2 and HMW-IAMF#6 the effects on public safety would be reduced.

Operations Effects

Operation of the SR 152 (North) to Road 11 Wye Alternative would have the same effects as described for the SR 152 (North) to Road 13 Wye Alternative. With the safety features included as part of the project design, the potential for hazards to HSR passengers and crew from nearby oil and gas wells would be correspondingly reduced.

6.2.6 Hazardous Material and Waste Activities near Schools

6.2.6.1 SR 152 (North) to Road 13 Wye Alternative

Construction Effects

Effects have the potential to occur in the proximity of the SR 152 (North) to Road 13 Wye Alternative to Fairmead Elementary School (approximately 0.2 mile). Potentially hazardous materials and items containing potentially hazardous materials commonly used in railway construction, operation, or maintenance (e.g., compressed gases, oils and lubricants, fuels and additives, paints and varnishes, adhesives and glues) could be used or stored in the alternative's right-of-way, in some cases within 0.25 mile of the schools. Additionally, demolition of the existing structures within the alternative's right-of-way could require removal of ACM and LBP from the project site. As such, construction activities may result in direct and temporary effects.

The Authority will implement HMW-IAMF#7, Transport of Materials, and HMW-IAMF#6, Spill Prevention, to minimize effects on schools. Any hazardous material use within the Central Valley Wye alternative's footprint would be subject to federal, state, and local regulations, such as RCRA, CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act. These regulations would apply equally near school sites and require monitoring the generation, transportation, treatment, storage, and disposal of hazardous waste.

Furthermore, California Public Resources Code section 21151.4 states that *"an environmental impact report shall not be certified or a negative declaration shall not be approved for any project involving the construction or alteration of a facility within 0.25 mile of a school that might reasonably be anticipated to emit hazardous air emissions, or that would handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of section 25532 of the Health and Safety Code, that may pose a health or safety hazard to persons who would attend or would be employed at the school, unless both of the following occur: (1) The lead agency preparing the environmental impact report or negative declaration has consulted with the school district having jurisdiction regarding the potential impact of the project on the school, and (2) The school district has been given written notification of the project not less than 30 days prior to the proposed certification of the environmental impact report or approval of the negative declaration."*

Accordingly, the Authority would give the affected schools opportunity to comment on the project and express any related concerns that may result in potential prescriptive actions, such as limits on the materials used, or restrictions on the transport and storage of such materials. The Authority has coordinated with potentially affected school districts during the course of the preparation of the environmental document.

The California Air Resources Board, the San Joaquin Valley Air Pollution Control District, and other agencies specify air monitoring for large- and small-scale construction projects, contaminated soil and groundwater remediation projects, and demolition projects. On-site monitoring regulations are summarized at the California Air Resources Board website for the following components of airborne contamination, among others:

- Visible emissions
- Fugitive dust
- Particulate matter
- Organic solvents

- Storage of organic liquids
- Transfer of gasoline and diesel fuel to vehicles
- Transfer of gasoline and diesel fuel to fuel storage tanks

Examples of other engineering controls that would be applied to contain any off-site emissions that might affect an adjacent school include emission control for diesel off-road equipment and diesel generators; dust control through wetting or covering; short- and long-term ambient air quality monitoring in neighborhoods near and downwind from the construction or maintenance sites; and field olfactometry measuring and quantifying odor strength in the ambient air.

The effect of hazardous materials released to the environment in the unlikely event of a leak or spill as the result of an accident or collision during construction would be minimal because of the small quantities of materials transported or used at any given time and because of the precautions required by regulations.

Operations Effects

Effects may occur in the proximity of the SR 152 (North) to Road 13 Wye Alternative to Fairmead Elementary School (approximately 0.2 mile). Use of hazardous materials and generation of hazardous wastes would be limited mostly to small amounts for routinely maintaining HSR facilities. No acutely hazardous materials would be required to operate the passenger rail service and no effects would occur.

The tracks of the SR 152 (North) to Road 13 Wye Alternative would be 0.2 mile away from Fairmead Elementary School on a high embankment, elevated approximately 20 feet, and returning to grade at the SR 99 crossing. The closest road crossings to the school are Road 20, approximately 0.7 mile to the northeast, and Fairmead Boulevard, approximately 0.9 mile to the northwest. Because this alternative would not be at-grade near the school, the potential for accidents between the train and vehicles transporting hazardous materials near schools would be eliminated.

The HSR trains would operate on electric power. Therefore, operating the trains would not create any of the emissions associated with the use of diesel fuel, natural gas, or other fuels.

6.2.6.2 SR 152 (North) to Road 19 Wye Alternative

Construction Effects

Effects may occur near schools within 0.25 mile of the SR 152 (North) to Road 19 Wye Alternative. The school affected and the effects related to the handling of hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school for the SR 152 (North) to Road 19 Wye Alternative would be the same as those described for the SR 152 (North) to Road 13 Wye Alternative. The Authority will implement HMW-IAMF#7, Transport of Materials, and HMW-IAMF#6, Spill Prevention, to minimize effects on schools. In addition to compliance with state and federal requirements regulating the transport of materials (HMW-IAMF#7), implementation of HMW-IAMF#6 will require implementation of a spill prevention, control, and countermeasure plan to reduce the potential for a damaging hazardous material release and, if a release occurs, will require its immediate clean up.

Operations Effects

Effects may occur near schools within 0.25 mile of the SR 152 (North) to Road 19 Wye Alternative. Operation of the SR 152 (North) to Road 19 Wye Alternative would have the same effects as described for the SR 152 (North) to Road 13 Wye Alternative. The system would have no at-grade crossings near Fairmead Elementary School, so the potential for accidents between the train and vehicles transporting hazardous materials would be eliminated. No acutely hazardous materials would be required to operate the passenger rail service, and the electricity-powered trains would not create fuel emissions during operation.

6.2.6.3 Avenue 21 to Road 13 Wye Alternative

Construction Effects

Effects may occur within the proximity of the Avenue 21 to Road 13 Wye Alternative to Chowchilla Adventist School (<0.1 mile). The effects related to the handling of hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school for the Avenue 21 to Road 13 Wye Alternative would be the same as those described for the SR 152 (North) to Road 13 Wye Alternative. The Authority will implement HMW-IAMF#7 and HMW-IAMF#6 to minimize effects on schools.

Operations Effects

Operation of the Avenue 21 to Road 13 Wye Alternative would have the same effects as described for the SR 152 (North) to Road 13 Wye Alternative. The track of the Merced to Fresno leg of this alternative would be approximately 0.2 mile away from Chowchilla Adventist School on a high embankment, elevated approximately 30 feet. The San Jose to Merced leg would be less than 0.1 mile away from Chowchilla Adventist School, on a structure elevated approximately 45 feet, with a high embankment of approximately 25 feet. The closest road crossing would be Avenue 22 1/2, approximately 0.25 mile to the north. Because this alternative would not be at-grade near the school, the potential for accidents between the train and vehicles transporting hazardous materials near schools would be eliminated.

As with the SR 152 (North) to Road 13, Alternative, no acutely hazardous materials would be required to operate the passenger rail service. Similarly, the electricity-powered trains would not create fuel emissions during operation.

6.2.6.4 SR 152 (North) to Road 11 Wye Alternative

Construction Effects

Effects may occur near schools within 0.25 mile of the SR 152 (North) to Road 11 Wye Alternative. The schools affected and the effects related to the handling of hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school for the SR 152 (North) to Road 11 Wye Alternative would be the same as those described for the SR 152 (North) to Road 13 Wye Alternative. The Authority will implement HMW-IAMF#7 and HMW-IAMF#6, to minimize effects on schools. In addition to compliance with state and federal requirements regulating the transport of materials (HMW-IAMF#7), implementation of HMW-IAMF#6 will require implementation of a spill prevention, control, and countermeasure plan to reduce the potential for a damaging hazardous material release and, if a release occurs, will require its immediate clean up.

Operations Effects

Effects may occur near schools within 0.25 mile of the SR 152 (North) to Road 11 Wye Alternative. Operation of the SR 152 (North) to Road 11 Wye Alternative would have the same effects as described for the SR 152 (North) to Road 13 Wye Alternative. The system would have no at-grade crossings near Fairmead Elementary School, so the potential for accidents between the train and vehicles transporting hazardous materials would be eliminated. No acutely hazardous materials would be required to operate the passenger rail service, and the electricity-powered trains would not create fuel emissions during operation.

7 WASTE DISPOSAL FOR HIGH-SPEED RAIL CONSTRUCTION AND OPERATION

Statewide, California landfills receive over 4 million tons of construction and demolition debris each year. The California Integrated Waste Management Board and California's Department of General Services plan to reduce construction and demolition wastes in landfills by implementing higher construction and demolition waste diversion (recycling) requirements on large capital projects (Burgoyne 1999). Recycling can also be cost-effective. Contractors can store, recycle, and reuse construction and demolition materials on the site; this represents one of the most efficient methods of recycling and saves transportation, storage, and some processing costs (CalRecycle 2010).

Construction, operation, and maintenance phases of the HSR project have the potential to generate large quantities of construction and demolition debris and other material. Waste from demolition and clearing for construction as well as multiple fluids generated from operation and maintenance phases are some of the wastes suitable for reuse or recycle. Some potential uses for recycled materials include aggregate for concrete and fill material for portions of the rail line. By recycling substantial amounts of construction and demolition wastes and operation and maintenance wastes, the project would generate a much smaller volume of waste for disposal. Consistent with CalRecycle 2010 resource conservation guidelines, the HSR system is anticipated to produce the following recyclables:

- Concrete
- Asphalt
- Nonhazardous soil
- Nonhazardous water
- Used oil and oil filters
- Used hydraulic fluid
- Contaminated fuel
- Antifreeze
- Ferrous and nonferrous metals
- Scrap pipe, culvert, and wire
- Used batteries
- Bricks
- Paper and cardboard
- Unused paint and solvents
- Glass and plastic
- Brush and wood products

Landfill disposal sites are classified by the types of waste that they can receive. In California, Class I sites accept hazardous and nonhazardous wastes; Class II sites can accept "designated" and nonhazardous wastes; and Class III sites can accept only nonhazardous wastes. There are three Class III landfills within Merced and Madera Counties. Although none of these landfills accept hazardous wastes, there are in-state landfills, such as Chemical Waste Management Kettleman Hills Landfill in Kings County, and permitted landfills in Southern California, that accept hazardous wastes (DTSC 2016). Kettleman Hills Landfill is a chemical waste disposal and treatment facility with a capacity of 5.7 million cubic yards. The 1,600-acre site accepts waste from all over the western U.S., although it primarily serves California. The anticipated implementation of the B-20 landfill addition within the Kettleman Hills Landfill site is expected to provide permitted capacity for the disposal of hazardous and designated waste through 2042. It is expected that the existing waste disposal facilities in nearby counties have sufficient capacity to address Class I hazardous wastes.

Pursuant to its 2013 sustainability policy (Policy Directive POLI-PLAN-03), the Authority will divert up to 75 percent of its construction-related solid waste from landfills. This will substantially reduce its potential for adverse effects. Neither construction nor operation of the HSR is expected to generate substantial amounts of hazardous wastes.

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Authority	California High-Speed Rail Authority
Caltrans	California Department of Transportation
DOC	California Department of Conservation
DTSC	Department of Toxic Substances Control
EDR	Environmental Data Resources, Inc.
FRA	Federal Railroad Administration
SWRCB	State Water Resources Control Board
USEPA	U.S. Environmental Protection Agency

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