

APPENDIX 2-A

Proposed Roadway Activities Along HST Alternatives

2A.1 UPRR/SR 99 Alternative – Additional Information

This section provides additional information on the UPRR/SR 99 Alternative for the entire Merced to Fresno Section, its design options, the wye options, and the stations. The information is arranged geographically by the four project vicinities—Merced, Chowchilla, Madera, and Fresno. Crossings, modifications, and local road closures to accommodate HST operations for the north-south alignment of the UPRR/SR 99 Alternative are listed in Tables 2A-1 through 2A-12; road closures and modifications listed in these tables are illustrated graphically in Figures 2A-1 through 2A-4.

Merced Vicinity (Merced Station to Deadman Creek)

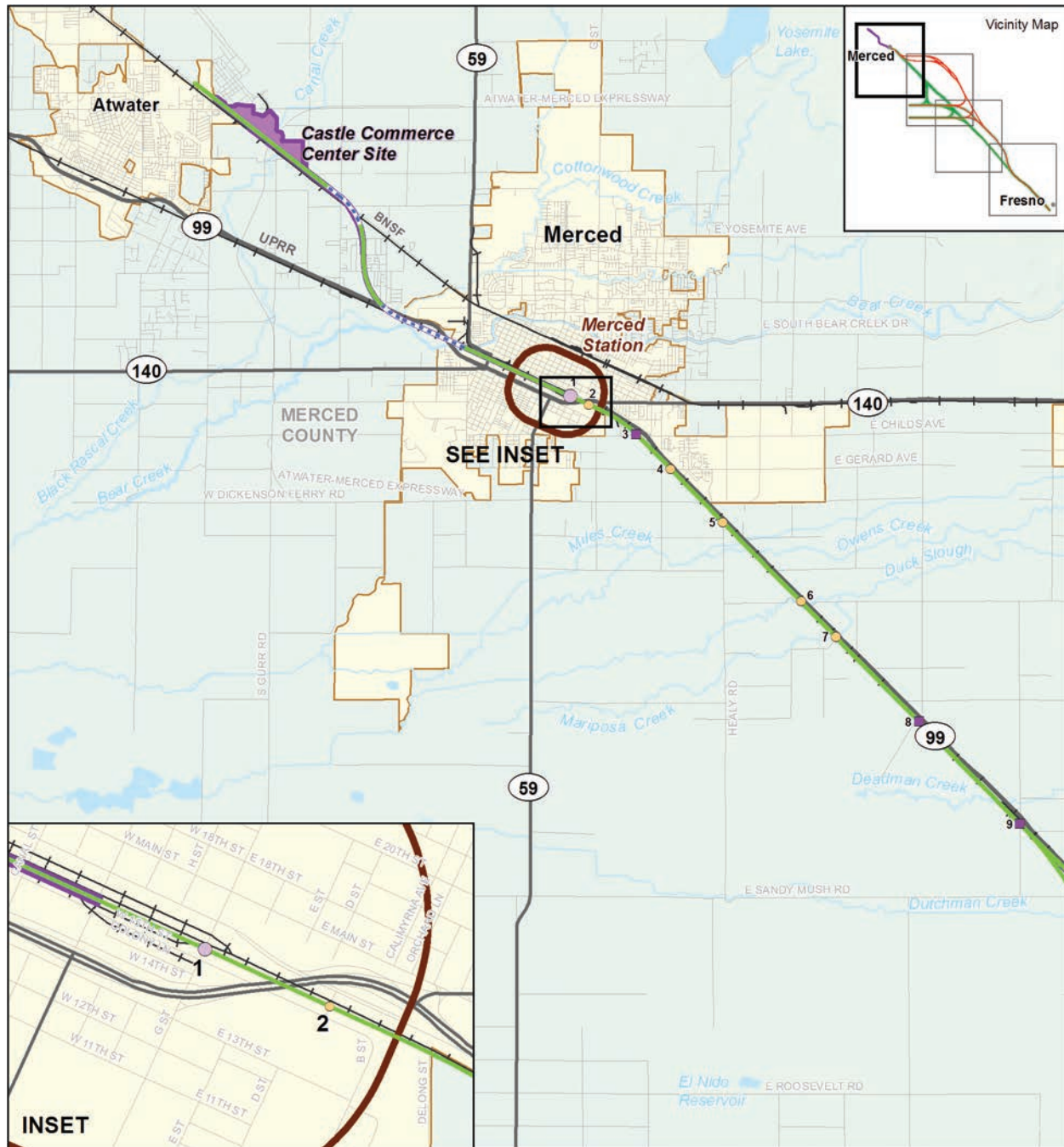
The north-south alignment of the UPRR/SR 99 Alternative begins at the HST station in Downtown Merced on the west side of the UPRR right-of-way, and travels south, adjacent to the UPRR and SR 99 corridors. Tables 2A-1 and 2A-2 summarize the road modifications, traction power substations, paralleling stations, and switching stations, as applicable to this alternative, in the Merced vicinity; Figure 2A-1 shows their locations.

Table 2A-1
 Merced Vicinity—UPRR/SR 99 Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
1	G St	4 lanes	HST at-grade	New overcrossing
2	D St	2 lanes	HST at-grade	Close road
3	Childs Ave	2 lanes	HST at-grade	Overpass extended
4	Gerard Ave	2 lanes	HST at-grade	Close road
5	Healy Ave	2 lanes	HST at-grade	Close road
6	Mariposa Way	2 Lanes	HST at-grade	Close road
7	Lingard Rd	2 Lanes	HST at-grade	Close road
8	Ranch Rd	2 Lanes	HST at-grade	Modify future overcrossing
9	Athlone Rd	2 Lanes	HST at-grade	Modify future overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-1 for the locations of these items.				

Table 2A-2
 Merced Vicinity—UPRR/SR 99 Alternative
 Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Traction Power Substation 1	South of Healy Road	East Chowchilla and West Chowchilla design options with Ave 24 Wye
Paralleling Station 1	South of Ranch Road	East Chowchilla and West Chowchilla design options with Ave 24 Wye
Paralleling Station 1	E Childs Ave/SR 99	East Chowchilla design option with Ave 21 Wye
Paralleling Station 2	Lingard Road	East Chowchilla design option with Ave 21 Wye



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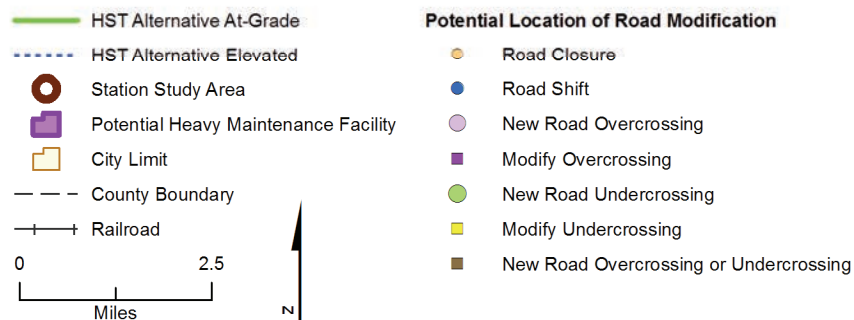


Figure 2A-1
 UPRR/SR 99 Alternative in
 the Merced Project Vicinity

Chowchilla Vicinity (Deadman Creek to Dry Creek)

Leaving the Merced vicinity, the north-south alignment of the UPRR/SR 99 Alternative approaches the City of Chowchilla along the UPRR/SR 99 corridor. Following two design options, the alignment travels either east or west of Chowchilla and joins the SR 99/UPRR corridor south of Chowchilla. On the west side of Chowchilla, two design options for the Ave 24 and Ave 21 wyes connect the north-south Merced to Fresno Section to the east-west San Jose to Merced Section. Tables 2A-3 through 2A-8 summarize the road modifications, traction power substations, paralleling, stations, and switching stations, as applicable to this alternative, in the Chowchilla vicinity; Figure 2A-2 shows their locations.

Table 2A-3
 Chowchilla Vicinity—UPRR/SR 99 Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
East Chowchilla Design Option				
10	Sandy Mush Rd	2 Lanes	HST at-grade	Modify future overcrossing
11	La Branza Rd	2 Lanes	HST elevated	Shift road
12	Fairmead Blvd	2 Lanes	HST elevated	Shift road
13	Avenue 20 and 20½	2 Lanes	HST elevated	Modify future overcrossing
West Chowchilla Design Option				
50	Cross Rd	2 Lanes	HST at-grade	New overcrossing
51	Avenue 26	2 Lanes	HST at-grade	New overcrossing
52	La Branza Rd	2 Lanes	HST elevated	Shift road
53	Avenue 25	2 Lanes	HST at-grade	New overcrossing
54	Avenue 24½	2 Lanes	HST at-grade	Close road
55	Road 13	2 Lanes	HST at-grade	New overcrossing
56	Avenue 24	2 Lanes	HST at-grade	Close road
57	Road 14	2 Lanes	HST at-grade	Close road
58	Robertson Blvd	2 Lanes	HST at-grade	New overcrossing or undercrossing
59	Railroad Dr	2 Lanes	HST at-grade	Close road
60	Road 15	2 Lanes	HST at-grade	New overcrossing
61	Road 15¾	2 Lanes	HST at-grade	Close road
62	Road 16	2 Lanes	HST at-grade	New overcrossing
63	Road 16½	2 Lanes	HST at-grade	Close road
64	Road 17	2 Lanes	HST at-grade	Close road
65	Avenue 23½	2 Lanes	HST at-grade	New overcrossing
66	Road 17½	2 Lanes	HST at-grade	Close road
67	Road 18	2 Lanes	HST at-grade	Close road
Note: State routes are Caltrans facilities. See Figure 2A-2 for the locations of these items.				

Table 2A-4
 Chowchilla Vicinity—UPRR/SR 99 Alternative
 Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Traction Power Substation 1	Sandy Mush Road	East Chowchilla design option with Ave 21 Wye
Paralleling Station 3	Ave 26/SR 99 interchange	East Chowchilla design option with Ave 21 Wye
Switching Station 1	Fairmead Circle	East Chowchilla design option with Ave 21 Wye
Paralleling Station 4	Fairmead Boulevard/Berenda Boulevard	East Chowchilla design option with Ave 21 Wye
Paralleling Station 2	South of South Vista Road	East Chowchilla design option with Ave 24 Wye
Switching Station 1	Avenue 24½ near SR 99	East Chowchilla design option with Ave 24 Wye
Paralleling Station 4	Berenda Boulevard	East Chowchilla design option with Ave 24 Wye
Paralleling Station 2	Road 12 near Cross Road	West Chowchilla design option with Ave 24 Wye
Switching Station 1	Near Avenue 24½/Road 13	West Chowchilla design option with Ave 24 Wye
Paralleling Station 3	Near Avenue 23½/Road 16½	West Chowchilla design option with Ave 24 Wye
Paralleling Station 4	North of Avenue 21/SR 99	West Chowchilla design option with Ave 24 Wye

Table 2A-5
 Ave 24 Wye—UPRR/SR 99 Alternative – East and West Chowchilla Design Options
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
68	Road 8	2 Lanes	HST at-grade	New overcrossing
69	Avenue 24	2 Lanes	HST at-grade	Shift road
70	Hemlock Rd/Road 9	2 Lanes	HST at-grade	New overcrossing
71	Road 10	2 Lanes	HST at-grade	New overcrossing
72	Road 11	2 Lanes	HST at-grade	Close road
73	Avenue 24½	2 Lanes	HST at-grade	Close road
74	Avenue 24¾	2 Lanes	HST at-grade	Close road
75	Road 12	2 Lanes	HST at-grade	Close road
76	Avenue 25	2 Lanes	HST at-grade	New overcrossing
77	Avenue 24	2 Lanes	HST at-grade	Close road
78	Road 12	2 Lanes	HST at-grade	Close road
79	Road 13	2 Lanes	HST at-grade	New overcrossing
80 *	Railroad Dr	2 Lanes	HST at-grade	Close road

Map No.	Cross Road	Current Road at HST	Proposed Activity	
81 *	Road 15	2 Lanes	HST at-grade	New overcrossing
82 *	Road 15¾	2 Lanes	HST at-grade	Close road
83 *	Road 16	2 Lanes	HST at-grade	New overcrossing
84 *	Road 16½	2 Lanes	HST at-grade	Close road
85 *	Avenue 23½	2 Lanes	HST at-grade	New overcrossing
86 *	Road 17	2 Lanes	HST at-grade	Close road

Note:
 * Items 57 through 63 apply only to the East Chowchilla design option. For the West Chowchilla design option, see Items 36 to 44 in Table 2A-3.
 State routes are Caltrans facilities. Some road modifications associated with the Ave 24 Wye and the West Chowchilla Design Option are included in Table 2A-12.
 See Figure 2A-2 for the locations of these items.

Table 2A-6
 Ave 24 Wye—UPRR/SR 99 Alternative – East and West Chowchilla Design Options
 Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Switching Station 21	Road 17½ near SR 152	East Chowchilla design option
Switching Station 22	Near Road 11/Avenue 24 intersection	East Chowchilla design option
Paralleling Station 21	Road 12/Avenue 24	East Chowchilla design option
Paralleling Station 22	Cross Road near Road 12	East Chowchilla design option
Switching Station 21	SR 152/Road 12	West Chowchilla design option
Paralleling Station 22	Avenue 24/Road 11	West Chowchilla design option

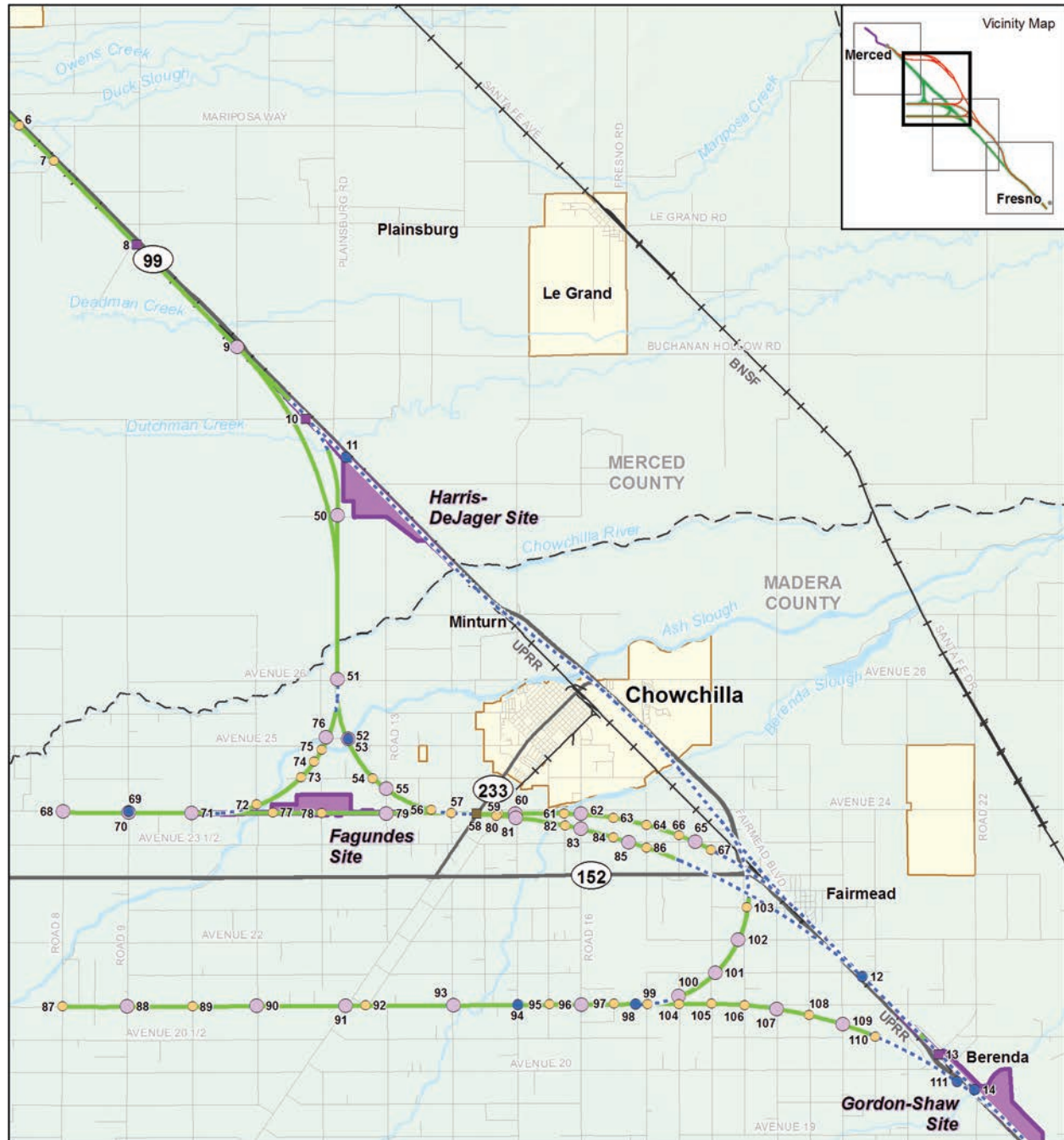
Table 2A-7
 Ave 21 Wye—UPRR/SR 99 Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
87	Road 8	2 Lanes	HST at-grade	Close road
88	Hemlock Rd/Road 9	2 Lanes	HST at-grade	New overcrossing
89	Road 10	2 Lanes	HST at-grade	Close road
90	Road 11	2 Lanes	HST at-grade	New overcrossing
91	Robertson Blvd (233)	2 Lanes	HST at-grade	New overcrossing
92	Railroad Ave	2 Lanes	HST at-grade	Close road
93	Road 14	2 Lanes	HST at-grade	New overcrossing
94	Road 15	2 Lanes	HST at-grade	Shift road
95	Road 15½	2 Lanes	HST at-grade	Close road
96	Road 16	2 Lanes	HST at-grade	New overcrossing
97	Road 16½	2 Lanes	HST at-grade	Close road
98	Avenue 21	2 Lanes	HST at-grade	Shift road
99	Road 17	2 Lanes	HST at-grade	Close road
100	Road 17½	2 Lanes	HST at-grade	New overcrossing
101	Avenue 21½	2 Lanes	HST at-grade	New overcrossing
102	Avenue 22	2 Lanes	HST at-grade	New overcrossing
103	Avenue 22½	2 Lanes	HST at-grade	Close road
104	Road 17½	2 Lanes	HST at-grade	Close road
105	Road 18	2 Lanes	HST at-grade	Close road
106	Road 18½	2 Lanes	HST at-grade	Close road
107	Road 19	2 Lanes	HST at-grade	New overcrossing
108	Road 19½	2 Lanes	HST at-grade	Close road
109	Road 20	2 Lanes	HST at-grade	New overcrossing
110	Road 20½	2 Lanes	HST at-grade	Close road
111	Golden State Blvd	2 Lanes	HST elevated	Shift road

Note:
 State routes are Caltrans facilities. See Figure 2A-2 for the locations of these items.

Table 2A-8
Ave 21 Wye — UPRR/SR 99 Alternative
Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location
Switching Station 11	South of Avenue 20/SR 99 interchange
Switching Station 12	SR 99/SR 152 interchange
Paralleling Station 11	Road 16



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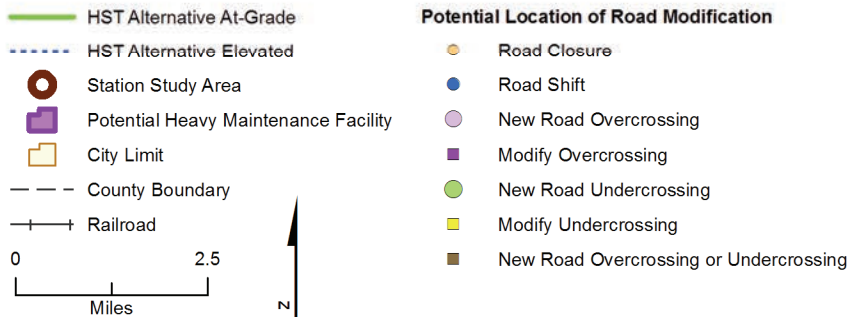


Figure 2A-2
 UPRR/SR 99 Alternative in
 the Chowchilla Vicinity

Madera Vicinity (Dry Creek to San Joaquin River)

Continuing southeasterly from Chowchilla, the UPRR/SR 99 Alternative runs parallel and adjacent to the east side of the UPRR and SR 99 on an elevated guideway through Downtown Madera. The alignment transitions to an at-grade profile, traveling south toward the San Joaquin River. Tables 2A-9 and 2A-10 summarize the road modifications, traction power substations, paralleling stations, and switching stations as applicable to this alternative in the Madera vicinity; Figure 2.1-3 shows their locations.

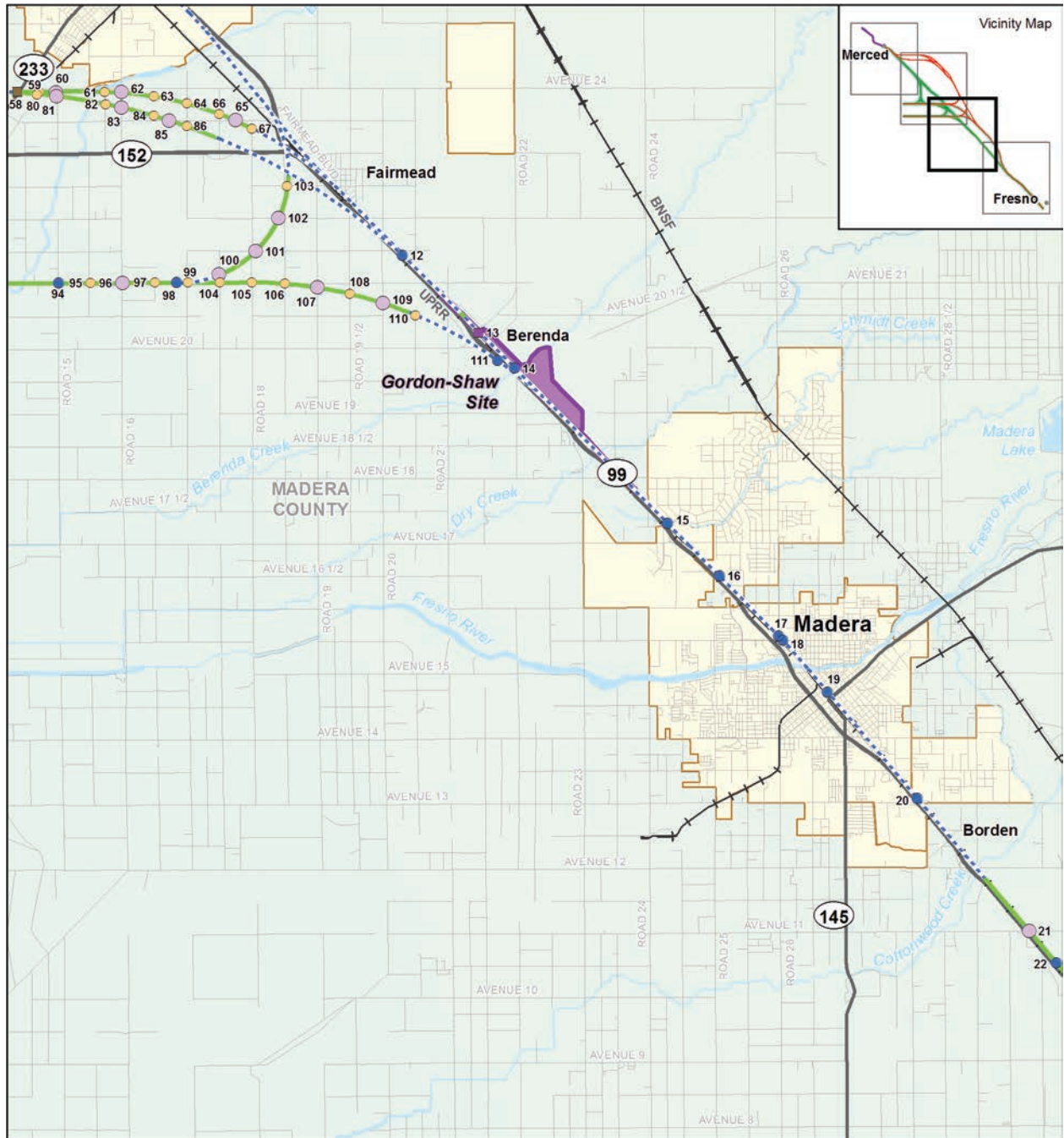
Table 2A-9
 Madera Vicinity—UPRR/SR 99 Alternative
 Roadway Modifications, Crossings, and Closures

Map No	Cross Road	Current Road at HST	Proposed Activity	
14	Berenda Blvd	2 Lanes	HST elevated	Shift road
15	Sharon Blvd	2 Lanes	HST elevated	Shift road
16	Sharon Blvd	2 Lanes	HST elevated	Shift road
17	Cleveland/Country Club	4 Lanes	HST elevated	Shift road
18	Cleveland/Avenue 15½	4 Lanes	HST elevated	Shift road
19	North E St	2 Lanes	HST elevated	Shift road
20	Road 28/Tozer Ave	2 Lanes	HST elevated	Shift road
21	Avenue 11	2 Lanes	HST at-grade	Replace overcrossing
22	Avenue 10½	2 Lanes	HST at-grade	Shift road
23	Avenue 10/Road 30½	2 Lanes	HST at-grade	Shift road
24	Road 31	2 Lanes	HST at-grade	Shift road
25	Road 30½	2 Lanes	HST at-grade	Shift road
26	Avenue 9	2 Lanes	HST at-grade	Replace overcrossing
27	Avenue 8	2 Lanes	HST at-grade	Replace overcrossing
28	Avenue 7	2 lanes	HST at-grade	Replace overcrossing
29	Road 33	2 lanes	HST at-grade	Shift road

Note:
 State routes are Caltrans facilities. Additional details about road changes are provided in the Transportation Technical Report. See Figure 2A-3 for the locations of these items.

Table 2A-10
 Madera Vicinity—UPRR/SR 99 Alternative
 Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Paralleling Station 5	Near the intersection of Clark Avenue and Sharon Boulevard with access from Clark Avenue	East Chowchilla design option with Ave 21 and Ave 24 Wyes
Supply Station 2	Near the intersection of Avenue 12 and Road 29	East Chowchilla design option with Ave 21 and Ave 24 Wyes, and West Chowchilla design option with Ave 24 Wye
Paralleling Station 5	Avenue 18/SR 99	West Chowchilla design option with Ave 24 Wye



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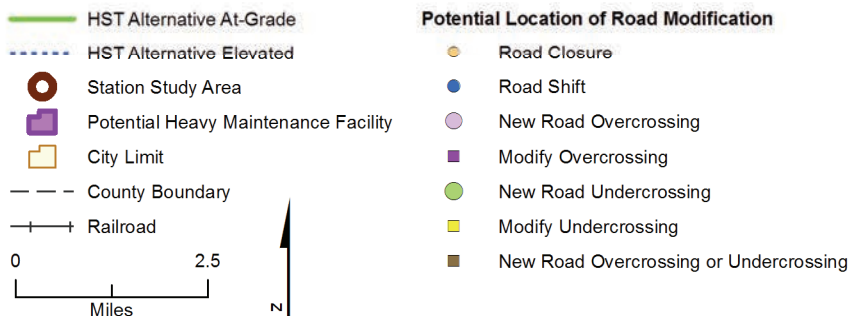


Figure 2A-3
 UPRR/SR 99 Alternative in
 the Madera Vicinity

Fresno Vicinity (San Joaquin River to Fresno Station)

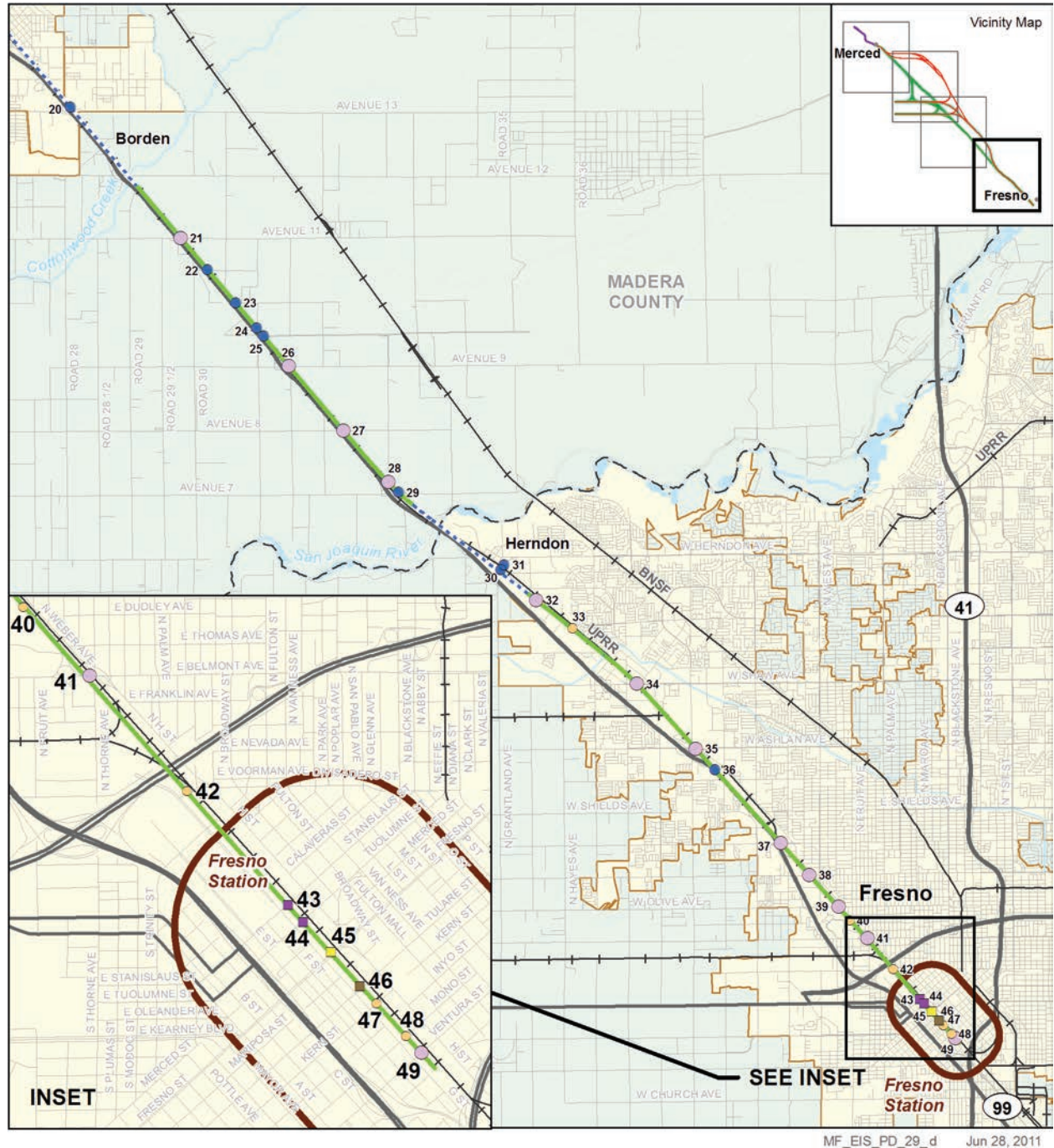
As the UPRR/SR 99 Alternative continues towards Fresno, it crosses over the San Joaquin River. The alignment crosses the UPRR on an elevated guideway supported by straddle bents, continues west of and adjacent to the UPRR right-of-way, and transitions to at-grade to the north of Veterans Boulevard, realigning Golden State Boulevard between Herndon Avenue and Ashlan, and realigning SR 99 between Ashlan and Clinton and continuing south to reach the Fresno station. Tables 2A-11 and 2A-12 summarize the road modifications, traction power substations, paralleling stations, and switching stations, as applicable to this alternative, in the Fresno vicinity; Figure 2A-4 shows their locations.

Table 2A-11
 Fresno Vicinity—UPRR/SR 99 Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
30	N Golden State Blvd	2/4 Lanes	HST elevated	Shift road (~4.5 miles)
31	Northbound SR 99 on-ramp	1 lane	HST elevated	Shift freeway ramp
32	Veterans Blvd	N/A	HST at-grade	New overcrossing connecting Golden State and Bullard
33	N Carnegie Ave	2 lanes	HST at-grade	Close road
34	W Shaw Ave	4 lanes	HST at-grade	New overcrossing
35	W Ashlan Ave	4 lanes	HST at-grade	Replace overcrossing
36	SR 99; UPRR Yard	6 Lanes	HST at-grade	Shift freeway (~2.3 miles)
37	W Clinton Ave	4 Lanes	HST at-grade	Replace overcrossing
38	W McKinley Ave	4 lanes	HST at-grade	New overcrossing
39	W Olive Ave	4 lanes	HST at-grade	New overcrossing
40	N Golden State Blvd	2 lanes	HST at-grade	Close road between W Olive and W Belmont
41	W Belmont Ave	2 lane underpass	HST in trench	New overcrossing
42	Divisadero St	2 lanes	HST at-grade	Close road
43	Stanislaus St	2 lane overcrossing	HST at-grade	Modify overcrossing
44	Tuolumne St	2 lane overcrossing	HST at-grade	Modify overcrossing
45	Fresno St	4 lane undercrossing	HST at-grade	Modify undercrossing
46	Tulare St	4 lanes	HST at-grade	New overcrossing or undercrossing
47	Kern St	2 lanes	HST at-grade	Close road
48	Mono St	2 lanes	HST at-grade	Close road
49	Ventura St	2 lanes	HST at-grade	New overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-4 for the locations of these items.				

Table 2A-12
 Fresno Vicinity—UPRR/SR 99 Alternative
 Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Paralleling Station 6 (East Chowchilla design option) and 7 (West Chowchilla design option)	Avenue 8/SR 99	East Chowchilla design option with Ave 24 and Ave 21 Wyes and West Chowchilla design option with Ave 24 Wye
Paralleling Station 6	Avenue 11/SR 99	West Chowchilla design option with Ave 24 Wye
Paralleling Station 7	Lovett Drive	East Chowchilla design option with Ave 24 and Ave 21 Wyes
Paralleling Station 8	North of West Bullard Avenue	West Chowchilla design option with Ave 24 Wye
Switching Station	On the south side of Clinton Avenue with access from Motel Drive	East Chowchilla design option with Ave 24 and Ave 21 Wyes and West Chowchilla design option with Ave 24 Wye



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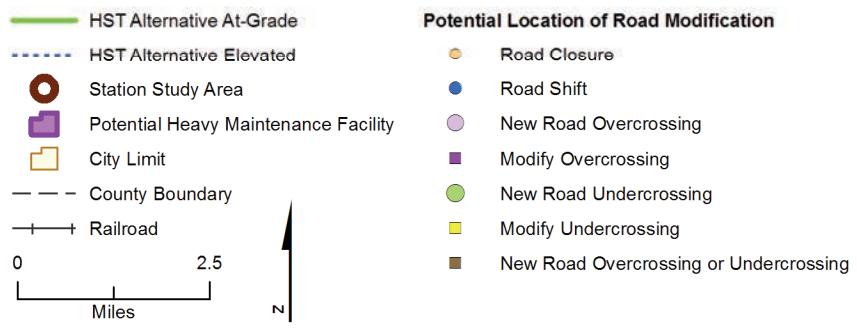


Figure 2A-4
 UPRR/SR 99 Alternative in
 the Fresno Project Vicinity

2A.2 BNSF Alternative – Additional Information

This section provides additional information on the BNSF Alternative for the entire Merced to Fresno Section, its design options, the wye options, and the station. The information is arranged geographically by the four project vicinities—Merced, Chowchilla, Madera, and Fresno. Crossings, modifications, and local road closures to accommodate HST operations for the north-south alignment of the BNSF Alternative are listed in Tables 2A-13 through 2A-24; road closures and modifications listed in these tables are illustrated graphically in Figures 2A-5 through 2A-8.

Merced Vicinity (Merced Station to Deadman Creek)

The north-south alignment of the BNSF Alternative begins at the HST station in Downtown Merced on the west side of the UPRR right-of-way, and then travels east along either the Mariposa Way or Mission Ave design option, after which it aligns adjacent to the BNSF tracks at about Le Grand. Using either Le Grand or East of Le Grand design option, the BNSF Alternative travels adjacent to the BNSF tracks due south. Tables 2A-13 and 2A-14 summarize the road modifications, traction power substations, paralleling stations, and switching stations, as applicable to this alternative, in the Merced vicinity. Figure 2A-13 shows their locations.

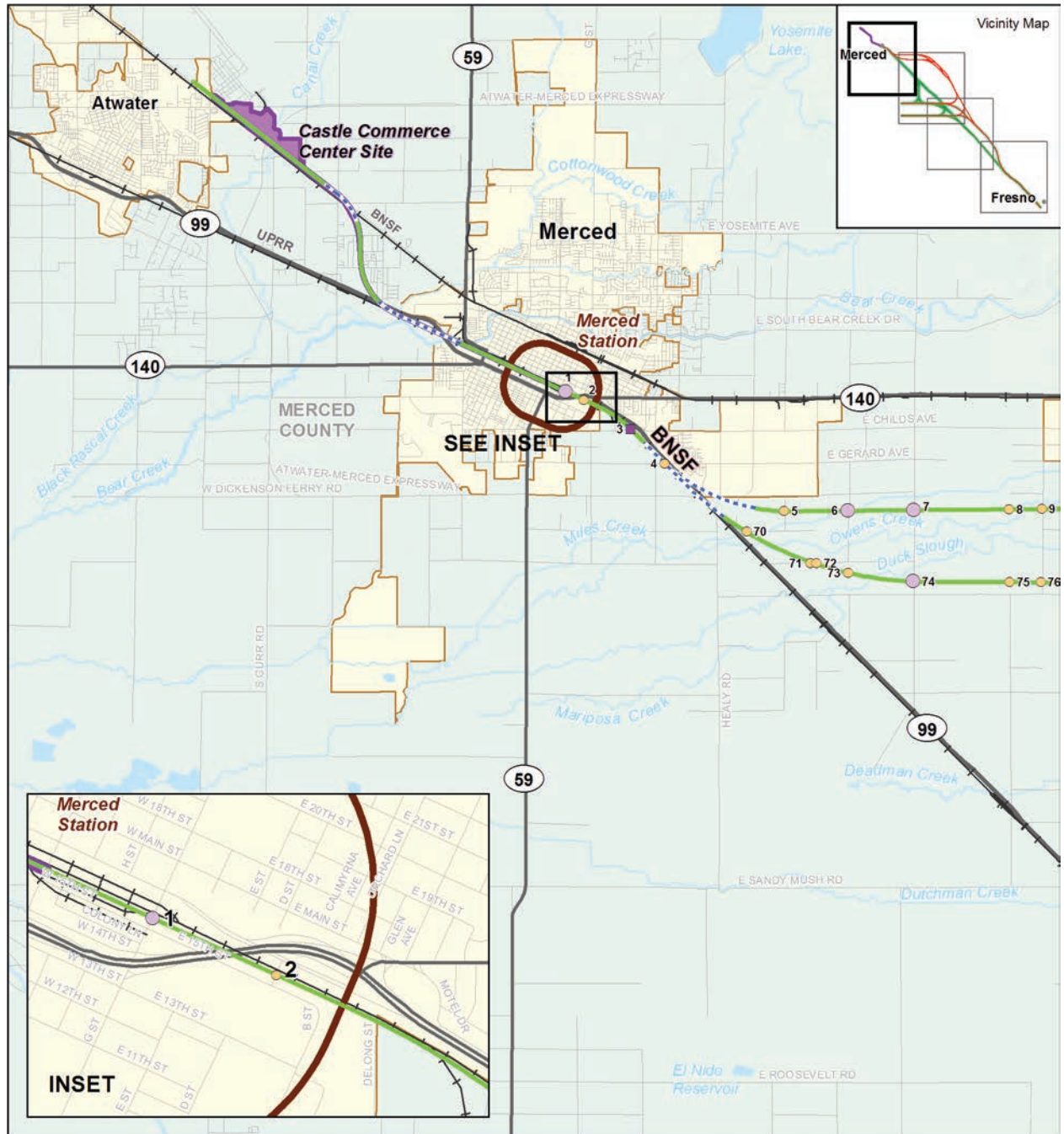
Table 2A-13
 Merced Vicinity—BNSF Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
1	G St	4 lanes	HST at-grade	New overcrossing
2	D St	2 lanes	HST at-grade	Close road
3	Childs Ave	2 lanes	HST at-grade	Overpass extended
4	Gerard Ave	2 lanes	HST at-grade	Close road
Mission Ave Design Option				
5	Miles Rd	2 Lanes	HST at-grade	Close road
6	S Orchard Dr	2 Lanes	HST at-grade	New overcrossing
7	Arboleda Dr	2 Lanes	HST at-grade	New overcrossing
8	Ranch Rd	2 Lanes	HST at-grade	Close road
9	Whealan Rd	2 Lanes	HST at-grade	Close road
10	Plainsburg Rd	2 Lanes	HST at-grade	New overcrossing
11	Morley Ave	2 Lanes	HST at-grade	Close road
12	Santa Fe Ave	2 Lanes	HST at-grade	New overcrossing
13	Santa Fe Ave	2 Lanes	HST elevated	Shift road
14	Buchanan Hollow Rd	2 Lanes	HST at-grade	New overcrossing
15	White Rock Rd	2 Lanes	HST at-grade	Close road
16	Santa Fe Ave	2 Lanes	HST at-grade	New overcrossing

Map No.	Cross Road	Current Road at HST	Proposed Activity	
Mission Ave East of Le Grand Design Option (combined with Mission Ave Design Option)				
67	Cunningham Rd	2 Lanes	HST at-grade	New overcrossing
68	Fresno Rd	2 Lanes	HST at-grade	New overcrossing
69	Le Grand Rd	2 Lanes	HST at-grade	New overcrossing
Mariposa Way Design Option				
70	Vassar Ave	2 Lanes	HST at-grade	Close road
71	McHenry Rd	2 Lanes	HST at-grade	Close road
72	S Tower Rd	2 Lanes	HST at-grade	Close road
73	S Orchard Dr	2 Lanes	HST at-grade	Close road
74	Arboleda Dr	2 Lanes	HST at-grade	New overcrossing
75	Ranch Rd	2 Lanes	HST at-grade	Close road
76	Whealan Rd	2 Lanes	HST at-grade	Close road
77	Plainsburg Rd	2 Lanes	HST at-grade	New overcrossing
78	Morley Ave	2 Lanes	HST at-grade	Close road
79	Burchell Ave	2 Lanes	HST at-grade	New overcrossing
80	Mariposa Way	2 Lanes	HST at-grade	Close road
81	Banks Rd	2 Lanes	HST at-grade	Close road
82	Ipsen Ave/Wade Ave	2 Lanes	HST at-grade	Close road
Mariposa Way East of Le Grand Design Option (combined with Mariposa Way Design Option)				
83	Morley Ave	2 Lanes	HST at-grade	Close road
84	Burchell Ave	2 Lanes	HST at-grade	New overcrossing
85	Cunningham Rd	2 Lanes	HST at-grade	New overcrossing
86	Fresno Rd	2 Lanes	HST at-grade	New overcrossing
87	Le Grand Rd	2 Lanes	HST at-grade	New overcrossing
88	White Rock Rd	2 Lanes	HST at-grade	New overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-13 for the locations of these items.				

Table 2A-14
 Merced Vicinity—BNSF Alternative
 Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Combination supply and switching station 1 - Option 1	South of the Mission Avenue interchange between Yale Street and S Coffee Street south of the future HST alignment	Ave 24 Wye and Ave 21 Wye
Combination supply and switching station 1 - Option 2	South of the Mission Avenue interchange between Yale Street and S Coffee Street north of the future HST alignment	Ave 24 Wye and Ave 21 Wye
Paralleling station 1- Option 1	East side of Service Road on the east side of Plainsburg Road near Mariposa Way	Ave 24 Wye and Ave 21 Wye
Paralleling station 1- Option 2	East side of Service Road on the west side of Plainsburg Road near Mariposa Way	Ave 24 Wye and Ave 21 Wye
Paralleling station 2	Intersection of Fresno Road and S Santa Fe Avenue at the south edge of Le Grand	Ave 24 Wye and Ave 21 Wye



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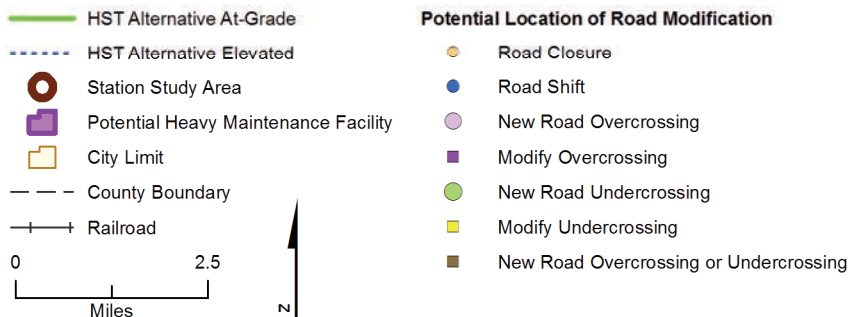


Figure 2A-5
 BNSF Alternative in the Merced Project Vicinity

Chowchilla Vicinity (Deadman Creek to Dry Creek)

Leaving Le Grand, the BNSF Alternative travels south on the east side of Chowchilla. In the Chowchilla vicinity, the Ave 24 and Ave 21 wyes join the main north-south alignment of the BNSF Alternative, adjacent to and on the west side of the BNSF tracks. On the south and east sides of Chowchilla, two design options for the Ave 24 and Ave 21 wyes connect the north-south Merced to Fresno Section to the east-west San Jose to Merced Section. Tables 2A-15 through 2A-18 summarize the road modifications, traction power substations, paralleling stations, and switching stations, as applicable to this alternative, in the Chowchilla vicinity; Figure 2.2-2 shows their locations.

Table 2A-15
 Chowchilla Vicinity—BNSF Alternative
 Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
17	Avenue 26 (Robertson)	2 Lanes	HST at-grade	New overcrossing
18	Road 22	2 Lanes	HST at-grade	Close road
19	Avenue 24 (E Sierra View)	2 Lanes	HST at-grade	New overcrossing
20	Avenue 22½	2 Lanes	HST at-grade	Shift road
21	Road 24	2 Lanes	HST at-grade	New overcrossing
22	Avenue 22	2 Lanes	HST at-grade	Close road
23	Avenue 20½	2 Lanes	HST at-grade	New overcrossing
24	Avenue 20	2 Lanes	HST at-grade	Close road

Note:
 State routes are Caltrans facilities. See Figure A2-6 for the locations of these items.

Table 2A-16
 Chowchilla Vicinity—BNSF Alternative
 Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Supply station 1	East of White Rock Road near Santa Fe Avenue	Ave 24 Wye and Ave 21 Wye
Paralleling station 3 - Option 1	East of Road 22 and south of Santa Fe Drive	Ave 24 Wye and Ave 21 Wye
Paralleling station 3 - Option 2	West of Road 22 and south of Santa Fe Drive	Ave 24 Wye and Ave 21 Wye
Switching station 2 - Option 1	South of Avenue 21, west of Avenue 20½ near where Avenue 21 crosses the BNSF	Ave 21 Wye
Switching station 2 - Option 2	On the existing Ave 21 alignment, west of Avenue 20½ near where Avenue 21 crosses the BNSF	Ave 21 Wye

Operational Facility	Location	Alternative
Switching station 2 - Option 1	South of Avenue 20 ½ near where Avenue 20½ crosses the BNSF	Ave 24 Wye
Switching station 2 - Option 2	North of Avenue 20½ near where Avenue 20½ crosses the BNSF	Ave 24 Wye

Table 2A-17
 Ave 24 Wye—BNSF Alternative and Associated Wye
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
89	Road 8	2 Lanes	HST at-grade	New overcrossing
90	Avenue 24	2 Lanes	HST at-grade	Shift road
91	Hemlock Rd/Road 9	2 Lanes	HST at-grade	New overcrossing
92	Road 10	2 Lanes	HST at-grade	New overcrossing
93	Avenue 24	2 Lanes	HST at-grade	Close road
94	Road 12	2 Lanes	HST at-grade	Close road
95	Road 13	2 Lanes	HST at-grade	New overcrossing
96	Road 14	2 Lanes	HST at-grade	Close road
97	Robertson Blvd (SR 233)	2 Lanes	HST at-grade	New overcrossing or undercrossing
98	Railroad Dr	2 Lanes	HST at-grade	Close road
99	Road 15	2 Lanes	HST at-grade	New overcrossing
100	Road 15¾	2 Lanes	HST at-grade	Close road
101	Road 16	2 Lanes	HST at-grade	New overcrossing
102	Road 16½	2 lanes`	HST at-grade	Close road
103	Road 17	2 lanes	HST at-grade	Close road
104	Road 18¾	2 Lanes	HST at-grade	Close road
105	Road 19	2 Lanes	HST at-grade	Close road
106	Road 19½	2 Lanes	HST at-grade	Close road
107	Road 20	2 Lanes	HST at-grade	Close road
108	Avenue 24	2 Lanes	HST at-grade	New overcrossing
109	Road 21	2 Lanes	HST at-grade	New overcrossing
110	Avenue 25	2 Lanes	HST at-grade	Close road
111	Road 18¾	2 Lanes	HST at-grade	Close road
112	Road 19	2 Lanes	HST at-grade	Close road

Map No.	Cross Road	Current Road at HST	Proposed Activity	
113	Road 19½	2 Lanes	HST at-grade	Close road
114	Road 20	2 Lanes	HST at-grade	Close road
115	Avenue 23½	2 Lanes	HST at-grade	New overcrossing
116	Road 20½	2 Lanes	HST at-grade	Close road
117	Road 22	2 Lanes	HST at-grade	New overcrossing
118	Road 22½	2 Lanes	HST at-grade	Close road
119	Avenue 22	2 Lanes	HST at-grade	New overcrossing
120	Road 24	2 Lanes	HST at-grade	New overcrossing
121	Avenue 20½	2 Lanes	HST at-grade	New overcrossing
122	Avenue 20	2 lanes	HST at-grade	New overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-6 for the locations of these items.				

Table 2A-18
 Ave 24 Wye—BNSF Alternative
 Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Paralleling station 21 - Option 1	South side of Avenue 24 west of Road 10	Ave 24 Wye
Paralleling station 21 - Option 2	South side of Avenue 24 east of Road 10	Ave 24 Wye
Paralleling station 22 - Option 1	East of Robertson Boulevard north of Avenue 23½. Option 1 would be south of the HST tracks.	Ave 24 Wye
Paralleling station 22 - Option 2	East of Robertson Boulevard north of Avenue 23½. Option 2 would be north of the HST tracks.	Ave 24 Wye
Switching station 21 - Option 1	Approximately 700 feet south of Avenue 24 west of Road 18¾	Ave 24 Wye
Switching station 21 - Option 2	Approximately 700 feet south of Avenue 24 east of Road 18¾	Ave 24 Wye
Switching station 22 - Option 1	Approximately 100 feet south of Avenue 24 west of Road 18¾	Ave 24 Wye
Switching station 22 -Option 2	Approximately 100 feet south of Avenue 24 east of Road 18¾	Ave 24 Wye
Paralleling station 23 -Option 1	North side of Avenue 20 west of Road 23	Ave 24 Wye
Paralleling station 23 -Option 2	South side of Avenue 20 west of Road 23	Ave 24 Wye
Paralleling station 24 -Option 1	North side of Avenue 19, northwest of Pickfair Way	Ave 24 Wye

Operational Facility	Location	Alternative
Paralleling station 24 -Option 2	North Side of Avenue 19, due north of Pickfair Way	Ave 24 Wye
Paralleling station 25 -Option 1	North side of Avenue 26 west of Santa Fe Drive	Ave 24 Wye
Paralleling station 25 -Option 2	South side of Avenue 26 west of Santa Fe Drive	Ave 24 Wye

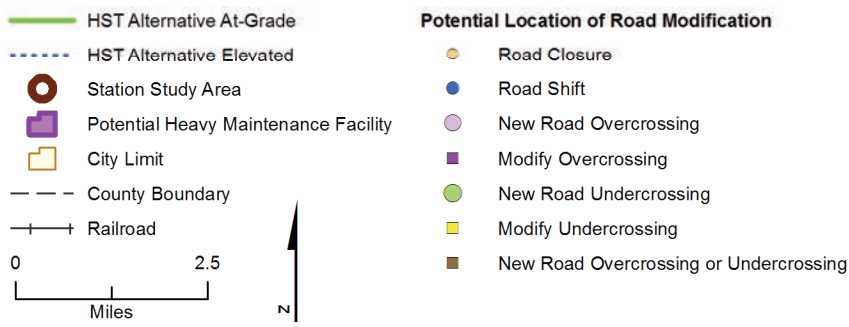
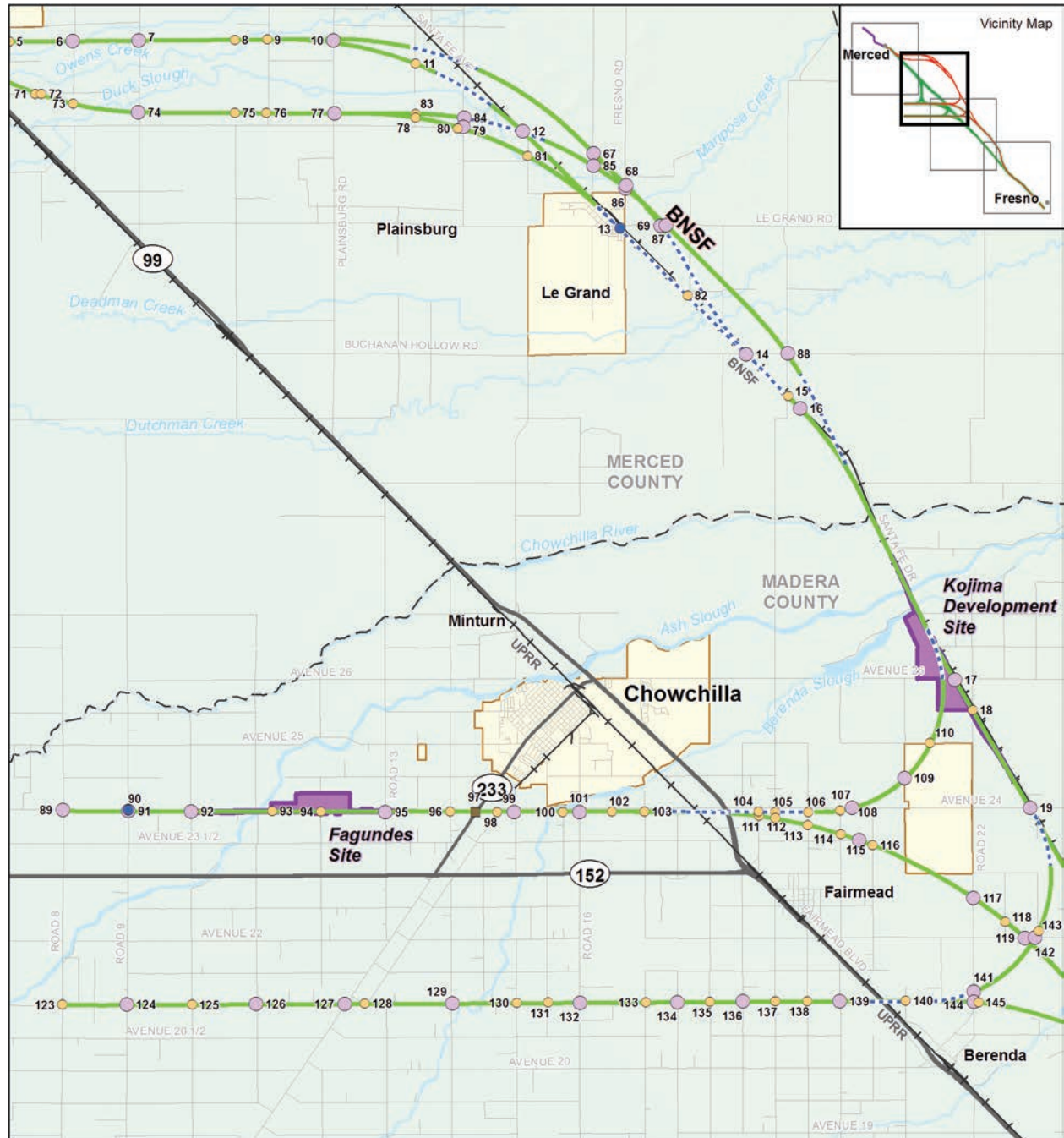


Figure 2A-6
 BNSF Alternative in the
 Chowchilla Vicinity

Madera Vicinity (Dry Creek to San Joaquin River)

Continuing southeasterly, the BNSF Alternative runs parallel and adjacent to the west side of the BNSF tracks and passes through the community of Madera Acres, east of the city of Madera. From there, the BNSF alignment leaves the BNSF tracks, moving west to meet the UPRR/SR 99 Alternative near the San Joaquin River crossing. Tables 2A-19 through 2A-22 summarize the road modifications, traction power substations, paralleling stations, and switching stations, as applicable to this alternative, in the Madera vicinity. Figure 2A-7 shows their locations.

Table 2A-19
 Madera Vicinity—BNSF Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
25	Avenue 19/Hanover Dr	2 Lanes	HST elevated	Shift road
26	Road 26 (Country Club)	2 Lanes	HST elevated	New undercrossing below HST
27	Road 27 (Lake)	2 Lanes	HST at-grade	New overcrossing
28	Avenue 17	2 Lanes	HST at-grade	New overcrossing
29	Road 28¼	2 Lanes	HST at-grade	Close road
30	Ellis St	2 Lanes	HST at-grade	Close road
31	Raymond Rd	2 Lanes	HST at-grade	New overcrossing
32	SR 145/Yosemite Ave	2 Lanes	HST at-grade	New undercrossing
33	Watson St	2 Lanes	HST at-grade	Close road
34	Avenue 15¾	2 Lanes	HST at-grade	Close road
35	Avenue 15½/Road 29	2 Lanes	HST at-grade	New overcrossing
36	Avenue 15	2 Lanes	HST at-grade	New overcrossing
37	Avenue 13	2 Lanes	HST at-grade	New overcrossing
38	Avenue 12	2 Lanes	HST at-grade	New overcrossing
39	Avenue 11	2 Lanes	HST at-grade	New overcrossing
40	Avenue 10	2 Lanes	HST at-grade	New overcrossing
41	Avenue 9	2 Lanes	HST at-grade	New overcrossing
42	Road 32	2 Lanes	HST at-grade	Shift road
43	Avenue 8	2 Lanes	HST at-grade	New overcrossing
44	Road 33	2 Lanes	HST at-grade	Shift road
45	Avenue 7	2 lanes	HST at-grade	Replace overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-7 for the locations of these items.				

Table 2A-20
 Madera Vicinity—BNSF Alternative
 Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Supply station 2 - Option 1	At Raymond Road near BNSF approximately 1,000 feet southeast of Raymond Road	Ave 24 Wye
Supply station 2 - Option 2	At Raymond Road near BNSF approximately 200 feet southeast of Raymond Road	Ave 24 Wye
Supply station 2	At Avenue 12 west of BNSF	Ave 21 Wye
Paralleling station 4	At Avenue 12 west of BNSF	Ave 24 Wye
Paralleling station 5	North of the Avenue 7 overcrossing near Road 33	Ave 24 Wye and Ave 21 Wye

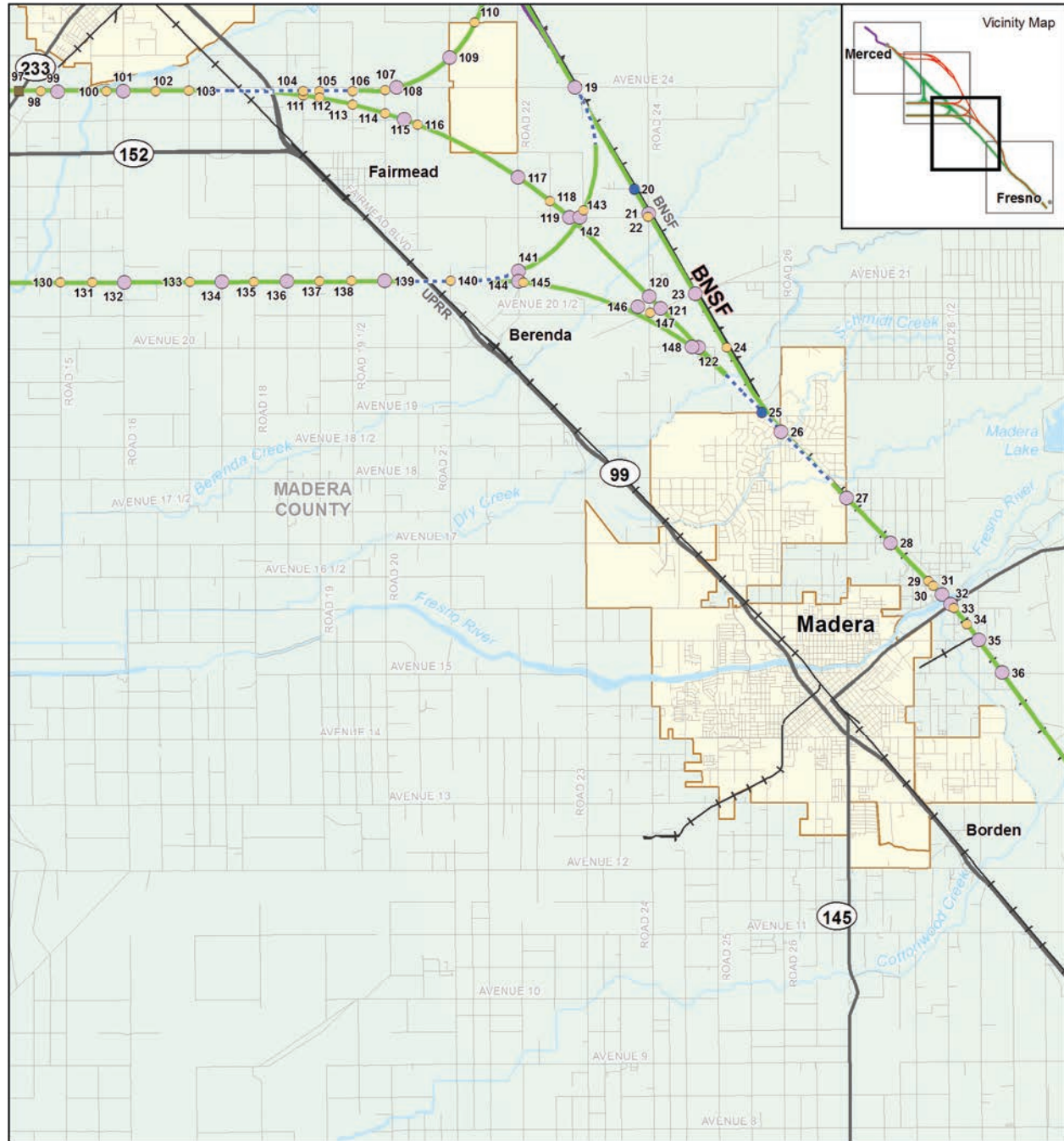
Table 2A-21
 Ave 21 Wye—BNSF Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
123	Road 8	2 Lanes	HST at-grade	Close road
124	Hemlock Rd/Road 9	2 Lanes	HST at-grade	New overcrossing
125	Road 10	2 Lanes	HST at-grade	Close road
126	Road 11	2 Lanes	HST at-grade	New overcrossing
127	Robertson Blvd (SR 233)	2 Lanes	HST at-grade	New overcrossing
128	Railroad Dr	2 Lanes	HST at-grade	Close road
129	Road 14	2 Lanes	HST at-grade	New overcrossing
130	Road 15	2 Lanes	HST at-grade	Close road
131	Road 15½	2 Lanes	HST at-grade	Close road
132	Road 16	2 Lanes	HST at-grade	New overcrossing
133	Road 17	2 Lanes	HST at-grade	Close road
134	Road 17½	2 Lanes	HST at-grade	New overcrossing
135	Road 18	2 Lanes	HST at-grade	Close road
136	Road 18½	2 Lanes	HST at-grade	New overcrossing
137	Road 19	2 Lanes	HST at-grade	Close road
138	Road 19½	2 Lanes	HST at-grade	Close road
139	Road 20	2 Lanes	HST at-grade	New overcrossing

Map No.	Cross Road	Current Road at HST	Proposed Activity	
140	Road 21	2 Lanes	HST at-grade	Close road
141	Road 22	2 Lanes	HST at-grade	New overcrossing
142	Avenue 22	2 Lanes	HST at-grade	New overcrossing
143	Road 23	2 Lanes	HST at-grade	Close road
144	Road 22	2 Lanes	HST at-grade	New overcrossing
145	Avenue 21	2 Lanes	HST at-grade	Close road
146	Avenue 20½	2 Lanes	HST at-grade	New overcrossing
147	Road 24	2 Lanes	HST at-grade	Close road
148	Avenue 20	2 Lanes	HST at-grade	New overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-7 for the locations of these items.				

Table 2A-22
 Ave 21 Wye—BNSF Alternative
 Traction Power Substation, and Paralleling and Switching Station Locations

Operational Facility	Location	Alternative
Paralleling station 11 - Option 1	South side of Avenue 21 west of Road 17	Ave 21 Wye
Paralleling station 11 - Option 2	North side of Avenue 21 east of Road 17	Ave 21 Wye
Switching station 11 - Option 1	East of Road 22 south of Avenue 21	Ave 21 Wye
Switching station 11 - Option 2	West of Road 22 north of Avenue 21	Ave 21 Wye
Switching station 12 - Option 1	East of Road 23, west of Avenue 22½, and north of the access road	Ave 21 Wye
Switching station 12 - Option 2	East of Road 23, west of Avenue 22½, and south of the access road	Ave 21 Wye
Paralleling station 12 - Option 1	North side of Avenue 19, northwest of Pickfair Way	Ave 21 Wye
Paralleling station 12 - Option 2	North Side of Avenue 19, due north of PickFair Way	Ave 21 Wye
Paralleling station 4 - Option 1	North of Raymond Road, west of BNSF	Ave 21 Wye
Paralleling station 4 - Option 2	North of Road 28½, east of BNSF	Ave 21 Wye



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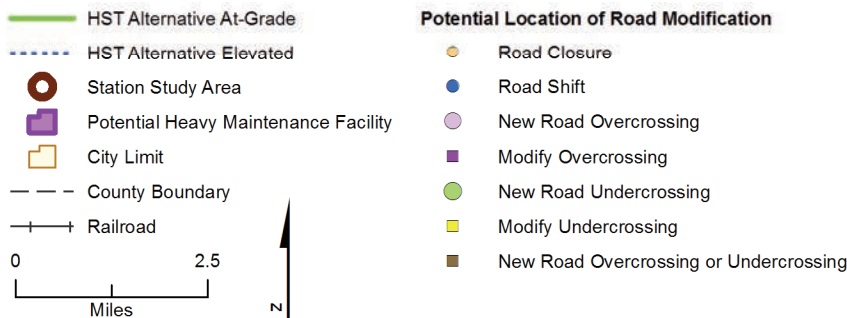


Figure 2A-7
 BNSF Alternative in the
 Madera Vicinity

Fresno Vicinity (San Joaquin River to Fresno Station)

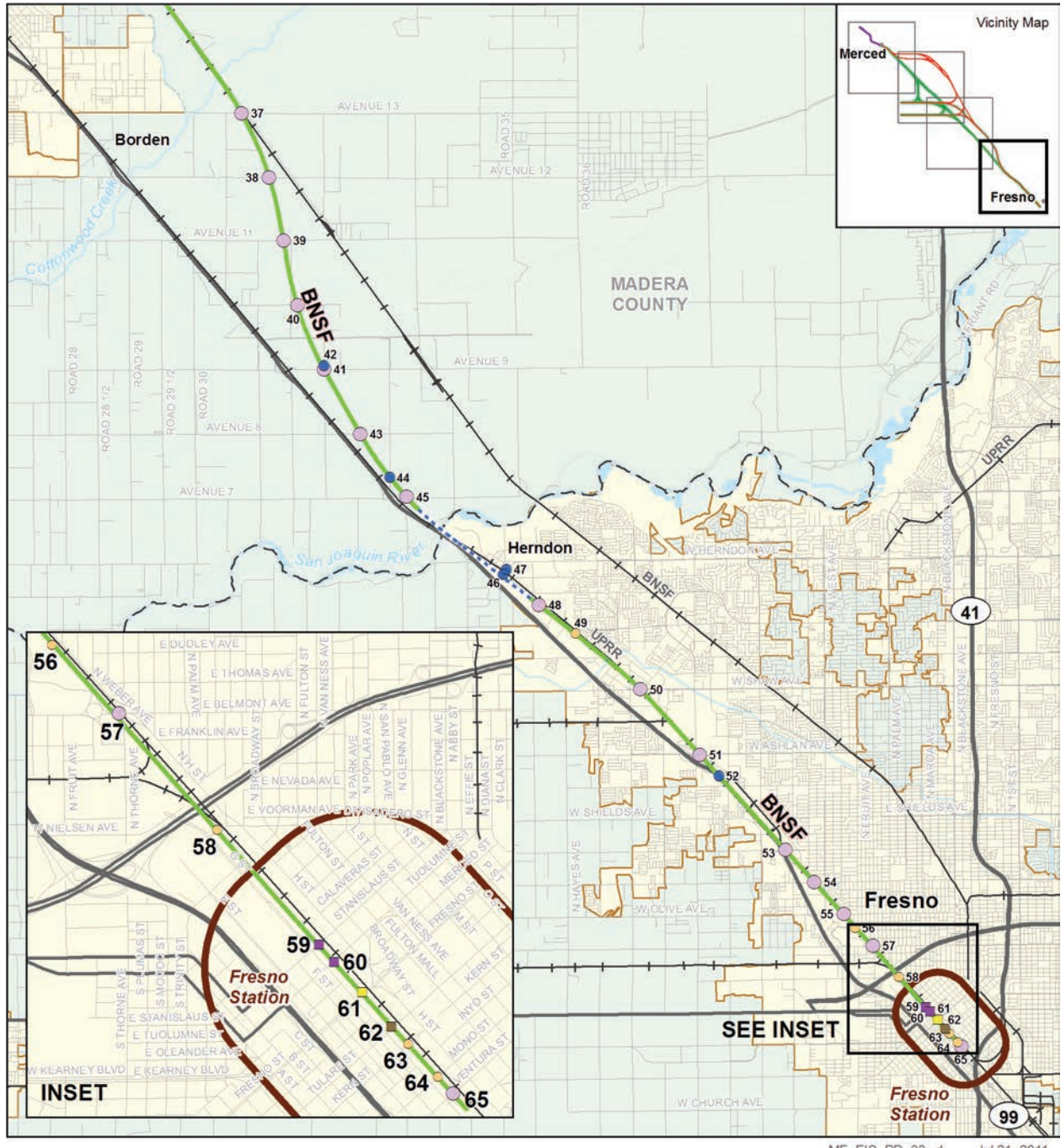
Crossing over the San Joaquin River, the BNSF Alternative is similar to the UPRR/SR 99 Alternative, remaining adjacent to the UPRR tracks up to the Fresno station. Tables 2A-23 and 2A-24 summarize the road modifications, traction power substations, paralleling stations, and switching stations, as applicable to this alternative, in the Fresno vicinity; Figure 2A-8 shows their locations.

Table 2A-23
 Fresno Vicinity—BNSF Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
46	N Golden State Blvd	2/4 Lanes	HST elevated	Shift road
47	Northbound SR 99 on-ramp	1 lanes	HST elevated	Shift freeway ramp
48	Veterans Blvd	N/A	HST at-grade	New overcrossing connecting Golden State and Bullard
49	N Carnegie Ave	2 lanes	HST at-grade	Close road
50	W Shaw Ave	4 lanes	HST at-grade	New overcrossing
51	W. Ashlan Ave	4 lanes	HST at-grade	Replace overcrossing
52	SR 99; UPRR Yard	4 Lanes	HST elevated	Shift freeway
53	W Clinton Ave	4 Lanes	HST elevated	Replace overcrossing
54	W McKinley Ave	4 lanes	HST at-grade	New overcrossing
55	W Olive Ave	4 lanes	HST at-grade	New overcrossing
56	N Golden State Blvd	2 lanes	HST at-grade	Close road between W Olive and W Belmont
57	W Belmont Ave	2 lane underpass	HST at-grade	New overcrossing
58	Divisadero St	2 lanes	HST at-grade	Close road
59	Stanislaus St	2 lane overcrossing	HST at-grade	Modify overcrossing
60	Tuolumne St	2 lane overcrossing	HST at-grade	Modify overcrossing
61	Fresno St	4 lane undercrossing	HST at-grade	Modify undercrossing
62	Tulare St	4 lanes	HST at-grade	New undercrossing
63	Kern St	2 lanes	HST at-grade	Close road
64	Mono St	2 lanes	HST at-grade	Close road
65	Ventura St	2 lanes	HST at-grade	New Overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-8 for the locations of these items.				

Table 2A-24
Fresno Vicinity—BNSF Alternative
Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Switching station 3	South of Market Avenue and west of Golden State Boulevard	Ave 24 Wye
Paralleling station 6	Northwest of Carnegie Avenue on Golden State Boulevard	Ave 21 Wye



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- | | |
|--|--|
| <ul style="list-style-type: none"> — HST Alternative At-Grade - - - HST Alternative Elevated Station Study Area Potential Heavy Maintenance Facility City Limit County Boundary Railroad | <p>Potential Location of Road Modification</p> <ul style="list-style-type: none"> ● Road Closure ● Road Shift ● New Road Overcrossing ■ Modify Overcrossing ● New Road Undercrossing ■ Modify Undercrossing ■ New Road Overcrossing or Undercrossing |
|--|--|

Figure 2A-8
 BNSF Alternative in the Fresno Project Vicinity

2A.3 Hybrid Alternative—Additional Information

This section provides additional information on the UPRR/SR 99 and BNSF Hybrid Alternative (hereafter referred to as the Hybrid Alternative) for the entire Merced to Fresno Section, its design options, the wye options, and the stations. The information is arranged geographically by the four project vicinities—Merced, Chowchilla, Madera, and Fresno. Crossings, modifications, and local road closures to accommodate HST operations for the north-south alignment of the Hybrid Alternative are listed in Tables 2A-25 through 2A-32; road closures and modifications listed in these tables are illustrated graphically in Figures 2A-9 through 2A-12.

Merced Vicinity (Merced Station to Deadman Creek)

The north-south alignment of the Hybrid Alternative begins in the City of Merced at the HST station in Downtown Merced on the west side of the UPRR right-of-way, and travels south, adjacent to the UPRR and SR 99 corridors. Table 2A-25 summarizes the road modifications in the Merced vicinity; Table 2A-26 summarizes the traction power substations, paralleling stations, and switching stations in the Merced vicinity; Figure 2A-9 shows their locations.

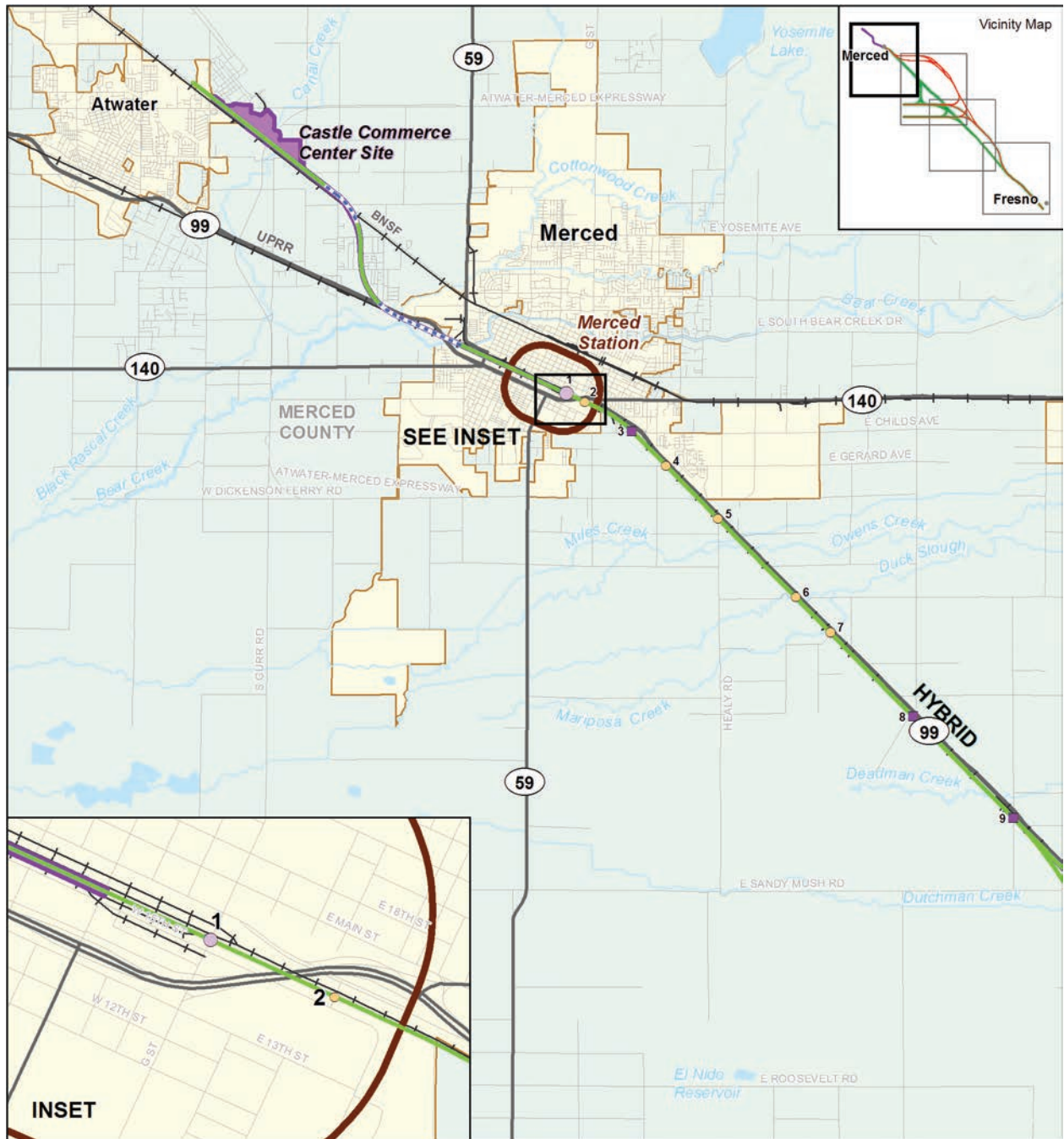
Table 2A-25
 Merced Vicinity—Hybrid Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
1	G St	4 lanes	HST at-grade	New overcrossing
2	D St	2 lanes	HST at-grade	Close road
3	Childs Ave	2 lanes	HST at-grade	Overpass extended
4	Gerard Ave	2 lanes	HST at-grade	Close road
5	Healy Ave	2 lanes	HST at-grade	Close road
6	Mariposa Way	2 Lanes	HST at-grade	Close road
7	Lingard Rd	2 Lanes	HST at-grade	Close road
8	Ranch Rd	2 Lanes	HST at-grade	Modify future overcrossing
9	Athlone Rd	2 Lanes	HST at-grade	Modify future overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-9 for the locations of these items.				

Table 2A-26
 Merced Vicinity—Hybrid Alternative
 Traction Power Substations, Paralleling Stations, and Switching Stations

Operational Facility	Location	Alternative
Supply station 1	South of Highway 99 east of Healy Road	Ave 24 Wye
Paralleling station 1	South of Highway 99, east of Ranch Road	Ave 24 Wye

Operational Facility	Location	Alternative
Paralleling station 2	South of Highway 99, south of Cross Road. Option 1 is east of the HST alignment, Option 2 is west of the HST alignment	Ave 24 Wye
Paralleling station 1	South of Highway 99, access from Brantley Street	Ave 21 Wye
Paralleling station 2	South of Highway 99, southeast of Lingard Road	Ave 21 Wye
Supply Station 1	South of Highway 99, north of E Sandy Mush Road	Ave 21 Wye



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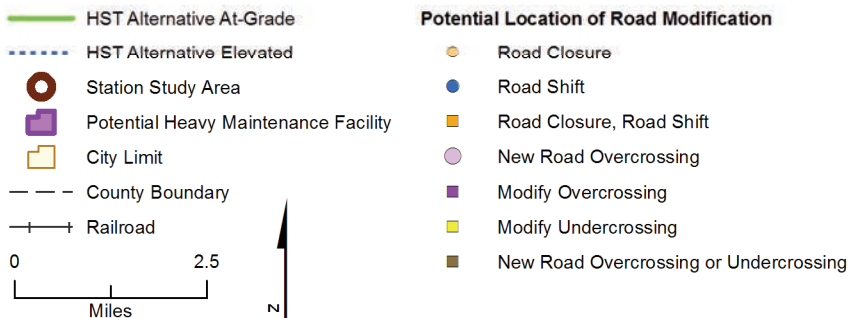


Figure 2A-9
 Hybrid Alternative in the
 Merced Project Vicinity

Chowchilla Vicinity (Deadman Creek to Dry Creek)

Leaving the Merced vicinity, the north-south alignment of the Hybrid Alternative approaches the City of Chowchilla along the UPRR/SR 99 corridor. Following two design options, the alignment travels either east or west of Chowchilla and then travels either east along Avenue 24 (West Chowchilla design option), or east along Ave 21 (East Chowchilla design option) to join the lower section of the Hybrid Alternative, along the BNSF Alternative (i.e., the Hybrid formation of both UPRR/SR 99 and BNSF Alternatives). Tables 2A-27 through 2A-32 summarize the road modifications, traction power substations, paralleling stations, and switching stations, as applicable to this alternative, in the Chowchilla vicinity; Figure 2A-10 shows their locations.

Table 2A-27
 Chowchilla Vicinity—Hybrid Alternative
 Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
West Chowchilla Design Option				
10	Sandy Mush Rd	2 Lanes	HST at-grade	Modify future overcrossing
11	Cross Rd	2 Lanes	HST at-grade	New overcrossing
12	Avenue 26	2 Lanes	HST at-grade	New overcrossing
13	Avenue 25	2 Lanes	HST at-grade	Close, shift road
14	Avenue 24½	2 Lanes	HST at-grade	New overcrossing
15	Road 13	2 Lanes	HST at-grade	New overcrossing
16	Avenue 24	2 Lanes	HST at-grade	Close road
17	Road 14	2 Lanes	HST at-grade	Close road
18	Robertson Blvd	2 Lanes	HST at-grade	New overcrossing or undercrossing
19	Railroad Dr	2 Lanes	HST at-grade	Close road
20	Road 15	2 Lanes	HST at-grade	New overcrossing
21	Road 15¾	2 Lanes	HST at-grade	Close road
22	Road 16	2 Lanes	HST at-grade	New overcrossing
23	Road 16½	2 Lanes	HST at-grade	Close road
24	Road 17	2 lanes	HST at-grade	Close road
25	Road 18¾	2 Lanes	HST at-grade	Close road
26	Road 19	2 Lanes	HST at-grade	Close road
27	Road 19½	2 Lanes	HST at-grade	Close road
28	Road 20	2 Lanes	HST at-grade	Close road
29	Avenue 23½	2 Lanes	HST at-grade	New overcrossing
30	Road 20½	2 Lanes	HST at-grade	Close road
31	Road 22	2 Lanes	HST at-grade	New overcrossing

Map No.	Cross Road	Current Road at HST	Proposed Activity	
32	Road 22½	2 Lanes	HST at-grade	Close road
33	Avenue 22	2 Lanes	HST at-grade	New overcrossing
34	Road 24	2 Lanes	HST at-grade	New overcrossing
35	Avenue 20½	2 Lanes	HST at-grade	New overcrossing
36	Avenue 20	2 Lanes	HST at-grade	New overcrossing
East Chowchilla Design Option				
37	La Branza Rd	2 Lanes	HST elevated	Shift road
38	Fairmead Blvd	2 Lanes	HST elevated	Shift road
Note: State routes are Caltrans facilities. See Figure 2A-10 for the locations of these items.				

Table 2A-28
 Chowchilla Vicinity—Hybrid Alternative
 Traction Power Substation, and Paralleling and Switching Station locations

Operational Facility	Location	Alternative
Paralleling station 3	South of Avenue 24. Option 1 is east of Chowchilla Boulevard, Option 2 is west of Chowchilla Boulevard	Ave 24 Wye
Paralleling station 4	Near Road 22 north of Avenue 22½. Option 1 is west of Road 22, Option 2 is directly on Road 22.	Ave 24 Wye
Paralleling station 5	Near Road 25 South of Avenue 20. Option 1 would be west of Road 25, Option 2 would be east.	Ave 24 Wye
Paralleling station 4	Near Road 25 South of Avenue 20. Option 1 would be east of HST Option 2 would be west of HST.	Ave 21 Wye

Table 2A-29
 Ave 24 Wye—Hybrid Alternative (West Chowchilla Design Option)
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
87	Road 8	2 Lanes	HST at-grade	New overcrossing
88	Avenue 24	2 Lanes	HST at-grade	Shift road
89	Hemlock Rd/Road 9	2 Lanes	HST at-grade	New overcrossing
90	Road 10	2 Lanes	HST at-grade	New overcrossing

Map No.	Cross Road	Current Road at HST	Proposed Activity	
91	Road 11	2 Lanes	HST at-grade	Close road
92	Avenue 24½	2 Lanes	HST at-grade	Close road
93	Avenue 24¾	2 Lanes	HST at-grade	New overcrossing
94	Road 12	2 Lanes	HST at-grade	Close road
95	Avenue 25	2 Lanes	HST at-grade	Close, shift road
96	Avenue 24	2 Lanes	HST at-grade	Close road
97	Road 12	2 Lanes	HST at-grade	Close road
98	Road 13	2 Lanes	HST at-grade	New overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-10 for the locations of these items.				

Table 2A-30
 Ave 24 Wye—Hybrid Alternative
 Traction Power Substation and Paralleling and Switching Station Locations

Operational Facility	Location	Alternative
Switching station 1	East of Road 13½ and north of Avenue 24	Ave 24 Wye
Switching station 21	West of Road 11 north of Avenue 24	Ave 24 Wye
Paralleling station 11	North side of Avenue 24 Option 1 is west of Road 9½, Option 2 is east of Road 9½	Ave 24 Wye

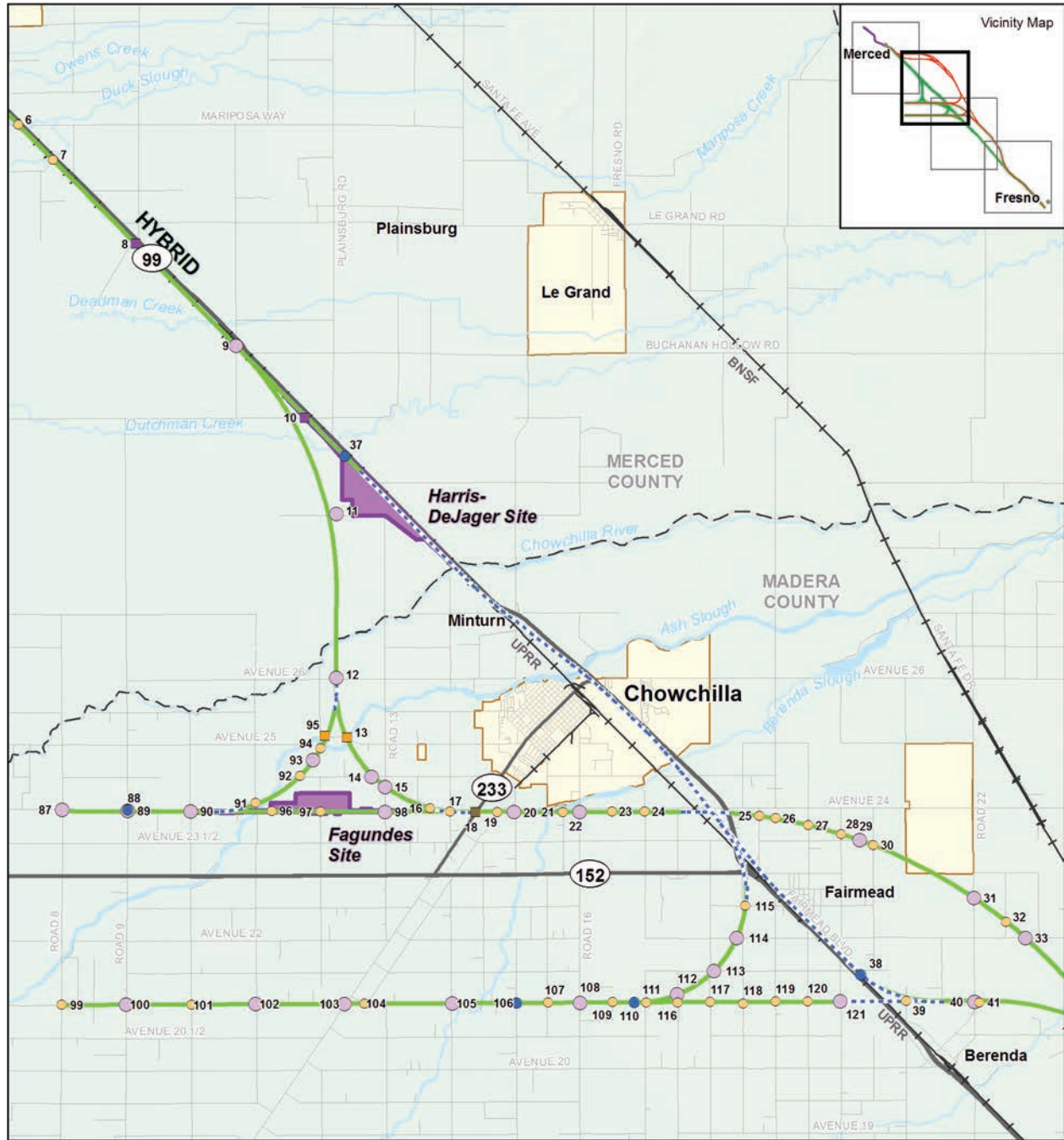
Table 2A-31
 Ave 21 Wye—Hybrid Alternative (East Chowchilla Design Option)
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
99	Road 8	2 Lanes	HST at-grade	Close road
100	Hemlock Rd/Road 9	2 Lanes	HST at-grade	New overcrossing
101	Road 10	2 Lanes	HST at-grade	Close road
102	Road 11	2 Lanes	HST at-grade	New overcrossing
103	Robertson Blvd (SR 233)	2 Lanes	HST at-grade	New overcrossing
104	Railroad Dr	2 Lanes	HST at-grade	Close road
105	Road 14	2 Lanes	HST at-grade	New overcrossing
106	Road 15	2 Lanes	HST at-grade	Shift road
107	Road 15½	2 Lanes	HST at-grade	Close road

Map No.	Cross Road	Current Road at HST	Proposed Activity	
108	Road 16	2 Lanes	HST at-grade	New overcrossing
109	Road 16 ½	2 Lanes	HST at-grade	Close road
110	Avenue 21	2 Lanes	HST at-grade	Shift road
111	Road 17	2 Lanes	HST at-grade	Close road
112	Road 17½	2 Lanes	HST at-grade	New overcrossing
113	Avenue 21 ½	2 Lanes	HST at-grade	New overcrossing
114	Avenue 22	2 Lanes	HST at-grade	New overcrossing
115	Avenue 22 ½	2 Lanes	HST at-grade	Close road
116	Road 18	2 Lanes	HST at-grade	Close road
117	Road 18½	2 Lanes	HST at-grade	Close road
118	Road 19	2 Lanes	HST at-grade	Close road
119	Road 19½	2 Lanes	HST at-grade	Close road
120	Road 20	2 Lanes	HST at-grade	Close road
121	Road 21	2 Lanes	HST at-grade	New overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-11 for the locations of these items.				

Table 2A-32
 Ave 21 Wye—Hybrid Alternative
 Traction Power Substation, and Paralleling and Switching Station Locations

Operational Facility	Location	Alternative
Paralleling station 3	South of Highway 99, north of Avenue 26	Ave 21 Wye
Switching station 1	South of Avenue 21½. Option 1 is south of new Road 20, Option 2 is north of Road 20.	Ave 21 Wye
Paralleling station 11	North of Avenue 21. Option 1 is east of Road 15½, Option 2 is west of Road 15½.	Ave 21 Wye
Switching Station 11	South of Highway 99 and north of Avenue 21	Ave 21 Wye
Switching Station 12	North of Avenue 22½ and east of Road 18½. Option 1 is east of the HST alignment, Option 2 is west of the HST alignment	Ave 21 Wye



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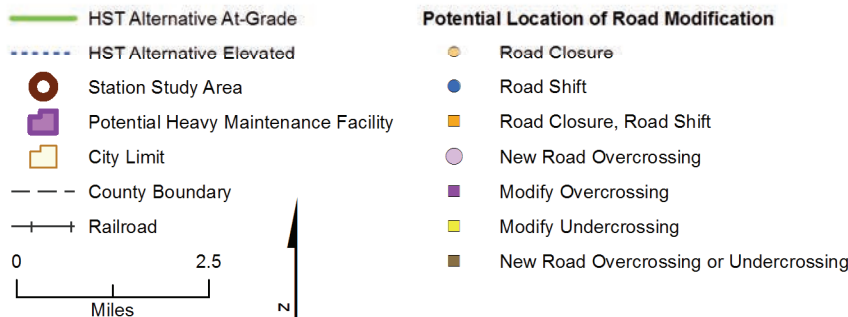


Figure 2A-10
 Hybrid Alternative in the
 Chowchilla Vicinity

Madera Vicinity (Dry Creek to San Joaquin River)

Continuing along Avenue 24 (West Chowchilla Design Option) or Avenue 21 (East Chowchilla Design Option), the Hybrid Alternative joins the lower section of the BNSF Alternative at the community of Madera Acres. From there, the Hybrid Alternative, similar to the BNSF Alternative, leaves the BNSF tracks going west to meet the UPRR/SR 99 Alternative near the San Joaquin River crossing. Table 2A-33 and 2A-34 summarize the road modifications applicable to this alternative in the Madera vicinity; Figure 2A-11 shows their locations.

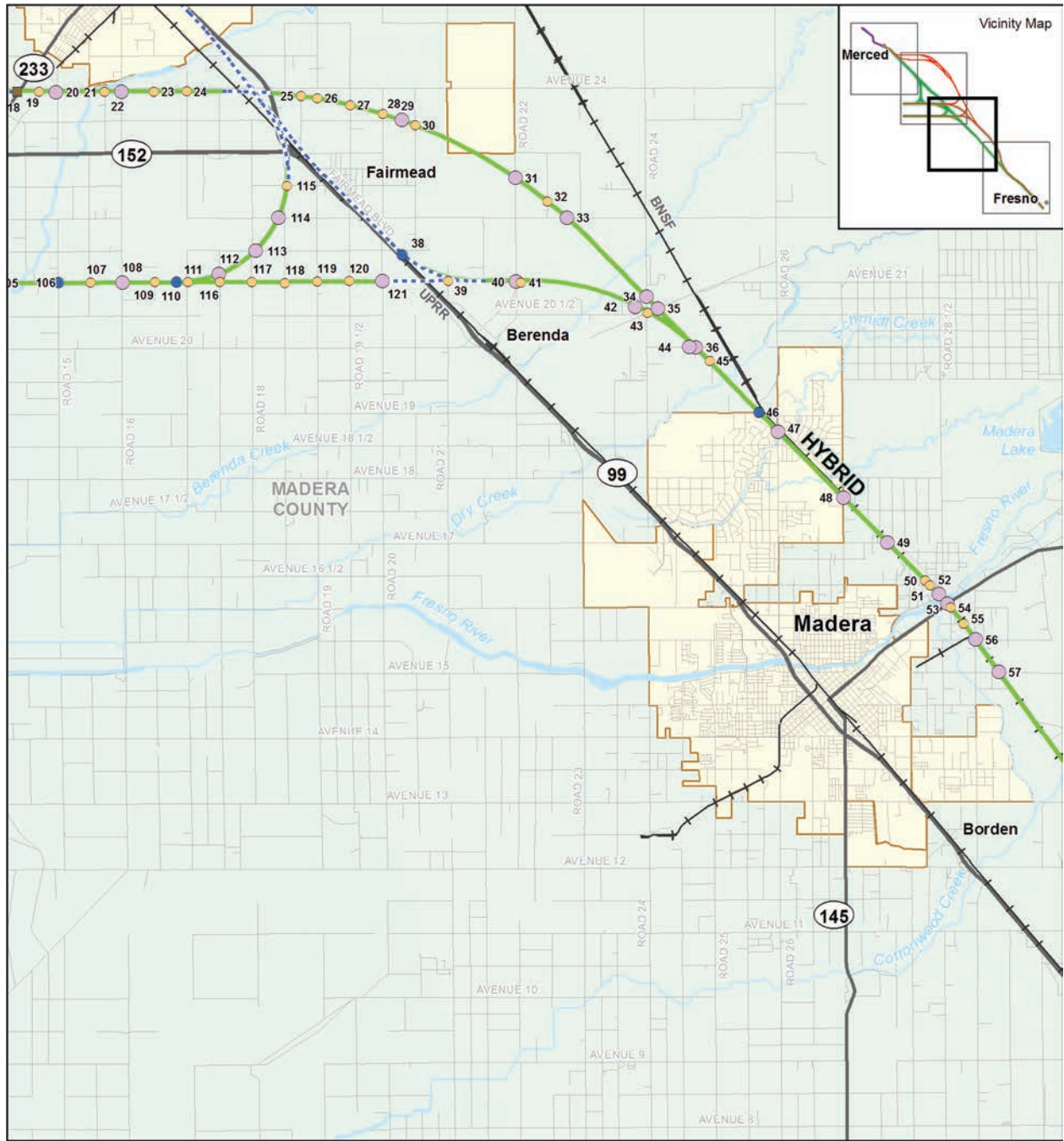
Table 2A-33
 Madera Vicinity—Hybrid Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
39	Road 21	2 Lanes	HST at-grade	Close road
40	Road 22	2 Lanes	HST at-grade	New overcrossing
41	Avenue 21	2 Lanes	HST at-grade	Close road
42	Avenue 20 ½	2 Lanes	HST at-grade	New overcrossing
43	Road 24	2 Lanes	HST at-grade	Close road
44	Avenue 20	2 Lanes	HST at-grade	New overcrossing
45	Road 25	2 Lanes	HST at-grade	Close Road
46	Avenue 19/Hanover Dr	2 Lanes	HST at-grade	Shift road
47	Road 26 (Country Club)	2 Lanes	HST at-grade	New overcrossing
48	Road 27 (Lake)	2 Lanes	HST at-grade	New overcrossing
49	Avenue 17	2 Lanes	HST at-grade	New overcrossing
50	Road 28¼	2 Lanes	HST at-grade	Close road
51	Ellis St	2 Lanes	HST at-grade	Close road
52	Raymond Rd	2 Lanes	HST at-grade	New overcrossing
53	SR 145/Yosemite Ave	2 Lanes	HST at-grade	New undercrossing
54	Watson St	2 Lanes	HST at-grade	Close road
55	Avenue 15¾	2 Lanes	HST at-grade	Close road
56	Avenue 15½/Road 29	2 Lanes	HST at-grade	New overcrossing
57	Avenue 15	2 Lanes	HST at-grade	New overcrossing
58	Avenue 13	2 Lanes	HST at-grade	New overcrossing
59	Avenue 12	2 Lanes	HST at-grade	New overcrossing
60	Avenue 11	2 Lanes	HST at-grade	New overcrossing
61	Avenue 10	2 Lanes	HST at-grade	New overcrossing
62	Avenue 9	2 Lanes	HST at-grade	New overcrossing

Map No.	Cross Road	Current Road at HST	Proposed Activity	
63	Road 32	2 Lanes	HST at-grade	Shift road
64	Avenue 8	2 Lanes	HST at-grade	New overcrossing
65	Road 33	2 Lanes	HST at-grade	Shift road
66	Avenue 7	2 lanes	HST at-grade	Replace overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-11 for the locations of these items.				

Table 2A-34
 Madera Vicinity—Hybrid Alternative
 Traction Power Substation and Paralleling and Switching Station Locations

Operational Facility	Location	Alternative
Supply station 2 - Option 1	At Raymond Road near BNSF approximately 1,000 feet southeast of Raymond Road	Ave 24 Wye
Supply station 2 - Option 2	At Raymond Road near BNSF approximately 200 feet southeast of Raymond Road	Ave 24 Wye
Paralleling station 6	At Avenue 12 west of BNSF	Ave 24 Wye
Paralleling station 7	Road 33 north of Avenue 7	Ave 24 Wye
Paralleling station 5	Near BNSF and Raymond and Road 28½. Option 1 is west of BNSF, Option 2 is east of BNSF	Ave 21 Wye
Supply station 2	At Avenue 12 west of BNSF	Ave 21 Wye
Paralleling station 6	Road 33 north of Avenue 7	Ave 21 Wye



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- | | |
|---|---|
| <ul style="list-style-type: none"> — HST Alternative At-Grade - - - HST Alternative Elevated ● Station Study Area ■ Potential Heavy Maintenance Facility City Limit County Boundary Railroad | <p>Potential Location of Road Modification</p> <ul style="list-style-type: none"> ● Road Closure ● Road Shift ■ Road Closure, Road Shift ● New Road Overcrossing ■ Modify Overcrossing ■ Modify Undercrossing ■ New Road Overcrossing or Undercrossing |
|---|---|

Figure 2A-11
 Hybrid Alternative in
 the Madera Vicinity

Fresno Vicinity (San Joaquin River to Fresno Station)

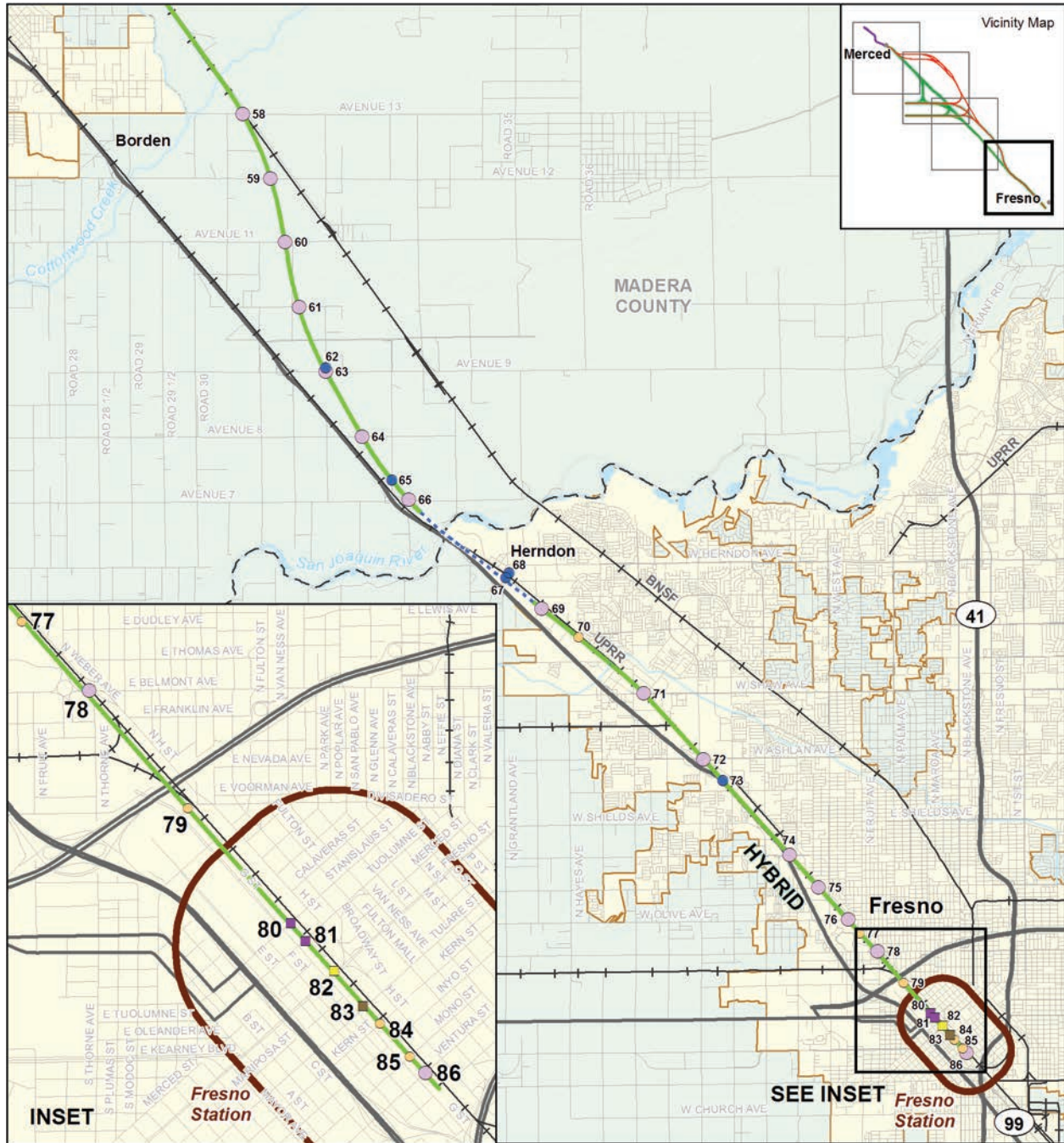
Crossing over the San Joaquin River, in Fresno, the Hybrid Alternative is similar to the BNSF and UPRR/SR 99 Alternatives, remaining adjacent to the UPRR tracks up to the Fresno station. Table 2A-35 and 2A-36 summarize the road modifications; Figure 2A-12 shows their locations.

Table 2A-35
 Fresno Vicinity—Hybrid Alternative
 Roadway Modifications, Crossings, and Closures

Map No.	Cross Road	Current Road at HST	Proposed Activity	
67	N Golden State Blvd	2/4 Lanes	HST elevated	Shift road
68	Northbound SR 99 on-ramp	1 lane	HST elevated	Shift freeway ramp
69	Veterans Blvd	N/A	HST at-grade	New overcrossing connecting Golden State and Bullard
70	N Carnegie Ave	2 lanes	HST at-grade	Close road
71	W Shaw Ave	4 lanes	HST at-grade	New overcrossing
72	W Ashlan Ave	4 lanes	HST at-grade	Replace overcrossing
73	SR-99; UPRR Yard	4 Lanes	HST elevated	Shift freeway
74	W Clinton Ave	4 Lanes	HST elevated	Replace overcrossing
75	W McKinley Ave	4 lanes	HST at-grade	New overcrossing
76	W Olive Ave	4 lanes	HST at-grade	New overcrossing
77	N Golden State Blvd	2 lanes	HST at-grade	Close road between W Olive and W Belmont
78	W Belmont Ave	2 lane underpass	HST at-grade	New overcrossing
79	Divisadero St	2 lanes	HST at-grade	Close road
80	Stanislaus St	2 lane overcrossing	HST at-grade	Modify overcrossing
81	Tuolumne St	2 lane overcrossing	HST at-grade	Modify overcrossing
82	Fresno St	4 lane undercrossing	HST at-grade	Modify undercrossing
83	Tulare St	4 lanes	HST at-grade	New undercrossing
84	Kern St	2 lanes	HST at-grade	Close road
85	Mono St	2 lanes	HST at-grade	Close road
86	Ventura	2 lanes	HST at-grade	New overcrossing
Note: State routes are Caltrans facilities. See Figure 2A-12 for the locations of these items.				

Table 2A-36
Fresno Vicinity—Hybrid Alternative
Traction Power Substation and Paralleling and Switching Station Locations

Operational Facility	Location	Alternative
Paralleling Station 7	West of Golden State Boulevard Near Lovett Avenue	Ave 21 Wye
Switching Station 2	Southwest of Golden State Boulevard, south of Market Street	Ave 24 Wye



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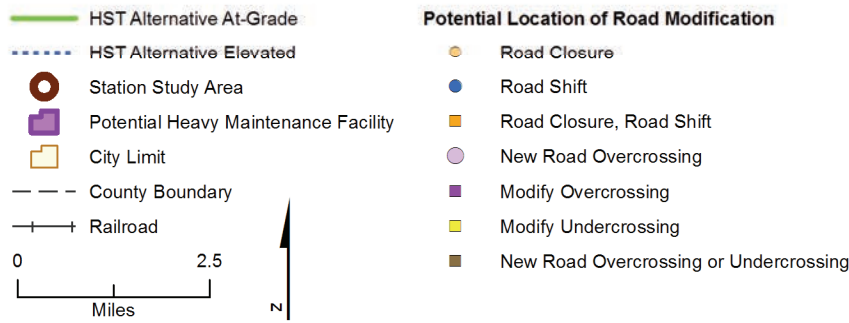


Figure 2A-12
 Hybrid Alternative in the
 Fresno Project Vicinity

2A.4 Preliminary Alternatives Analysis Data

Table 2A-37 compares the HST alternatives' north-south alignments with the best performing design options and wye connections. Note that alternate wye connection findings are shown in parentheses. The information in the table is from the preliminary alternatives analysis process completed in 2010 and does not reflect design and analysis later conducted for the Draft EIR/EIS.

Table 2A-37
 Original Preliminary Alternatives Analysis Data (Not current)

Category	Measurement ^a	BNSF Alternative + South SR 152 (Ave 22 Wye)	UPRR/ SR 99 Alternative + South SR 152 (Ave 22 Wye)	Western Madera Alternative South SR 152 ^b (Ave 22 Wye)	Original Hybrid Alternative + Ave 24 Wye
Design Objectives	Journey time (minutes) - San Luis Reservoir to Fresno Station	24.26 (24.5)	23.89 (24.02)	23.66 (23.82)	25.40 (25.68)
	Journey time (minutes) - Merced to Fresno	21.07 (same)	18.12 (same)	20.18 (same)	20.71 (same)
	Journey time (minutes) - San Luis Reservoir to Merced Station	22.67 (22.3)	19.48 (18.15)	17.85 (16.84)	17.84 (19.22)
	Route length (miles)	93.1 (95.1)	83.2 (83.9)	81.1 (79.4)	81.1 (81.8)
	At-grade/embankment	71.2 (58.1)	56.1 (38.7)	67.0 (60.1)	48.5 (51.3)
	Retained fill	6.3 (5.3)	7.1 (5.2)	4.6 (same)	3.4 (3.7)
	Elevated	15.6 (31.8)	20.1 (40.1)	9.6 (14.8)	29.3 (26.7)
	Miles of curvature	34.0 (35.8)	20.8 (24.5)	37.0 (36.1)	35.6 (same)
	Intermodal connections	Not applicable (station measure only)	Not applicable (station measure only)	Not applicable (station measure only)	Not applicable (station measure only)
	Operating & Maintenance Costs	Medium (same)	Low (Medium)	Low (same)	Medium (same)
	Capital Cost Factor	1.23 (1.52)	1.31 (1.69)	1.00 (1.03)	1.50 (same)

Category	Measurement ^a	BNSF Alternative + South SR 152 (Ave 22 Wye)	UPRR/ SR 99 Alternative + South SR 152 (Ave 22 Wye)	Western Madera Alternative South SR 152 ^b (Ave 22 Wye)	Original Hybrid Alternative + Ave 24 Wye
Land Use	Potential for transit-oriented development	Not applicable (station measure only)	Not applicable (station measure only)	Not applicable (station measure only)	Not applicable (station measure only)
	Consistency with other planning efforts	Neutral – land use plans and policies do not support or conflict with alternative (same)	Supported by City and County of Merced with Ave 22 Not supportive – conflicts with land use plans and policies in Chowchilla and Madera (same)	Not supportive – conflicts with land use plans and policies in Merced and Madera County (same)	Supported by Chowchilla and City of Madera Neutral – land use plans and policies do not support or conflict with alternative (same)
Constructability	Constructability	High (same)	Medium (High)	Low (same)	Medium (same)
	Disruption to existing railroads (number of crossings of railroad right-of-way)	5 (same)	4 (same)	1 (same)	4 (same)
	Disruption to & relocation of utilities (miles of alternative in urban areas)	23 (24)	23 (22)	13 (same)	17 (same)
	Number of crossings of UPRR/ BNSF/ SR 99	11 (same)	9 (same)	5 (same)	9 (same)
	# SR 99 crossings	6 (same)	5 (same)	4 (same)	5 (same)
	# UPRR crossings	5 (same)	4 (same)	1 (same)	4 (same)
	# BNSF crossings	0 (same)	0 (same)	0 (same)	0 (same)

Category	Measurement ^a	BNSF Alternative + South SR 152 (Ave 22 Wye)	UPRR/ SR 99 Alternative + South SR 152 (Ave 22 Wye)	Western Madera Alternative South SR 152 ^b (Ave 22 Wye)	Original Hybrid Alternative + Ave 24 Wye
Disruption to Communities	Total property acquisition (acres)	1042 (993)	847 (774)	876 (860)	805 (837)
	Agricultural (acres) ^c	779 (732)	565 (503)	707 (693)	594 (625)
	Commercial (acres)	12 (14)	17 (11)	11 (same)	13 (same)
	Industrial (acres)	8 (14)	20 (same)	9 (same)	9 (same)
	Residential (acres)	83 (70)	36 (same)	30 (28)	52 (same)
	Other (acres)	160 (162)	209 (204)	119 (118)	138 (same)
	Properties with access affected (number of road closures)	39 (31)	55 (42)	44 (same)	26 (same)
	Local traffic effects around stations (number of roads with decreased levels of service)	Not applicable (station measure only)	Not applicable (station measure only)	Not applicable (station measure only)	Not applicable (station measure only)
Local traffic effects at grade separations (number of grade separations)	37 (32)	31 (18)	57 (52)	22 (24)	
Environmental Resources	Biological Resources - number of new bridge crossings	22 (same)	23 (same)	21 (22)	21 (same)
	Biological resources - acres of wetlands (vernal pool)	10 (3)/(10 (3))	9 (0)/(9 (0))	9 (0)/(9 (0))	12 (2)/(13 (2))
	Biological resources - linear feet of waterways crossed	5050 (7040)	5,200 (5,900)	5,090 (5,590)	6,280 (same)

Category	Measurement ^a	BNSF Alternative + South SR 152 (Ave 22 Wye)	UPRR/ SR 99 Alternative + South SR 152 (Ave 22 Wye)	Western Madera Alternative South SR 152 ^b (Ave 22 Wye)	Original Hybrid Alternative + Ave 24 Wye
	Biological resources - acres of potential T&E habitat	298 (260)	126 (131)	201 (same)	169 (same)
	Cultural Resources (number of sites)	41(42)	64 (53)	34 (same)	44 (43)
	Parklands (number of parks)	0 (same)	0 (0)	0 (same)	0 (0)
	Agricultural lands (acres of prime, unique, and important farmland) ^c	725 (665)	450 (395)	719 (700)	567 (599)
Natural Environment	Noise and Vibration	High amount of residential land use (same)	High amount of residential land use (same)	Low amount of residential land use (same)	Medium amount of residential land use (same)
	Visual/scenic resources (miles of alternative in urban areas)	10 (11)	13 (11)	6 (same)	7 (same)
	Geotechnical constraints	Not applicable	Not applicable	Not applicable	Not applicable
	Hazardous Materials (number of sites)	49 (51)	144 (134)	40 (same)	49 (50)

^aTotals may not equal sum of subtotals due to rounding differences.

^b The performance of Alternative A3 with the Ave 24 Wye is similar to the performance of the alternative with the South SR152 Wye.

^c The differences between affected acres of agricultural land use(City/County data) and prime, unique, and important farmland (California Department of Conservation) is due to the difference in the source and how they define agricultural land use.