3.14 Agricultural Lands

3.14.1 Introduction

This section describes the regulatory setting and affected environment for agricultural lands and identifies potential project impacts on these lands and associated mitigation measures. Because there are no forests between Fresno and Bakersfield, forest lands are not discussed.

The Statewide Program EIR/EIS (Authority and FRA 2005) concluded that the project would have a significant impact on agricultural lands and committed to mitigation strategies and design practices to reduce those effects. These mitigation strategies and design practices include avoiding farmland when selecting the HST alignment, situating the alignment adjacent to existing railroad rights-of-way or U.S. Geological Survey section lines that divide properties, and securing conservation easements to mitigate impacts. Additionally, to the extent possible, the HST project has been designed to avoid existing railway spurs that service agricultural businesses (e.g., by using overpasses).

Sections 3.4 Noise and Vibration; 3.8 Hydrology and Water Resources; 3.12 Socioeconomics, Communities, and Environmental Justice; 3.13 Station Planning, Land Use, and Development; and 3.18 Regional Growth, provide additional information about issues related to agricultural lands, including noise, irrigation, agricultural economics, rural housing, agricultural zoning, and effects of future urban development on farmlands.

3.14.2 Laws, Regulations, and Orders

The following sections summarize key laws and regulations for agricultural lands relevant to the proposed project.

A. FEDERAL

Farmland Protection Policy Act of 1981– [7 U.S.C. Sections 4201 to 4209 and 7 CFR Part 658]

The Farmland Protection Policy Act (FPPA, 7 U.S.C. Section 4201 et seq.) is intended to protect farmland and requires federal agencies to coordinate with the U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), if their activities may irreversibly convert farmland to nonagricultural use, either directly or indirectly. The stated purpose of the FPPA is to "minimize the extent to which federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses." The FPPA requires federal agencies to examine potential direct and indirect effects to farmland of a proposed action and its alternatives before approving any activity that would convert farmland to nonagricultural use. USDA issues regulations to implement the FPPA (7 Code of Federal Regulations [CFR], Chapter VI Part 658).

For the purpose of FPPA, "Important Farmland" includes prime farmland, unique farmland, and farmland of statewide or local importance, as defined by Section 1540(c)(1) of the FPPA. Classification standards differ from state to state; each state may set its own criteria for classification in each category. Federal farmland classification criteria may differ from those developed by the California Department of Conservation (DOC), which are described in Section 3.14.2.B, Regional and Local Regulatory Framework. Farmland subject to FPPA requirements can be forestland, pastureland, cropland, or other land, but not water or urban built-up land.

The FPPA exempts the following land types:

- Soil types not suitable for crops, such as rocky terrain or sand dunes.
- Sites where the project's right-of-way is entirely within a delineated urban area and the project requires no prime or unique farmland, nor any farmland of statewide or local importance.
- Farmland that has already been converted to industrial, residential, or commercial or is used for recreational activity.

The FPPA applies to projects and programs sponsored or financed in whole or in part by the federal government. FPPA implementing regulations spell out requirements to ensure that federal programs, to the extent practical, are compatible with state, local, and private programs and policies to protect farmland. The FPPA requires a rating of farmland conversion impacts based on land evaluation and site assessment criteria identified in 7 CFR Part 658.5. These criteria are addressed through completion of a Farmland Conversion Impact Rating for Corridor Type Projects (NRCS-CPA-106) form, which requires input from both the federal agency involved and from the NRCS.

B. STATE

California Land Conservation Act of 1965 (California Government Code S.51200-51295) (also known as the Williamson Act)

The California Land Conservation Act (Government Code Section 51200 et seq.) of 1965, commonly known as the Williamson Act, provides a tax incentive for the voluntary enrollment of agricultural and open space lands in contracts between local government and landowners. The contract restricts the land to agricultural and open space uses and compatible uses defined in state law and local ordinances. Local government establishes an agricultural preserve defining the boundary within which a city or county will enter into contracts with landowners. Local governments calculate the property tax assessment based on the actual land use instead of the potential land value assuming full development.

Williamson Act contracts are for 10 years and longer. The contract is renewed automatically each year, maintaining a constant, 10-year contract, unless the landowner or local government files to initiate nonrenewal. Should that occur, the Williamson Act would terminate 9 years after the filing of a notice of nonrenewal. Only a landowner can petition for a contract cancellation. Tentative contract cancellations can be approved only after a local government approves, but the landowner pays the cancellation fee.

California has the following policies regarding public acquisition of and locating public improvements on lands in agricultural preserves and on lands under Williamson Act contracts (Government Code Sections 51290–51295):

- State policy is to avoid locating federal, state, or local public improvements and improvements of public utilities, and the acquisition of land, in agricultural preserves.
- State policy is to locate public improvements that are in agricultural preserves on land other than land under Williamson Act contract.
- State policy is that any agency or entity proposing to locate such an improvement, in considering the relative costs of parcels of land and the development of improvements, give consideration of the value to the public of land, particularly prime agricultural land, in an agricultural preserve.

Since 1998, another option in the Williamson Act Program has been established with the creation of Farmland Security Zone contracts. A Farmland Security Zone is an area created within an agricultural preserve by a board of supervisors upon the request of a landowner or group of landowners. Farmland Security Zone contracts offer landowners greater property tax reductions and have a minimum initial term of 20 years. Like Williamson Act contracts, Farmland Security Zone contracts renew annually unless an owner files a notice of nonrenewal.

Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP) is the only statewide land use inventory conducted on a regular basis. The California DOC administers the FMMP, under which it maintains an automated map and database system to record changes in agricultural land use. "Important Farmland" under the FMMP is listed by category, as described below. The categories are defined according to USDA land inventory and monitoring criteria, as modified for California:

- **Prime Farmland** – Prime Farmland is land with the best combination of physical and chemical features to sustain long-term agricultural crop production. These lands have the soil quality, growing season, and moisture supply necessary to produce sustained high yields. Soil must meet the physical and chemical criteria determined by the NCRS. Prime Farmland must have been used for production of irrigated crops at some time during the 4 years prior to the FMMP's mapping date.

- **Farmland of Statewide Importance** – Farmland of Statewide Importance is similar to Prime Farmland but with minor differences, such as having greater slopes or soils with a lesser ability to store moisture. Farmland of Statewide Importance must have been used for production of irrigated crops at some time during the 4 years prior to the mapping date.

- **Unique Farmland** – Unique Farmland has lesser quality soils than Prime Farmland or Farmland of Statewide Importance. Unique Farmland is used for producing the state's leading agricultural crops. These lands usually are irrigated, but may include non-irrigated orchards or vineyards found in some climatic zones. Unique Farmland must have been used for crops at some time during the 4 years prior to the mapping date.

- **Farmland of Local Importance** – Farmland of Local Importance is farmland that is important to the local agricultural community as determined by each county's board of supervisors and local advisory committees.

The FMMP focuses on agricultural land that has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained yields of crops. Farmland of local importance can cover a broader range of agricultural uses and is initially identified by a local advisory committee (LAC) convened in each county by FMMP in cooperation with the U.S. Natural Resources Conservation Service and the county board of supervisors. In Fresno, Kings, and Tulare counties, confined livestock, dairy, and poultry facilities are included as farmland of local importance. Fresno County includes dryland farming and grazing land in this category while Tulare County includes dryland farming in farmland of local importance. There is no farmland of local importance in Kern County (DOC 2004).

California Farmland Conservancy Program Act (Public Resources Code Sections 10200 to 10277)

This act provides a mechanism for the DOC to establish agricultural conservation easements on farmland. Agricultural conservation easement or easement means an interest in land, less than fee simple, which represents the right to prevent the development or improvement of the land for any purpose other than agricultural production. The easement is granted for the California Farmland Conservancy Program by the owner of a fee simple interest in land to a local

government, nonprofit organization, resource conservation district, or to a regional park or open-space district or regional park or open-space authority that has the conservation of farmland among its stated purposes or as expressed in the entity's locally adopted policies. It shall be granted in perpetuity as the equivalent of covenants running with the land. The landowner may make a request to the DOC that the easement be reviewed for possible termination 25 or more years from the date of sale of the agricultural conservation easement.

C. REGIONAL AND LOCAL

The regional and local plans and policies addressing preservation and protection of farmlands that were identified and considered in the preparation of this analysis are summarized in Table 3.14-1. The San Joaquin Valley Blueprint planning process resulted in a regional plan – the B+ Scenario - that is intended to help preserve agricultural land by focusing new development in urban centers. By 2050, implementation of the regional plan is estimated to reduce the conversion of farmland in the San Joaquin Valley relative to current land use patterns by 118,000 acres (San Joaquin Valley Regional Planning Agencies 2009). On behalf of the eight councils of government that participated in the blueprint process,1 the Council of Fresno County Governments initiated preparation of the Valley Blueprint Roadmap in early 2010. This roadmap provides implementation strategies and tools to guide local planning decisions in the direction needed to realize the values expressed by residents throughout the San Joaquin Valley. The regional plan established by the San Joaquin Valley Blueprint includes development of the HST in the BNSF corridor with stations in Fresno, Hanford, and Bakersfield (San Joaquin Valley Regional Planning Agencies 2009). The HST would provide an alternative transportation mode to valley residents, thus reducing reliance on passenger vehicles. It would also promote concentration of growth in existing urban centers. The following local plans and policies were identified and considered in the preparation of this analysis.

Table 3.14-1
Regional and Local Plans and Policies

Policy Title	Summary
Fresno County	
Fresno County General Plan (Goal LU-A) (Fresno County 2003)	Contains policies for the use of agricultural lands in the county. The policies are as follows: Maintain agriculturally designated areas for agriculture use and direct urban growth away from valuable agricultural lands to cities, unincorporated communities, and other areas planned for development where public facilities and infrastructure are available (Agriculture, Goal LU-A, Policy LU-A.1). Protect agricultural activities from encroachment of incompatible land uses (Agriculture, Goal LU-A, Policy LU-A.12). Protect agricultural operations from conflicts with nonagricultural uses by requiring buffers between nonagricultural uses and agricultural operations (Agriculture, Goal LU-A, Policy LU-A.13). Include an assessment of the conversion of productive agricultural lands and mitigation, where appropriate, in review of discretionary permits (Agriculture, Goal LU-A, Policy LU-A.14). Accept California Land Conservation contracts on designated agricultural lands subject to the location, acreage, and use limitations of the county (Agriculture, Goal LU-A, Policy LU-A.17).

[1] The 8 county council of governments participating in the blueprint process are Stanislaus, San Joaquin, Merced, Madera, Fresno, Kings, Tulare, and Kern.

Table 3.14-1
Regional and Local Plans and Policies

Policy Title	Summary
Fresno County Zoning Ordinance	Designates agricultural land use districts (Sections 816, 817, and 819) to preserve, develop, and grow the agricultural community in the county.
City of Fresno	
City of Fresno General Plan (City of Fresno 2009)	Contains policies that focus on the relationship between the city and farmlands outside the city limits, protecting existing uses from "untimely" conversion (Objective G-6). The policies are as follows: Allow for continued agricultural use of vacant land in the city consistent with standards for the protection of the environment; public safety and well-being; and the planned, orderly, and efficient development of the urban area (Policy G-6-a). Continue to recognize the City's agricultural preserve contracts (i.e., Williamson Act contracts) and promote the enrollment of prime farmland that remains outside of its anticipated urban growth area. Scenic or resource conservation easements should be explored as another means for protecting farmland (Policy G-6-b). Where possible, major streets will be used as boundaries between areas designated for urban development and agriculture (Policy G-6-c). When land proposed for urban development directly abuts active farmed land under an agricultural preservation contract, which has not had an application for cancellation or a Notice of Nonrenewal filed, appropriate design features need to be incorporated into the development project to buffer the agriculture/urban interface. Design features should include the following, or equivalent measures, to create an adequate buffer (Policy G-6-d): Wider building setbacks with fencing. Designated open space (including but not limited to: densely landscaped strips, full-width multiuse trails or bikeways, onsite flood control, drainage or recharge facilities) and/or boundary streets.
Kings County	
Kings County 2035 General Plan (Kings County 2010)	Contains goals, objectives, and policies for protecting agricultural lands. The goals are as follows: Maintain large parcel sizes, preventing the development of incompatible urban uses, maintaining agricultural land use designations, and encouraging participation in agricultural preservation programs in locations that will not conflict with planned urban growth (Land Use, Goals B1 and B2). Require mitigation for the loss of agricultural land through encouragement of Williamson Act contracts, farmland security zone contracts, and conservation easements in locations that will not conflict with planned urban growth, and through conservation of soils and control of soil erosion (Resource Conservation Goals B1, C1, and C2).

Table 3.14-1
Regional and Local Plans and Policies

Policy Title	Summary
Kings County Zoning Ordinance	Establishes County policy to protect agricultural land, operations, and facilities from conflicting uses due to the encroachment of incompatible, nonagricultural uses in agricultural areas of the county; and to advise developers, owners, and subsequent purchasers of property of the inherent potential inconveniences and discomforts often associated with agricultural activities and operations (Ordinance Number 608, Section 2, 3-5-02, Chapter 14, Article IV, Division 1, Section 14-38). Establishes zoning regulations for the AG-20 General Agricultural-20 District, AX Exclusive Agricultural District, AL-10 Limited Agricultural-10 District, and AG-40 General Agricultural-40 District.
City of Hanford	
City of Hanford General Plan (City of Hanford 2002)	Contains policies and programs to support the preservation of agricultural lands around the periphery of Hanford by imposing land use buffers, planning coordination with Kings County, agricultural land use designations, management of Williamson Act contracts, and guidance of urban development within the existing urbanized areas of the city (Objectives OCR 1 and 6).
Hanford Municipal Code	Contains zoning regulations for the Conservation and Open Space District and the Agricultural District within city limits (Title 17).
City of Corcoran	
Corcoran City Code	Designates an Agricultural District (Title 11, Chapter 6) to protect agricultural land from conversion to nonagricultural uses, and establishes City policies to support and recognize the importance of the agricultural industry in the city's economy and to promote good neighbor policies between agricultural and nonagricultural properties within city limits.
Tulare County	
Tulare County General Plan (Tulare County 2008)	Contains goals and policies for preserving agriculture as the primary land use in the county, coordinating with state and federal agricultural regulations, promoting the use of Williamson Act contracts, and implementation of resource management programs (Chapter 3, Agriculture). Also contains policies regarding Williamson Act cancellation, the use of conservation easements, urban growth management, land use buffers, right-to-farm noticing, and the improvement of regional transportation to improve agricultural goods movement.
Tulare County Code of Ordinances	Outlines the procedure for recording a Right-to-Farm Notice, designed to conserve, enhance, and encourage agricultural operations, and to minimize potential conflict between agricultural and nonagricultural land uses within the county (Part VII, Chapter 29).
Tulare County Zoning Ordinance	Establishes zoning regulations for the AE, Exclusive Agricultural Zone; AE-10, Exclusive Agricultural Zone, 10-Acre Minimum; AE-20, Exclusive Agricultural Zone, 20-Acre Minimum; AE-40, Exclusive Agricultural Zone, 40-Acre Minimum; AE-80, Exclusive Agricultural Zone, 80-Acre Minimum; A-1, Agricultural Zone; and AF, Foothill Agricultural Zone, respectively.

Table 3.14-1
Regional and Local Plans and Policies

Policy Title	Summary
Kern County	
Kern County General Plan (Kern County Planning Department 2007)	Contains policies that outline measures for the long-term retention of agriculture, timber, and other resource lands through participation in the Williamson Act Program and Farmland Security Zone Contracts, protection from incompatible land uses, and the orderly expansion of urban development (Policies 1.9-3, 1.9-5, 1.9-7, 1.9-8, 1.9-9, 1.9-12, 1.9-13, and 1.9-21 through 1.9-24).
Kern County Code of Ordinances	Outlines the right-to-farm policy of the county and establishes nuisance guidelines for agricultural uses (Title 8, Chapter 5.56.010). Provides zoning regulations for an Exclusive Agriculture District and a Limited Agriculture District (Title 19, Chapter 19.12 and 19.14).
City of Wasco	
City of Wasco General Plan (City of Wasco 2002)	Contains policies to encourage the preservation of prime farmland and farmland of statewide importance through the management of urban development, support of taxation laws that support agricultural land use, land use regulation for the conservation of soils, and the establishment of permanent agricultural preserves within the city limits (Objectives A and B of the Agricultural Element).
City of Wasco Municipal Code	Outlines the management of Williamson Act contracts in Wasco, including noticing procedures for nonrenewal and procedures for cancellation (Chapter 17.64). Establishes City policy to preserve, protect, and encourage the use of viable agricultural lands and to provide notification of the City's recognition and support of persons' and/or entities' right to farm (Chapter 17.66).
City of Shafter	
City of Shafter General Plan (City of Shafter 2005)	Contains policies for the protection and preservation of agricultural lands through land use buffers, managed urban growth, coordination with Kern County, and pursuit of Agricultural Conservation Easements within the city limits (Policies 2.4.2 through 2.4.6 and 2.4.8 through 2.4.11).
City of Shafter Code of Ordinances	Outlines procedures for application processing, notices of nonrenewal, and cancellations of agricultural preserve contracts within the city limits (Title 18, Chapter 18.04).
City of Bakersfield	
Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007)	Contains policies and programs outline for planned management, conservation, and wise use of agricultural land in the Bakersfield area; promotion of soil conservation; minimization of development of prime agricultural land; and managed urban development within the city limits (Goals 1 through 3 of the Conservation Element).
Bakersfield Municipal Code	Establishes zoning regulations for the Agricultural Zone district within the city limits (Title 17, Chapter 17.32).

3.14.3 Methods for Evaluating Impacts

The methods for evaluating project impacts include using geographic information system (GIS) tools. Recently available FMMP spatial data for Fresno, Kings, Tulare, and Kern counties provided by the DOC identify Important Farmland (i.e., Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance) and Grazing Land (DOC 2008). The DOC also provided spatial data for agricultural lands protected under Williamson Act

and Farmland Security Zone (FSZ) contracts. Together, this information provided the basis for calculating land use changes. Several conservation organizations (e.g., land trusts) provided information about agricultural conservation easements.

To calculate the permanent conversion of Important Farmlands to nonagricultural use, the acreage for the project footprint for each alternative was quantified and identified as being permanently converted to HST use. In addition, analysts examined farmland severance on a parcel-by-parcel basis for each alternative to identify where severance would create two parcels, and result in remainder parcel(s) that would be too small to be farmed economically. The quantity of the non-economic remainder parcels was then added to the footprint quantity to identify total Important Farmland converted to nonagricultural use for each alternative.

In addition to evaluating changes to Important Farmland using FMMP data, NRCS staff and project analysts conducted a farmland conversion impact rating of project alternatives using Form NRCS-CPA-106 in accordance with FPPA criteria. NRCS completed the land evaluation portion of the NRCS-CPA-106 form, considering the acreage of converted farmland (as defined by the FPPA). Project analysts prepared the site assessment using FPPA criteria (e.g., area of non-urban use, percentage of the HST corridor being farmed, protected farmland, size of farm, creation of non-farmable farmland, availability of farm support services, on-farm investments, and compatibility with existing agricultural uses). Project staff combined the scores for both the land evaluation and site assessment portions of Form NRCS-CPA-106 to arrive at a total score for each alternative. The maximum possible score is 260 points. If the score is less than 160 points, no further evaluation is necessary under the FPPA. If the score is greater than 160, the FPPA requires consideration of alternatives that avoid or minimize farmland impacts.

In addition to the GIS analysis and NRCS-CPA-106 calculations, public and agency input (e.g., during the Draft Project EIR/EIS scoping process) also informed the analysis. Scoping comments helped define a range of possible impacts to consider in the EIR/EIS - including disruption of adjacent agricultural operations (e.g., orchards, dairies) from dust, noise, and wind. These comments helped the Lead Agencies to consider a broader range of potential impacts than expected prior to the scoping process. The information was also used to refine project facility designs to minimize project impacts to agricultural lands.

In evaluating the potential effects on farming and animal husbandry, the impacts analysis methods also included noise modeling and measured wind velocity to assess predicted noise effects on animal husbandry operations during project construction and operation.

A. METHODS FOR EVALUATING EFFECTS UNDER NEPA

Pursuant to NEPA regulations (40 CFR 1500-1508), project effects are evaluated based on the criteria of context and intensity. Context means the affected environment in which a proposed project occurs. Intensity refers to the severity of the effect, which is examined in terms of the type, quality, and sensitivity of the resource involved, location and extent of the effect, duration of the effect (short- or long-term), and other consideration of context. Beneficial effects are identified and described. When there is no measurable effect, impact is found not to occur. Intensity of adverse effects are summarized as the degree or magnitude of a potential adverse effect where the adverse effect is thus determined to be negligible, moderate, or substantial. It is possible that a significant adverse effect may still exist when on balance the impact is negligible or even beneficial.

For agricultural lands, a negligible impact would be an impact that would not be measurable by FMMP, which uses a minimum land use mapping unit of 10 acres. A substantial impact would be a large conversion of agricultural land resources. Agricultural lands are not replaceable, and therefore any farmland conversion is a permanent depletion of the resource. Within the context

of the highly productive Central Valley farmland in the project area, a large depletion is defined as more than 50 acres. A moderate effect would be a depletion of agricultural land that is measurable by FMMP (i.e., greater than 10 acres) but not a substantial effect (i.e., less than 50 acres).

B. CEQA SIGNIFICANCE CRITERIA

According to CEQA Guidelines Appendix G, the project would result in a significant impact on agricultural lands if it would result in the following:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to a nonagricultural use.
- Conflict with existing zoning for agricultural use or a Williamson Act contract.
- Involve other changes in the existing environment that would result in conversion of farmland to non-agricultural use because of their location or nature.

C. STUDY AREA FOR ANALYSIS

The study area for effects on agricultural lands encompasses the entire potential area of disturbance associated with the project construction footprint (for direct effects), plus an additional 100 feet around the construction footprint to address indirect effects. This distance from the construction footprint was used to identify potential noise and vibration impacts to animal husbandry operations. As described in Section 3.1, the construction footprint includes the proposed HST right-of-way and associated facilities (including traction power substations, switching and paralleling stations, and areas associated with modifying or relocating roadways for those facilities such as overcrossings and interchanges), heavy maintenance facilities sites, and other construction areas, including laydown, storage, and similar areas. Parcels that the HST alignments could sever were part of the study area for direct and indirect effects.

The urbanized downtown Fresno and Bakersfield station areas are located within the study area; however, they are not addressed further because these urban areas do not include agricultural lands. As the potential Kings/Tulare Regional Station area is located east of Hanford in a rural area, its potential effects on agricultural lands are addressed here.

3.14.4 Affected Environment

This section describes the existing agricultural lands. It provides information about regional agricultural operations and those in the project vicinity. This section also discusses animal husbandry facilities, which are primarily dairies in the study area. There are no applicable regional plans or policies pertaining to safety and security within the Fresno to Bakersfield Section study area.

A. REGIONAL AGRICULTURE

In 2007, California had approximately 25.4 million acres of farmland, with an estimated 81,000 farms (USDA 2009). According to the California Department of Food and Agriculture (CDFA 2009), the state produces more than 400 different types of agricultural products and, in 2007, generated $36.6 billion in direct farm sales. California's agricultural production represents 12.8% of the nation's total agricultural value (in dollars). California is also a major global supplier of food and agricultural commodities, with exports reaching a high of $10.9 billion in 2007, representing an 11% increase over the 2006 export totals.

The south San Joaquin Valley, where the Fresno to Bakersfield HST Section is located, is California's and the nation's leading agricultural production region (CDFA 2010). The cash farm receipts from Fresno, Kings, Tulare, and Kern counties of about $16.5 billion in 2008 represented 46% of the state's total agricultural revenues. Fresno, Kern, Tulare, and Kings counties rank first, second, third, and eighth, respectively, among California's top agricultural counties, as measured by the gross value of agricultural production (CDFA 2010). The total county land area committed to agricultural production ranges from 38% in Tulare County to 77% in Kings County.

According to the most recent Census of Agriculture profile for Fresno County, there were 6,081 farms occupying more than 1.6 million acres of land in 2007, with an average farm size of 269 acres (USDA 2009). More than 67% of farmland was devoted to crops, and about 29% was in pasture (other uses accounted for about 4% of total farmland). About 60% of the crop land is irrigated. The market value of agricultural products in 2007 was more than $3 billion: 67% from crop sales and 33% from livestock and poultry and livestock products. The highest crop acreages were devoted to grapes, vegetable crops, cotton, almonds, and tomatoes. In order of sales value, the most important agricultural commodities were fruits, tree nuts, and berries; vegetables, melons, and potatoes; milk and other dairy products; cattle; poultry and eggs; and cotton and cottonseed.

In 2007, Kings County had 1,129 farms occupying 680,000 acres of land, with an average farm size of 603 acres (USDA 2009). About 75% of farmland was devoted to crops, and 61% of this land was irrigated. The market value of agricultural products in 2007 was more than $1.3 billion: 48% from crop sales and 52% from livestock, poultry, and livestock products. In order of sales value, the most important agricultural commodities were milk, cotton, cattle and calves, tomatoes, nuts, grapes, and silage (Kings County Department of Agriculture 2009).

In Tulare County, 5,240 farms occupied more than 1.1 million acres of land in 2007, with an average farm size of 223 acres. About 55% of farmland was devoted to crops, and 47% of this land was irrigated (USDA 2009). The market value of agricultural products was more than $3.3 billion: 36% from crop sales and 64% from livestock and poultry and livestock products. In order of sales value, the most important agricultural commodities were fruit and nut crops (primarily grapes and almonds), milk, livestock and poultry, and alfalfa and silage (Tulare County Agriculture Commissioner/Sealer 2009).

In Kern County, 2,117 farms occupied more than 2.3 million acres of land in 2007, with an average farm size of 1,116 acres. About 40% of farmland was devoted to crops, and 33% of this land was irrigated (USDA 2009). The market value of agricultural products in 2007 was more than $3.2 billion: 80% from crop sales and 20% from livestock and poultry and livestock products. In order of sales value, the most important agricultural commodities were milk, grapes, citrus, almonds, carrots, alfalfa, and cattle and calves (Kern County 2009).

B. IMPORTANT AND PROTECTED[2] FARMLANDS

According to the FMMP data, there are more than 3.7 million acres of Important Farmland in Fresno, Kings, Tulare, and Kern counties combined (see Table 3.14-2). In addition, there are more than 3.3 million acres of Grazing Land in the four counties. The FMMP defines Grazing Land as land that has existing vegetation that is suitable for the grazing of livestock (DOC 2008). In all four counties, the practice is to fence grazing areas to prevent livestock from crossing major transportation corridors, such as the BNSF Railway and State Route (SR) 41. Table 3.14-2 presents the total acreage of each category of Important Farmland and Grazing Land in Fresno, Kings, Tulare, and Kern counties. Figures 3.14-1 through 3.14-5 show the distribution of

[2] Protected farmland consists of farmland under Williamson Act or Farmland Security Zone contract and farmland under an agricultural conservation easement.

Important Farmland and Grazing Land in the vicinity of the project alternatives. Figures 3.14-6 through 3.14-10 show the distribution of crop cover in these areas.

Table 3.14-2
Important Farmland and Grazing Land in Fresno, Kings, Tulare, and Kern Counties (acres)[a]

Type of Agricultural Land	Fresno County	Kings County	Tulare County	Kern County
Prime Farmland	693,200	138,100	375,100	626,200
Farmland of Statewide Importance	439,000	397,100	327,200	216,300
Unique Farmland	94,200	22,900	11,900	96,000
Farmland of Local Importance	149,900	10,000	150,200	0
Grazing Land	827,100	257,700	439,900	1,807,100
Total	**2,203,200**	**825,800**	**1,304,300**	**2,746,300**

Source: California Department of Conservation, Division of Land Resource Protection, 2006-2008 http://redirect.conservation.ca.gov/DLRP/fmmp/product_page.asp (accessed September 18, 2010).

[a] Rounded to nearest 100 acres.

Although each county in the project study area has policies to protect agricultural lands, according to the DOC farmland conversion data, conversions of Important Farmland continue to occur. Table 3.14-3 presents the change in acreages of Important Farmland and Grazing Land between 2000 and 2008. All four counties reported a reduction in Important Farmland acreage during this period, with most reductions occurring in Fresno County. Population growth and the associated urban development pressure primarily drive the loss of Important Farmland; however, losses also can occur if land goes into habitat conservation or confined animal facilities. Gains in Important Farmland also can occur, for example, when grazing land goes into crop production (e.g., increased area planted to almonds). Nevertheless, one of the leading regions in the state that is losing Important Farmland to urban uses is the San Joaquin Valley (DOC 2008).

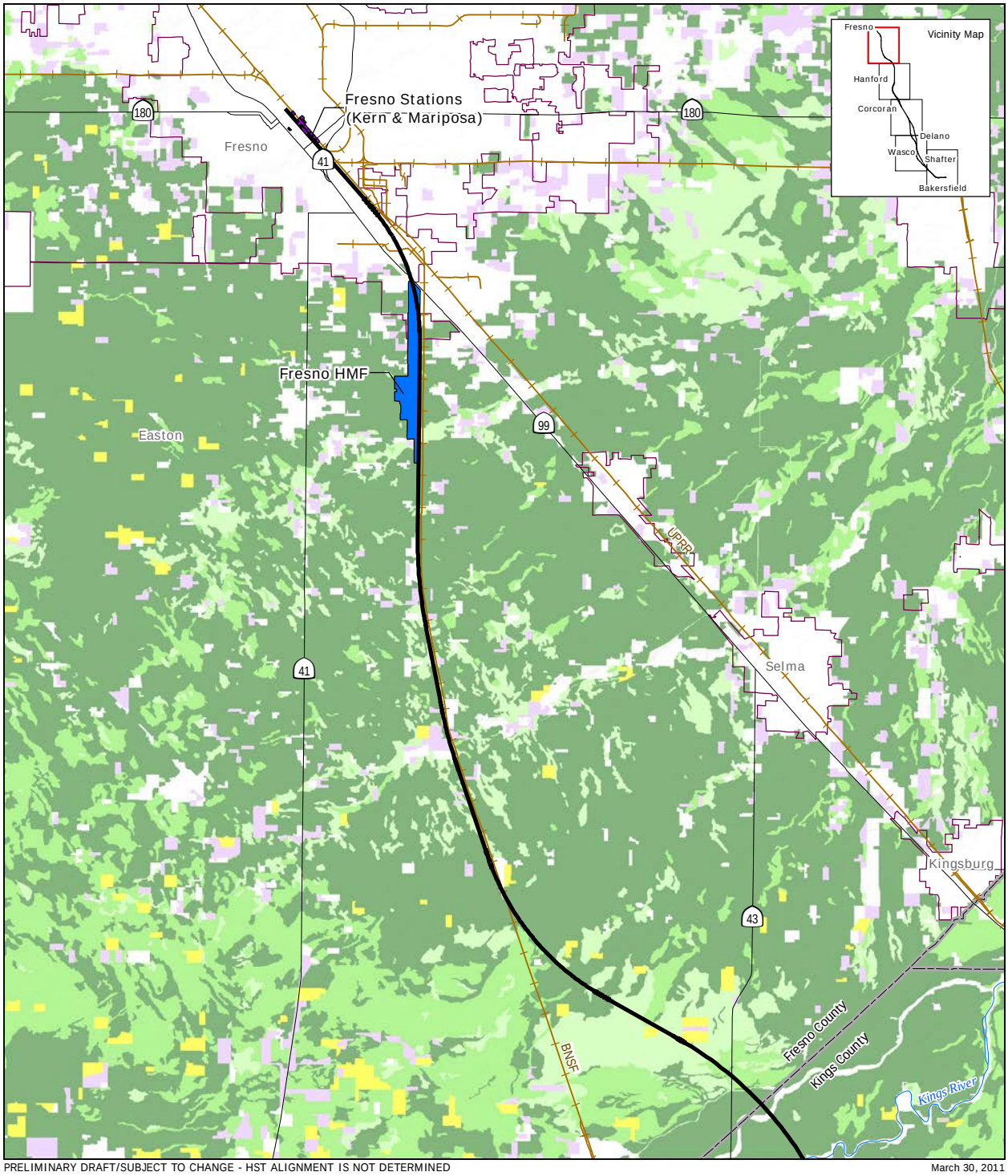
Table 3.14-3
Farmland Conversions in Fresno, Kings, and Tulare Counties from 2000 to 2008 and Kern County from 2004 to 2008

County and Farmland Category	Net Change in Acreage
Fresno County	
Prime Farmland	-40,876
Farmland of Statewide Importance	-52,550
Unique Farmland	-8,589
Farmland of Local Importance	77,755
Total Change in Important Farmland	-24,260
Grazing Land	-8,918

Table 3.14-3
Farmland Conversions in Fresno, Kings, and Tulare Counties from 2000 to 2008 and Kern County from 2004 to 2008

County and Farmland Category	Net Change in Acreage
Total Change in Agricultural Land	**-33,178**
Kings County	
Prime Farmland	-3,125
Farmland of Statewide Importance	-33,696
Unique Farmland	-5,523
Farmland of Local Importance	3,173
Total Change in Important Farmland	-39,171
Grazing Land	19,261
Total Change in Agricultural Land	**-19,910**
Tulare County	
Prime Farmland	-17,910
Farmland of Statewide Importance	-23,385
Unique Farmland	197
Farmland of Local Importance	24,931
Total Change in Important Farmland	-16,167
Grazing Land	5,804
Total Change in Agricultural Land	**-10,363**
Kern County	
Prime Farmland	-16,911
Farmland of Statewide Importance	1,643
Unique Farmland	-12,662
Farmland of Local Importance	0
Total Change in Important Farmland	-27,930
Grazing Land	15,602
Total Change in Agricultural Land	**-12,328**

Source: California Department of Conservation, Division of Land Resource Protection. 2008. http://redirect.conservation.ca.gov/dlrp/fmmp/product_page.asp (accessed September 19, 2010).



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Conservation, State of California, Farmland Mapping and Monitoring Program, 2008-2010

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance
- Grazing Land
- Confined Animal Agriculture

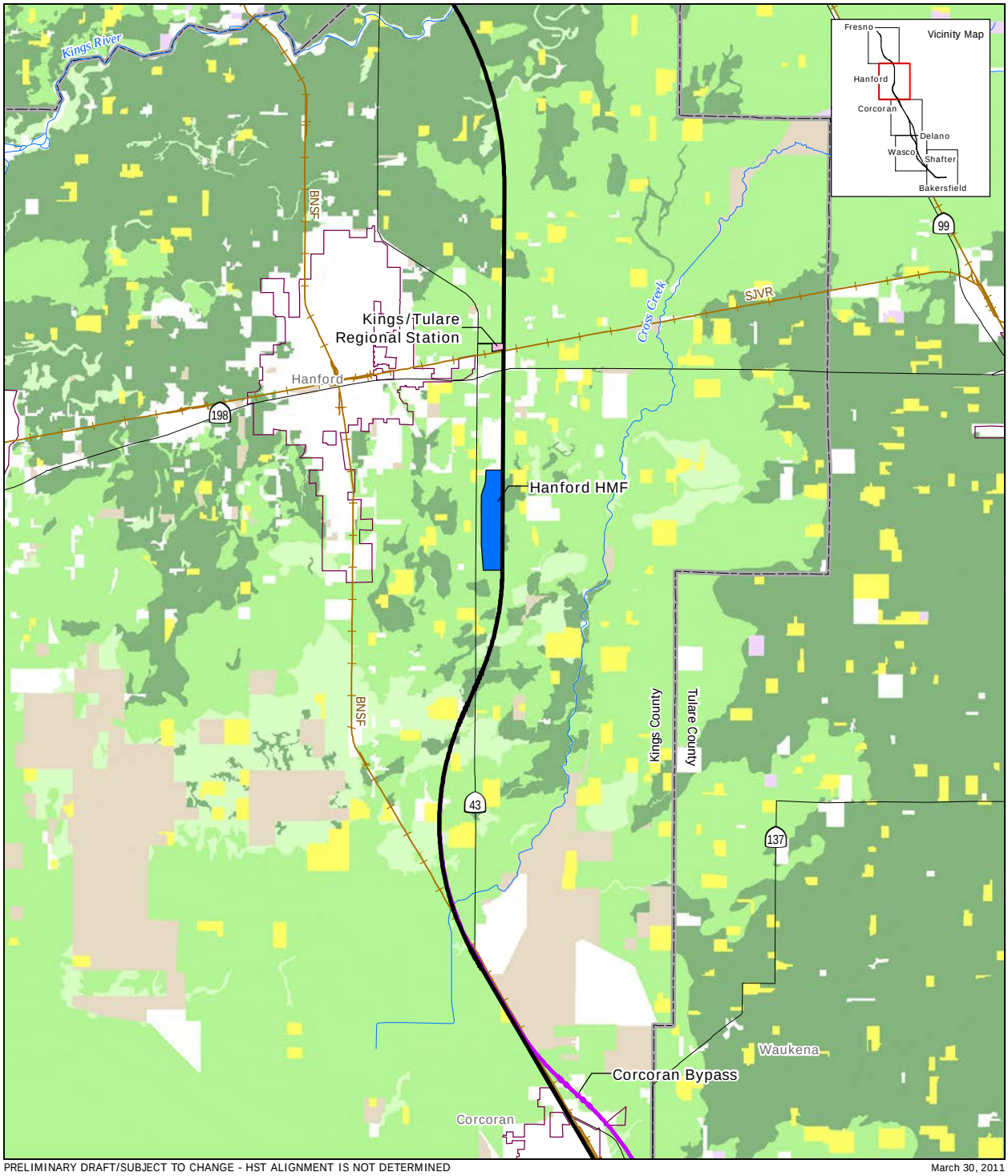
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-1

Important Farmland and Grazing Land in the Fresno Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Conservation, State of California, Farmland Mapping and Monitoring Program, 2008-2010

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance
- Grazing Land
- Confined Animal Agriculture

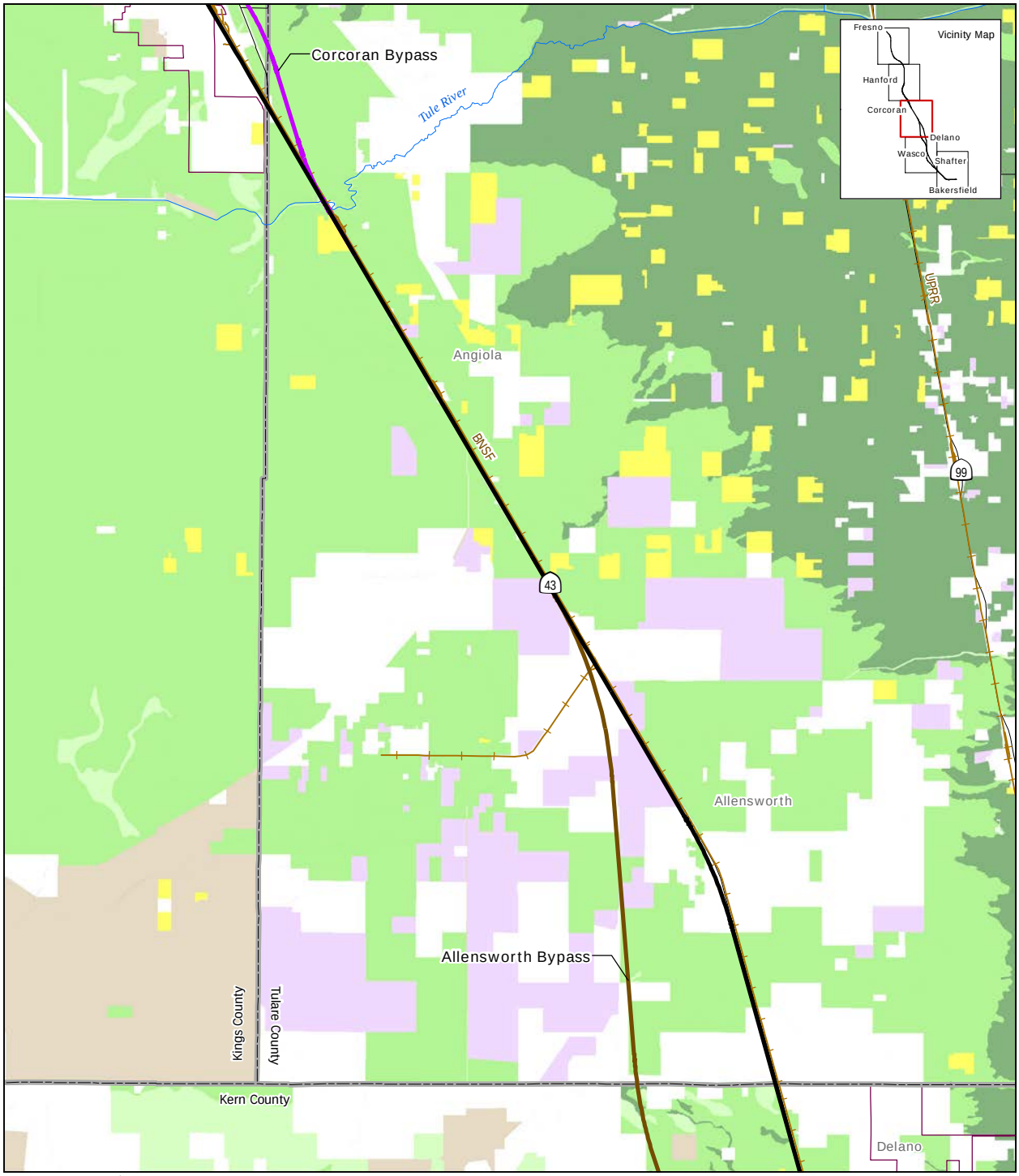
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-2

Important Farmland and Grazing Land in the Hanford Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Conservation, State of California, Farmland Mapping and Monitoring Program, 2008-2010

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance
- Grazing Land
- Confined Animal Agriculture

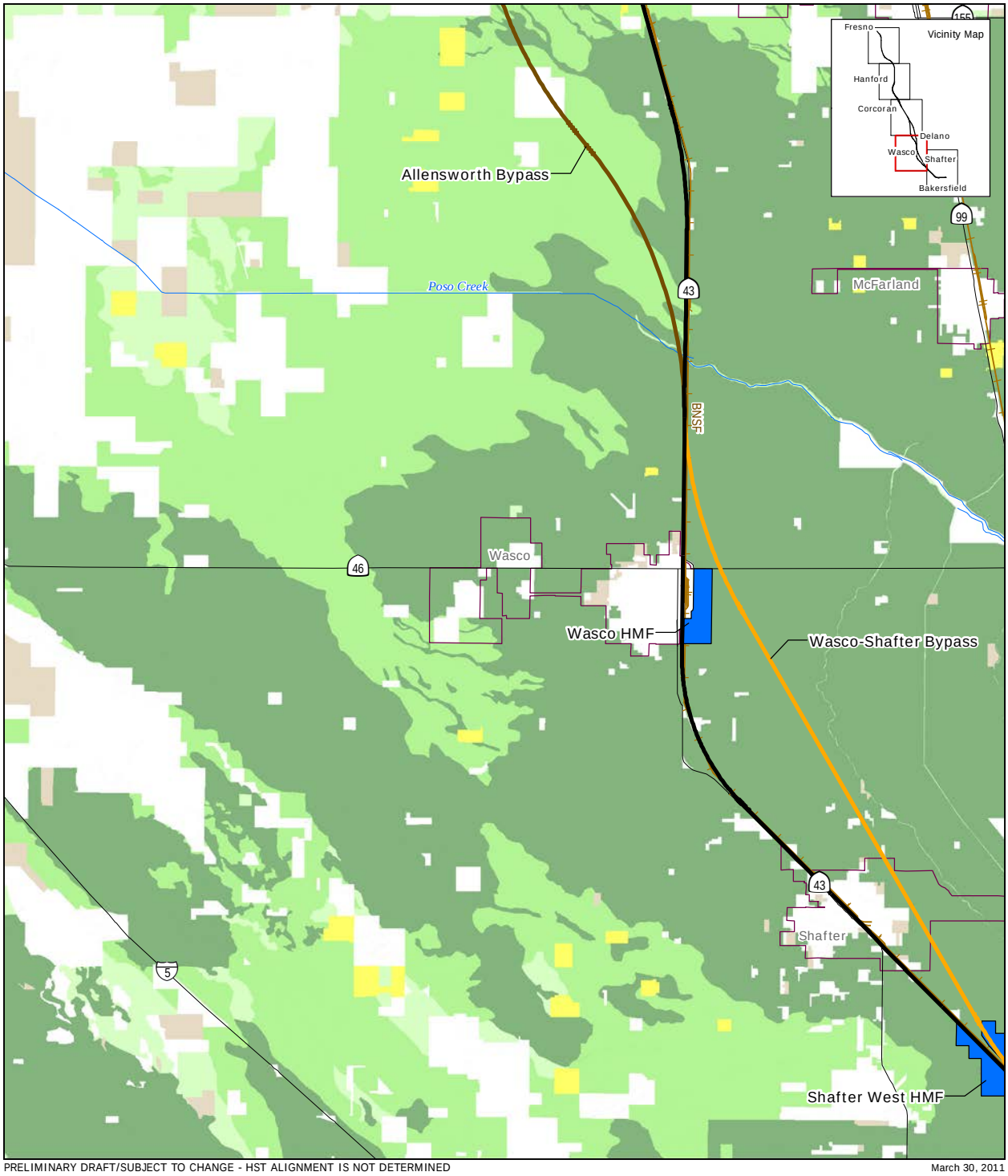
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-3

Important Farmland and Grazing Land in the Corcoran Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Conservation, State of California, Farmland Mapping and Monitoring Program, 2008-2010

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance
- Grazing Land
- Confined Animal Agriculture

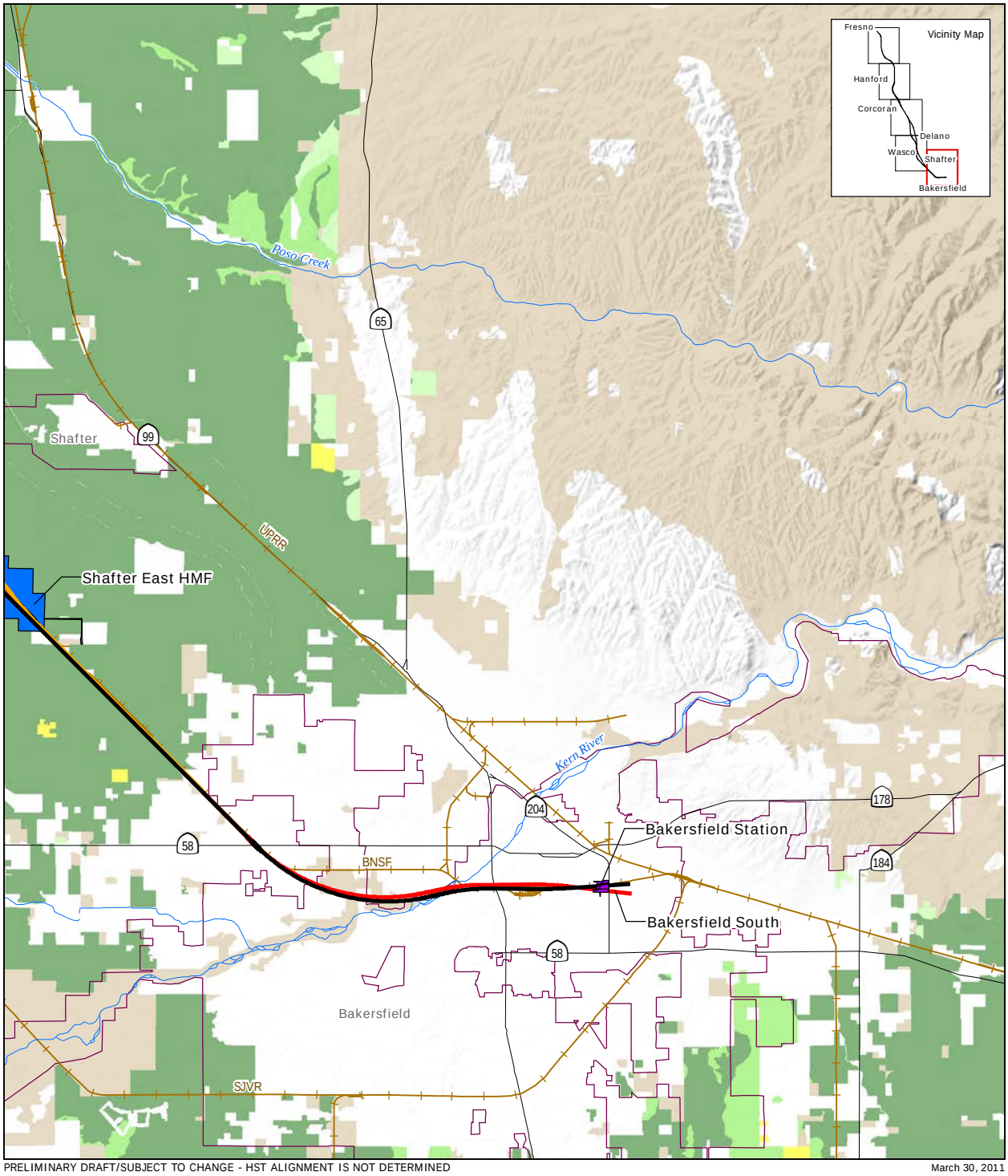
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-4

Important Farmland and Grazing Land in the Wasco-Shafter Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Conservation, State of California, Farmland Mapping and Monitoring Program, 2008-2010

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance
- Grazing Land
- Confined Animal Agriculture

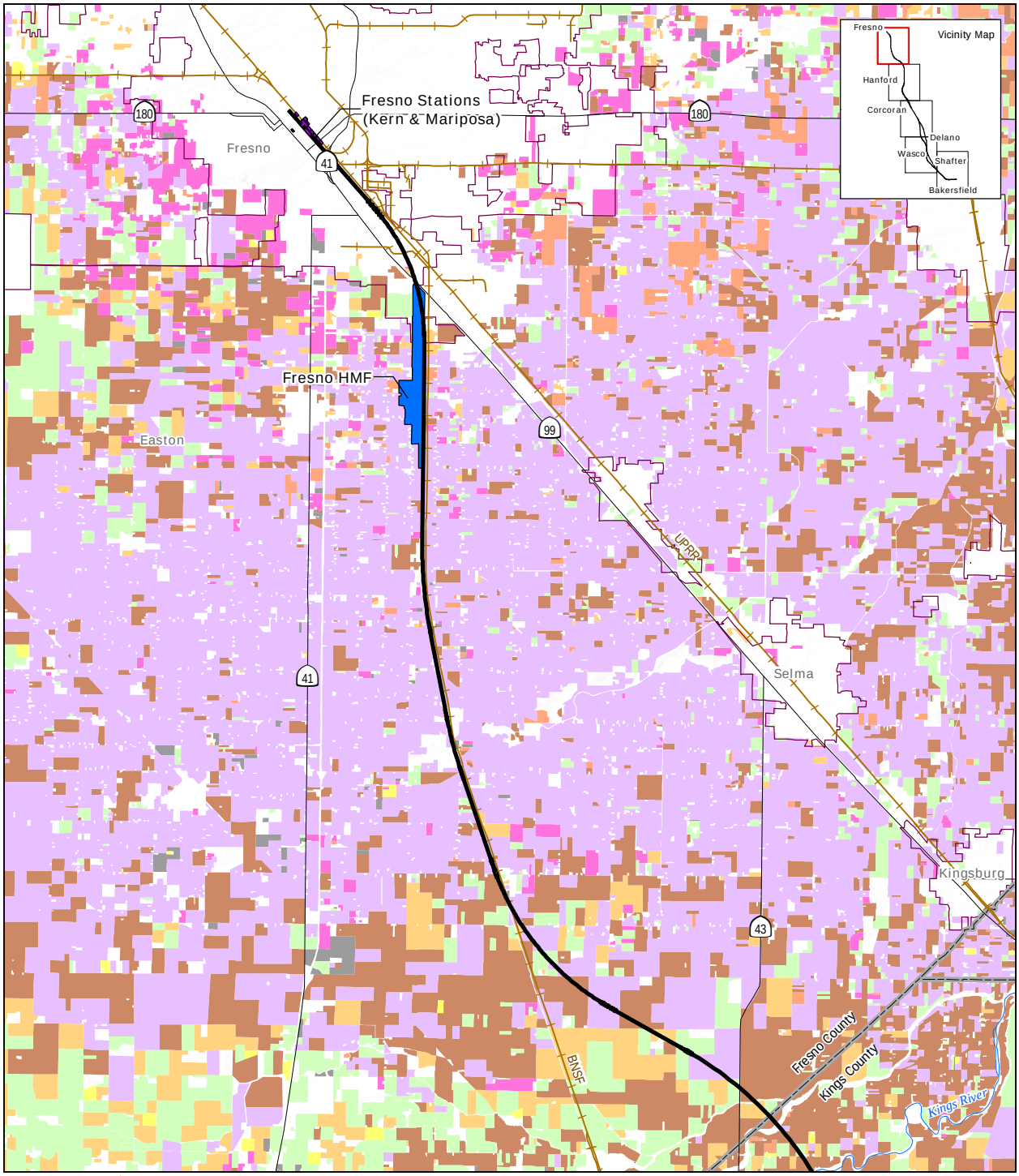
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-5

Important Farmland and Grazing Land in the Bakersfield Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Water Resources, State of California, Land Use Survey, 2007-2009

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station

- Citrus and Subtropical
- Deciduous Fruits and Nuts
- Field Crops
- Grain and Hay Crops
- Idle
- Pasture
- Rice
- Truck, Nursery and Berry Crops
- Vineyards

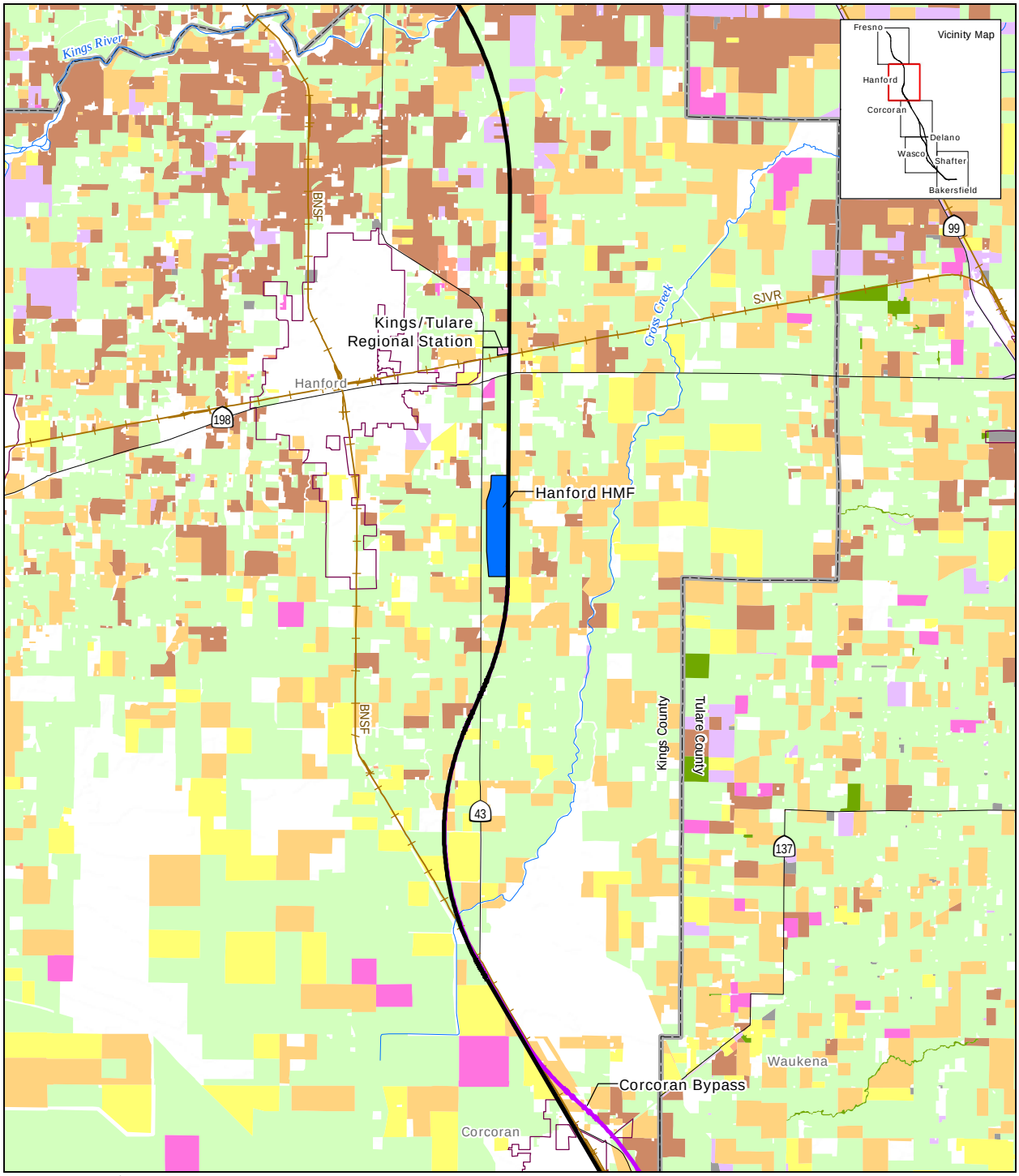
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-6

Distribution of Crop Cover in the Fresno Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Water Resources, State of California, Land Use Survey, 2007-2009

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station

- Citrus and Subtropical
- Deciduous Fruits and Nuts
- Field Crops
- Grain and Hay Crops
- Idle
- Pasture
- Rice
- Truck, Nursery and Berry Crops
- Vineyards

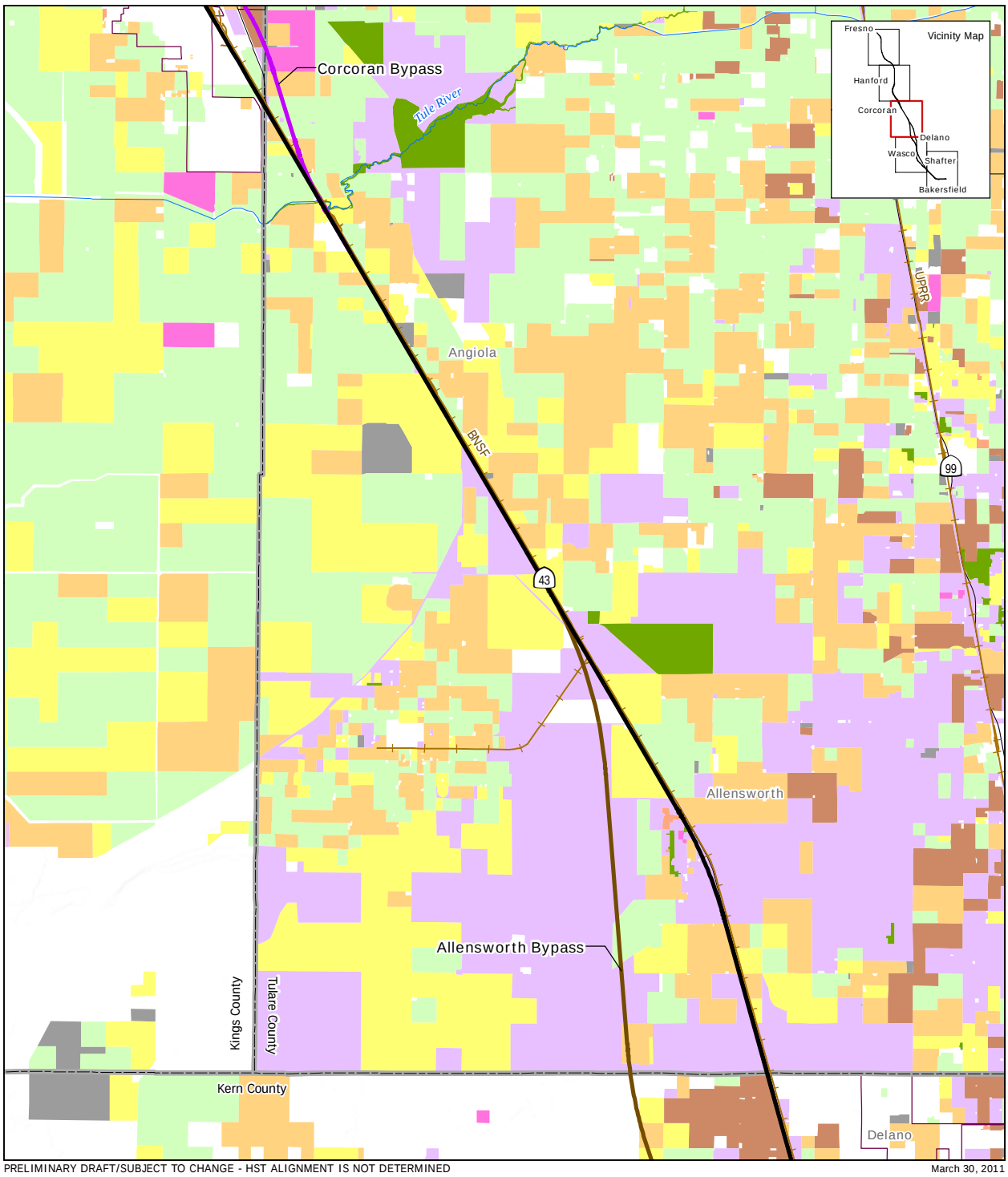
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-7

Distribution of Crop Cover
in the Hanford Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Water Resources, State of California, Land Use Survey, 2007-2009

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station

- Citrus and Subtropical
- Deciduous Fruits and Nuts
- Field Crops
- Grain and Hay Crops
- Idle
- Pasture
- Rice
- Truck, Nursery and Berry Crops
- Vineyards

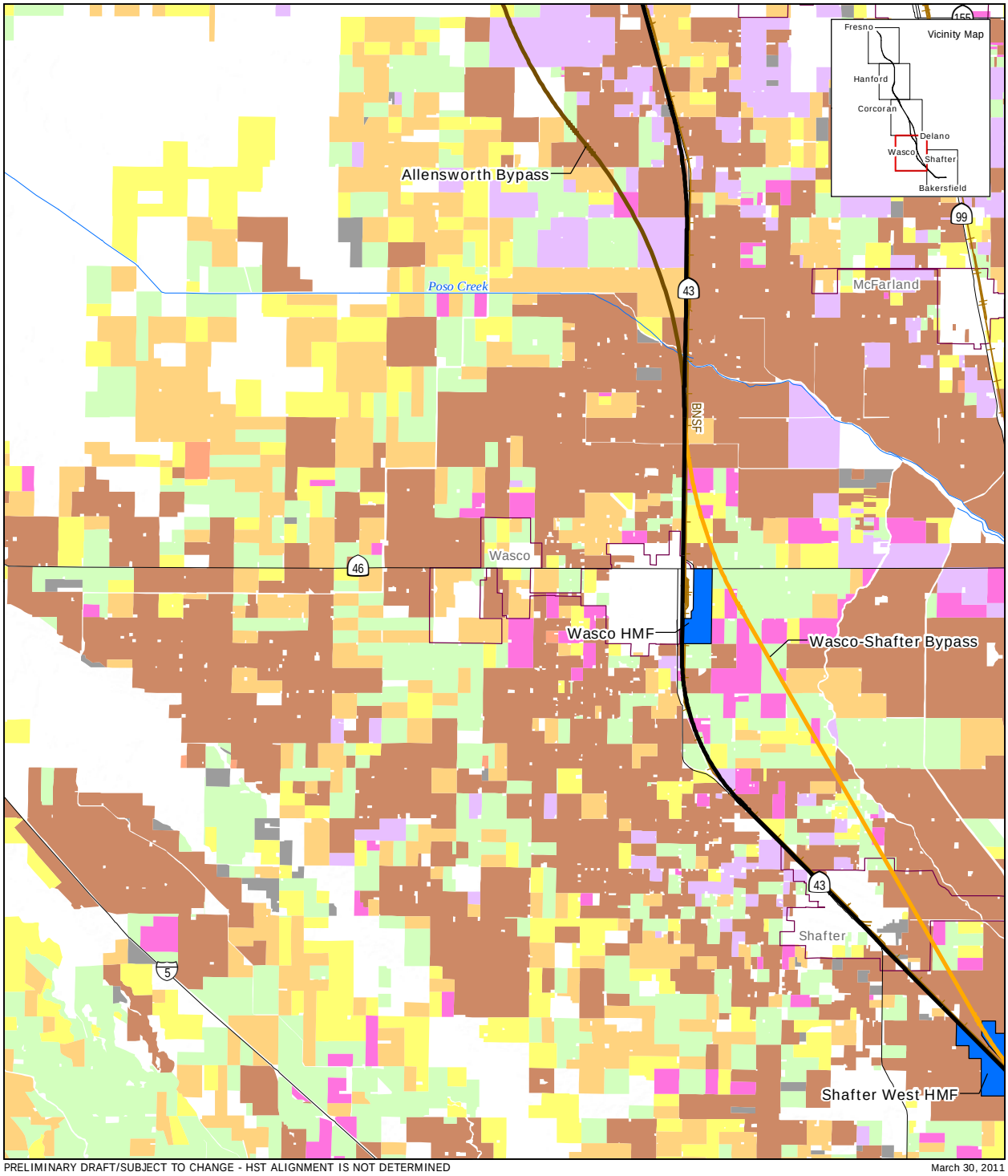
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-8

Distribution of Crop Cover in the Corcoran Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Water Resources, State of California, Land Use Survey, 2007-2009

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station

- Citrus and Subtropical
- Deciduous Fruits and Nuts
- Field Crops
- Grain and Hay Crops
- Idle
- Pasture
- Rice
- Truck, Nursery and Berry Crops
- Vineyards

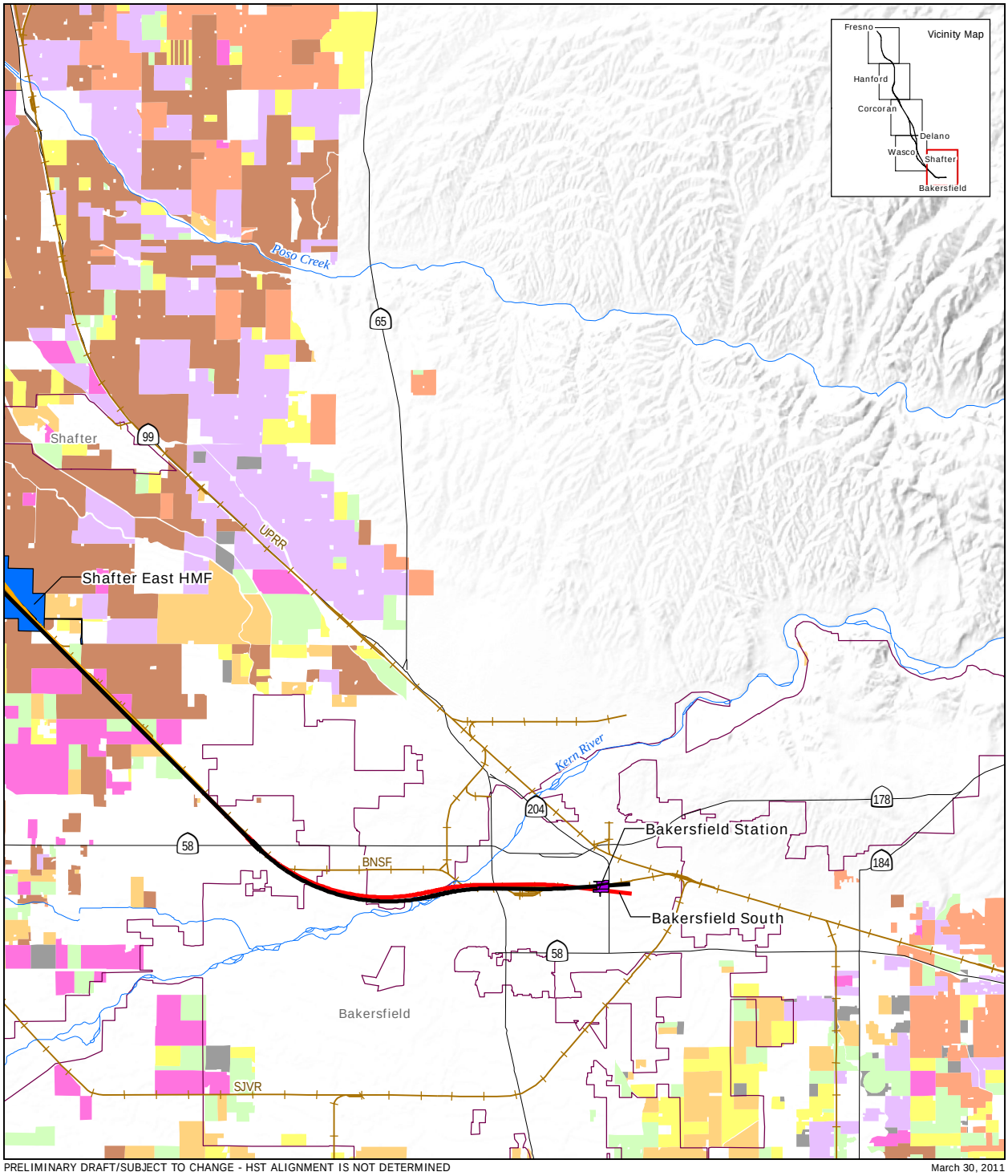
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-9

Distribution of Crop Cover
in the Wasco-Shafter Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Water Resources, State of California, Land Use Survey, 2007-2009

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station

- Citrus and Subtropical
- Deciduous Fruits and Nuts
- Field Crops
- Grain and Hay Crops
- Idle
- Pasture
- Rice
- Truck, Nursery and Berry Crops
- Vineyards

N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-10

Distribution of Crop Cover
in the Bakersfield Project Vicinity

Table 3.14-4 presents the acreage of farmland protected under Williamson Act and FSZ contracts in each county.

Table 3.14-4
Protected Farmland in Fresno, Kings, Tulare, and Kern Counties (acres) (2008)

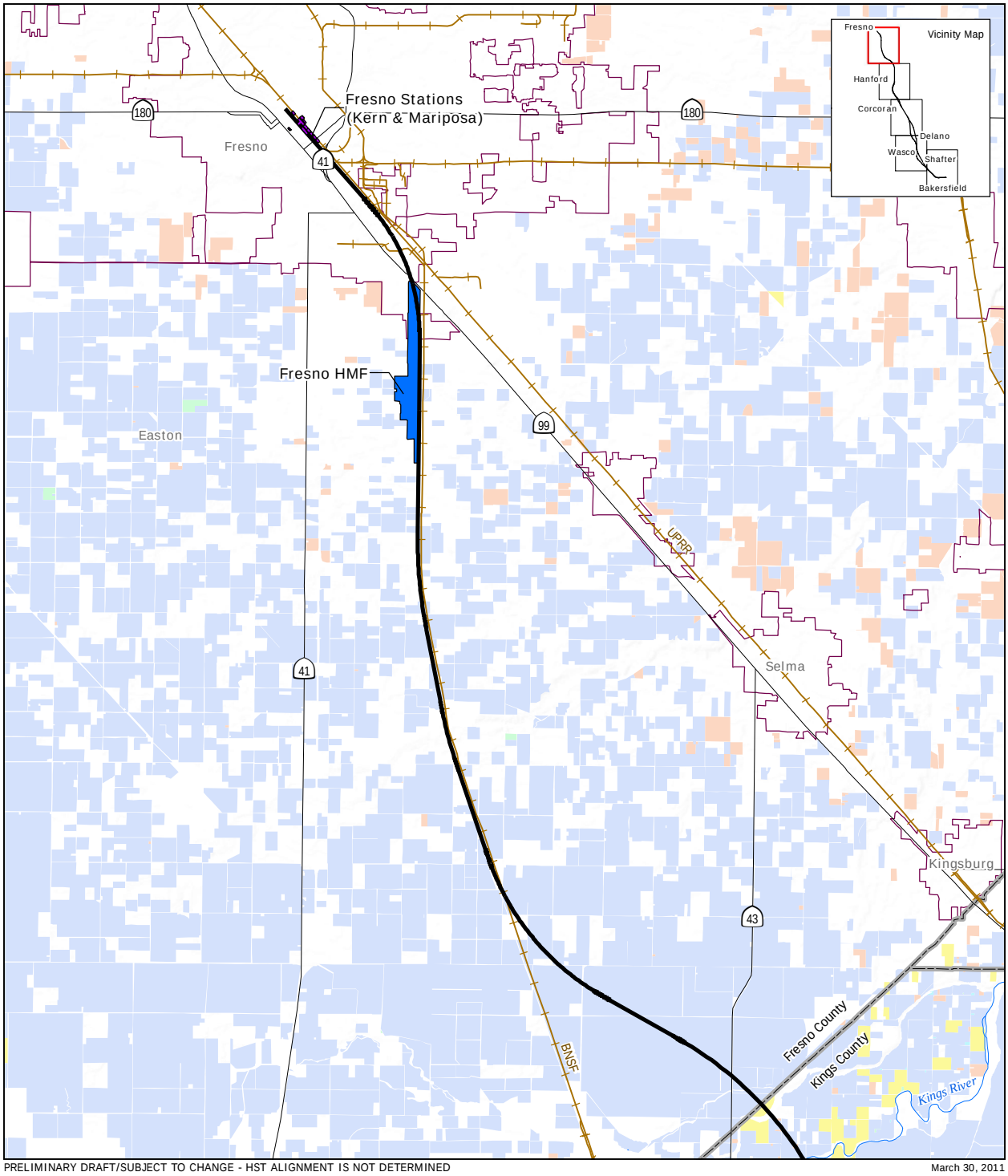
Protected Farmland	Fresno County	Kings County	Tulare County	Kern County
Williamson Act Contract	1,465,383	391,626	1,086,692	1,541,814
Farmland Security Zone Contract	29,114	287,833	11,152	158,927
Total	**1,494,497**	**679,459**	**1,097,844**	**1,700,741**

Source: California Department of Conservation. 2010. The California Land Conservation (Williamson) Act 2010 Status Report.

Tulare and Kings counties have the greatest percentage, 84% and 82%, respectively, of their Important Farmland and Grazing Land in Williamson Act and FSZ contracts, while Kern and Fresno counties have the smallest percentages, at approximately 62% and 68%, of their lands in these contracts. Protected farmlands also include lands zoned for agricultural use and lands with agricultural conservation easements. Most of the Important Farmland in the area is zoned for agriculture (see Section 3.13, Station Planning, Land Use, and Development). Based on the California Department of Conservation enrollment figures for 2008 (DOC 2010), none of the counties have land in agricultural conservation easements. Tulare County has an additional 686 acres of agricultural land protected by other enforceable restrictions (DOC 2010).

Figures 3.14-11 through 3.14-15 illustrate that protected farmlands occur along all of the alignment alternatives outside urban communities. FSZ lands are adjacent to the alignment alternatives in Kings, Tulare, and Kern counties. There is no land in FSZ contract along the alternative alignments in Fresno County.

The potential Kings/Tulare Regional Station site is not located on land under Williamson Act or FSZ contract (Figure 3.14-12). Also, the Fresno Works and Wasco HMF sites are not located on land in Williamson Act contracts. Most of the land at the Hanford HMF site is either under Williamson Act or FSZ contracts; at the two Shafter HMF sites most of the land is under nonrenewable Williamson Act contracts.



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Conservation, Division of Land Resource Protection, State of California, 2009

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station

Williamson Act land

- Prime
- Prime Non-Renewal
- Farmland Security Zone
- Farmland Security Zone Non-Renewal
- Non-Prime
- Non-Prime Non-Renewal
- Mixed Prime and Non-Prime
- Mixed Prime and Non-Prime Non-Renewal
- Home site
- Home site Non-Renewal

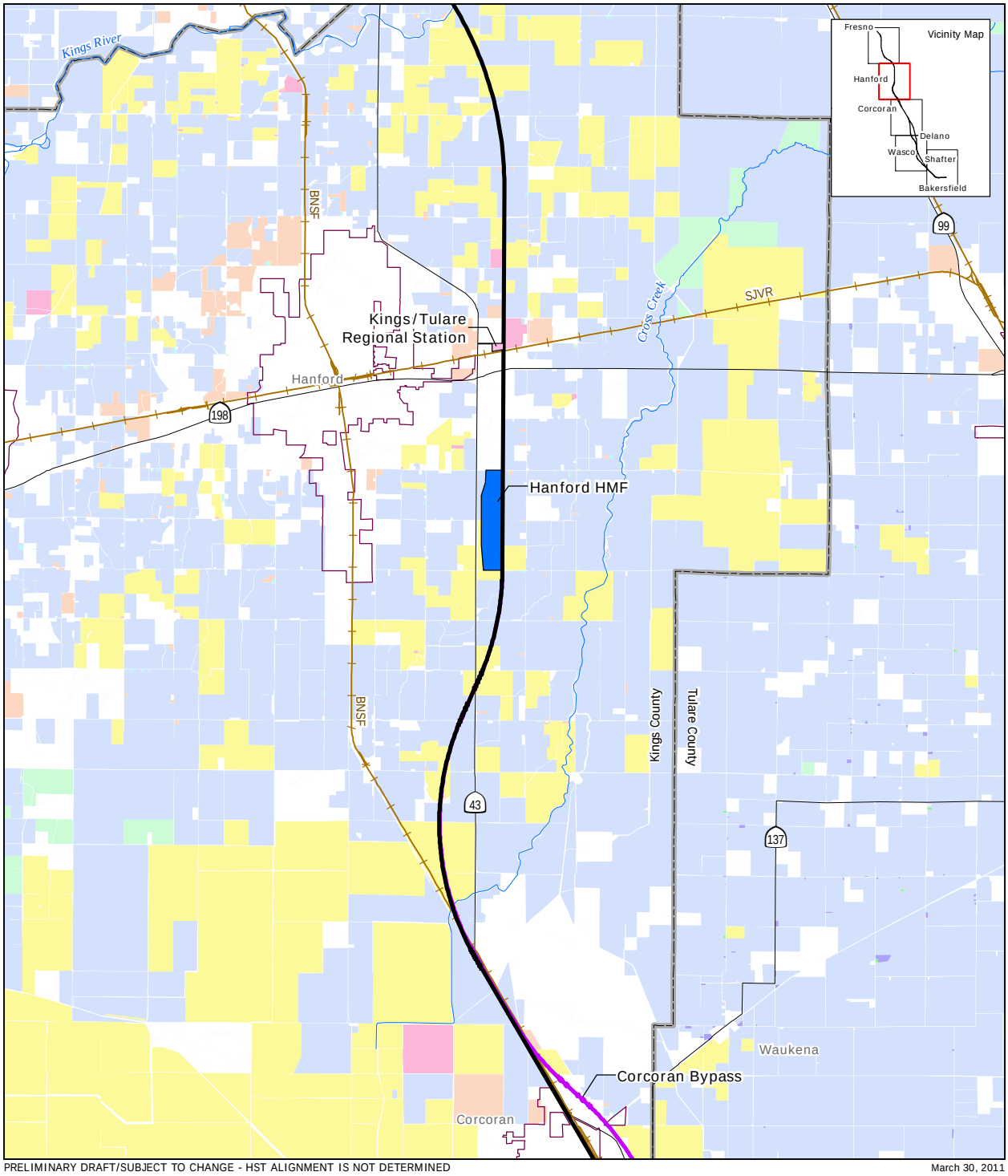
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-11

Protected Lands
in the Fresno Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Conservation, Division of Land Resource Protection, State of California, 2009

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station

Williamson Act land

- Prime
- Prime Non-Renewal
- Farmland Security Zone
- Farmland Security Zone Non-Renewal
- Non-Prime
- Non-Prime Non-Renewal
- Mixed Prime and Non-Prime
- Mixed Prime and Non-Prime Non-Renewal
- Home site
- Home site Non-Renewal

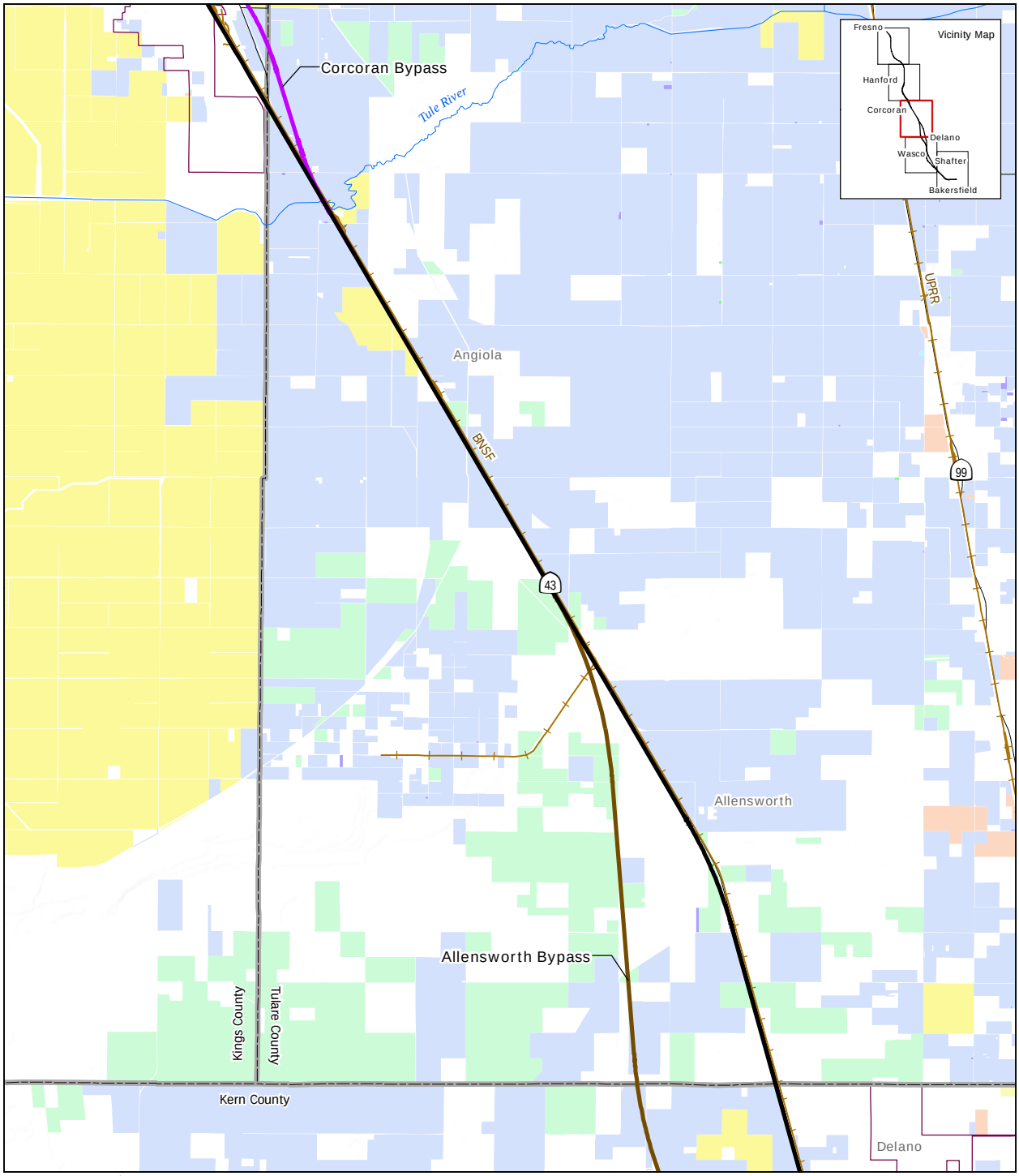
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-12

Protected Lands
in the Hanford Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Conservation, Division of Land Resource Protection, State of California, 2009

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station

Williamson Act land

- Prime
- Prime Non-Renewal
- Farmland Security Zone
- Farmland Security Zone Non-Renewal
- Non-Prime
- Non-Prime Non-Renewal
- Mixed Prime and Non-Prime
- Mixed Prime and Non-Prime Non-Renewal
- Home site
- Home site Non-Renewal

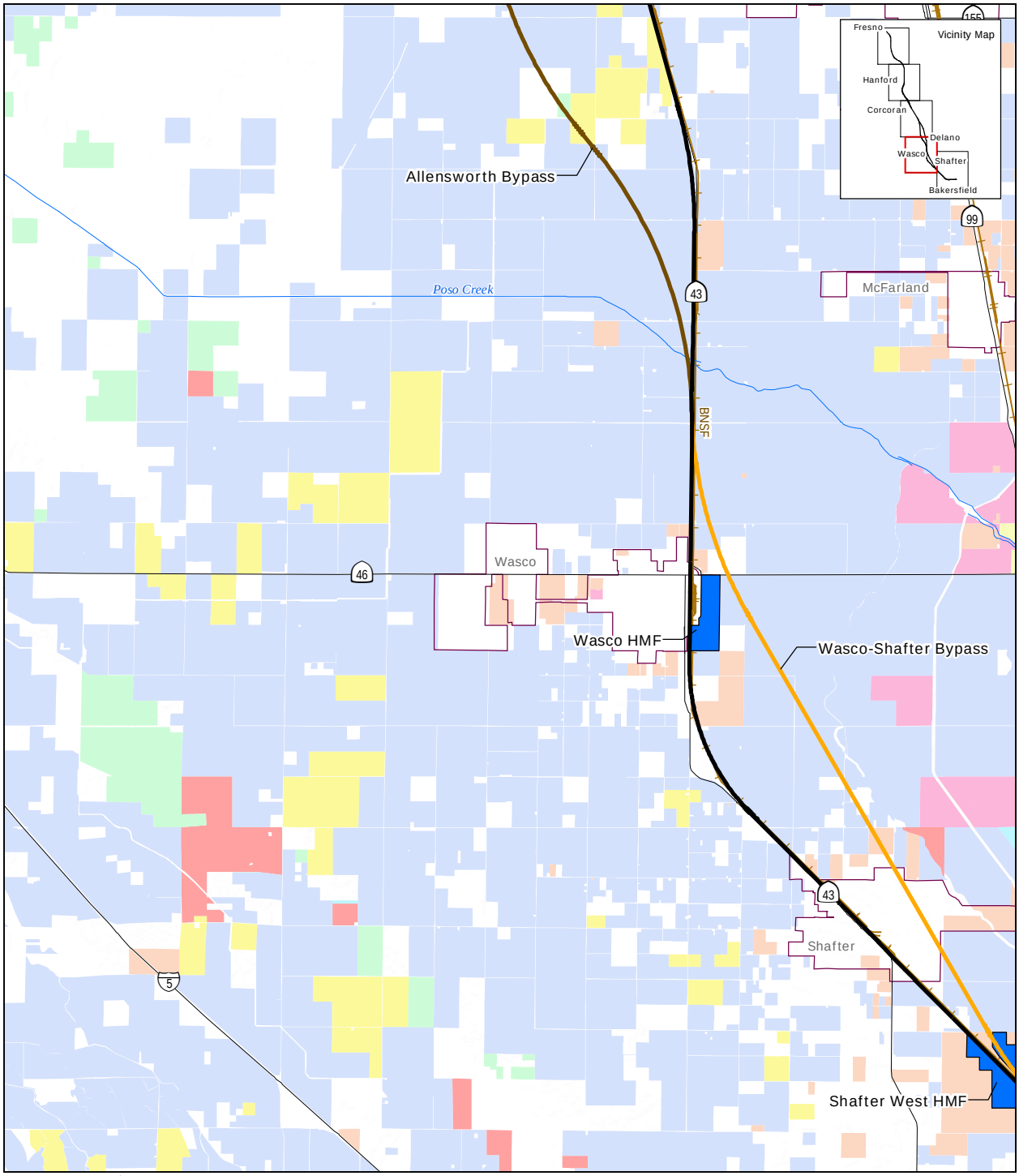
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-13

Protected Lands
in the Corcoran Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Conservation, Division of Land Resource Protection, State of California, 2009

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station

Williamson Act land

- Prime
- Prime Non-Renewal
- Farmland Security Zone
- Farmland Security Zone Non-Renewal
- Non-Prime
- Non-Prime Non-Renewal
- Mixed Prime and Non-Prime
- Mixed Prime and Non-Prime Non-Renewal
- Home site
- Home site Non-Renewal

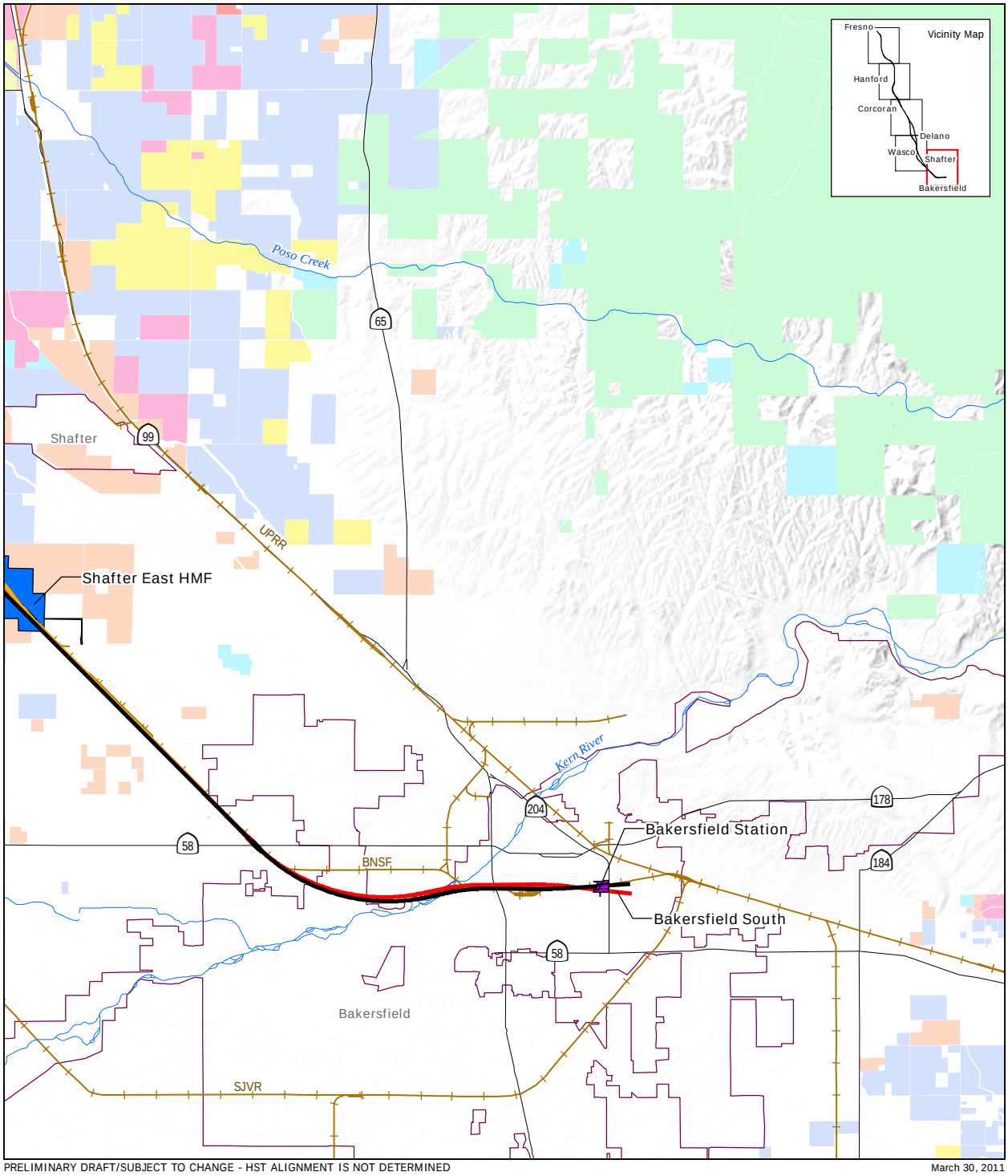
N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-14

Protected Lands
in the Wasco-Shafter Project Vicinity



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

March 30, 2011

Source: Department of Conservation, Division of Land Resource Protection, State of California, 2009

- BNSF Alternative (Bypasses labeled)
- Existing rail line
- Stream/River
- Highway
- Community/Urban area
- Potential heavy maintenance facility
- Proposed station
- Potential Kings/Tulare Regional Station

Williamson Act land

- Prime
- Prime Non-Renewal
- Farmland Security Zone
- Farmland Security Zone Non-Renewal
- Non-Prime
- Non-Prime Non-Renewal
- Mixed Prime and Non-Prime
- Mixed Prime and Non-Prime Non-Renewal
- Home site
- Home site Non-Renewal

N

0 1 2 Miles

0 2 4 Kilometers

Figure 3.14-15

Protected Lands
in the Bakersfield Project Vicinity

When originally established, farms in the project vicinity were rectangular parcels that followed township and range survey patterns, composed of many similarly shaped parcels. Over time, construction of the railroads, state highways, and local roads divided some farms, creating irregularly shaped parcels.

The majority of farms are family-owned and typically range from 10 to 179 acres, however, Kings and Kern counties have the largest number of farms over 1,000 acres in size in the San Joaquin Valley (U.S. Department of Agriculture 2007a-d). Often, large farm owners only farm a portion of the land themselves; others farm none. Large farm owners hire agricultural management and specialized service firms (e.g., for pesticide application, bee pollinators, or harvesting). Farm infrastructure typically includes irrigation and drainage systems, field access roads that often surround the farmed parcels, storage structures such as silos and barns, power distribution systems, and residences.

Although weather conditions, such as temperature and wind, affect crop production, timing and scheduling of agricultural management and operations help maximize yields. For example, farmers apply chemicals to extend blooms of bee-pollinated trees to increase the pollination potential. Spray rigs apply most pesticides. In accordance with Federal Aviation Regulations 137, Agricultural Aircraft Operations, and the California Code of Regulations, Division 6, Pesticides and Pest Control Operations, aircraft apply some pesticides when the wind speed and direction are favorable to avoid dispersing chemicals beyond the target area. Aerial applications occur near existing railroad tracks (Karen Alfson, Agriculture Standard Specialist III, Fresno County Agriculture Commission, Tim Niswander, Agriculture Commissioner, Kings County, Judy Brandt, Agriculture Inspector, Tulare County, Ruben Arroyo, Agriculture Commissioner, Kern County, April 20, 2011, personal communication)). Approximately 85% of aerial application occurs at night in the south San Joaquin Valley; a 200-acre field takes about 15 minutes to spray by air (Dennis Hansen, Owner, Kerman Air Services, April 20, 2011, personal communication).

C. AGRICULTURAL LANDS ALONG THE PROPOSED HST ALTERNATIVES

The following subsections describe the agricultural lands that are associated with the HST alternatives.

BNSF Alternative Alignment

Important Farmlands and farmland protected by Williamson Act and FSZ contracts occur along most of the BNSF Alternative Alignment. The majority of the farmland in the vicinity of the BNSF Alternative is classified as Prime Farmland and Farmland of Statewide Importance. The alternative crosses a small area classified as Grazing Land to the north of Corcoran in Kings County. Large areas in the vicinity of the BNSF Alternative in Tulare County are designated as nonagricultural or natural vegetation (Figure 3.14-13). The largest concentration of FSZ contract lands occurs in the vicinity of the alternative in Kings County. Approximately 15% of the farmland adjacent to the alternative in this county is FSZ contract land. The alignment alternatives are adjacent to FSZ lands at the Tule River and near Angiola in Tulare County (Figure 3.14-13) and near Allensworth in Kern County. The BNSF Alternative crosses land under Williamson Act contracts in all four counties.

The potential Kings/Tulare Regional Station is located on land classified as Farmland of Statewide Importance (Figure 3.14-2). This land is not under Williamson Act or FSZ contract (Figure 3.14-12). No agricultural conservation easements appear to be located within the BNSF Alternative.

The 100-foot wide right-of-way for the BNSF Alternative would cross through the property of 1 dairy and 1 poultry farm in Fresno County, 12 dairies and 1 cattle feedlot in Kings County, and 1 dairy and 1 cattle feedlot in Tulare County . In some cases, the alignment would cross land used

to raise feed crops for livestock. In other cases, the alignment would also cross through farm facilities such as milking sheds and poultry sheds. Please see Section 3.12 (Socioeconomics, Communities, and Environmental Justice) for a discussion of these effects on the agricultural economy. No animal husbandry operations are adjacent to any of the other project alternatives.

Corcoran Elevated Alternative Alignment

The Corcoran Elevated Alternative crosses through the urban area of the city of Corcoran and therefore does not include farmlands.

Corcoran Bypass Alternative Alignment

The Corcoran Bypass Alternative crosses Grazing Land and Farmland of Statewide Importance. The lands immediately east of Corcoran in Kings County are under Williamson Act and FSZ contracts (Figure 3.14-12). All of the land in the vicinity of the Corcoran Bypass Alternative in Tulare County is under Williamson Act contracts (Figure 3.14-13). No agricultural conservation easements appear to be located within the alternative.

Allensworth Bypass Alternative Alignment

Most of the land in the vicinity of the Allensworth Bypass Alternative in Tulare County is classified as nonagricultural or natural vegetation and Farmland of Local Importance. In Kern County, most of the land near this alternative is classified as Farmland of Statewide Importance. In Tulare County, most of the land in the vicinity either is not under Williamson Act contract or is under non-renewable Williamson Act contracts (Figure 3.14-13). In Kern County, most of the land in the vicinity of this alternative is under Williamson Act contracts and a portion is under FSZ contracts (Figure 3.14-14). No agricultural conservation easements appear to be located within the Allensworth Bypass Alternative.

Wasco-Shafter Bypass Alternative Alignment

Virtually all of the land crossed by the Wasco-Shafter Bypass Alternative is classified as prime farmland (Figures 3.14-4 and 3.14-5). North of Shafter, almost all the land is under Williamson Act contract (Figure 3.14-14 and 3.14-15). No agricultural conservation easements appear to be located within the Wasco-Shafter Bypass Alternative.

Bakersfield South Alternative Alignment

The Bakersfield South Alternative is located entirely within the Bakersfield urban area which does not include farmlands (Figure 3.14-5).

Heavy Maintenance Facility (HMF)

Fresno Works-Fresno Alternative Site

The northern portion of the Fresno Works-Fresno HMF site is within the city limits of Fresno and is not classified as farmland. The southern portion of the site is classified primarily as Prime Farmland with some Farmland of Statewide Importance (Figure 3.14-1). The site is not under Williamson Act contract. No dairy or other animal husbandry operations are adjacent to or within 50 feet of this alternative. No agricultural conservation easements appear to be located within the Fresno Works-Fresno site. The site is used primarily for vegetable crops, plant and seed nurseries, and berry crops.

Kings County-Hanford Alternative Site

Most of the Kings County-Hanford HMF site is located on land classified as Farmland of Statewide Importance (Figure 3.14-2). Approximately 46% of the site is under Williamson Act contract and the other 54% is under FSZ (Figure 3.14-12). One dairy operation is located adjacent to the site (Figure 3.14-2). No agricultural conservation easements appear to be located within the Kings County-Hanford site. The site is used for field crops and pasture.

Kern Council of Governments-Wasco Alternative Site

The Kern Council of Governments-Wasco HMF site is classified as Prime Farmland (Figure 3.14-4). The site is not under Williamson Act contract. No dairy or other animal husbandry operations are adjacent to or within 50 feet of this site. No agricultural conservation easements appear to be located within the site. The site is used primarily for field crops, grain, and hay crops.

Kern Council of Governments-Shafter East Alternative Site

The Kern Council of Governments-Shafter HMF site is classified as Prime Farmland (Figures 3.14-4 and 3.14-5). The site is not under Williamson Act contract. No dairy or other animal husbandry operations are adjacent to or within 50 feet of this site. No agricultural conservation easements appear to be located within the site. The site is used for fruit and nut orchards.

Kern Council of Governments-Shafter West Alternative Site

The Shafter West HMF site has the same agricultural land characteristics as the Kern Council of Governments- East Shafter site described above.

3.14.5 Environmental Consequences

This section describes the potential effects on agricultural lands for the project alternatives. Section 3.14.6 Mitigation Measures summarizes the mitigation measures for agricultural resources.

A. OVERVIEW

The No Project Alternative would result in substantial farmland conversion to accommodate anticipated growth in the region that would occur without the proposed HST project. In comparison, the HST alternatives would convert farmland for construction of the project, but would also provide opportunities for focusing future development on land that is already urbanized. This could reduce the amount of farmland converted to urban uses to accommodate projected future growth, depending on future local land use decisions.

Table 3.14-5 shows the potential permanent conversion of Important Farmlands (by category) for the HST, and Table 3.14-6 lists the total acres of protected farmlands (Williamson Act and Farmland Security Zone) affected by project alignment alternatives, including remnant parcels that would likely not be suitable for farming after the project is completed. Parcel maps with the alternative alignments on them are provided in Appendix 3.1-A. The BNSF Alternative would permanently convert 2,210 acres of Important Farmland to nonagricultural use. The Corcoran Bypass would decrease the acreage of Important Farmland converted to nonagricultural use relative to the BNSF Alternative by 54 acres. The Allensworth Bypass and Wasco-Shafter Bypass would increase the acreage of Important Farmland converted to nonagricultural use relative to the BNSF Alternative by 39 and 108 acres, respectively. The Corcoran Elevated Alternative and the Bakersfield South Alternative pass through urban areas and would not impact Important Farmland, which is also the case for the segments of the BNSF Alternative that correspond to

these two alternatives in Corcoran and Bakersfield. All alternatives, except the Corcoran Elevated Alternative, would convert Grazing Land and land zoned for agricultural use, and would require severing farmland parcels because they traverse areas not adjacent to transportation corridors. It does not appear that any of the alternatives would affect agricultural conservation easements.

Table 3.14-5
Important Farmlands Permanently Affected by Each Alternative Alignment (acres)[a]

County / Important Farmland Classification	Alternative Alignment					
	BNSF Alternative	Corcoran Elevated Alternative	Corcoran Bypass Alternative	Allensworth Bypass Alternative	Wasco-Shafter Bypass Alternative	Bakersfield South Alternative
Fresno County						
Prime Farmland	352	0	0	0	0	0
Farmland of Statewide Importance	36	0	0	0	0	0
Unique Farmland	122	0	0	0	0	0
Farmland of Local Importance	45	0	0	0	0	0
Total	**555**	**0**	**0**	**0**	**0**	**0**
Kings County						
Prime Farmland	220	0	44	0	0	0
Farmland of Statewide Importance	446	0	275	0	0	0
Unique Farmland	67	0	56	0	0	0
Farmland of Local Importance	0	0	0	0	0	0
Total	**733**	**0**	**375**	**0**	**0**	**0**
Tulare County						
Prime Farmland	0	0	0	0	0	0
Farmland of Statewide Importance	344	0	70	51	0	0
Unique Farmland	0	0	0	1	0	0
Farmland of Local Importance	46	0	0	23	0	0
Total	**390**		**70**	**76**	**0**	**0**

Table 3.14-5
Important Farmlands Permanently Affected by Each Alternative Alignment (acres)[a]

County/ Important Farmland Classification	Alternative Alignment					
	BNSF Alternative	Corcoran Elevated Alternative	Corcoran Bypass Alternative	Allensworth Bypass Alternative	Wasco-Shafter Bypass Alternative	Bakersfield South Alternative
Kern County						
Prime Farmland	491	0	0	75	530	0
Farmland of Statewide Importance	42	0	0	146	0	0
Unique Farmland	0	0	0	4	0	0
Farmland of Local Importance	0	0	0	0	0	0
Total	**533**	**0**	**0**	**225**	**530**	**0**
Total by Important Farmland Classification						
Prime Farmland	1,063	0	44	75	530	0
Farmland of Statewide Importance	867	0	341	198	0	0
Unique Farmland	189	0	56	5	0	0
Farmland of Local Importance	91	0	0	23	0	0
Total Acreage of Important Farmland	**2,211**	**0**	**441**	**301**	**530**	**0**

Table 3.14-6
Protected Farmland Permanently Converted by Each Alignment Alternative[a]

Alternative	Williamson Act Land Acres[a]	Williamson Act Parcels[b]	FSZ Land Acres[a]	FSZ Parcels[b]
BNSF Alternative	1,132	248	181	41
Corcoran Elevated Alternative	0	0	0	0
Corcoran Bypass Alternative	240	59	140	20
Allensworth Bypass Alternative	221	63	8	2
Wasco-Shafter Bypass Alternative	188	31	0	0
Bakersfield South Alternative	0	0	0	0

[a] Acreages are rounded to the nearest whole number. The acreages listed do not include farmland under non-renewable Williamson Act contracts.

The HMF is expected to cover approximately 154 acres. Potential HMF sites in the Fresno to Bakersfield Section have been identified ranging from 416 to 586 acres. The specific location of an HMF within any of these sites is not currently known. The acreage of Important Farmland within each HMF site is provided in Table 3.14-7. Only the Hanford site contains protected farmland, with 219 acres in Williamson Act contract and 251 acres in FSZ contract.[3] As indicated in the table, it is expected that construction of an HMF at any of the sites would result in the conversion of Prime Farmland and/or Farmland of Statewide Importance to nonagricultural use.

Table 3.14-7
Important Farmlands within Heavy Maintenance Facility Alternative Sites (acres)[a]

HMF Alternative Sites	Important Farmlands				
	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Total
Fresno Works-Fresno (586 acres)	384	0	17	8	409
Kings County-Hanford (511 acres)	80	284	101	0	465
Kern COG-Wasco (416 acres)	409	0	0	0	409
Kern COG-Shafter East (495 acres)	490	0	0	0	490
Shafter West (495 acres)	457	0	0	0	457

[a] Acreages are rounded to the nearest whole number.

Wind effects on bees and adjacent cropland would be negligible and not affect agricultural productivity, including pollination by bees. Noise from HST operation would be unlikely to affect confined farm animals.

B. NO PROJECT ALTERNATIVE

As discussed in Chapter 1 Purpose, Need, and Project Objectives, and Section 3.18 Regional Growth, the San Joaquin Valley population continues to grow. To accommodate this growth, conversion of farmland to other uses, such as residential developments and transportation infrastructure, continues. Section 3.19 Cumulative Impacts discusses foreseeable future projects, which include residential, commercial, and industrial developments and transportation infrastructure. These projects are planned or approved, and future development pursuant to local land use plans would result in conversion of Prime and Unique Farmland and Farmland of Statewide or Local Importance.

Under the No Project Alternative, population growth would be commensurate with regional growth forecasts (see Section 2.4.1 No Project Alternative). Using the methods in Section 2.4.1 for relating population growth to conversion of farmland, regional growth forecasts indicate development of approximately 56,500 acres occurring in Fresno County, 11,800 acres in Kings County, 36,200 acres in Tulare County, and 68,400 acres in Kern County by 2035.

[3] The Kern COG-Shafter and Shafter West HMF sites are in nonrenewal Williamson Act contract.

The eight San Joaquin Valley counties that participated in the San Joaquin Valley Blueprint planning process developed a forecast of farmland conversion to nonagricultural uses by 2050 based on current development patterns. Given continuation of these patterns, 327,000 acres of farmland would be converted by 2050 (San Joaquin Valley Regional Planning Agencies 2009).

Because of the extent and quality of farmland in these counties, most of this growth is likely to occur on Important Farmlands. Local and regional growth management and land use plans encourage infill and higher-density development in urban areas and concentration of uses around transit corridors. All of the regional transportation plans for the south San Joaquin Valley include HST as an important element in meeting air quality goals for the region, as described in Section 1.3 Relationship to Other Agency Plans, Policies, and Programs. Under the No Project Alternative, cities would have a more difficult time reducing low-density sprawl and encouraging higher-density development.

As shown in Figure 3.14-1, most development in the southern San Joaquin Valley that is currently being planned or permitted is located in the vicinity of urban centers and/or along SR 99. Most of this development would take place on currently unincorporated county land that is largely classified as Prime Farmland. A total of approximately 5,100 acres of farmland would be converted to nonagricultural uses by development planned or permitted within 2 miles of the Fresno to Bakersfield HST Section alternatives by 2035.

Indirectly, urbanized area encroachment affects agricultural operations by constraining activities such as spraying fertilizers and pesticides or reducing operating hours for farm equipment. Where residential development is adjacent to farms, residents complain of odor and noise from agricultural equipment.

C. HIGH-SPEED TRAIN ALTERNATIVES

This section evaluates direct and indirect impacts that would result from each HST alternative. Impacts during construction are temporary, such as temporary construction staging, because they will cease when construction is completed. Project impacts, such as conversion of agricultural lands for the HST alignment and associated facilities, are permanent because these lands would remain in nonagricultural use. For a discussion of property acquisition, see Section 3.12 Socioeconomics, Communities, and Environmental Justice, including the Uniform Relocation Assistance and Real Properties Acquisition Policy Act and the California Relocation Assistance Act. The project would compensate property owners and tenants in accordance with statutory requirements, which apply to all real property including the acquisition of farmland whether converted to other uses or because of severance.

Construction Period Impacts

Project implementation would include purchasing rights-of-way, constructing the project, and testing the HSTs. Heavy construction (such as grading, excavation, constructing the HST railbed, and laying the tracks) would occur within a shorter period. Chapter 2, Alternatives, describes the expected construction schedule.

Common Agricultural Land Impacts

The construction of any of the project alternatives would require the temporary use of agricultural land outside the permanent right-of-way and result in disruption of some utilities and infrastructure, and temporary disturbance of dairies. The following sections discuss the potential effects of each alternative.

Temporary Use of Agricultural Land

Some agricultural land outside of the permanent right-of-way would be used for construction activities such as staging areas and material laydown areas. This land would be leased from the landowner and used for 1 to 3 years for construction. After construction, the land would be restored to its original condition and returned to the owner. These impacts are negligible under NEPA and less than significant under CEQA because the land would be used temporarily and restored; the land would not be permanently converted to a nonagricultural use.

BNSF Alternative Alignment. Table 3.14-8 presents estimates of the temporary use of Important Farmlands under the BNSF Alternative. Most of this land is classified as Prime Farmland. Because this land would be restored and returned to agricultural use after project construction is completed, it would not be permanently converted to nonagricultural uses; therefore, the temporary use of farmland for project construction is considered to have negligible effects under NEPA and less than significant impacts under CEQA.

Table 3.14-8
Important Farmland Temporarily Used for Project Construction (acres)[a]

HST Alternative Alignment	Important Farmlands				Total	Net Change in Acreage Relative to BNSF Alternative
	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance		
BNSF Alternative	855	480	246	0	1,581	NA
Corcoran Elevated Alternative	0	0	0	0	0	0
Corcoran Bypass Alternative	0	205	207	0	412	+6
Allensworth Bypass Alternative	17	130	0	0	147	-7
Wasco-Shafter Bypass Alternative	495	0	0	0	495	+6
Bakersfield South Alternative	0	0	0	0	0	0

[a] Acreages are rounded to the nearest whole number.

NA = Not applicable.

Corcoran Elevated Alternative Alignment. The Corcoran Elevated Alternative passes through the city of Corcoran and does not impact farmland.

Corcoran Bypass Alternative Alignment. The Corcoran Bypass Alternative would temporarily use 412 acres of Important Farmland during construction. This is 6 more acres of Important Farmland affected during construction as the acreage affected by the corresponding segment of the BNSF Alternative. This land would be restored and returned to agricultural use after construction is completed. These impacts are considered negligible effects under NEPA and less than significant impacts under CEQA since they do not result in permanently converting the farmlands or permanently disrupting agricultural uses.

Allensworth Bypass Alternative Alignment. The Allensworth Bypass Alternative would temporarily use 147 acres of Important Farmland during construction. This is 7 less acres of Important Farmland affected during construction as the acreage affected by the corresponding segment of the BNSF Alternative. This would be a negligible effect under NEPA, and a less than significant impact under CEQA since it would not result in permanently converting farmlands or permanently disrupting agricultural uses. The same area of farmland would be temporarily used if the BNSF Railway right-of-way were moved adjacent to the Allensworth Bypass.

Wasco-Shafter Bypass Alternative Alignment. The Wasco-Shafter Bypass Alternative would temporarily use 495 acres of Important Farmland during construction. This is 6 more acres of Important Farmland affected during construction as the acreage affected by the corresponding segment of the BNSF Alternative. This would be a negligible effect under NEPA, and a less than significant impact under CEQA since it would not result in permanently converting farmlands or permanently disrupting agricultural uses.

Bakersfield South Alternative Alignment. The Bakersfield South Alternative would not use any agricultural land during construction. As a result, there would be no adverse effect under NEPA and no adverse impact under CEQA.

HMF Alternatives. None of the HMF alternatives would use agricultural land for temporary construction activities. Construction would take place within the permanent footprint of the HMF. As a result, there would be no adverse effect under NEPA and no adverse impact under CEQA.

Temporary Utility and Infrastructure Interruption

Construction of the alignment alternatives and related improvements (e.g., road realignments) would affect productive farmland. Each farm maintains a system of onsite utilities needed for operations, such as irrigation systems (e.g., ditches, drains, pipelines, and wells), access roads, and power supplies that could be disrupted by the project during construction. Utility disruptions could jeopardize farm productivity.

Section 3.12 Socioeconomics, Communities, and Environmental Justice describes the expected process for right-of-way acquisition. As part of this process, Authority right-of-way agents would work with each affected property owner to address issues of concern. The required property appraisal would identify affected utilities, and the agents would attempt to resolve conflicts. For example, the acquisition agreements could require that the contractor relocate the affected utilities before construction, maintain service during construction, or time the disruption to avoid active periods (e.g., during the winter idle period for annual crops). In some cases, the agents may not be able to resolve the conflict. When construction activities cannot avoid a utility, the agent would negotiate a fair compensation for loss of production. Because utility disruptions would likely be resolved during the right-of-way acquisition process, they would likely not result in the conversion of farmland to nonagricultural use and therefore the effect would be negligible under NEPA, and the impact less than significant under CEQA.

For additional information on large regional utilities, see Section 3.6 Public Utilities and Energy. The analysis of project impacts below addresses potential hardships associated with severing parcels (i.e., not just disrupting utilities during construction).

Temporary Noise and Vibration Effects on Adjacent Farm Animals

Construction of the project would generate noise and vibration from construction equipment and vehicles (e.g., clearing, grading, track installation). Noise levels from project construction are estimated to be 89 dBA L_{eq} at 50 feet for an 8-hour workday (refer to Section 3.4 Noise and Vibration). There is 1 poultry farm in Fresno County and 4 dairy operations in Kings County where the BNSF Alternative would come within 100 feet of animal containment facilities. No

animal husbandry operations are located in the vicinity of other project alternatives. The FTA threshold for construction noise impacts on commercial land uses such as animal husbandry operations is 85 dBA 8-hour L_{eq} (day or night). At a distance of 100 feet, the 8-hour L_{eq} for project construction at the animal containment facilities on the poultry farm and the 4 dairies would be 83 dBA. Therefore, project construction noise effects on these animal husbandry operations would be negligible under NEPA, and the impact would be less than significant under CEQA.

There are no criteria established for vibration effects on domestic animals or poultry; however, the FRA has established a 75 VdB criterion for ground-borne vibration impacts to institutional land uses (Category 3). Institutional land uses include schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for vibration to cause activity interference. This level of sensitivity to vibration is judged to be appropriate for animal husbandry operations.

Project construction would generate vibration levels of 75 VdB at up to 70 feet from the construction site (refer to Section 3.4 Noise and Vibration). As indicated above, the animal containment facilities for the poultry farm and dairies near the BNSF Alternative are approximately 100 feet from construction activities. Therefore, project construction vibration effects on these operations would be negligible under NEPA and the impact would be less than significant under CEQA.

Project Impacts

Common Agricultural Land Impacts

All the HST alternatives would result in permanent conversion of agricultural land to nonagricultural use (including potential conversion from parcel severance), permanent access severance, conflicts with farmland protection contracts (e.g., Williamson Act), and indirect effects on dairies or other animal husbandry facilities. None of the alternatives would cause adverse wind effects on adjacent agricultural lands nor would they interfere with aerial spraying of the crops.

Permanent Conversion of Agricultural Land to Nonagricultural Use

The project involves construction of rail and associated transportation structures, and other HST facilities (e.g., paralleling stations and HMF access tracks) through areas with Important Farmlands, permanently displacing agricultural uses on these lands. In addition, the HST alternatives would sever large agricultural properties, especially where the alternatives are not directly alongside existing transportation facilities. In many cases, severing the parcels would create two farmable parcels and the only loss of Important Farmland would be from the HST facilities themselves. In some cases, severing the parcels would create small remnant parcels. Depending on several factors such as adjacency to neighboring farms, access, and utilities (e.g., irrigation and power systems), these small remnant parcels might not be farmable. In cases where farming is unlikely to continue, these small remnant parcels have been identified in this section as converted farmland. The Fresno to Bakersfield Section Draft Relocation Impacts Report (Authority and FRA 2010) explains how analysts reviewed each affected parcel by alternative, considered usable and unusable remnants, and made preliminary recommendations for property acquisitions. As the design develops, this assessment will continue to be updated for current property acquisition requirements. The farmland conversion reported in this document reflects a 15% design level.

Conversion of agricultural lands would occur along each of the project alternatives. Table 3.14-5 summarizes the impacts (acres converted). The following discussion of alternatives presents the results of the CPA-106 farmland conversion evaluation. Permanently converting Important

Farmland to nonagricultural uses is a substantial effect under NEPA and a significant impact under CEQA.

The project also would affect Grazing Land, as described in detail for each of the alternatives below. Grazing Land is not considered to be Important Farmland; therefore, impacts to Grazing Land would be a negligible effect under NEPA and a less than significant impact under CEQA.

As discussed in Chapter 1, Project Purpose, Need, and Objectives, and in Section 3.18, Regional Growth, the HST system would ease the pressure on the state's agricultural land base by reducing the need for expanding airports and freeways. By offering a new transportation option, it provides an opportunity to create transit centers in the central business districts, where mixed land uses (residential, commercial, and business uses) and urban densities are best suited. If the communities zone to take advantage of this increase in land values, the growth can be redirected to limit low density development, which has been consuming large amounts of land area. There is an opportunity to encourage walkable, more concentrated development patterns to meet new growth demands and reduce the rate and occurrence of low density, which erodes the valuable land resources. Providing opportunities for focusing future development on land that is already in nonagricultural uses would reduce the amount of farmland converted to uses other than agriculture. Consistent with the preferred B+ (Blueprint) Scenario, which incorporates the HST system, farmland conversion would be reduced from 327,000 acres (the business-as-usual, or "A" Scenario) to 209,000 acres, a reduction of 118,000 acres. The project's expected contribution to this reduction would be a potential beneficial effect under each HST alternative.

BNSF Alternative Alignment. Table 3.14-5 presents the estimates of the permanent conversion of Important Farmlands under the BNSF Alternative, based on the land that would be permanently converted as a result of the project right-of-way, ancillary facilities such as substations, and the Fresno, Kings/Tulare and Bakersfield HST stations. As indicated, approximately 2,210 acres of Important Farmlands would be converted, including approximately 108 acres consisting of remnants from 40 parcels that are not expected to remain suitable for agriculture. The farmland conversion impact rating by county for the BNSF Alternative is provided in Table 3.14-9. The rating within each county was less than 160. The BNSF Alternative would also convert 41 acres of grazing land to nonagricultural uses. The conversion of this much farmland to a nonagricultural use would be a substantial effect under NEPA and a significant impact under CEQA.

Table 3.14-9
Farmland Conversion Impact Rating for BNSF Alternative in Fresno, Kings, Tulare, and Kern Counties

County	Farmland Conversion Impact Rating
Fresno	124
Kings	147
Tulare	111
Kern	151

Corcoran Elevated Alternative Alignment. The Corcoran Elevated Alternative passes through the city of Corcoran and does not impact farmland.

Corcoran Bypass Alternative Alignment. The guideway and ancillary facilities for the Corcoran Bypass Alternative would result in the permanent conversion of 44 acres of Prime Farmland, 341 acres of Farmland of Statewide Importance, and 56 acres of Unique Farmland. The total acreage impacted includes 4 acres of Farmland of State Importance from one parcel that would be isolated and no longer viable for economic farming. The Corcoran Bypass Alternative would impact 54 fewer acres of Important Farmland than would the corresponding segment of the BNSF Alternative. The Corcoran Bypass Alternative would not impact grazing land. The farmland conversion impact rating for the Corcoran Bypass Alternative is 151 for the segment in Kings County and 116 for the segment in Tulare County. The large amount of farmland that would be converted to a nonagricultural use by the Corcoran Bypass Alternative would be a substantial effect under NEPA and a significant impact under CEQA.

Allensworth Bypass Alternative Alignment. The guideway and ancillary facilities for the Allensworth Bypass Alternative would result in the permanent conversion of 75 acres of Prime Farmland, 198 acres of Farmland of Statewide Importance, 5 acres of Unique Farmland, and 23 acres of Farmland of Local Importance. The Allensworth Bypass Alternative would affect 39 more acres of Important Farmland than would the corresponding segment of the BNSF Alternative. This alternative could also cause parcel splits that would preclude farming on 24 acres of Important Farmland from 8 parcels. The Allensworth Bypass Alternative would not impact grazing land. The farmland conversion impact rating for the Allensworth Bypass Alternative is 112 for the segment in Tulare County and 180 for the segment in Kern County. The large amount of farmland that would be converted to a nonagricultural use by the Allensworth Bypass Alternative would be a substantial effect under NEPA and a significant impact under CEQA.

In the event that the BNSF Railway right-of-way was moved adjacent to the Allensworth Bypass Alternative Alignment, the conversion of Important Farmland to nonagricultural use would double. A total of 174 acres of Prime Farmland, 372 acres of Farmland of Statewide Importance, 10 acres of Unique Farmland, and 52 acres of Farmland of Local Importance would be converted to nonagricultural use. The conversion of this much farmland to a nonagricultural use would be a substantial effect under NEPA and a significant impact under CEQA.

Wasco-Shafter Bypass Alternative Alignment. The guideway and ancillary facilities for the Wasco-Shafter Bypass Alternative would result in the permanent conversion of 530 acres of Prime Farmland. This alternative would affect 108 more acres of Prime Farmland than would the corresponding segment of the BNSF Alternative. This alternative could also preclude farming on 74 acres of Prime Farmland from six parcels. The Wasco-Shafter Bypass Alternative would convert 1 acre of grazing land to nonagricultural use. The farmland conversion impact rating for the Wasco-Shafter Bypass Alternative is 180. The large amount of farmland that would be converted to a nonagricultural use by the Wasco-Shafter Bypass Alternative would be a substantial effect under NEPA and a significant impact under CEQA.

Bakersfield South Alternative Alignment. The guideway and ancillary facilities for the Bakersfield South Alternative would result in the permanent conversion of 17 acres of grazing land and would not result in any remnant parcels that could not be farmed. This alternative would affect 2 fewer acres of grazing land than would the corresponding segment of the BNSF Alternative. The farmland conversion impact rating for the Bakersfield South Alternative is 151. The Bakersfield South Alternative would not convert important farmland to nonagricultural uses; therefore, it would have a negligible effect under NEPA and a less than significant impact under CEQA.

HMF Alternatives. Table 3.14-7 presents the acreage of farmland encompassed by each HMF site. Within the site, the HMF and associated tracks would occupy approximately 154 acres of land. While the precise location of HMF facilities within each alternative site is not known at this time, the facilities would be located near the trackway.

The conversion of Important Farmlands for any HMF site in the Fresno to Bakersfield Section would be in addition to the conversion caused by the HST trackway. Because all of the alternative alignments already result in a substantial effect in Fresno, Kings, and Kern counties, an HMF in any of these counties would augment the effect.

Parcel Severance

As previously discussed, the HST alternative alignments would convert farmland to a nonagricultural use. The alignments follow existing transportation corridors (i.e., SR 43, UPRR, and BNSF) as much as possible, but in some cases the alignments deviate from those corridors and bisect agricultural parcels. The reasons for these deviations include maintaining mandated travel times, optimizing the location of a potential Kings/Tulare Regional Station, and reducing impacts to urban areas, farmland, waters of the U.S., and habitat for threatened or endangered species. Alignments deviating from existing transportation facilities would bisect parcels. Some of the remnant parcels would be too small to maintain economic activity. The analysis of impacts on Important Farmland already assumes that the Authority would acquire the smallest property remainders. Because the farmland conversion analysis includes these non-economic remnants, they are not discussed further. This analysis assumes that other remainder parcels are of sufficient size to maintain economic activity and are not at risk for conversion.

Although larger remainder parcels would not be at risk based on size alone, diagonal alignments could cause hardships in maintaining economic activity on otherwise viable parcels. For example, a remainder parcel may become isolated from the farm activity center, requiring farm workers (and farm equipment) to take long detours on public roads. The project design reduces these hardships by providing alignment crossings on public roads. As described in Chapter 2, and listed in Appendix 2-A, grade-separated crossings (usually overpasses) would occur at intervals of approximately 1 to 2 miles. The right-of-way acquisition process provides additional opportunities to reduce hardships caused by access severance. As part of this process, the Authority's right-of-way agents would work with each affected property owner to address issues of concern. Agents would attempt to resolve conflicts, for example by arranging additional property transfers to consolidate ownership. For large properties, agents may be able to arrange for additional grade-separated crossings (e.g., underpasses or small overpasses). The agents may not be able to resolve all issues, and may offer compensation to landowners that demonstrate a hardship from parcel severance. Because these issues would likely be resolved during the right-of-way acquisition process, it is unlikely that parcel severance would result in the additional conversion of farmland to nonagricultural use. This would be a negligible effect under NEPA and a less-than-significant impact under CEQA. For additional information on the right-of-way process, see Section 3.12, Socioeconomics, Communities, and Environmental Justice.

Effects on Land under Williamson Act or FSZ Contracts, Local Zoning, or Conservation Easement Lands

Parcels required for the project that are under Williamson Act or FSZ contracts would be subject to property acquisition in accordance with the applicable provisions of the programs. Williamson Act and FSZ contracts provide tax incentives for parcels that remain in agricultural production. Partial acquisitions of Williamson Act or FSZ properties might result in remaining portions of the parcels staying under Williamson Act contracts if minimum acreage requirements established by the local jurisdiction are met. These requirements vary by county, parcel size, and land quality.

A partial acquisition of land protected by the Williamson Act or the FSZ could constrain the potential continued use of that land for farming because (1) the remaining land acreage might be too small to meet the minimum requirements under these programs; and (2) the resulting increase in property taxes on such land might affect the financial feasibility of continued farming. Although it would be possible to combine adjacent farmlands, this approach might not be feasible

because of variations in topography and soils between adjacent farms. As previously discussed, farmland conversion is a significant impact of each alternative except for the Corcoran Elevated and Bakersfield South alternatives located in urban areas. The potential for the project to cause removal of lands from Williamson Act or FSZ contracts, beyond the lands needed for the HST project facilities, is not expected to result in additional farmland conversion beyond that identified above.

Local zoning codes and general plan policies also protect most of the Important Farmlands discussed above for agricultural use. Section 3.13 Station Planning, Land Use, and Development addresses the Project's consistency with local zoning and general plan policies for the protection and preservation of agricultural lands.

Agricultural conservation easements provide permanent protection for high-quality farmlands. Available information indicates that none of the alternatives would affect lands protected under agricultural conservation easements. There is no effect under NEPA or impact under CEQA associated with the potential for additional agricultural land conversion to lands protected by an agricultural conservation easement. Moreover, because the analysis is on conversion of land classified as Important Farmlands based on its physical characteristics, the level of agricultural land conversion discussed above would not change even if it is determined that some land potentially affected is under an agricultural conservation easement.

BNSF Alternative Alignment. Table 3.14-10 lists by county the acreage of Williamson Act and FSZ contract lands affected by the BNSF Alternative. The alternative would affect a total of 1,462 acres of farmland under Williamson Act contract (including 72 acres that is in nonrenewal) and 511 acres of farmland under FSZ contract, with the largest affected acreage within Kings County.

Table 3.14-10
Protected Farmland Permanently Affected by the BNSF Alternative Alignment (acres)

Protected Farmland Classification	Fresno County	Kings County	Tulare County	Kern County
Contracted Land	255	480	322	305
Non-Prime Contracted Land	0	0	28	0
Farmland Security Zone	0	423	17	71
Prime Contracted Land – Nonrenewal	0	13	0	59
Total	**255**	**916**	**367**	**435**

Corcoran Elevated Alternative Alignment. The Corcoran Elevated Alternative passes through the city of Corcoran and does not impact farmland.

Corcoran Bypass Alternative Alignment. The Corcoran Bypass Alternative would affect 476 acres of land under Williamson Act contract (including 9 acres that is in nonrenewal) and 386 acres under FSZ contract land. This is 19 acres less of Williamson Act contract land and 33 acres more of FSZ contract land than the corresponding segment of the BNSF Alternative.

Allensworth Bypass Alternative Alignment. The Allensworth Bypass Alternative would affect 244 acres of land under Williamson Act contract and 8 acres under FSZ contract land. This is 26 and 63 acres less of Williamson Act and FSZ contract land, respectively, than the corresponding segment of the BNSF Alternative. In the event that the BNSF Railway right-of-way is moved

adjacent to the Allensworth Bypass Alternative Alignment, the acreage of protected farmland affected by this alternative would double.

Wasco-Shafter Bypass Alternative Alignment. The Wasco-Shafter Bypass Alternative would affect 342 acres of land under the Williamson Act contract, of which 24 acres are under nonrenewable contracts. This is 238 acres more of Williamson Act contract land than the corresponding segment of the BNSF Alternative.

Heavy Maintenance Facility Alternatives. None of the land at the Fresno Works-Fresno, Kern COG-Wasco, Kern COG-Shafter, and Shafter West HMF sites is currently under Williamson Act or FSZ contract. A total of 242 acres of land on the Hanford site is under Williamson Act contract and 228 acres are under FSZ contract.

Effects on Confined Animal Agriculture

Conversion of lands with dairy operations, poultry farms, or other animal husbandry (cattle feedlot and hog feedlot) could include loss of structures and facilities, as well as removal of associated land areas for growing forage crops and/or receiving waste (nutrient distribution). Conversions of part of a dairy or other animal husbandry operation to nonagricultural uses could result in secondary impacts. For example, changes to land areas that receive dairy waste would require modification of the dairy waste management and nutrient management plans, and would result in the need to increase offsite disposal of waste or to reduce the size of the dairy's herd. As a result, land conversions could impact the economic viability of one or more animal husbandry operations. Those economic impacts are discussed in Section 3.12 Socioeconomics, Communities, and Environmental Justice.

As part of the right-of-way acquisition process, the Authority's right-of-way agents would work with each affected animal husbandry operator to address issues of concern. Agents would attempt to resolve conflicts, for example by reconfiguring facilities so that there is no net loss of operational capacity. The agents might not be able to resolve all issues, and would offer compensation to landowners that demonstrate a hardship from loss of facilities.

As discussed above, the FMMP focuses on agricultural land that has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained yields of crops and therefore does not directly address agricultural operations such as dairies and other confined animal facilities. Federal and state environmental law regarding farmland focuses on the conversion of farmland to nonagricultural uses. Should the project cause an animal husbandry operation to cease as a going concern, the high value of land for agricultural use in the south San Joaquin Valley would cause land removed from animal husbandry to return to agricultural production in the long-term. That is, land not directly taken by project facilities even if no longer used for animal husbandry, would most likely be converted to other agricultural uses. Therefore, project effects on animal husbandry would not result in farmland conversion other than that portion of land taken for project facilities. For this reason, loss of animal husbandry facilities would be a negligible effect under NEPA and a less-than-significant impact under CEQA from the standpoint of farmland conversion. For additional information on the right-of-way process and a discussion of agricultural economic impacts associated with conversion of lands with animal husbandry operations, see Section 3.12, Socioeconomics, Communities, and Environmental Justice.

Additionally, where the HST right-of-way was located within 100 feet of confined animal facilities, the HST operation might cause noise that would disturb livestock. Based on existing research, the FRA has established a threshold for high-speed train noise effects on livestock of 100 dBA SEL (FRA 2005). As discussed in Section 3.4 Noise and Vibration, SEL describes the noise from a single event such as a train passing a given point. At a distance of 100 feet, the SEL for project

operations on the BNSF Alternative would exceed 100 dBA SEL at two sheds on one dairy in Kings County and two sheds on a hog feedlot in Tulare County. The impact of noise at the dairy and feedlot would not preclude agricultural use and would not result in farmland conversion. Therefore, HST noise effects on confined animals would be negligible under NEPA, and the impact would be less than significant under CEQA.

The HST operating at 220 mph would generate vibration levels of 75 VdB at up to 70 feet from the tracks (refer to Section 3.4 Noise and Vibration). The sheds at the dairy and hog feedlot described above would be within 70 feet of the HST tracks and may be impacted by vibration. This impact would not preclude agricultural use and would not result in farmland conversion. Therefore, project operation vibration effects on these animal husbandry operations would be negligible under NEPA and the impact would be less than significant under CEQA.

BNSF Alternative Alignment. The project would result in the conversion of about 229 acres of land on 36 parcels associated with 1 dairy and 1 poultry farm in Fresno County, at least 12 dairies and a feedlot in Kings County, and 1 dairy and 1 a feedlot in Tulare County. Structures or other facilities would be displaced in 8 of those operations (1 in Fresno County, 5 in Kings County, and 2 in Tulare County) including up to 9 structures or sheds, 1 cattle pen, 6 retention basins, and 2 residences. A further 4 sheds in 2 of the facilities could be affected by noise and vibration. Of the total land to be acquired, about 200 acres, or 87%, would be in areas designated for nutrient distribution or waste disposal. The remaining 29 acres (13%) would be in areas associated with existing facilities or under improvement. Of the 36 parcels affected, land acquisition would amount to 1 acre or less in 8 parcels, between 1 acre and 10 acres in 20 parcels, and between 10 acres and 20 acres in 6 parcels. In only two parcels (both in Kings County) would acquisition total more than 20 acres – 20.4 acres or 13% of one parcel, and 33.6 acres or 5% of another parcel.

Corcoran Elevated Alternative Alignment. The Corcoran Elevated Alternative passes through the city of Corcoran and does not impact farmland.

Corcoran Bypass Alternative Alignment. The Corcoran Bypass Alternative would have the same impacts to animal husbandry operations in Fresno and Tulare counties as the BNSF Alternative. In Kings County, it would separate operational facilities from land used for crops and nutrient distribution at one fewer dairy than the BNSF Alternative.

Allensworth Bypass Alternative Alignment. The Allensworth Bypass Alternative would not affect animal husbandry operations.

Wasco-Shafter Bypass Alternative Alignment. The Wasco-Shafter Bypass Alternative would not affect animal husbandry operations.

Bakersfield South Alternative Alignment. The Bakersfield South Alternative would not affect animal husbandry operations.

Wind-Induced Effects

During operation, HSTs induce airflow (i.e., generate wind) along the sides and at the end of the train (known as *wake*). Studies summarized by the FRA in 1999 found that the strength of the airflow depends on the distance from the train, the train's geometry (i.e., the shape of the nose and end of the train), and the train's operating speed. FRA found that the airflow dissipates in less than 1 second (FRA 1999). Another study found that wind generated by the train has a velocity of approximately 10% of the train velocity at a distance of 3 meters (approximately 10 feet) from the train (Neppert and Sanderson 1977; Mark Sterling and Chris Baker, School of Engineering, University of Birmingham, United Kingdom, August 23, 2010, personal communication). Therefore, an extrapolation of these studies for an HST traveling at 220 mph

indicates that it would generate a wind gust lasting less than 1 second at a distance of approximately 10 feet from the train tracks. The HST would be a minimum of 21 feet from the edge of the right-of-way (see Section 2.1.4 Infrastructure Components) and in many cases, particularly in agricultural areas, the train tracks would be farther away. Therefore, the HST would not cause wind effects to adjacent farmlands, and indirect effects (e.g., interference with insect pollination, additional pesticide drift and application restrictions) are not expected to result in additional farmland conversion. There would be no effect under NEPA and no impact under CEQA.

Aerial Spraying

The height of vertical HST structures, such as poles and elevated guideways, could interfere with aerial spraying of agricultural lands adjacent to the alignment. Currently, no restrictions exist on the distances an aircraft must maintain from utility lines or towers (Terry Gage, Executive Director, California Agricultural Aircraft Association, Lincoln, California, personal communication, August 30, 2010, regarding aerial spraying). Agricultural aircraft currently fly in areas where utility lines, such as telephone poles and electrical transmission towers of varying heights, exist in or near the sprayed fields. The distance that aircraft maintain from power lines and poles depends on the cropping pattern, the field's orientation, and operator-determined safety factors. Because vertical HST structures are similar to existing utility structures placed in and near agricultural fields, changes in spraying patterns are unlikely to cause conversion of agricultural land. There would be no effect under NEPA and no impact under CEQA.

3.14.6 Mitigation Measures

The following mitigation measures are based on the Statewide Program EIR/EIS mitigation strategies. The Authority would implement these measures to reduce substantial adverse environmental impacts resulting from the project.

Ag-MM#1: Preserve the Total Amount of Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland. Coordinate with the DOC to identify suitable land for mitigation and purchase agricultural conservation easements from willing sellers at a ratio of no less than 1:1 to preserve Important Farmlands in the amount commensurate with the quantity and quality of converted farmlands. Work directly or through donation of mitigation fees to a local, regional, or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural conservation easements (e.g., Central Valley Farmland Trust, American Farmland Trust, and resource conservation districts). Establish easements in the same agricultural regions as the impacts occur.

Ag-MM # 2: Consolidate Non-Economic Remnants. Create a farmland consolidation program to sell non-economic remnant parcels to neighboring landowners for consolidation with adjacent property with the goal of providing for continued agricultural use on the maximum feasible amount of non-economic remnant parcels.

3.14.7 NEPA Impact Summary

The No Project Alternative would have a substantial adverse impact on Important Farmlands because it is estimated that more than 100,000 acres of farmland would be converted to accommodate projected future growth in the Fresno, Kings, Tulare, and Kern areas. All of the HST alternatives, except for the Corcoran Elevated and Bakersfield South alternatives have substantial direct adverse effects on Important Farmlands (see Table 3.14-5) because they would convert more than 50 acres of Important Farmland to nonagricultural uses. The Corcoran Elevated and Bakersfield South alternatives are located in urban areas that are not classified as

Important Farmland by the FMMP. Therefore, these two alternatives have no impacts to agricultural lands.

The indirect noise, vibration, and utility severance effects of construction are not anticipated to result in substantially more farmland conversion from any of the HST alternatives. Therefore, these effects would be negligible. The indirect effects of operation from noise and vibration on farm animals, and from project-generated wind on adjacent farmland operations are anticipated to be negligible.

The HST-generated wind would not render agricultural lands unusable for farming under any alternative. Therefore, it would not result in an effect. Similarly, the HST vertical structures would not interfere with aerial application of pesticides and would not render agricultural lands unusable for farming. Therefore, there would be no adverse impact from HST-generated wind

Mitigation measures AG#1 and AG#2 would ensure that non-economic remnant parcels would remain in agricultural production and that land was preserved for agriculture. However, Important Farmland cannot be replaced. Its loss to agricultural uses is permanent and therefore, the effect of converting Important Farmland to a nonagricultural use would remain substantial.

3.14.8 CEQA Significance Conclusions

Table 3.14-11 summarizes significant project impacts, associated mitigation measures, and levels of significance after mitigation.

Table 3.14-11
Summary of Significant Agricultural Lands Impacts and Mitigation Measures

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Operation			
AG#1: Permanent Conversion of Agricultural Land to Nonagricultural Use. The BNSF Alternative would affect 2,210 acres of Important Farmland. The effect of other alignment alternatives on Important Farmland and the magnitude of that effect relative to the corresponding segment of the BNSF Alternative are as follows: Corcoran Bypass Alternative – 445 acres, 54 acres less than the BNSF Alternative. Allensworth Bypass Alternative – 301 acres, 39 acres more than the BNSF Alternative. Wasco-Shafter Bypass Alternative – 530 acres, 108 acres more than the BNSF Alternative.	Significant	**AG-MM#1 Preserve the total amount of Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland.**	Significant

Table 3.14-11
Summary of Significant Agricultural Lands Impacts and Mitigation Measures

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
AG#2: Permanent Conversion of Agricultural Land from Parcel Splits. The BNSF Alternative would create 108 acres of remnants from 40 parcels too small and isolated to economically farm. The Corcoran Bypass Alternative would create a 4-acre remnant from one parcel too small and isolated to economically farm. The Allensworth Bypass Alternative would create 24 acres of remnants from 8 parcels too small and isolated to economically farm. The Wasco-Shafter Bypass Alternative would create 74 acres from 6 parcels too small and isolated to economically farm.	Significant	**Ag-MM # 2: Consolidate Non-Economic Remnants.** Create a farmland consolidation program to sell non-economic remnant parcels to neighboring landowners for consolidation with adjacent property with the goal of providing for continued agricultural use on the maximum feasible amount of non-economic remnant parcels.	Significant

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