CALIFORNIA HIGH-SPEED TRAIN

Program Environmental Impact Report/Environmental Impact Statement

Sacramento to Bakersfield

CULTURAL RESOURCES TECHNICAL EVALUATION

January 2004

Prepared for:

California High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

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CALIFORNIA HIGH-SPEED TRAIN PROGRAM EIR/EIS

Sacramento to Bakersfield
Cultural Resources Technical Evaluation

Prepared by

Applied Earthworks

In association with

DMJM+HARRIS

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ACRONYMS

ACHP	Advisory Council of Historic Preservation
APE	Area of Potential Effect
Authority	California High-Speed Rail Authority
BNSF	Burlington Northern and Santa Fe Railway
BST	Buried Site Testing
CCR	California Code of Regulations
CCT	Central California Traction
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHRIS	California Historic Resources Information System
CRHR	California Register of Historical Resources
COG	Council of Governments
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HST	High-Speed Train
MOA	Memorandum of Agreement
MTA	Metropolitan Transportation Authority
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PMOA	Programmatic Memorandum of Agreement
RTP	Regional Transportation Plan
SHPO	State Historic Preservation Officer
SR	State Route
STIP	State Transportation Improvement Plan
UP, UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 INTRODUCTION

The California High-Speed Rail Authority (Authority) was created by the Legislature in 1996 to develop a plan for the construction, operation, and financing of a statewide, intercity high-speed passenger train system.[1] After completing a number of initial studies over the past six years to assess the feasibility of a high-speed train system in California and to evaluate the potential ridership for a variety of alternative corridors and station areas, the Authority recommended the evaluation of a proposed high-speed train system as the logical next step in the development of California's transportation infrastructure. The Authority does not have responsibility for other intercity transportation systems or facilities, such as expanded highways, or improvements to airports or passenger rail or transit used for intercity trips.

The Authority adopted a *Final Business Plan* in June 2000, which reviewed the economic feasibility of a 1,127-kilometer-long (700-mile-long) high-speed train system. This system would be capable of speeds in excess of 321.8 kilometers per hour (200 miles per hour [mph]) on a dedicated, fully grade-separated track with state-of-the-art safety, signaling, and automated train control systems. The system described would connect and serve the major metropolitan areas of California, extending from Sacramento and the San Francisco Bay Area, through the Central Valley, to Los Angeles and San Diego. The high-speed train system is projected to carry a minimum of 42 million passengers annually (32 million intercity trips and 10 million commuter trips) by the year 2020.

Following the adoption of the Business Plan, the appropriate next step for the Authority to take in the pursuit of a high-speed train system is to satisfy the environmental review process required by federal and state laws which will in turn enable public agencies to select and approve a high speed rail system, define mitigation strategies, obtain necessary approvals, and obtain financial assistance necessary to implement a high speed rail system. For example, the Federal Railroad Administration (FRA) may be requested by the Authority to issue a *Rule of Particular Applicability*, which establishes safety standards for the high-speed train system for speeds over 200 mph, and for the potential shared use of rail corridors.

The Authority is both the project sponsor and the lead agency for purposes of the California Environmental Quality Act (CEQA) requirements. The Authority has determined that a Program Environmental Impact Report (EIR) is the appropriate CEQA document for the project at this conceptual stage of planning and decision-making, which would include selecting a preferred corridor and station locations for future right-of-way preservation and identifying potential phasing options. No permits are being sought for this phase of environmental review. Later stages of project development would include project-specific detailed environmental documents to assess the impacts of the alternative alignments and stations in those segments of the system that are ready for implementation.

The decisions of federal agencies, particularly the Federal Railroad Administration (FRA) related to high-speed train systems, would constitute major federal actions regarding environmental review under the National Environmental Policy Act (NEPA). NEPA requires federal agencies to prepare an Environmental Impact Statement (EIS) if the proposed action has the potential to cause significant environmental impacts. The proposed action in California warrants the preparation of a Tier 1 Program-level EIS under NEPA, due to the nature and scope of the comprehensive high-speed train system proposed by the Authority, the need to narrow the range of alternatives, and the need to protect/preserve right-of-way in the future. FRA is the federal lead agency for the preparation of the Program EIS, and the Federal Highway Administration (FHWA), the U.S. Environmental Protection Agency (EPA), the U.S. Corps of Engineers (USACE), the Federal Aviation Administration (FAA), the U.S. Fish and Wildlife Service (USFWS), and the Federal Transit Administration (FTA) are cooperating federal agencies for the EIS.

[1] Chapter 796 of the Statutes of 1996; SB 1420, Kopp and Costa

A combined Program EIR/EIS is to be prepared under the supervision and direction of the FRA and the Authority in conjunction with the federal cooperating agencies. It is intended that other federal, state, regional, and local agencies will use the Program EIR/EIS in reviewing the proposed program and developing feasible and practicable programmatic mitigation strategies and analysis expectations for the Tier 2 detailed environmental review process which would be expected to follow any approval of a high speed train system.

The statewide high-speed train system has been divided into five regions for study: Bay Area-Merced, Sacramento-Bakersfield, Bakersfield-Los Angeles, Los Angeles-San Diego via the Inland Empire, and Los Angeles-Orange County-San Diego. This Cultural Resources Technical Evaluation for the Sacramento to Bakersfield Region is one of five such reports being prepared for each of the regions on the topic, and it is one of fifteen technical reports for this region. This report will be summarized in the Program EIR/EIS and it will be part of the administrative record supporting the environmental review of alternatives.

1.1 ALTERNATIVES

1.1.1 No-Project Alternative

The No-Project Alternative serves as the baseline for the comparison of Modal and High-Speed Train alternatives (Figure 1). The No-Project Alternative represents the state's transportation system (highway, air, and conventional rail) as it existed in 1999-2000 and as it would be after implementation of programs or projects currently programmed for implementation and projects that are expected to be funded by 2020. The No-Project Alternative addresses the geographic area serving the same intercity travel market as the proposed high-speed train (generally from Sacramento and the San Francisco Bay Area, through the Central Valley, to Los Angeles and San Diego). The No-Project Alternative satisfies the statutory requirements under CEQA and NEPA for an alternative that does not include any new action or project beyond what is already committed.

The No-Project Alternative defines the existing and future statewide intercity transportation system based on programmed and funded (already in funded programs/financially constrained plans) improvements to the intercity transportation system through 2020, according to the following sources of information:

- State Transportation Improvement Program (STIP)
- Regional Transportation Plans (RTPs) for all modes of travel
- Airport plans
- Intercity passenger rail plans (California Rail Plan 2001-2010, Amtrak Five- and Twenty-year Plans)

As with all of the alternatives, the No-Project Alternative will be assessed against the purpose and need topics/objectives for congestion, safety, air pollution, reliability, and travel times.

Figure 1
No-Project Alternative – California Transportation System

1.1.2 Modal Alternative

There are currently only three main options for intercity travel between the major urban areas of San Diego, Los Angeles, the Central Valley, San Jose, Oakland/San Francisco, and Sacramento: vehicles on the interstate highway system and state highways, commercial airlines serving airports between San Diego and Sacramento and the Bay Area, and conventional passenger trains (Amtrak) on freight and/or commuter rail tracks. The Modal/System Alternative consists of expansion of highways, airports, and intercity and commuter rail systems serving the markets identified for the High-Speed Train Alternative (Figure 2).
The Modal Alternative uses the same inter-city travel demand (not capacity) assumed under the high-end sensitivity analysis completed for the high-speed train ridership in 2020. This same travel demand is assigned to the highways and airports and passenger rail described under the No-Project Alternative, and the additional improvements or expansion of facilities is assumed to meet the demand, regardless of funding potential and without high-speed train service as part of the system.

1.1.3 High Speed Train Alternative

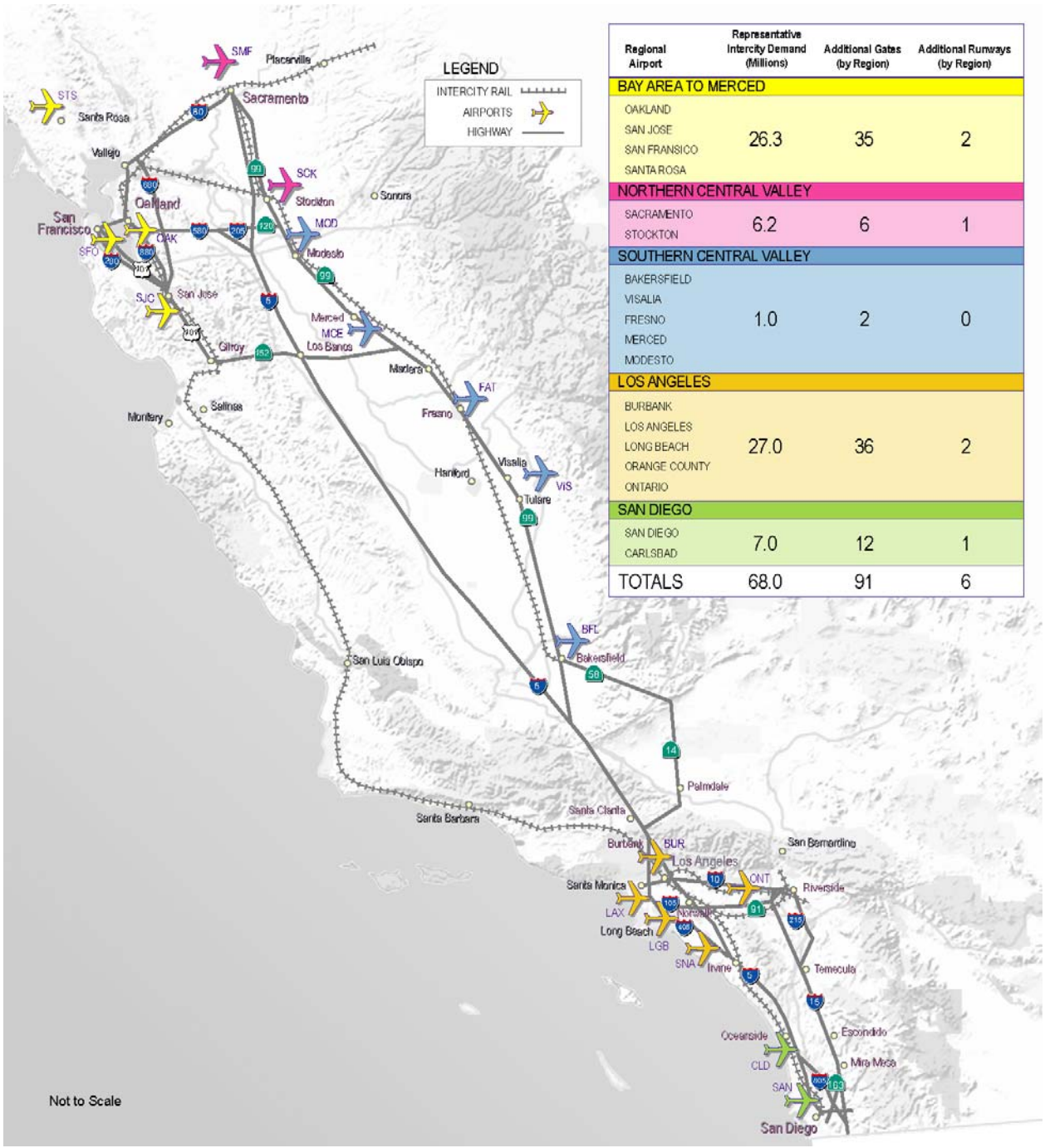
The Authority has defined a statewide high speed train (HST) system capable of speeds in excess of 200 miles per hour (mph) (320 kilometers per hour [km/h]) on dedicated, fully grade-separated tracks, with state-of-the-art safety, signaling, and automated train control systems. State of the art high speed steel-wheel-on-steel-rail technology is being considered for the system that would serve the major metropolitan centers of California, extending from Sacramento and the San Francisco Bay Area, through the Central Valley, to Los Angeles and San Diego. (Figure 3)

The High-Speed Train Alternative includes several corridor and station options. A steel-wheel on steel-rail, electrified train, primarily on exclusive right-of-way with small portions of the route on shared track with other rail is planned. Conventional “non-electric” improvements are also being considered along the existing LOSSAN rail corridor from Los Angeles to San Diego. The train track would be either at-grade, in an open trench or tunnel, or on an elevated guideway, depending on terrain and physical constraints.

For purposes of comparative analysis, the HST corridors are described from station-to-station within each region, except where a by-pass option is considered when the point of departure from the corridor defines the end of the corridor segment. The Sacramento to Bakersfield region has been divided into six corridors: Corridor A runs generally from Sacramento to Stockton; Corridor B, from Stockton to Modesto; Corridor C, from Modesto to Merced; Corridor D, from Merced to Fresno; Corridor E, from Fresno to Tulare; and Corridor F, from Tulare to Bakersfield. Within any given corridor, various alignment options have been developed. Each alignment option is named with an alpha-numeric designation: The letter corresponds to the corridor, and the number refers to a specific route within that corridor. The corridors and alignment routes for HST for this region are defined and presented in Appendix A.

Figure 2
Modal Alternative-Highway Component

Figure 3
Modal Alternative-Aviation Component



Regional Airport	Representative Intercity Demand (Millions)	Additional Gates (by Region)	Additional Runways (by Region)
BAY AREA TO MERCED			
OAKLAND SAN JOSE SAN FRANSICO SANTA ROSA	26.3	35	2
NORTHERN CENTRAL VALLEY			
SACRAMENTO STOCKTON	6.2	6	1
SOUTHERN CENTRAL VALLEY			
BAKERSFIELD VISALIA FRESNO MERCED MODESTO	1.0	2	0
LOS ANGELES			
BURBANK LOS ANGELES LONG BEACH ORANGE COUNTY ONTARIO	27.0	36	2
SAN DIEGO			
SAN DIEGO CARLSBAD	7.0	12	1
TOTALS	68.0	91	6

Figure 4
HST Alternative – Corridors and Stations for Continued Investigation

2.0 BASELINE/AFFECTED ENVIRONMENT

2.1 STUDY AREA (AREA OF POTENTIAL EFFECT) DEFINED

The study area for cultural resources is the Area of Potential Effect (APE) that was defined in consultation with the State Historic Preservation Officer (SHPO). At this programmatic Tier 1 level of analysis, the APE is the area within which information about the locations of archaeological sites was obtained from the Information Centers of the California Historical Resources Information System (CHRIS). No APE was defined for structures from the historical period because individual structures from the historical period were not identified during this programmatic Tier 1 level of analysis.

The APE for this undertaking is defined as 500 feet on each side of the centerline of proposed rail routes in non-urban areas and 100 feet from the centerline in urban areas. The APE for freeway routes and around airports is defined as 100 feet beyond the existing freeway right-of-way and 100 feet beyond the existing airport property boundary. The reason for using 100 feet for urban rail corridors, freeways, and airports is that very little additional right-of-way would be affected in these areas. The 500 feet on each side of the railroad centerline in non-urban areas provides information on wider corridors where additional right-of-way could be affected.

Locations of easements and construction-related facilities, such as equipment staging areas, borrow and disposal areas, access roads, and utilities, have not yet been identified. Locations for these will be identified as part of the construction design program for the alternatives selected for more detailed analysis in the next phase of the project. Thus, these items are not considered in the program level Tier-1 analysis, but this information will be available for Tier-2 site-specific EIR/EIS's. The APE will be modified to include these items as part of the Tier-2 analysis.

2.2 BRIEF CULTURAL BACKGROUND OF REGION

2.2.1 Prehistory

Southern San Joaquin Valley

Archaeological investigations conducted in the southern San Joaquin Valley have revealed human occupation of the region since the late Pleistocene. Population density was low at that time, with the few settlements focused around the shores of ancient water sources such as Tulare and Buena Vista lakes. Studies by Fredrickson and Grossman (1977) and Grossman (1968) located a deeply buried prehistoric component at the Buena Vista Lake Site (CA-KER-116), approximately 18 air miles southwest of Bakersfield. Materials from this component have been ascribed to the Western Pluvial Lakes Tradition, which investigators have placed from 11,500–7,500 years ago (Moratto 1984:186, 214). Based on these and other archaeological investigations conducted throughout the valley (Latta 1977; Price 1992; Spier 1978; Wallace 1978a, 1978b), the Yokuts occupied most of the San Joaquin Valley over a period extending as long as 2,000 years.

Northern San Joaquin Valley

The relatively low number of archaeological investigations conducted within the northern San Joaquin Valley region has resulted in a paucity of information on prehistoric events in the area. However, the results of these studies provided valuable information toward an understanding of the prehistoric peoples who inhabited this region. Details of these efforts are summarized in Moratto (1984:189, 191–193, 215, 573) and are briefly presented below.

Intensive archaeological investigations within the Northern San Joaquin Valley were initiated during the 1960s (Olsen and Payen 1968, 1969; Riddell and Olsen 1969; Treganza 1960). Artifacts recovered from four archaeological sites near the delta of the Sacramento and San Joaquin rivers are similar to materials associated with Phase 2 of the Late Horizon described by Bennyhoff and Heizer (1958), which has been dated to ca. A.D. 1500 (Wallace 1978b:463). Studies conducted along the eastern Diablo Mountain Range resulted in the identification of a cultural sequence similar to, but distinct from, that identified for the delta region. Excavations conducted for the construction of several reservoirs, including Little Panoche Reservoir, revealed a series of four cultural complexes focused on the exploitation of the foothill-valley biotic zone. This sequence indicates that prehistoric people occupied the valley for a period extending from ca. 3000 B.C. to A.D. 1850, with a 500-year hiatus between ca. A.D. 1000 and 1500. The earliest complex identified is the Positas Complex (ca. 3300–2600 B.C.), followed by the Pacheco Complex (ca. 2600 B.C.– A.D. 300), the Gonzaga Complex (ca. A.D. 300–1000), and the Panoche Complex (ca. A.D. 1500–1850).

It is difficult to clearly determine the ancestry of these early peoples. However, artifact assemblages associated with occupation ca. 1000 B.C.–A.D. 500 suggest that the inhabitants were possibly the ancestors of the ethnographic Yokuts (Moratto 1984:188). The latest occupation, the Panoche Creek Complex (A.D. 1500–1850), is associated with the time period in which the ethnographic Yokuts inhabited the region.

2.2.2 Ethnography

The Sacramento to Bakersfield Region of the High Speed Train project passes through traditional lands of four ethnohistorically-known Native American Groups: The Nissenan, Plains Miwok, Northern Valley Yokuts, and Southern Valley Yokuts. The northern San Joaquin Valley is the one large area in California for which very little ethnographic information is available. The dearth of information about the early inhabitants of the region " . . . is due to their rapid disappearance as a result of disease, missionization, and the sudden overrunning of their country by American miners and settlers during the gold rush years" (Wallace 1978a:462). Most of what is known about the early inhabitants comes from the writings of explorers and other early travelers in the region. By piecing together these scraps of information it has been determined that, by the time of the first European visitors, the primary inhabitants of the area were the Northern Valley Yokuts (Wallace 1978a:462).

The Nisenan were the southern linguistic group of the Maidu tribe who occupied the Yuba, Bear, and American River drainages. Their territory extended to just south of Sacramento and north of the Cosumnes River. The Plains Miwok inhabited the lower reaches of the Cosumnes and Mokelumne Rivers and both sides of the Sacramento River as far south as Bear Creek near Stockton. Northern Valley Yokuts territory extended south from Bear Creek to the south side of the San Joaquin River past Mendota, east to the Sierra Foothills, and west to the Coast Range (Wallace 1978a). A small area below this, between the Northern and Southern Valley Yokuts, has been referred to as "unclaimed territory" (Dick-Bissonette 1994:4).

The dry plains along the western edge of the Northern Valley Yokuts territory contain no permanent water sources, suggesting limited seasonal use of resources from this location (Wallace 1978a:462). In a summary by Pettigrew et al. (1994:3-34–3-35), it is noted that the Northern Valley Yokuts occupied year-round villages along the San Joaquin River and other major tributaries to exploit riverine resources. Settlements in the western Coast Range foothills appear to have been used for seasonal procurement to take advantage of oak woodland environments not common to the valley floor.

The Northern Valley Yokuts lived in individual, autonomous villages (Latta 1949:3) composed of single family structures (Moratto 1988:174; Wallace 1978b:451). The structures were small and usually built from woven tule mats. Other structures included sweathouses and ceremonial chambers. One such sweathouse was excavated on Little Panoche Creek by Olsen and Payen in 1968 (Wallace 1978a:465).

Villages were established on high ground near drainages and other valley water sources (Moratto 1988:174). Some travel did occur for collection of seasonal plant foods and hunting. Wallace (1978a:464) notes that fish were one of the most important resources procured, with salmon topping the list of preferred varieties.

Most stone artifacts were fashioned from local cherts, and obsidian was imported from other locations (Wallace 1978a:465). Mortars and pestles were the dominant ground stone tools; bone was used to manufacture awls for making coiled baskets. Ceramic items do not appear to have been manufactured by the Northern Valley Yokuts. Tule was important in the manufacture of mats and boats, and other materials were acquired by trading with neighboring Miwok and Coastanoans.

As with other Indian groups in the valley, the lifeway of the Northern Valley Yokuts was dramatically altered as a result of contact with Spanish explorers and missionaries, miners, ranchers, and other European immigrants who entered the valley after 1700. The introduction of European culture and new diseases proved devastating to the native population. Traditional lifestyles were diminished and numerous people died from disease (Moratto 1988:174). Population estimates for the eighteenth century put the number of Yokuts living in the San Joaquin Valley at around 41,000.

Southern Valley Yokuts

The Southern Valley Yokuts lived within an area extending south from the Kings River to the Tehachapi Mountains (Wallace 1978a). They lived as individual, autonomous villages, and it was not unusual for as many as 10 families to live together within a single structure (Latta 1949:3; Moratto 1988:174; Wallace 1978a:451). Villages were established on high ground near drainages and other water sources where the Yokuts were able to reside on a near-permanent basis due to the abundant food resources of the valley (Moratto 1988:174). Some travel did occur for collection of seasonal plant foods, hunting, and fishing. Archaeological remains suggest that the Yokuts may have inhabited most of the San Joaquin Valley for as long as 2,000 years (Wallace 1978a, 1978b). By the historic period, approximately 15 Yokuts groups were occupying the southern Valley (Wallace 1978a:449).

The Yokuts navigated the swamps and waterways of the valley in rafts built of tule plants (Wallace 1978a:451–452). Baskets and cradles also were manufactured from the tule plant, and tule mats were made to cover dwellings and acorn granaries. Trade was important for the procurement of obsidian, marine shells, ground stone tools, wooden mortars, and other items not locally available (Wallace 1978a:451–452).

Riverine food resources made up the primary diet. Freshwater mussels, turtles, waterfowl, and a variety of freshwater fish were consumed (Wallace 1978a:450). Residents also fished for steelhead and salmon that entered the sloughs and streams. Land mammals and birds supplemented the diet.

The lifeway of the Southern Valley Yokuts was dramatically altered in the 1700s as a result of contact with Spanish explorers and missionaries. The introduction of European lifeways and diseases proved devastating to the native population. Traditional lifestyles were diminished and numerous people died from disease (Moratto 1988:174).

2.2.3 History

The Spaniards were the first non-Indians to enter the San Joaquin Valley. Pedro Fages led a group of soldiers through Tejon Pass into the San Joaquin Valley in 1772 (Wallace 1978a:459), and four years later Francisco Garcés also explored the region. Other Europeans did not follow until Lieutenant Gabriel Moraga led a group of Spanish explorers into the San Joaquin Valley in 1806 (Clough and Secrest 1984:25–27). Moraga's party intended to locate new lands for missions, find and return runaway Indians, and relocate stolen livestock. Moraga is credited with naming both the Kings and San Joaquin

rivers. By the early 1820s, the expansion of missions in California ceased as a result of Mexico's independence from Spain (Clough and Secrest 1984:26). At that time fur trappers began their forays into the California interior. Jedediah S. Smith may have been the first to enter the area during a fur trapping expedition in 1827. Smith's adventures included friendly encounters with the Southern Yokuts near the Kings River and trapping and camping along the San Joaquin River (Clough and Secrest 1984:27). After Smith's visit, other trappers followed until about 1837, by which time fur-bearing animals had been nearly exterminated from the valley.

Stanislaus County Vicinity

As with other cities along the project route, the goldfields of the Sierra drew thousands of miners to Stanislaus County and resulted in numerous business opportunities for others. While the search for precious metals would eventually fade away, agriculture would ultimately be responsible for the area's prosperity. The rich soils were ideal for raising cattle and cultivating grains, specifically wheat. Although fire, drought, and flood wreaked havoc on the earliest settlers, their efforts were rewarded during the wheat boom of 1867–1870 (Gooch 1988:99).

In the wake of this wheat boom, John W. Mitchell founded the town of Turlock in 1873. Mitchell had been buying land in the area since 1867, and by 1871 he owned 100,000 acres. A large portion of land in the "Turlock District" had originally been given to veterans of the Mexican War by way of military warrants. Many of these veterans sold their warrants at a discount for ready cash. Recognizing the necessary role that the railroads played in bringing the large wheat crops to market, Mitchell founded his new town on the main line of the Central and Southern Pacific Railroad. By 1880 Turlock had 192 permanent inhabitants and five grain warehouses as well as other businesses. Turlock was a major wheat shipping point until new rail lines and multiple crop failures contributed to its decline (Gooch 1988:53–56).

As it did throughout California, irrigation technology brought rebirth to the region. One of the early irrigation projects was started in Patterson. Located on the west side of the valley, the town, named for the family of John D. Patterson who bought the land in 1864, had also been one of the communities to benefit from the new rail lines. John Patterson's heirs established a company to build an irrigation system in 1910 and were supplying water to 19,000 acres by 1921 (Gooch 1988:62–63).

The town of Westley began life as a railroad stop on the west side of the valley just north and west of Patterson. The town of Hilmar, the site of another substation, was founded in 1902 and was marketed to Swedish settlers. Portuguese, Armenian, Japanese, Assyrian, and other groups all came to the area seeking their futures (Gooch 1988:56–57). The agricultural traditions began by these early settlers continue to this day.

Fresno County Vicinity

During the mid to late 1840s, Fresno County experienced an increase in population as settlers began establishing themselves on the various Mexican land grants. As a reaction to the discovery of gold at Coloma in 1848, miners began filtering into Fresno County in search of the precious mineral. Mining claims were established along the San Joaquin River and various other localities throughout the foothills and businesses were soon founded to profit from the miners needs for services and supplies. By the 1860s and 1870s, several sawmills were in operation around the Fresno area.

By 1872, the Central Pacific Railroad was built across Fresno County. This initiated major changes in transportation, the mail system, and the livelihoods of those who lived in the county. Agriculture soon replaced mining as the primary source of livelihood, although mining continued in the hills. The Central Pacific Railroad was established in what would later become the city of Fresno because of the location of a successful wheat field owned by A. Y. Easterby (Clough and Secrest 1984:121). Attempts to irrigate

agricultural lands in Fresno County were initiated in 1875; however, it was not until 1877 that crops, vineyards, and orchards were firmly in place (Clough and Secrest 1984:143). To accommodate the growing needs of the farmers, numerous irrigation ditches were constructed throughout the county in the early 1880s and the wine and raisin industries began to prosper.

Western Fresno County contains dry barren plains, which did not attract settlers the way other locations in the county did. Initially, the main branch of the *El Camino Viejo a Los Angeles*, a road extending from Los Angeles to as far north as Riverdale during the 1800s, passed through this portion of the county following the base of the Coast Range to *Arroyo de Panoche Grande* near Mendota and the project area (Clough and Secrest 1984:39). The road was used to drive cattle and wild horses to Los Angeles. The western portion of the county primarily supported Hispanic populations in communities such as *Las Juantas* and *Rancho de los Californianos* along the San Joaquin River (Clough and Secrest 1984:253). Indian villages also were reported historically along the mouth of the Fresno Slough. Eventually, smaller communities at Firebaugh, Mendota, and in other locations were established by Euroamericans to accommodate the growing interests in the county.

Tulare and Kings Counties Vicinity

During the mid to late 1840s, settlers began to claim rights to former Mexican land grants in California. Struggles ensued with the Indians over the claims and the settlers waited for legal recognition by the U.S. government as conflicts and confusion over the handling of the land grants was addressed (Clough and Secrest 1984:34). Several government expeditions to the Tulare Lake basin during the mid to late 1840s resulted in recommendations for the development of agricultural settlements that would permanently alter the area (Preston 1981:62). After discovery of gold at Coloma in 1848, miners began entering the valley. Mining claims were established along the San Joaquin River and various other localities throughout the foothills. The mining boom spurred the establishment of other businesses as well. Ferries were established on the major rivers while hotels and trading posts were constructed, and stage lines began carrying mail and passengers. During the 1850s the valley experienced an influx of Chinese immigrants seeking to establish themselves as miners or businessmen who would profit from the gold rush (Clough and Secrest 1984:62). The miners' needs for food and supplies were quickly realized through the development of ranching in the Tulare Lake basin (Preston 1981:72). New roads and transportation routes emerged throughout the basin, and the ranching industry boomed when access to livestock markets to the north and south became available.

By 1853, a project to develop irrigation systems near Visalia was implemented; by 1899, the Tulare Lake basin boasted the most irrigated acreage in the San Joaquin Valley (Preston 1981:97). This, combined with the availability of federally surveyed lands for purchase and construction of transportation routes, increased the rate of settlement throughout the basin. By the 1870s, many railroad towns had emerged, including Tulare (1872) and Tipton (1884) (Preston 1981:125). The town of Alila was established by the railroad in 1885, but the name was changed to Earlimart in 1909 to promote the town's agriculture. Pixley, named for a newspaper editor, was founded in 1886 under private venture (Preston 1981:125).

Rich alluvial fans (deltas) created by flooding of the Kaweah and Kings rivers were highly desirable agricultural land. As agriculture flourished on the Kings Delta, the desire for a political identity separate from the Kaweah Delta resulted in the formation of Kings County in 1893, with Hanford as the county seat (Preston 1981:142). Irrigation continued to increase in the basin through the 1890s, and irrigation districts advertised for business. Agriculture in the basin diversified at this time. The Tipton-Pixley region boasted crops and grazing of drylands (Preston 1981:146). Kings County acquired additional land from Fresno County. By 1909, Kings and Tulare counties encompassed the whole of the Tulare Lake basin. By 1910, the development of new towns and settlements had slowed dramatically, and improvements were initiated to construct better roads. Agricultural concerns continued to prosper in the basin, resulting in the intensification of local farming. Within the project area, shipping stations emerged at Tipton, Pixley, and Earlimart. Poplar, Woodville, and Tulare prospered from dairies, grain crops, vineyards, and orchards

(Preston 1981:186). Farmers emerged from the Great Depression to find that agriculture was less lucrative. Since that time, farmland has been developed more for commercial interests, reducing the amount of agriculture within the Tulare Basin. Currently, the area continues the historic traditions of agriculture and ranching, but at a level far reduced from a century ago.

Kern County Vicinity

In 1776, Spanish missionaries visited the area now known as Bakersfield; the event was documented by Franciscan Friar Francisco Garces. Father Garces described the Kern River, which he named Rio de San Felipe, and visited the Yokut community of Woilu, a village situated on the land modern Bakersfield would later occupy. While visiting Woilu, Father Garces performed the first European baptism in the San Joaquin Valley. The Franciscans returned to their base at the mission San Gabriel following a route through the Tehachapi Mountains that functioned as the primary road until 1876, when the Southern Pacific Railroad created an alternate route. From the 1770s until the 1820s, the area remained relatively unvisited from non-native influences. However, by 1827 the seventeen-man expedition led by Jedediah Smith entered the region and signaled the earliest American presence in the Kern County area (Clark 1998).

Kern County remained the province of several Native American groups and relatively isolated from Euro-American influences until 1853 when gold was discovered in the rugged hills near Greenhorn Mountains, about one mile northwest of the Kern River and thirty miles northeast of Bakersfield. Thousands of gold-seekers poured into the Kern River Valley, including families, many of whom settled in the region after most of the gold mining ended. The mining boom spurred the establishment of other businesses as well. Ferries (such as Gordon's Ferry on the Kern River, State Historical Landmark No. 137) were established on major waterways, hotels and trading posts were constructed, and stage lines began carrying mail and passengers. In 1899, rich oil fields were discovered near McKittrick (State Historical Landmark No. 376) and a new influx of immigrants seeking profit was underway in Kern County (Pittman 1995:131). Agriculture became prominent, and cotton was the primary crop. Basque sheepherders brought their herds to feast on local vegetation, and the establishment of the railroad attracted Chinese workers.

Modern Bakersfield evolved, in part, from the reclamation of swamp lands known as Kern Island. Originally settled in 1860 by Christian Bohna, Kern Island underwent development initiated in 1863 by Colonel Thomas Baker and his family. In 1866, the California State Legislature created Kern County, naming Havilah as the county seat. Bakersfield became an incorporated city in 1874 and that same year displaced Havilah as the county seat.

The settlement and growth of Bakersfield began in earnest with the arrival of the Southern Pacific Railroad. In 1873, the Southern Pacific constructed lines that connected San Francisco, Sacramento and the eastern United States with Los Angeles. By 1873 the Southern Pacific had laid trackage through Kern County and founded the town of Delano. The railroad erected stations at Sumner, several miles east of Bakersfield, and at Summit (later known as Tehachapi), in the Tehachapi Pass, bypassing Bakersfield because city boosters refused to satisfy the railroad's request for large land concessions. Bakersfield residents quickly organized a small rail system that connected Bakersfield to Sumner and the Southern Pacific's national lines. In 1893, Sumner incorporated as Kern City and in 1910 merged into the city of Bakersfield. Today the area is known as East Bakersfield (Clark 1998)

The Southern Pacific railroad facilitated the creation of several Kern County communities; besides Delano, East Bakersfield, and Tehachapi, the railroad created several towns, including: Caliente (1875) construction headquarters for the SP, Bealville (1875) a depot and telegraph office; Mojave (platted by the railroad in 1876); and Rosamond, platted in 1877 by a railroad employee who named the town for his daughter. Passenger service continued until 1971 when the Amtrak system merged all passenger carriers into one system.

2.3 DATA SOURCES

Record searches and literature reviews were conducted at three Information Centers of the California Historical Resources Information System. These included: 1) the Southern San Joaquin Valley Information Center at California State University, Bakersfield; 2) the Central California Information Center at California State University, Stanislaus; and 3) the North Central Information Center at California State University, Sacramento. Other repositories consulted include the Sacramento Bureau of Land Management Office and the Sacramento Public Library. The records searches included review of previous cultural resources studies and previously recorded sites within the project area. The study area included a 1000-foot corridor centered on the mid-line of the railway alignments, a 100-foot corridor along either side of the roadway shoulders, and a 100-foot area beyond airport property boundaries. Base maps and records on file at the Information Centers were reviewed. Pertinent site records and archaeological report information were copied. Site locations and previous survey coverage were plotted onto the appropriate 7.5 minute USGS topographic quadrangles.

In addition to the maps and documents discussed above, the National Register of Historic Places, California Inventory of Historic Resources, California Historical Landmarks, California Register of Historical Resources, and California Points of Interest also were reviewed. Historic maps reviewed during the records searches include pre-1960 USGS topographic quadrangle maps, Government Land Office (GLO) maps from the mid- to late nineteenth century, and a historical atlas of Fresno County from the early twentieth century.

A letter describing the project was sent to the Native American Heritage Commission in Sacramento. The letter provided project location information and requested a search of the Sacred Lands File to identify any traditional cultural properties that could be potentially impacted or affected by the project. In addition, lists of Native Americans to contact for the areas that could be affected by the project were requested. Letters were sent to the Native Americans on the contact lists provided by the NAHC. The letters provided information about the project and requested information about traditional cultural properties that the Native Americans believe could be affected by the project.

2.4 ARCHAEOLOGICAL SITES

Prehistoric archaeological sites in California are places where Native Americans lived or carried out activities during the prehistoric period before A.D. 1769. Prehistoric sites contain artifacts and subsistence remains, and may contain human burials. Artifacts are objects made by people and include tools (projectile points, scrapers, and grinding implements, for example), waste products from making flaked stone tools (debitage), and non-utilitarian artifacts (beads, ornaments, ceremonial items, and rock art). Subsistence remains include the non-edible portions of foods, such as animal bone and shell, and edible parts that were lost and not consumed, such as charred seeds.

Historical archaeological sites in California are places where human activities were carried out during the historic period, dating between A.D. 1769 and 50 years ago. Some of these sites may be the result of Native American activities during the historic period, but most are the result of Spanish, Mexican, or Anglo-American activities. Many historical archaeological sites are places where houses formerly existed and contain deposits of ceramic, metal, and glass refuse resulting from the transport, preparation, and consumption of food. Such sites may also contain house foundations and other structural remnants, such as window pane glass, lumber, and nails. Historical archaeological sites may also include debris associated with non-residential use such as ranching, farming, industry, and other activities. Table 2.4.1 summarizes the types and numbers of prehistoric and historical archaeological sites within each corridor alignment.

Table 2.4.1
Types and Numbers of Archaeological Sites Per Corridor (Modal Alternative)

Type	Corridor A Sacramento to Stockton	Corridor B Stockton to Modesto	Corridor C Modesto to Merced	Corridor D Merced to Fresno	Corridor E Fresno to Tulare	Corridor F Tulare to Bakersfield	Total
HISTORIC:							
Trash Scatters	2	1	1	4	2	4	14
Building Pads, Structural Remains	6	1	6	1		2	16
Other	0	0	1	0	0	0	1
PREHISTORIC:							
Burials	3	0	0	0	0	0	3
Isolates	2	0	1	3	0	12	18
Lithic Scatters	4	0	2	2	1	10	19
Habitation Sites	3	0	0	1	0	1	5
Other	4	0	0	1	0	0	5
MULTICOMPONENT:							
Trash Scatters/Lithic Scatters	3	0	0	0	0	1	4
TOTALS	27	2	11	12	3	30	85

2.5 STRUCTURES FROM THE HISTORIC PERIOD

Structures from the historic period consist of houses, outbuildings, stores, offices, factories, barns, corrals, mines, dams, bridges, roads, canals or other facilities that served residential, commercial, industrial, agricultural, transportation, or other use more than 50 years ago. Table 2.5.1 below details the 396 historical structures and features within each corridor alignment.

Table 2.5.1
Types and Number of Historical Structures and Features Per Corridor (Modal Alternative)

Type	Corridor A Sacramento to Stockton	Corridor B Stockton to Modesto	Corridor C Modesto to Merced	Corridor D Merced To Fresno	Corridor E Fresno To Tulare	Corridor F Tulare To Bakersfield	Total
Bridges	3	2	11	4	1	1	22
Canals, Levees, Water Systems	5	10	15	7	13	20	70
Cemeteries	2	0	0	0	1	0	3
Commemorative Plaques	1	0	0	1	1	4	7
Roads	2		1	1	1	1	6
Railroad Segments, Features	9	6	2	3	1	2	23
Railroad Stations	7	1	0	2	1	2	13
Structures	69	30	114	14	3	8	238
Other	9	2	1	0	0	2	14
TOTALS	107	51	144	32	22	40	396

Table 2.5.2 lists the period of origin or development for the main towns and cities located along the corridor alignments. The majority of towns were initially established as train stations along the railroad lines. The results of the records search indicate that many of these areas contain historic buildings dating from the mid- to late-1800s, and up to the 1960s.

Table 2.5.2
General Areas of Development and
Approximate Years of Construction

City	Years of Origin and Construction	Special Considerations
Sacramento		
City Center	1840s-1870s & 1910-1920s	Historic Districts
Outter Sacramento	1900s-1910s, 1920s, 1930s-1940s &1950s	Sensitive
Galt		
Citywide	1860s-1870s & 1910s	Sensitive
Acampo		
Citywide	1870s & 1910s & 1930s & 1950s	Sensitive
Florin		
Citywide	1860s & 1900s	Sensitive
Sheldon		
Citywide	1840s & 1900s	Sensitive
Elk Grove		
Citywide	1850s & 1900s	Sensitive
Lodi		
Citywide	1860s & 1910s & 1930s & 1950s	Sensitive
Stockton		
Citywide	1840s & 1950s	Historic District
French Camp		
Citywide	1830s	Sensitive
Ripon		
Citywide	1870s	Sensitive
Manteca		
Citywide	1900s	Sensitive
Modesto		
Citywide	1870s	Sensitive
Escalon		
Citywide	1890s	Sensitive
Empire		
Citywide	1850s	Sensitive
Keyes		
Citywide	1890s	Sensitive
Ceres		
Citywide	1870s	Sensitive
Hughson		
Citywide	1900s	Sensitive
Turlock		
Citywide	1870s	Sensitive
Delhi		
Citywide	1890s & 1910s	Sensitive

City	Years of Origin and Construction	Special Considerations
Cressey		
Citywide	1900s	Sensitive
Livingston		
Citywide	1870s	Sensitive
Winton		
Citywide	1910s	Sensitive, Castle Air Force Base
Atwater		
Citywide	1880s	Sensitive
Merced		
City Center	1870s-1880s & 1920s & 1930s	Sensitive
East Merced	1900s	
West Merced	1940s	
Le Grand		
Citywide	1890s	Sensitive
Chowchilla		
Citywide	1880s	Sensitive
Berenda		
Citywide	1890s	Sensitive
Madera		
Citywaid	1890s	Sensitive
Irrigosa		
Citywide	1890s	Sensitive
Borden		
Citywide	1890s	Sensitive
Herndon		
Citywide	1870s	Sensitive
Fresno		
Citywide	1870s	
Easton		
Citywide	1870s-1880s	Sensitive
Fowler		
Citywide	1870s	Sensitive
Monmouth		
Citywide	1890s	Sensitive
Selma		
Citywide	1880s	Sensitive
Layton		
Citywide	1890s	Sensitive
Traver		
Citywide	1880s	Sensitive
Hanford		
Citywide	1870s	Sensitive
Goshen		
Citywide	1870s	Sensitive
Tagus		
Citywide	1870s	Sensitive
Corcoran		
Citywide	1900s	Sensitive
Wasco		

City	Years of Origin and Construction	Special Considerations
Citywide	1890s	Sensitive
Shafter		
Citywide	1900s-1910s	Sensitive
Tulare		
Citywide	1870s	Sensitive
Tipton		
Citywide	1870s	Sensitive
Pixley		
Citywide	1880s	Sensitive
Earlimart		
Citywide	1870s-1900s	Sensitive
Delano		
Citywide	1870s	Sensitive
Visalia		
Citywide	1850s &1870s-1910s	Sensitive
McFarlan		
Citywide	1900s	Sensitive
Famoso		
Citywide	1870s-1890s	Sensitive
Bakersfield		
Citywide	1860s	Sensitive
City Center	1920s-1940s	Sensitive
North and South Bakersfield	1930s-1950s	
Edison		
Citywide	1900s	Sensitive

2.6 TRADITIONAL CULTURAL PROPERTIES

Traditional cultural properties are places associated with the cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community. Examples include "a location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world" and "a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice" (National Park Service n.d.). Traditional cultural properties are identified by consulting with Native American groups that have a history of use of the project area.

The Native American Heritage Commission did not identify any traditional cultural properties that could be affected by the project in this region. Native Americans contacted by letter did not identify traditional cultural properties that could be affected by the project in this region.

3.0 METHODS FOR CULTURAL RESOURCES ANALYSIS

The cultural resources analysis for this program-level EIR/EIS is focused on a broad comparison of potential impacts to cultural resources along corridors for each of the alternatives (high-speed train and modal alternatives) and around stations. The potential impacts for each of these alternatives are compared with the No-Project Alternative.

3.1 DATA COLLECTION

An Area of Potential Effect (APE) or study area was defined for the project. The APE for archaeological sites was defined as 500 feet on each side of the centerline of proposed rail routes in non-urban areas and 100 feet from the centerline in urban areas. The APE for freeway routes and around airports was defined as 100 feet beyond the existing freeway right-of-way and 100 feet beyond the existing airport property boundary.

Records searches were obtained from the appropriate Information Centers of the California Historic Resources Information System (CHRIS). The records searches provided the locations of archaeological sites within the APE. The number of archaeological sites within the APE for each alternative was compared to assess the relative degree of potential impacts or effects for each alternative. In order to assess impacts to structures from the historic period, the percentage, based on miles, of each alternative route that passes through areas that originally developed in specific, pre-defined historical time periods (before 1900, 1900 to 1929, and 1930 to 1958) was determined by using historical maps and knowledge of local history.

3.2 CEQA AND NHPA SIGNIFICANCE CRITERIA FOR CULTURAL RESOURCES

Under both state and federal guidelines for cultural resources, impacts are potentially significant only if the resource being impacted has been determined to be significant. Under federal guidelines (36 CFR 800.4) implementing Section 106 of the National Historic Preservation Act (NHPA), significant cultural resources are those that are eligible for the National Register of Historic Places (NRHP). The NRHP eligibility criteria (36 CFR 60.4) state that the quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and:

(a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) That are associated with the lives of persons significant in our past; or

(c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That have yielded, or may be likely to yield, information important to prehistory or history.

In addition, the cultural resource must be over 50 years old unless it is exceptionally important.

In CEQA, significant cultural resources are called "Historical Resources". Historical resources are resources that are eligible for listing in the California Register of Historical Resources (CRHR) or that are listed in the historical register of a local jurisdiction (county or city). Generally, a resource shall be considered by a lead agency to be "historically significant" if the resource has integrity and meets the criteria for listing on the California Register of Historical Resources, as follows [Title 14, California Code of Regulations, Section 15064.5(a)(3)]:

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Is associated with the lives of persons important in our past;

(C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(D) Has yielded, or may be likely to yield, information important in prehistory or history.

As can be seen, the NRHP and CRHR criteria are almost identical. Any resource determined eligible for the NRHP is also automatically eligible for the CRHR. However, the CEQA definition of an Historical Resource also includes resources listed on local historical registers.

CEQA also contains a section addressing "unique" archeological resources and provides a definition of such resources (Public Resources Code, Section 21083.2). This section establishes limitations on the cost of mitigation and prohibits imposition of mitigation measures for impacts to archeological resources that are not unique. However, the CEQA Guidelines state that the limitations in this section do not apply when an archeological resource has already met the definition of a Historical Resource [Title 14, California Code of Regulations, Section 15064.5(c)(2)].

Impacts to NRHP eligible resources are adverse "when an undertaking may alter, directly, or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association" [36 CFR 800.5(1)]. Examples of adverse effects include physical destruction or damage to all or part of the property, alteration that is not consistent with the Secretary of the Interior's standards for the treatment of historic properties, removal of the property from its historic location, change in the type of use or of the physical characteristics of the setting, introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features, and neglect resulting in deterioration [36 CFR 800.5(2)]. Note that historic properties include prehistoric archaeological sites. Archaeological sites are usually adversely affected only by physical destruction or damage, whereas all of the examples can apply to historic buildings and structures.

Impacts to CRHR eligible resources, or resources listed on local registers, constitute a significant effect on the environment (significant impacts that must be disclosed in a CEQA environmental document) if the project may cause a substantial adverse change in the significance of a historical resource. "Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" [Title 14, California Code of Regulations, Section 15064.5(b)(1)]. Materially impaired means that the historical resource will be demolished or the physical characteristics of the resource that made the resource eligible will be adversely altered such that the resource would no longer be eligible for the CRHR nor listed in a local historical register [Title 14, California Code of Regulations, Section 15064.5(b)(2)].

3.3 RANKING POTENTIAL IMPACTS TO CULTURAL RESOURCES BY ALTERNATIVE

At this Tier 1 programmatic level of analysis, individual archaeological sites were not evaluated for eligibility. Instead, the archaeological sites identified as a result of the records searches are assumed to be potentially eligible and the number of archaeological sites identified in the APE for each alternative is used as one indicator of the relative degree of potential impacts on cultural resources for that alternative, should it be selected for construction. Numbers of archaeological sites were then translated into qualitative rankings of Low, Medium, and High, which was based on the overall number of sites per corridor segment. Many of segments stretched for several miles with few or no reported cultural resources, while other locations along the segments contained concentrations of recorded sites. The average of the sites per mile was used to determine the sensitivity ranking.

In addition, the preparer's knowledge of regional prehistory was used to supplement the records search results. For example, if it is known that numerous sites have been recorded along a particular river drainage, but the records search did not yield recorded sites along the river in the APE for a particular alternative route, the preparer increased the number of sites expected for that route. Locations for which this knowledge was used are discussed under the applicable alternative in Section 4.

Specific structures from the historic period were not identified at this Tier 1 programmatic level of analysis. Instead, the percentage based on the number of miles in each alternative route that passed through areas that originally developed in specific, pre-defined historical time periods (before 1900, 1900 to 1929, and 1930 to 1958), was determined from historical maps and knowledge of the history of the region. The percentages were used as indicators of the potential for a particular alternative to impact or affect potentially eligible structures from the historical time periods. Percentages of route lengths that developed in various periods were then translated into qualitative rankings of Low, Medium, and High, as follows:

Traditional cultural properties were assessed on a presence/absence basis for each alternative route. If a traditional cultural property is present, it resulted in a "High" ranking for traditional cultural properties for that alternative route.

The Low, Medium, and High rankings for numbers of archaeological sites, percentage of the route that developed in historical periods, and presence of traditional cultural properties were combined to produce an overall ranking of Low, Medium, or High potential to impact/affect cultural resources for each alternative HST route. These rankings were again combined to provide a ranking of Low, Medium, or High potential to impact/affect cultural resources for the entire HST Alternative, and for the Modal and No-Project Alternatives within the region.

4.0 CULTURAL IMPACTS

Table 4.0 below lists each highway segment and rail option of the Sacramento to Bakersfield route for the No-Project, Modal, and High Speed Train alternatives. The number of known cultural resources, the percentage of historical development, and the presence or absence of traditional cultural properties are combined to provide an overall ranking of high, medium, or low potential for affecting cultural resources. Highway segments and rail options are evaluated using the information complied from the records search as well as qualitative assessments by the preparer.

It should be noted that known cultural resources includes prehistoric and historical isolates; prehistoric sites; and historical sites, structures, and features. Because the segments and options have varying lengths, the density of cultural resources was examined in terms of cultural resources per mile (see Table 1.3.2). An obvious danger in using such measures is that the number of known sites for a given area is related not only to the cultural sensitivity of that area but to the intensity and extent of survey coverage. In other words, an area or corridor may contain comparably more cultural resources simply because it has been subject to a greater degree of archaeological study. Fortunately, extensive and relatively recent investigations have been performed for both Union Pacific and Burlington Northern railways. Thus, cultural resources per mile measurements for rail options can be compared with confidence.

Table 4.0
Detailed Analysis/Comparison Table
Impacts to Cultural Resources
Sacramento to Bakersfield

	Number of Known Cultural Resources	Percentage of Route Developed during Historic Periods	Traditional Cultural Properties	Overall Ranking (High, Medium, Low)
No-Project*	-	-	-	Low
Modal Alternative				
I5 from SR-80 to Stockton	7	N/A	N/A	Medium
I5 from Stockton to SR-580/SR-120	4	N/A	N/A	Low/Medium
I5 from SR-580/SR-120 to SR-152	3	N/A	N/A	Low
I5 from SR-152 to SR-99	22	N/A	N/A	Low
SR-99 from I5 to SR-58	3	N/A	N/A	Low
SR-99 from Sacramento to SR-120	50	N/A	N/A	High
SR-99 from SR-120 to Modesto	2	N/A	N/A	Low/Medium
SR-99 from Modesto to Merced	52	N/A	N/A	High

	Number of Known Cultural Resources	Percentage of Route Developed during Historic Periods	Traditional Cultural Properties	Overall Ranking (High, Medium, Low)
SR-99 from Merced to SR-152	23	N/A	N/A	Medium/High
SR-99 from SR-152 to Fresno	0	N/A	N/A	Low/Medium
SR-99 from Fresno to Tulare/Visalia	11	N/A	N/A	Low
SR-99 from Tulare/Visalia to SR-58	10	N/A	N/A	Low/Medium
SR-152 from SR-99 to I5	5	N/A	N/A	Low
Sacramento Airport	4	10	N/A	Low/Medium
Fresno/Yosemite Airport	12	<1.0	N/A	Medium
High-Speed Train Alternative				
A1	49	33	N/A	High
A2	54	31	N/A	High
A3	39	28	N/A	High
A4	44	22	N/A	High
A5	40	28	N/A	Medium
A6	35	26	N/A	Medium
A7	28	22	N/A	Low
A8	25	21	N/A	Low
Sacramento Downtown Depot	0	100	N/A	High
Power Inn Road Station (BNSF Option)	0	10	N/A	Low
Power Inn Road Station (UPRR Option)	0	10	N/A	Low
Stockton ACE Downtown Station	0	N/A	N/A	High
Sacramento Maintenance Facility BNSF Alt	0	N/A	N/A	Low
Sacramento Maintenance Facility UPRR Alt	0	N/A	N/A	Low
B1	26	38	N/A	Medium
B2	14	29	N/A	Low/Medium
Modesto Downtown Station	0	N/A	N/A	Medium/High
Modesto Briggsmore Station	0	N/A	N/A	Low
C1	100	46	N/A	High
C2	101	38	N/A	Medium/High
C3	94	46	N/A	Medium/High
C4	95	37	N/A	Medium/High

	Number of Known Cultural Resources	Percentage of Route Developed during Historic Periods	Traditional Cultural Properties	Overall Ranking (High, Medium, Low)
C5	39	33	N/A	Medium
C6	39	27	N/A	Medium
C7	33	33	N/A	Medium
C8	33	27	N/A	Low/Medium
C9	60	34	N/A	Medium
C10	60	34	N/A	Medium
C11	1	21	N/A	Low
C12	1	21	N/A	Low
C13	50	20	N/A	Low/Medium
C14	64	27	N/A	Medium
C15	50	19	N/A	Low/Medium
C16	82	27	N/A	Medium
Merced Downtown Station	0	N/A	N/A	Low/Medium
Merced Municipal Airport Station	0	N/A	N/A	Low
Castle Air Force Base Station	0	N/A	N/A	Low
D1	10	22	N/A	Low/Medium
D2	10	17	N/A	Low/Medium
D3	5	27	N/A	Low
D4	5	21	N/A	Low
D5	11	36	N/A	Low/Medium
D6	11	28	N/A	Low/Medium
D7	16	30	N/A	Low/Medium
D8	16	23	N/A	Low/Medium
Fresno Downtown Station	0	100	N/A	High
E1	18	32	N/A	Medium/High
E2	5	20	N/A	Low/Medium
Visalia Airport Station	0	N/A	N/A	Low
Hanford Station	0	N/A	N/A	Medium/High
F1	34	31	N/A	Medium
F2	33	27	N/A	Medium
F3	24	28	N/A	Medium
F4	23	23	N/A	Medium
F5	13	20	N/A	Low/Medium
F6	12	15	N/A	Low/Medium
F7	34	31	N/A	Medium
F8	33	27	N/A	Medium
F9	24	28	N/A	Medium
F10	23	23	N/A	Medium
F11	13	20	N/A	Low/Medium

	Number of Known Cultural Resources	Percentage of Route Developed during Historic Periods	Traditional Cultural Properties	Overall Ranking (High, Medium, Low)
F12	12	15	N/A	Low/Medium
F13	29	28	N/A	Medium
F14	19	24	N/A	Medium
F15	35	36	N/A	Medium
F16	34	32	N/A	Medium
F17	25	33	N/A	Medium
F18	24	29	N/A	Medium
F19	42	36	N/A	Medium
F20	41	32	N/A	Medium
F21	32	33	N/A	Medium
F22	31	29	N/A	Medium
F23	15	29	N/A	Medium
F24	14	24	N/A	Medium
Bakersfield Airport Station	0	N/A	N/A	Medium/High
Golden State Station	0	N/A	N/A	Medium
Truxton (Union Avenue) Station	0	N/A	N/A	Medium/High
Truxtun (Amtrak) Station	0	N/A	N/A	Medium/High
Main Maintenance Facility BNSF Alt	0	N/A	N/A	Low
Main Maintenance Facility UPRR Alt	0	N/A	N/A	Low

N/A = not available

4.1 NO-PROJECT ALTERNATIVE

The No-Project Alternative involves only those transportation improvements that have been programmed and funded. They include localized changes to the transportation system – a new or improved interchange, installation of carpool or high occupancy lanes, selective highway widenings, expansions of airport passenger terminals and parking, and track and station upgrades on the conventional passenger rail system. Given the nature of these improvements, the impacts, if any, would be geographically and physically limited. Compared to the more extensive Modal and HST Alternatives, the No-Project Alternative would trigger less environmental impact. Nonetheless, this statement is not intended to suggest that the No-Project would *not* have adverse effects. In fact, it is anticipated that collectively the various improvements programmed and funded in the State Transportation Improvement Program, Regional Transportation Plans, Airport Master Plans, and intercity passenger rail plans would have impacts, many of which will require mitigation measures to reduce the effects.

Impacts of the No-Project Alternative would be expected both during the construction period and during the long-term operational period. The effects would occur throughout the Central Valley, primarily along the highways where the majority of the funded and programmed improvements are proposed, and at two of the region's airports, Sacramento Metropolitan and Fresno Yosemite International. With respect to the roadway improvements, impacts to cultural resources would be greatest in those segments proposed for

widening:

- In Sacramento County, SR 99 from I-5 to Elkhorn Boulevard in Sacramento (Sacramento County)
- I-5 from I-80 to North Market Boulevard (for auxiliary lanes in Sacramento County)
- I-5 from Del Paso Road to SR 99 (for auxiliary lanes in Sacramento County)
- I-5 from Monte Diablo to Country Club (for auxiliary lane in Stockton, San Joaquin County)
- I-5 from Monte Diablo undercrossing to Hammer Lane (Stockton, San Joaquin County)
- I-5 from I-205 to SR 120 northbound (San Joaquin County)
- I-5 from Hammer Lane to Eight Mile Road (Stockton, San Joaquin County)
- SR 99 from Hammer Lane to north of Crosstown Freeway (Stockton, San Joaquin County)
- I-580 from Patterson Pass to Alameda/San Joaquin county line (San Joaquin County)
- SR 99 from south of Jensen Avenue to Ventura Street (for auxiliary lane in Fresno County)
- SR 99 from south of South Pacific and Biola Junction Bridge to Fresno/Madera county line (Fresno County)
- SR 99 from Goshen to SR 201 (Fresno/Tulare County)
- SR 99 from SR 201 to Floral (Fresno County).

Impacts are expected to occur whether or not the project build alternatives are constructed and implemented. Each of the proposed intercity travel demand improvements of the No-Project Alternative has been or will be subject to it own environmental clearance process and potential mitigation measures will be identified as part of those individual CEQA and/or NEPA reviews to address substantial impacts.

4.2 MODAL ALTERNATIVE

At present, it is assumed that improvements and modifications to the segments and terminals included in the Modal Alternatives will be constructed as a whole. Thus, the segments are not evaluated in terms of preferred routes, but rather culturally sensitive areas are identified within the study area of this alternative for future consideration.

Compared to the No-Project Alternative, the Modal Alternative has a marked increased on impacts to cultural resources. The level of sensitivity varies for each Modal route, however.

Interstate 5 and State Route 152 pass through areas containing a low potential for historical structures as well as few recorded cultural resources. Interstate 5 avoids almost all of the developed areas in the Central Valley; with the exception of the Sacramento area, it is likely to contain few, if any historically important resources. Similarly, State Route 152 passes through Los Banos, but no other areas of historic sensitivity. The numbers and degree of investigations along Interstate 5 and State Route 152 have not been as extensive, especially compared to that of State Route 99; and the potential for encountering prehistoric sites is considered at least moderate for both routes.

Fresno and Sacramento airports were built far from the historical parts of their respective towns, although certain aspects of the surrounding area of each terminal possess a moderate to high potential for historic resources. The National Guard encampment adjacent to the Fresno Yosemite International Airport contains several recorded historical structures. The Yolo River flows just west of the Sacramento

International air terminal; four known historical sites lie east of the river near the airport; and the presence of a major water source increases the likelihood that prehistoric sites exist nearby.

By far the highest concentration of cultural resources for the Modal segments lies along State Route 99, particularly on the stretch between State Route 120 and Merced. For the most part, State Route 99 parallels the Union Pacific rail line–the oldest railway in the Central Valley–and passes through many of the historic areas of the smaller towns between Sacramento and Bakersfield. Moreover, it crosses dozens of historic agricultural canals and farmsteads. It should be noted that although Tier 2 level of analysis is not within the scope of this report, many of the pre-1960 buildings that lie along State Route 99 have been preliminary or formally evaluated using NRHP criteria.

4.3 HIGH SPEED TRAIN ALTERNATIVE

4.3.1 Corridor A: Sacramento to Stockton

Generally speaking, the areas with the highest sensitivity for Corridor A—both in terms of the number of known cultural resources and the potential for historical structures—lie in downtown Sacramento and along the Union Pacific Railroad. Options 1—4 begin at the Sacramento downtown depot in the oldest section of the city. Given a proposed 1000 foot APE corridor, construction of a rail line through the downtown area involves potential impacts to five known historical sites, two city preservation areas, and one State Historic Landmark in the first 2.5 miles alone. By contrast, the Power Road Inn Station is situated in a part of the city that was developed much later and involves a comparably low risk to impact cultural resources.

The preponderance of cultural resources between Sacramento and Stockton are historical structures or features related to the development of the railroad. The majority of these lie along the Union Pacific line. Options that include long segments of the UP route entail a greater potential to impact historical structures, primarily because they passes through Elk Grove and Galt, two towns established in the mid-1800s. By contrast, although the BNSF line does pass by historic homesteads and ranches, it generally avoids developed areas.

The site of the proposed Stockton downtown station ranks high in the potential for historical buildings, and its construction would undoubtedly have some impact to cultural resources. But because the station is included in all proposed routes, it does not serve as a basis for comparisons among the options (though the sensitivity of this area should warrant consideration prior to and during construction).

Based on the information above, Option A8 has the lowest potential to encounter cultural resources within Corridor A. It begins at the Power Inn Road Station, thereby avoiding downtown Sacramento, and generally follows the BNSF line.

4.3.2 Corridor B: Stockton to Modesto

That only two options are considered for Corridor B greatly simplifies the analysis for Corridor B. About 50 historic resources lie between Stockton and Modesto and are distributed equally between Options B1 and B2. Most of these are historical structures that have been previously evaluated. The historical sensitivity associated with each option would also appear to be similar: Option B1 has a lower potential for structures but terminates at the Modesto downtown station, which is situated in a moderate-highly sensitive part of the city and near two historical structures eligible for the NRHP; Option B2 has a somewhat higher potential for structures but ends at the Modesto Briggsmore Station, located in an undeveloped area. Although the options appear to be similar with respect to their possible impacts on cultural resources, B2 is the better overall option since it is compatible with Option 8 above and Options C8, C11, and C12 below.

4.3.3 Corridor C: Modesto to Merced

By far the highest density of sites as well as the greatest variability among options occurs in Corridor C. About two-thirds of the over 150 recorded resources that lie along Corridor C are concentrated in two areas: along a segment of the UP line between Keyes and Atwater, which includes two structures eligible for the NRHP, and at the former Castle Air Force Base. It should be noted that most of these resources are historical structures that have been previously evaluated.

The potential for historical structures is somewhat greater along the Union Pacific route. Towns located along the UP date to the 1870s, when they were originally established as railroad stations during initial construction of the UP line. Towns such as Cressey and Winton were developed after the construction of the BNSF in the early 1900s. The specific locales of the three proposed stations associated with this corridor are considered to have low-moderate potential for historical structures, although the Merced downtown station is situated in a moderately-highly sensitive area.

Based on the information above, Options C11 and C12 clearly avoid culturally sensitive areas within Corridor C, therefore having equally low potential to affect cultural resources. Both begin at the BNSF route in Corridor B and use with the Merced Airport Terminal Station, though C11 eventually connects with the UP line and C12 with the BNSF line in Corridor D. With a slightly higher likelihood to impact cultural resources, C8 is also a viable option. Connecting with the BNSF line in Corridor B, Option C8 arrives at the downtown Merced station before proceeding to the BNSF line in Corridor D.

4.3.4 Corridor D: Merced to Fresno

The paucity of known cultural resources in Corridor D is somewhat deceiving. All eight options utilize the downtown Fresno station located in the Chinatown Historic District; and although the downtown area exhibits a comparably low number of recorded structures, this is probably more a result of relatively few historical investigations being performed in the study area than a lack of historic structures in downtown Fresno.

Similarly, no recorded sites exist in the area where all eight options cross the San Joaquin River, even though river banks are typically prime locales for prehistoric sites and numerous surveys have been performed along the San Joaquin River in the past quarter century. Nonetheless, this area is considered highly sensitive, since cultural material may be covered by alluvial river deposits and could be easily unearthed during ground-disturbing activity. Archaeological sites buried under as much as 1 meter of alluvium have recently been discovered in other locations along the San Joaquin River banks near the project area (Flint 2001). Moreover, ethnographic accounts refer to an indigenous village located in the immediate vicinity, though this habitation site has not yet been found.

Options D2, D4, D6, and D8 include extended loops that begin near the San Joaquin River, follow a south to southeasterly route, and re-connect with their respective line southeast of Fresno. Like many of the ancillary routes for the HS Train alternative in general, these loops proceed through undeveloped agricultural lands that have been subject to little, if any, investigation. Although the potential for encountering cultural resources in such areas is considered low, options with extended and predominantly un-surveyed loops carry an additional element of uncertainty in assessing their possible impact to cultural resources.

Based on the information above, Options D2, D3, D4, and D6 exhibit the lowest potential to impact cultural resources.

4.3.5 Corridor E: Fresno to Tulare

Within Corridor E, there are over three times as many known cultural resources located along the UP line. Moreover, the UP route passes through the older communities of Kingsburg and Selma thereby increasing potential for historic structures along these segments. Consequently, because it generally follows the BNSF line, Option E2 is the favorable choice. It should be noted that the segment of Option E2 between Laton and Hanford has not been previously surveyed for cultural resources and that this option includes the Hanford Station, which lies in a moderately-highly sensitive area for historic structures. In addition, because it connects with the BNSF in Corridor D, Option E2 is only compatible with Option D2 above.

4.3.6 Corridor F: Tulare to Bakersfield

Corridor F contains 24 alignment options. As in Corridor D, many of these options contain extended loops or connectors covering areas that have not been previously surveyed. Corridor F, also like Corridor D, includes a highly sensitive archaeological area—the Tulare Lake Basin—where some of the oldest deposits in North America have been found (Riddell and Olsen 1969).

All options are equally moderate in their potential to encounter historical buildings. Sensitive areas and locales in this corridor include downtown Bakersfield and the Santa Fe Railroad Station, which has been nominated to the NRHP. Main Maintenance Facilities offer the lowest probabilities for historical buildings, while the sites for the proposed stations have moderate to moderately high potentials to encounter historical buildings.

Although the differences between options to encounter cultural resources and historic structures are not outstanding, Options F5, F6, F11, F12, F23, and F24 retain the lowest potential based on the available information. All six begin at a BNSF connection point and are thus compatible only with Option E2; they do, however, offer several combinations of station use (Bakersfield Airport, Truxtun-Union Avenue, Truxtun-Amtrak) and termination points (Wheeler ridge, SR 58). It should be noted that all six options also include the segment of the BNSF route that passes through the Tulare Lake Bed. Although no known archaeological lie within the project area, the potential for sub-surface deposits is high in this area.

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6.0 PREPARERS

Barry A. Price Lead Analyst, Division Manager	M.A. Cultural Resources Management: Sonoma State University 30 years of experience in prehistoric and historic archaeology and cultural resources management. • Project Oversight and Administration • Technical Editor
Sandra S. Flint Analyst, Senior Archaeologist	M.A. Anthropology: California State University, Chico 23 years of experience in prehistoric and historic archaeology and cultural resources management. • Project Manager • Archaeological Research • Document Preparation
Randy M. Baloian Analyst, Project Administrator	M.A. Anthropology, University of California, Davis 3 years of experience in prehistoric and historic archaeology and cultural resources management. • Archaeological Research • Document Preparation
Jay B. Lloyd Analyst, Staff Archaeologist	M.A. Linguistics: University of California, Santa Cruz 5 years of experience in linguistics, prehistoric and historic archaeology, and cultural resources management. • Archaeological Research

APPENDICES

APPENDIX – A

Corridor and Design Options for High-Speed Train Alternative

CORRIDOR AND DESIGN OPTIONS FOR HIGH-SPEED TRAIN ALTERNATIVE

SACRAMENTO TO BAKERSFIELD

Corridor Definition

The Central Valley region has been divided into six discrete corridors:

Corridor A, Sacramento to Stockton

Corridor B, Stockton to Modesto

Corridor C, Modesto to Merced

Corridor D, Merced to Fresno

Corridor E, Fresno to Tulare

Corridor F, Tulare to Bakersfield

Design Options

There are two or more HST alignment alternatives within each Corridor, distinguished by parallel route (UPRR or BNSF), station site served, route connection (UPRR or BNSF) to the south, and station configuration (off-line "loop" or standard). HST alternatives are shown on the alignment exhibits in this Appendix.

Within the Sacramento to Bakersfield region, the HST project would be built primarily at-grade. With the exception of specific and localized grade separations, which may include structures to carry the HST alignment over existing roadway or railroad facilities, proposed aerial structures within the Central Valley would include those listed below. The specific location, number, and length of structures will be determined during the next phase of design.

Aerial Structure Locations			
HST Alignment Option(s)	**Aerial Structure Location**	**Approximate Limits**	**Length (ft)**
Corridor A			
Sacramento Depot alignments: A1 thru A4	Sacramento	Sacramento Downtown Depot to the Elvas Wye	17,000
Sacramento Depot alignments parallel to UPRR north of Stockton: A1, A3	Sacramento	Folsom Blvd to 14th Avenue	6,000
All alignments: A1 thru A8	Stockton	Harding Way to Mormon Slough	7,000
Corridor B			
Modesto Downtown Station alignment: B1	Modesto	Kansas Avenue to Tuolumne River	9,000
Modesto Briggsmore Station alignment: B2	Escalon	Yosemite Avenue to St. John Road	5,000
Modesto Briggsmore Station alignment: B2	Riverbank	South of Patterson Road to Claribel Road	7,000
Corridor C			
All alignments parallel to UPRR north of Merced: C1, C2, C3, C4, C9, C10	Turlock	Broadway to Berkeley Avenue	12,000

Aerial Structure Locations			
HST Alignment Option(s)	**Aerial Structure Location**	**Approximate Limits**	**Length (ft)**
All alignments parallel to UPRR north of Merced: C1, C2, C3, C4, C9, C10	South of Delhi	High Fine Canal to Merced River	8,000
All alignments parallel to UPRR north of Merced: C1, C2, C3, C4, C9, C10	Atwater	Atwater Canal/Jordan Canal to SR99 Overpass	13,000
Corridor D			
All alignments parallel to UPRR north of Fresno: D5, D6, D7, D8	Madera	Fresno River to Olive Avenue	8,000
All alignments: D1 thru D8	Fresno	Ashlan Avenue to Clinton Avenue	12,000
All alignments: D1 thru D8	Fresno	Belmont Avenue to SR180 Overpass	4,000
Corridor E			
Visalia Airport Station alignment: E1	Selma	Floral Avenue to Nebraska Avenue	8,000
Hanford Station alignment: E2	Hanford	11th Avenue to south of 3rd Street	6,000
Corridor F			
All alignments thru Tulare: F1, F2, F7, F8, F13, F15, F16, F19, F20	Tulare	Prosperity Avenue/Avenue 240 to Bardsley Avenue	11,000
All alignments parallel to UPRR north of Bakersfield: F1 thru F4, F7 thru F10, F13 thru F22	Delano	Cecil Avenue to High Street	8,000
All alignments parallel to BNSF north of Bakersfield: F5, F6, F11, F12, F23, F24	Corcoran	Orange Avenue to Pickerell Avenue	6,000
All alignments parallel to BNSF north of Bakersfield: F5, F6, F11, F12, F23, F24	Shafter	Tulare Avenue to Lerdo Highway	4,000
Truxtun (Amtrak) Station (without loop) alignments parallel to UPRR north of Bakersfield: F15 thru F18	Famoso	North of Poso Creek to south of SR99	16,000
Bakersfield Airport Station, Golden State Station, Truxtun (Union Avenue) Station, and Truxtun (Amtrak) Station (with high-speed loop) alignments: F1 thru F6, F7 thru F12 F13, F14, F19 thru F22	Bakersfield	North of Norris Road to Olive Drive	6,000
Bakersfield Airport Station, Golden State Station, Truxtun (Union Avenue) Station, and Truxtun (Amtrak) Station (with high-speed loop) alignments: F1 thru F6, F7 thru F12 F13, F14, F19 thru F22	Bakersfield	Beale Avenue to Mount Vernon Avenue	7,000
Truxtun (Amtrak) Station alignments: F15 thru F24	Bakersfield	North of Mohawk Street to Carrier Canal	8,000
Truxtun (Amtrak) Station alignments: F15 thru F24	Bakersfield	F Street to Truxtun Avenue	14,000