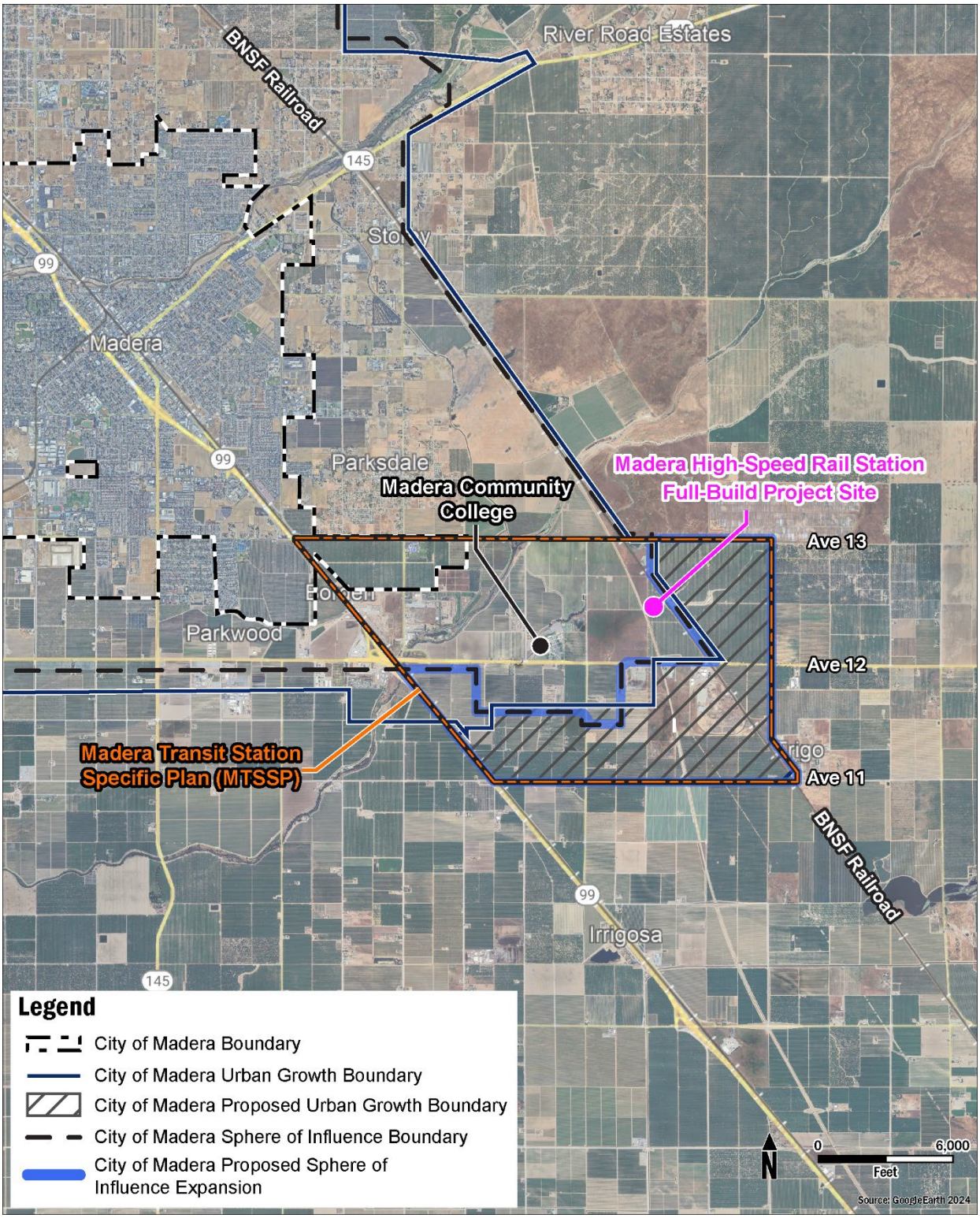
Chapter 2
Project Description

2.1 Project Location

The Project would be located in Madera County, California less than 2 miles southeast of the City of Madera, approximately 1 mile northeast of Madera Community College and approximately 1 mile north of Avenue 12. Primary access routes to the site by automobile or bus is via State Route 99 and Avenue 12 for State Route 41 and Avenue 12. The Project is within the study area of the Madera Transit Station Specific Plan (MTSSP) (see **Figure 2.1-1**), and is anticipated to be completed in 2025. The MTSSP is an updated plan of the prior and will replace the Madera State Center Community College (SCCC) Specific Plan (SCCC, 1995).

Madera County is home to approximately 156,000 residents (U.S. Census, 2020), and has been primarily known for its agricultural industry, with key crops including almonds, grapes, and pistachios. Reflecting this agricultural character, the Project site and adjacent land uses are designated as ARE-40 (Agricultural, rural, exclusive [40-acre] district), and IH (Industrial, urban or rural, heavy district) as shown on the Madera County Zoning Map (Madera County, 2024b). In addition, the Madera County General Plan identifies Agriculture Residential, Agriculture Exclusive, Very Low Density Residential, Public Institution, High Industrial, Open Space land uses on and immediately adjacent to the Project Footprint (Madera County, 2024c). The Project Footprint shown on **Figure 2.1-2**, consists of the permanent footprint and construction footprint, including areas that may be disturbed as part of construction activities.

Figure 2.1-1: Project Location



Source: (AECOM, 2025)

Figure 2.1-2: Project Footprint

Source: (AECOM, 2024)

2.2 Project Description

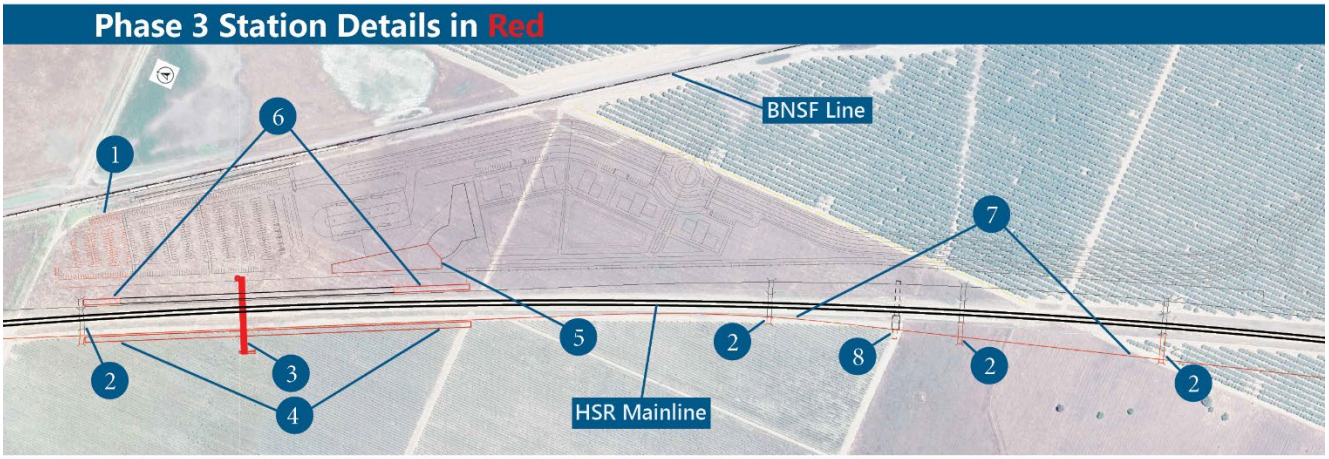
The Project would be designed to serve as the key connection for Madera County and portions of Fresno County to the intercity rail network, supporting expanded HSR operations and service levels (beyond the EOS) associated with HSR Service (north to the Bay Area, south to Southern California, or both) and subsequently Phase 1 HSR service (San Francisco to Los Angeles) at the proposed Madera HSR Station. The Project would include improvements in addition to those previously cleared for Phases 1 and 2 in the 2021 IS/MND, and the 2025 IS/MND Addendum.

2.2.1 Project Components

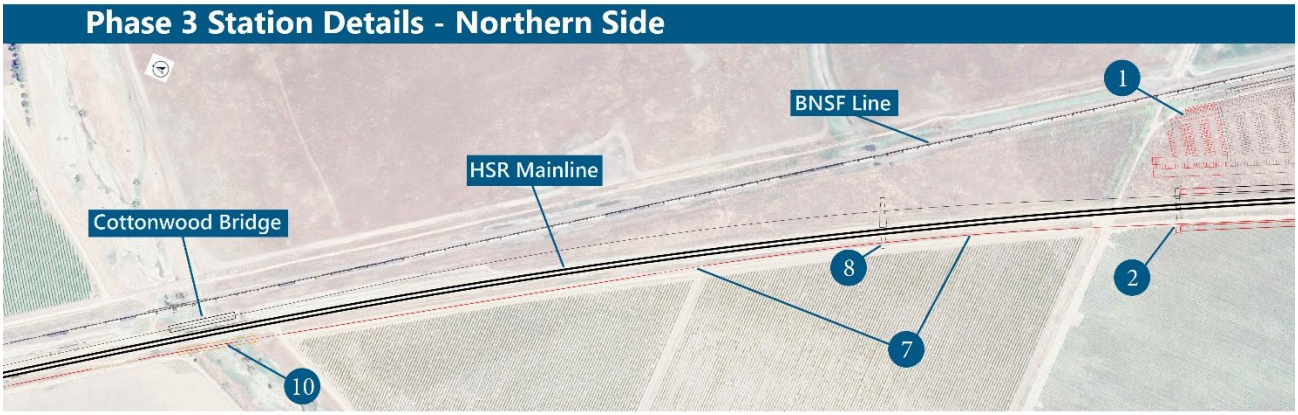
The components of the Project include platforms, trackwork, bridges, overhead contact system, substations, grade separations, station and parking expansions, and culverts. These are shown in red **Figure 2.2-1** and the components approved earlier in Phase 1 and Phase 2 are shown in black. More detailed figures for the Project and the permanent right-of-way (ROW) needed are provided in Appendix G, *Engineering Plans* of the Draft EIR.

Design, construction, and operation of the Project's rail components would comply with applicable standards from the Federal Railroad Administration, California Public Utilities Commission, and CHSRA. Design, construction, and operation of Project site access improvements, including the modifications to the access road, would adhere to applicable standards such as the California Manual on Uniform Traffic Control Devices and local design guidelines and specifications. Design approval for specific components would be sought from the appropriate agencies as part of the detailed design and subsequent stages of the Project. Specific components of the Project are described in more detail in the following subsections.

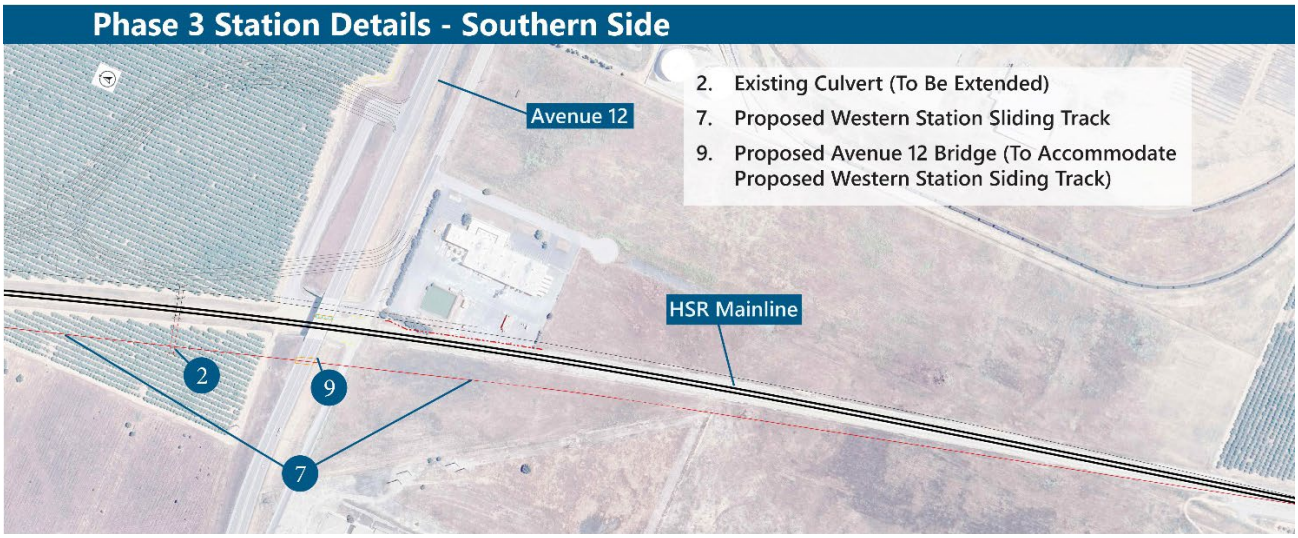
Figure 2.2-1: Project Components - Station Overview



1. Proposed Additional Parking
2. Existing Culvert (To Be Extended)
3. Proposed Overhead Pedestrian Bridge
4. Proposed Western Station Platform (20 ft. x 1,410 ft.)
5. Proposed Station Building/Canopy
6. Eastern Station Platform Extended to 1,410 ft. (Platform In Previous Phase 2 Was 1,000 ft.)
7. Proposed Western Station Siding Track
8. Existing Wildlife Crossing (To Be Extended)



1. Proposed Additional Parking
2. Existing Culvert (To Be Extended)
7. Proposed Western Station Sliding Track
8. Existing Wildlife Crossing (To Be Extended)
10. Proposed Cottonwood Bridge



Source: (Kerns and West, 2024)

2.2.2 Platforms

The Project would include a 1,410-foot platform along the westside of the station to accommodate the full length of the HSR trainsets. The Project also includes the extension of the eastside platform by 410 feet to 1,410 feet, matching the new westside platform. The platform height would be designed to accommodate the trainsets selected for the HSR system. Canopies would be provided on the new westside platform and on the extended portions of the eastside platform to protect passengers from the environmental elements.

Access between the platforms and the station would be provided by a new Americans with Disabilities Act-compliant accessible pedestrian crossing (i.e., footbridge) over the HSR mainline and station tracks. More details on this bridge are provided in Section 2.2.4 below.

2.2.3 Trackwork

In conjunction with the new westside platform, the Project would construct a new station siding track on the westside of the station. Together with the station siding track on the eastside of the station completed under Phase 2, the Project would provide the Madera HSR Station with a total of four tracks. These would be arranged in a typical "local" station layout: two through tracks in the center (for faster trains not stopping at the station) and one siding track on either side (for slower trains stopping at the station).

The entire length of the new siding track, from the turnout locations at the north and south, would be approximately 14,600 feet. The turnouts would be designed for speeds up to 110 miles per hour.

2.2.4 Bridges

Three bridge structures (one track bridge, one roadway bridge, and one pedestrian bridge) are included in the Project as follows:

- Track bridge at Cottonwood Creek. The western siding track would include a new single-track, five-span continuous cast-in-place, reinforced concrete slab structure over Cottonwood Creek. This bridge would match the span arrangement and hydraulic conveyance capacity of the existing double-track bridge constructed as part of the CHSRA Project.
- Pedestrian bridge at the station. A pedestrian overpass would be provided to allow passengers to access the new westside platform from the eastside of the station. The pedestrian bridge would include a shade structure, stairs, and two elevators.
- Roadway bridge at Avenue 12. The southern portion of the new western siding track would traverse Avenue 12 below the roadway surface. The existing Avenue 12 berm would be modified by creating a new penetration to accommodate the alignment of the proposed station siding track and expanding the roadway bridge to span the single siding track below.

2.2.5 Overhead Contact System and Traction Power Substation

In conjunction with the proposed station siding track that would serve the proposed western platform, an overhead contact system (OCS) would be constructed along its entire length to provide electrical power to electrified trainsets. The OCS would consist of poles at intervals matching the OCS poles being constructed as part of the CHSRA Project. These OCS poles are expected to be approximately 30 feet tall and would have foundations extending approximately 6 to 10 feet below the ground surface. To provide power to the OCS, a small traction power substation (TPSS) may be needed, though there is a possibility that electrical power could be drawn from the OCS planned to be constructed in association with the CHSRA Project's adjacent mainline tracks. If a TPSS is required, it would be located in an area in the vicinity of the northern end of the western platform.

2.2.6 Parking Expansion

The surface parking lot that is being constructed as part of Phase 2 would be extended north in this Project and utilize unused space between the HSR corridor and the BNSF Stockton Subdivision. The expanded parking lot would result in a net increase of approximately 542 parking spaces above the 401 parking spaces cleared for Phase 2, for a new total of 943 parking spaces as shown in **Table 2.2-1**.

Table 2.2-1: Summary of Proposed Parking Spaces by Phase for Madera HSR Station

Project Phase	Number of Parking Spaces by Phase	Total Parking Spaces
Phase 1	98	98
Phase 2	303	401
Phase 3	542	943

Source: (AECOM, 2024)

Parking calculations for this Project are based on the highest forecasted ridership at the Madera HSR Station related to the implementation of the Project (i.e. ridership based on the Phase 1 HSR Service, which will run from San Francisco and Los Angeles). See Section 2.3.2 and Appendix H, *Ridership Memorandum* for additional ridership information.

2.2.7 Station Building Expansion

The Project includes construction of an expanded or new separate station building, which would expand upon the station support services provided with the Phase 2 building identified in the prior IS/MND. The new station structure would also include a large canopy structure or structures that would extend out from the enclosed building portion to provide shaded outdoor plaza/seating areas. This station building (including the canopy) would be located adjacent to the eastern edge HSR platform (southern portion) and slightly west of the bus plaza. The total indoor building area would be expanded by approximately 5,000 square feet to provide space for enhanced passenger amenities and station support functions to accommodate the increased ridership from additional service, such as ticketing areas and waiting areas. The outdoor canopy could be designed to cover up to 20,000 square feet of outdoor plaza/seating space. A further 20,000 square feet of space would be reserved for expansion of the building/canopy structure in the future (when and if that becomes needed) but is not part of the Project. The Phase 3 building expansion would include a roof height of about 25 feet compared to the Phase 2 building roof height of about 15 feet.

2.2.8 Culverts

There are 10 proposed drainage culverts as part of the Project, all of which would be extensions of culverts originally constructed as part of Phase 2 of proposed Madera HSR Station. These 10 culverts extensions are listed below. The culverts are marked with position measurements (e.g., 41+85 for the northernmost culvert) on the preliminary engineering plans and in the list below. The culvert extensions are listed below with the stationing measurements, from north to south, as follows:

- Proposed Culvert Extension Number (#) 1: 41+85;
- Proposed Culvert Extension #2: 48+22;

- Proposed Culvert Extension #3: 87+46;
- Proposed Culvert Extension #4: 112+55;
- Proposed Culvert Extension #5: 119+57;
- Proposed Culvert Extension #6: 126+96;
- Proposed Culvert Extension #7: 135+05;
- Proposed Culvert Extension #8: 157+85;
- Proposed Culvert Extension #9: 162+51; and
- Proposed Culvert Extension #10: 171+40.

2.2.9 Wildlife Crossings

There are two proposed wildlife crossings as part of the Project; both would be extensions of wildlife crossings facilities originally constructed as part of Phase 2 of the proposed Madera HSR Station. As with the proposed culvert extensions, the wildlife crossing extensions are demarked with stationing measurements on the plans and in the list below. The wildlife crossing extensions are listed below with the stationing measurements, going from north to south as follows:

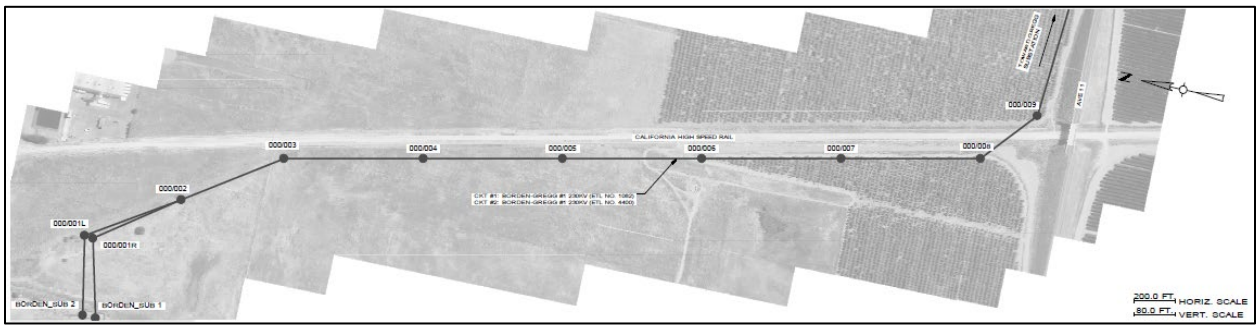
- Proposed Wildlife Crossing Extension #1: 76+41; and
- Proposed Wildlife Crossing Extension #2: 117+20.

2.2.10 Relocation of Pacific Gas and Electric Company Transmission Line

Pacific Gas and Electric Company (PG&E) is currently implementing the Borden-Gregg Transmission Line Re-Alignment Project (BGTLRP) in the vicinity of the Project. The BGTLRP would construct a portion of the re-aligned 230-kilovolt transmission line (including two transmission poles) in the Project Footprint. The BGTLRP is currently in final design and is expected to be completed prior to the construction of the Project.

The BGTLRP conflicts with the location of the southern end of the western side station siding track and with a culvert extension, both of which would be constructed as part of the Project. Identified in **Figure 2.2-2**, Poles 003 and 004 from the BGTLRP would need to be relocated as part of the Project slightly to the west.

Figure 2.2-2: Proposed Alignment of PG&E Borden-Gregg Transmission Line Re-Alignment Project



Source: (RailPros, 2024)

2.3 Operations and Maintenance

2.3.1 Conceptual Service Plan

The Project would enable additional HSR trains to serve the proposed Madera HSR Station and express HSR services that would bypass the Madera HSR Station by expanding capacity through the construction of a second platform and second station siding track. Phase 2 of the proposed Madera HSR Station would be able to accommodate only the Merced–Bakersfield EOS, which would consist of 18 trains (round trips) per day as (or a total of 36 trains per day) described in the CHSRA's 2024 Business Plan (CHSRA, 2024a) with all trains stopping at the Madera HSR Station. The additional capacity from the Project would allow an increase in the number of HSR trains serving the proposed Madera HSR Station and enable express HSR services to bypass the Madera HSR Station for the planned HSR Service (north to the Bay Area, south to Southern California, or both) and subsequently Phase 1 HSR Service (San Francisco to Los Angeles). This DEIR analyzes Phase 1 HSR Service, which has the highest potential impacts.

The Phase 1 HSR Service plan, as outlined in the CHSRA in its 2024 Business Plan, delineates stopping patterns and service levels, and would include the following:

- 32 trains per direction per day (total of 64 trains per day) serving the Madera HSR Station; and
- An additional 66 express trains skipping the Madera HSR Station (i.e., passing through, but not stopping) (CHSRA, 2024b).

2.3.2 Ridership

As shown in **Table 2.3-1**, forecasted annual ridership in 2050 at the Madera HSR Station with the Project and with the Phase 1 HSR Service (San Francisco to Los Angeles) operating is between 715,600 and 835,500 ons and offs. This is compared to between 291,700 and 306,700 ons and offs without the Project and with only the EOS Service operating. Appendix H, *Ridership Memorandum*, provides more detail regarding projected ridership estimates.

Table 2.3-1: Summary of Ridership Forecasts for Madera HSR Station

Madera HSR Station Phase	Phase of High-Speed Rail Service	Forecast Year	Estimated Annual Ridership Range (Ons and Offs at the Madera HSR Station)
Phase 2 (approved)	Early Operating Segment Service (Merced to Bakersfield)	2030	247,000–259,600
		2050	291,700–306,700
Phase 3 (proposed)	Phase 1 HSR Service (San Francisco to Los Angeles)	2050	715,600–835,500

Source: (AECOM, 2024)

2.3.3 Energy Consumption

Construction of the Project would require the temporary use of fuels and energy needed to power construction equipment, machinery, tools, trucks, and worker vehicles for commuting to and from the Project site. Use of these fuels and energy would be limited to the duration of the construction period. Diesel fuel would primarily be needed for road-hauling trips and off-road construction diesel equipment (e.g., scrapers, blades, dozers, and backhoes). In addition, materials such as steel, concrete, and asphalt would require energy for the manufacturing process and transport to the Project site. The Project also would use energy for temporary electric power from a generator(s) or tie into existing electrical lines during construction for lighting and electric equipment (such as computers inside of temporary construction trailers, and heating, ventilation, and air conditioning system).

The CHSRA intends to utilize renewable energy for operations of the trains. If this proposed sustainability goal is not available for the initial operation of the trains, the Project would be connected to the overall power structure and supply for the entire HSR project. Operational energy for other elements of the Project such as safety lighting, building lighting, and other similar uses would be negligible.

2.3.4 Maintenance Activities

Operational activities of the Project would include standard maintenance and cleaning of the facilities and track. Operational activities would include maintenance work (e.g., the typical storage and periodic application of pesticides and herbicides for pest and vegetation management, as well as the storage and use of fuels, greases, lubricants, and solvents for use in machinery and equipment to ensure continued functionality of the proposed structures and facilities). Access to and within the Project site would be provided by existing and previously planned roadways and infrastructure such that no additional maintenance of such access roads or corridors would be needed.

2.4 Construction

2.4.1 Construction Methods

Construction staging areas would be provided to support construction activities and accommodate access to the Project site, equipment deliveries, materials storage, and other construction needs. These areas would generally be located adjacent to or in close proximity to specific Project components and would fall within the Project Footprint, as illustrated in **Figure 2.1-2**.

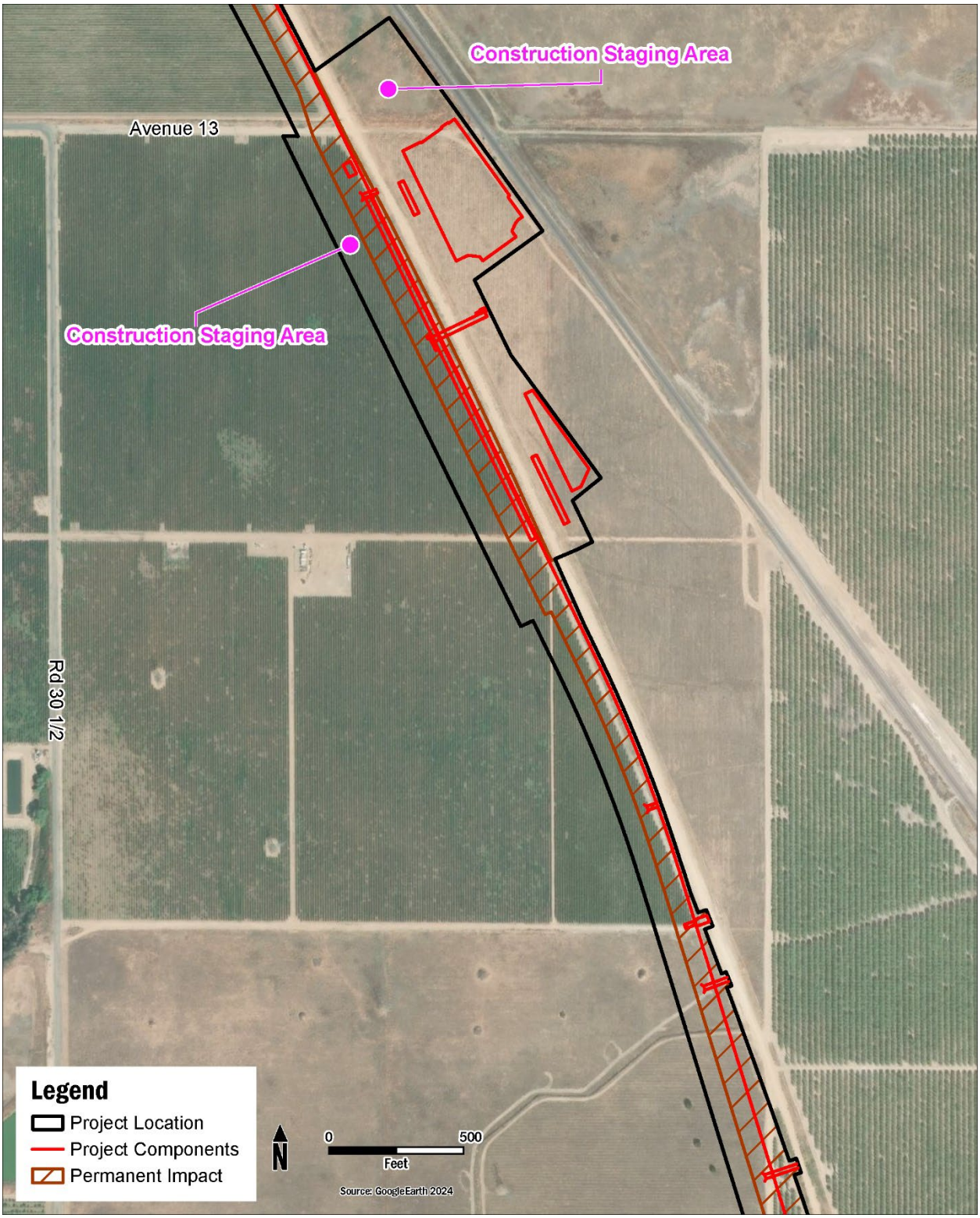
Access to construction sites would occur via a temporary access road within the Project Footprint for the construction on the western side of the HSR mainline and via the station access road constructed during Phases 1 and 2 for work within the station area. As shown in **Figure 2.4-1** and **Figure 2.4-2**, staging areas for Project construction include the following areas:

- For construction on the eastern side of the station, the area north of the planned parking expansion;
- For construction on the western side of the station, the area immediately west of the proposed western side station track; and
- For construction of the new grade separation under Avenue 12, including the new roadway bridge as part of Avenue 12, the triangular-shaped piece of land located at the northwestern corner of Avenue 12 and HSR track alignment.

Contractors would use standard industry equipment such as excavators, pavers, and dump and concrete trucks to support the construction of the Project. For the construction of the new bridge over Cottonwood Creek, pile-driving equipment would be utilized. Best Management Practices (BMPs) that would be implemented as part of the Project include the following:

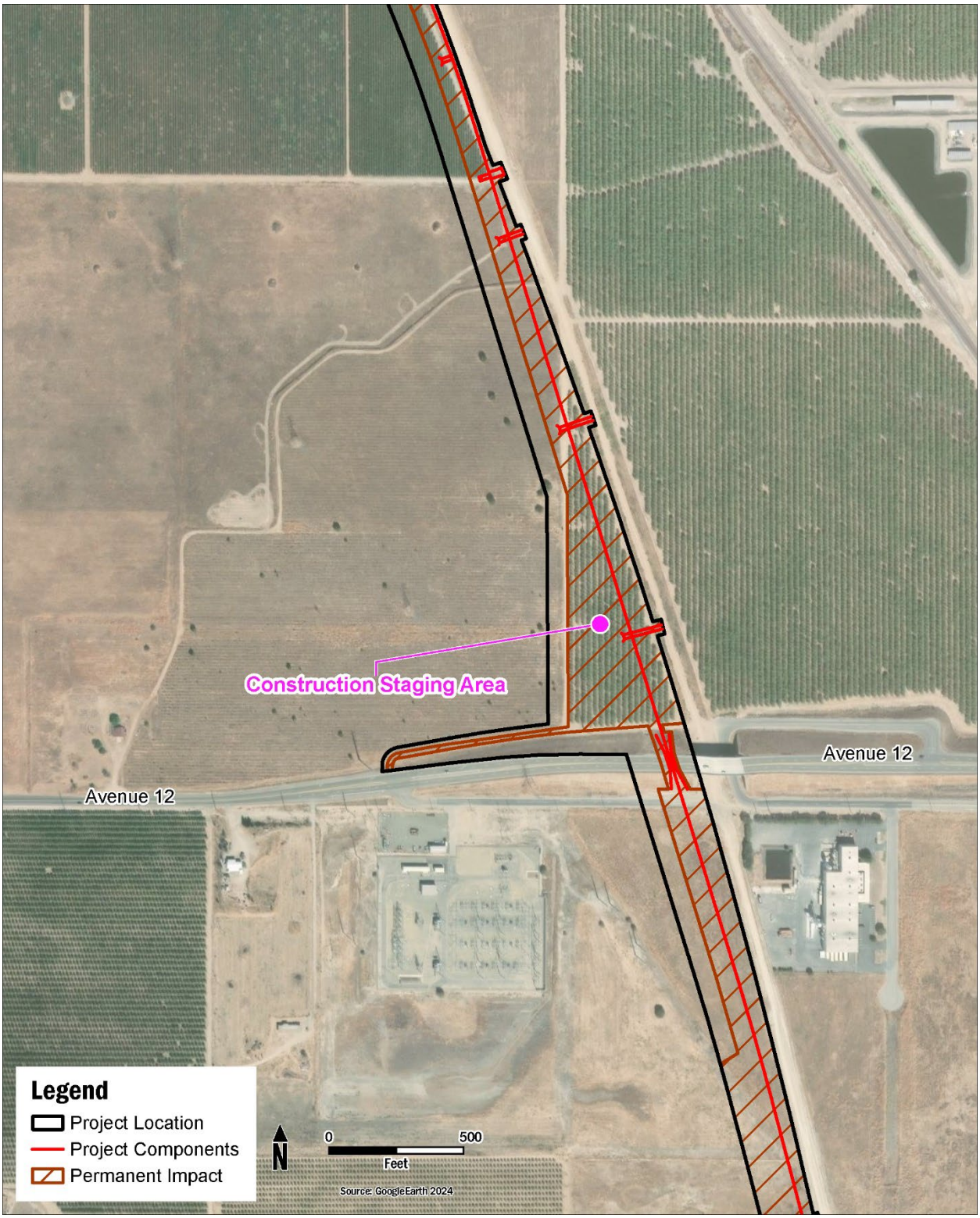
- Use of fabric-covered screening fences to minimize public views of the construction activities, equipment, and stockpiles;
- Positioning of light direction and shielding, which would minimize lighting spillover;
- Measures in California Department of Transportation's *Construction Site BMP Field Manual and Troubleshooting Guide* and *Construction Site BMP Manual* to reduce impacts to soil erosion; and
- Standard construction practices, such as Best Available Technology Economically Feasible and Best Conventional Pollutant Control Technology, would help reduce potential impacts related to stormwater drainage systems.

Figure 2.4-1: Construction Staging Areas



Source: (AECOM, 2025)

Figure 2.4-2: Construction Staging Areas (Continued)



Source: (AECOM, 2025)

2.4.2 Construction Schedule and Durations

Construction of the Project would last approximately 3 years. If funding is secured and construction of Phase 3 is needed for HSR operations, then an assessment would be made to identify the construction schedule.

2.5 Costs

2.5.1 Capital Costs

Preliminary cost estimates of all Project elements including trackwork, platforms, station facilities, power systems, drainage, Avenue 12 grade separation, and parking lot expansion, were prepared. The estimated capital cost for the Project is approximately $150 million (2024 year of expenditure dollars).[1]

2.6 Permits and Approvals

The Project would require the following approvals and permits from federal, state, and local agencies:

- Federal
  - United States Army Corps of Engineers Clean Water Act (CWA) Section 404 permit; and
  - Consultation with United States Fish and Wildlife Service under the federal Endangered Species Act and obtainment of an Incidental Take Permit (ITP) if take of federal-listed species would occur.
- State
  - CHSRA approval of the station as part of the statewide HSR system and approval to connect into their track infrastructure;
  - California Department of Fish and Wildlife (CDFW) Fish and Game Code Section 2800 ITP if take of state-listed species cannot be avoided;
  - CDFW Section 1600 Streambed Alteration Agreement;
  - Compliance with State Water Resources Control Board National Pollutant Discharge Elimination System Construction General Permit Order 2022-0057-DWQ;
  - Central Valley Regional Water Quality Control Board CWA Section 401 Permit/Waste Discharge Requirements; and
  - State of California Fire Marshal for work in state-owned ROW.
- Local
  - County of Madera Public Works Department Grading and Erosion Control Permit; and
  - County of Madera Public Works Department Encroachment Permit.

[1] Construction is anticipated to begin as early as 2030 through 2033.