3.3 Agriculture and Forestry Resources

This section addresses agriculture and forestry resources that could be affected by implementation of the proposed program. Agricultural resources are lands defined as Important Farmland by the Farmland Mapping and Monitoring Program (FMMP) of the California Department of Conservation (DOC), as well as California Land Conservation Act of 1965 (Williamson Act) contract lands. Forestry resources are lands defined as forest land, including timberland. Important Farmland, Williamson Act contract lands, and forest land are summarized below for the study area as a whole, then described in greater detail in the respective discussions for the various geographic areas. This section is composed of the following subsections:

- Section 3.3.1, "Environmental Setting," describes the physical conditions in the program study area as they apply to agriculture and forestry resources.

- Section 3.3.2, "Regulatory Setting," summarizes federal, State, and regional and local laws and regulations pertinent to evaluation of the proposed program's impacts on agriculture and forestry resources.

- Section 3.3.3, "Analysis Methodology and Thresholds of Significance," describes the methods used to assess the environmental effects of the proposed program and lists the thresholds used to determine the significance of those effects.

- Section 3.3.4, "Environmental Impacts and Mitigation Measures for NTMAs," discusses the environmental effects of the near-term management activities (NTMAs) and identifies mitigation measures for significant environmental effects.

- Section 3.3.5, "Environmental Impacts, Mitigation Measures, and Mitigation Strategies for LTMAs," discusses the environmental effects of the long-term management activities (LTMAs), identifies mitigation measures for significant environmental effects, and addresses conditions in which any impacts would be too speculative for evaluation (CEQA Guidelines, Section 15145).

NTMAs and LTMAs are described in detail in Section 2.4, "Proposed Management Activities."

See Section 3.6, "Biological Resources—Terrestrial," for a discussion of the relationship between agricultural land uses and wildlife uses and detailed definitions of forest land habitats. See Subsection 3.7.1, "Environmental Setting," in Section 3.7, "Climate Change and Greenhouse Gas Emissions," for a description of potential consequences of climate change on agricultural land uses and agricultural water demand. See Section 3.14, "Land Use and Planning," for a discussion of existing land uses and definitions of general land use types in the study area. Section 3.14 describes general land use categories, including agriculture, as defined by DWR. DWR broadly defines agriculture in the context of general land use types. Although DWR's land use definitions provide a general context for land uses in the study area, DOC's definitions are more specific and therefore are relevant to assessing impacts on agricultural lands. Consistent with Appendix G of the CEQA Guidelines, DOC definitions of agricultural land are described below and are used to assess impacts on such lands.

Agricultural lands provide public benefits—floodplain management benefits, scenic open space, wildlife habitat, and defined boundaries to urban growth—while producing food and fiber and making a substantial contribution to California's economy. Intentional seasonal flooding of agricultural lands can provide valuable habitat for sensitive and common fish and wildlife species, offering foraging opportunities, and rest areas. Agricultural lands can be managed to benefit wildlife and recharge groundwater and can reduce costs to the State for flood management. Farmlands near urban populations can benefit the environment by providing local food sources, thereby conserving energy and land and reducing greenhouse gas emissions produced during transport and storage of food. Agricultural uses also preserve open space, which is both the backdrop and source of recreational opportunities.

3.3.1 Environmental Setting

The following discussion of the environmental setting in the study area focuses on existing agricultural and forest-related land uses that could experience temporary, short-term, or permanent effects from implementation of the proposed program. Sources of information used to prepare this section include the following:

- *California Farmland Conversion Report 2006–2008* (DOC 2011)
- *The California Land Conservation (Williamson) Act 2010 Status Report* (DOC 2010)
- The Important Farmland maps published by the DOC Division of Land Resource Protection (DOC 2008)

- The California Land Conservation Act (Williamson Act) maps published by the DOC Division of Land Resource Protection (DOC 2009)

- Multisource land cover data for the State of California (CAL FIRE 2003)

- *California's Forests and Rangelands: 2010 Assessment* (CAL FIRE 2010)

- *Summary of California County Agricultural Commissioners' Reports 2008–2009* (USDA 2010)

- *2008 California County Agricultural Commissioner's Data* (USDA 2009)

- *California Agricultural Resource Directory 2010–2011* (DFA 2010)

- *California Water Plan Update 2009* (DWR 2009)

The study area for this analysis consists of the following areas:

- Extended systemwide planning area (Extended SPA) divided into the Sacramento and San Joaquin Valley and foothills, and the Sacramento–San Joaquin Delta (Delta) and Suisun Marsh

- Sacramento and San Joaquin Valley watersheds

- SoCal/coastal Central Valley Project/State Water Project (CVP/SWP) service areas

Greater detail is provided for the Extended SPA than for the watersheds because the effects of the proposed program would be more varied and substantially greater in those areas than in the watersheds, where effects would be more localized. None of the management actions included in the proposed program would be implemented in the SoCal/coastal CVP/SWP service areas. In addition, implementation of the proposed program would not result in long-term reductions in water deliveries to the SoCal/coastal CVP/SWP service areas (see Section 2.6, "No Near- or Long-Term Reduction in Water or Renewable Electricity Deliveries"). Given these conditions, no effects or only negligible effects on agriculture and forestry resources would occur in the portion of the SoCal/coastal CVP/SWP service areas located outside of the Sacramento and San Joaquin Valley and foothills and the Sacramento and San Joaquin Valley watersheds and this geographic area is not discussed in detail in this section.

Overview

This section provides a general description of Important Farmland, Williamson Act contract lands, and forest land in the study area as a whole. The sections below more specifically describe these resources as they appear at particular locations in each geographic area.

Important Farmland Important Farmland is classified by DOC as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. These classifications recognize the land's suitability for agricultural production by considering physical and chemical characteristics of the soil, such as soil temperature range, depth of the groundwater table, flooding potential, rock fragment content, and rooting depth. The classifications also consider location, growing season, and moisture available to sustain high-yield crops. (See "Important Farmland" in the discussion of State regulations in Section 3.3.2, "Regulatory Setting," below, for detailed definitions of Important Farmland.)

In 2008, DOC estimated that California had approximately 31.6 million acres of agricultural land, of which approximately 12.4 million acres were identified as Important Farmland and 19.2 million acres were identified as Grazing Land. During the 12 biennial reporting cycles since the FMMP was established, more than 1.3 million acres of agricultural land in California have been converted to nonagricultural purposes. Between 2006 and 2008, 72,300 acres of agricultural land in the state were lost to urbanization. In total, Southern California accounted for 50 percent of new urban land uses in the state and the San Joaquin Valley ranked second at 27 percent of the total (19,400 acres). Housing developments were the most frequent and largest category of newly urbanized land. The increase was associated mostly with single-family homes located at the periphery of existing cities, and to a lesser degree, with apartment complexes.

Losses of irrigated farmland (i.e., Prime Farmland, Farmland of Statewide Importance, and Unique Farmland) have accelerated, as shown in recent updates to Important Farmland maps. Irrigated farmland decreased by 203,000 acres in 2008, a 30 percent greater decrease than in 2006. Losses of irrigated farmland have resulted in part from drought-related reductions in water supply and from reclassification of lands to Grazing Land or Farmland of Local Importance. Irrigated farmland made up 20,400 acres or 28 percent of all new urban land. Another 35 percent of new urban land came from dryland farming and grazing uses, some of which may have been idled in anticipation of development. The remaining 37 percent was derived from native vegetation or vacant lands.

Idling of irrigated farmland became a major factor in 2008, exceeding the effect of urbanization for the first time in FMMP history. This was

particularly true of the San Joaquin Valley, which accounted for 64 percent (130,000 acres) of the total land idled. Various plans and agreements to idle land in the Delta have the potential to accelerate this trend. Tracking of fallow lands during the FMMP's 2008 mapping cycle indicates that more than 156,000 acres in the San Joaquin Valley may have been removed from irrigated farmland categories between 2008 and 2010.

Approximately 80,000 acres of idled land were converted to irrigated farmland categories between 2006 and 2008, an increase of less than 1 percent from the prior cycle. Fully 70 percent of the land brought into agricultural use did not meet the criteria for Prime Farmland. San Joaquin Valley counties accounted for 55 percent of the land brought into irrigated uses, while the Sacramento Valley and Southern California accounted for 14 percent and 12 percent, respectively. Most expansions of irrigated land resulted from the addition of almond and pistachio orchards along the Sierra Nevada foothills and interior Coast Ranges foothills.

The study area includes approximately 9.4 million acres of Important Farmland, or 75 percent of the total for California (Table 3.3-1). Locations of Important Farmland in the study area are shown in Figure 3.3-1. Tables showing the amount of Important Farmland by category for each geographic area are provided below.

Table 3.3-1. Acreages of Important Farmland in the Study Area

Geographic Area	Acres of Important Farmland[1]
Extended systemwide planning area	
Sacramento and San Joaquin Valley and foothills	2,660,100
Delta and Suisun Marsh	550,100
Sacramento and San Joaquin Valley watersheds[2]	2,100,400
SoCal/coastal CVP/SWP service areas[3]	4,050,800
Total	**9,360,400**

Sources: DOC 2011; data compiled by AECOM in 2011

Notes:
[1] Acreages have been rounded (either up or down) to the nearest thousand acres. Important Farmland is agricultural land defined by the California Department of Conservation as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance.
[2] The Sacramento and San Joaquin Valley watersheds include only Important Farmland that is in the portion of the watersheds that is outside of the extended systemwide planning area.
[3] The SoCal/coastal CVP/SWP service areas include only Important Farmland that is outside of the extended systemwide planning area.

Key:
CVP = Central Valley Project
Delta = Sacramento–San Joaquin Delta
SWP = State Water Project

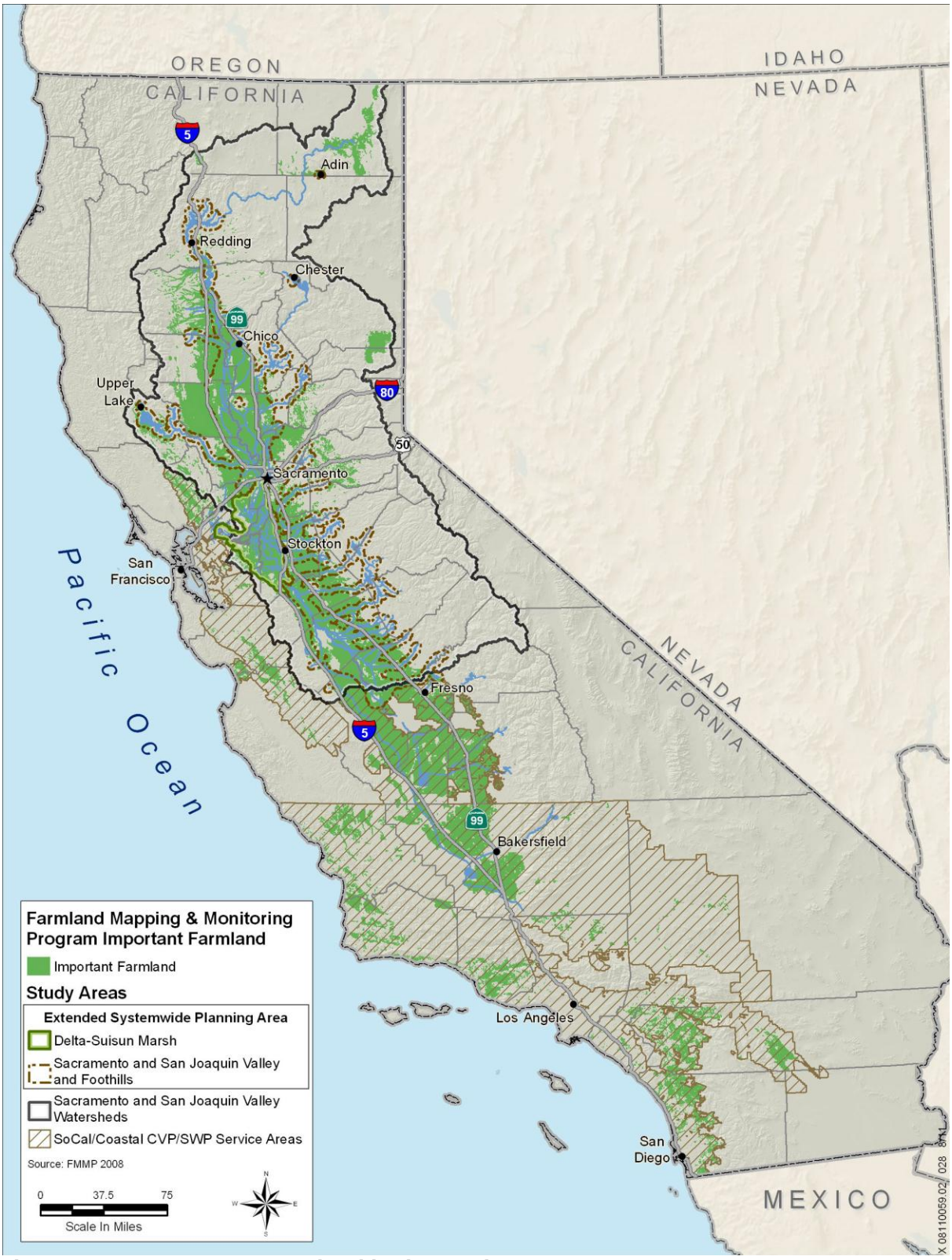

Figure 3.3-1. Important Farmland in the Study Area

In addition to conversion to urban or other land uses (e.g., habitat restoration), other factors affect the acreage of irrigated farmland. Regionally, factors related to the availability and reliability of surface water and groundwater supplies, crop markets, and anticipation of urban development affect the acreage of irrigated farmland. More locally, changes in annual water supplies, drainage, access, and compatibility with adjacent land uses also affect the productivity and value, and thus use, of agricultural land. Potential conflicts of adjacent land uses with agricultural production include traffic, vandalism, dumping, and provision of habitat for pest organisms (EDAW 2006; Sokolow et al. 2010).

Williamson Act Lands Under the California Land Conservation Act of 1965, also known as the Williamson Act, local governments can enter into contracts with private property owners to protect land (within agricultural preserves) for agricultural and open space purposes. (See the discussion of State regulations in Section 3.3.2, "Regulatory Setting," for a more detailed discussion of this topic.) Nine counties did not report Williamson Act enrollment figures from 2009–2010 because they lacked planning staff to administer the Williamson Act program. Therefore, this analysis reflects the most recent complete Williamson Act enrollment data from the 2008–2009 period.

As of January 1, 2008, 16.6 million acres were enrolled under the Williamson Act statewide. This represents approximately half of California's farmland and nearly one-third of its privately owned land. The study area includes 12.3 million acres of Williamson Act land, which represents 74 percent of the total for California (Table 3.3-2). The locations of Williamson Act lands within the study area are shown in Figure 3.3-2.

Table 3.3-2. Acreage of Williamson Act Lands in the Study Area

Geographic Area	Acreage of Williamson Act Lands[1]
Extended systemwide planning area	
Sacramento and San Joaquin Valley and foothills	1,900,000
Delta and Suisun Marsh	440,000
Sacramento and San Joaquin Valley watersheds	3,900,000
SoCal/coastal CVP/SWP service areas	6,100,000
Total	**12,340,000**

Sources: DOC 2009; data compiled by AECOM in 2010

Notes:
[1] Acreages have been rounded (either up or down) to the nearest thousand acres. The total acres of Williamson Act contract lands include continuing-term and nonrenewal contracts.

Key:
CVP = Central Valley Project
Delta = Sacramento–San Joaquin Delta
SWP = State Water Project

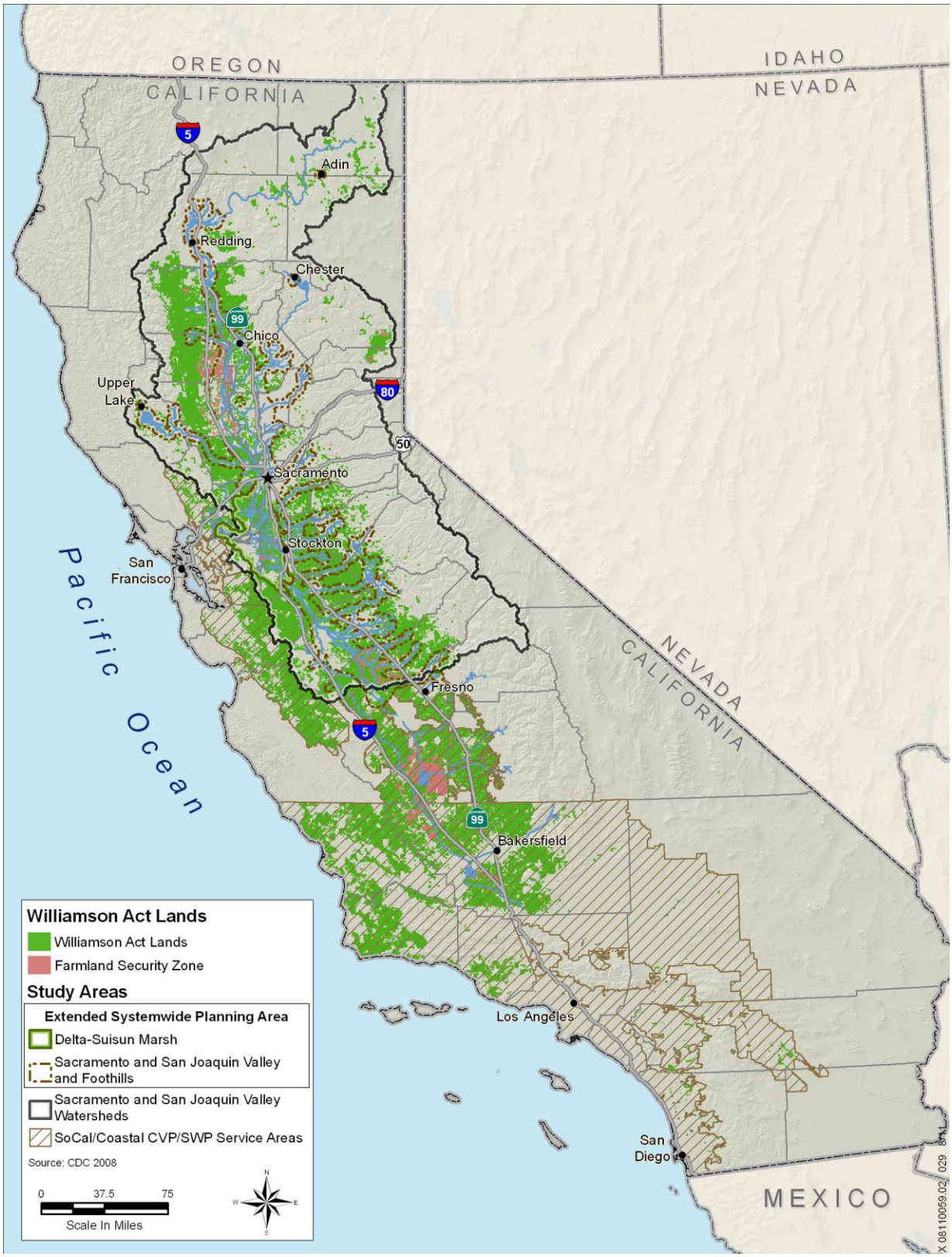

Figure 3.3-2. Williamson Act Lands in the Study Area

The nonrenewal process is the most common mechanism for terminating Williamson Act contracts. Nonrenewal trends may be seen as an indicator of likely farmland conversion in particular locations. Statewide, nonrenewal initiations have increased each year since 2001, with the San Joaquin Valley accounting for the largest increase in nonrenewal initiations. Overall, a total of 520,550 acres of contracted land was at some stage of the nonrenewal process in 2008.

In the study area, a total of 520,300 acres of Williamson Act land was in the nonrenewal process, representing 99 percent of contracts in nonrenewal in California (DOC 2010).

Forest Land As discussed in greater detail below in the description of State regulations, forest land is defined as native tree cover greater than 10 percent that allows for management of timber, aesthetics, fish and wildlife, recreation, and other public benefits (California Public Resources Code (PRC) Section 12220(g)). Natural forest and woodland vegetation types in the study area typically have greater than 10 percent cover by native trees. (Figures 3.6-1a and 3.6-1b in Section 3.6, "Biological Resources—Terrestrial," display the distribution of natural forest and woodland vegetation in the Extended SPA.) Timberland, a subset of forest land, is defined by State law as land that is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products (PRC Section 4526), and can produce an average annual volume of wood fiber of at least 20 cubic feet per acre per year at its maximum production (PRC Section 51104(g)).

Forests can serve as high-quality habitat for fish and wildlife species, sequester carbon to mitigate climate change effects, capture vital runoff for agricultural and domestic water supply, and provide a variety of outdoor recreation and education opportunities. Many rural communities depend on income and employment opportunities resulting from working timber industries, or on amenity values that support a tourist industry and attract new residents seeking a better lifestyle. In metropolitan areas, urban forests contribute to improved air quality, cooling of heat islands for energy conservation, and local employment (CAL FIRE 2010). Table 3.3-3 shows the estimated acreage of forest land by owner in California. In 2007, approximately 61 percent of forest land in California was owned by federal, State, and local entities and the remaining 39 percent was privately owned. Nonindustrial forest land accounted for about two-thirds of the privately owned forest land, or about 8.5 million acres.

Table 3.3-3. Acreage of California's Forest Land by Owner in 2007

Owner	Acreage of Forest Land[1]
U.S. government	19,200,000
State of California	700,000
Local government entities	370,000
Private owners[2]	13,100,000
Total	**33,400,000**

Sources: CAL FIRE 2010; data compiled by AECOM in 2010

Notes:
[1] Acreages have been rounded (either up or down) to the nearest thousand acres.
[2] Private forest land ownership included nonindustrial private forest land.

Timber Production Zones (TPZs) are privately owned land or land acquired for State forest purposes. For discussion of TPZs, see "Forest Land, Timberland, and the Forest Taxation Reform Act" in the discussion of State regulations in Section 3.3.2, "Regulatory Setting." Rezoning of TPZ timberlands provides landowners flexible land management options, such as to establish vineyards or subdivide parcels for future development. As shown in Table 3.3-4, approximately 29,600 acres of TPZs were rezoned in the study area between 2006 and 2008.

Table 3.3-4. Acreage of Timber Production Rezoned in the Study Area (2006–2008)

County	Timber Production Acres Rezoned[1]
Butte	3,300
Lassen	5,500
Placer	600
Shasta	6,400
Sierra	7,000
Siskiyou	4,300
Tehama	2,500
Total	**29,600**

Sources: CAL FIRE 2008; data compiled by AECOM in 2010

Note:
[1] Acreages have been rounded (either up or down) to the nearest thousand acres.

Extended Systemwide Planning Area

Sacramento and San Joaquin Valley and Foothills This section summarizes the acreages of Important Farmland, land under Williamson

Act contract, and forest land in the portion of the Sacramento and San Joaquin Valley and foothills that is located outside of the watersheds themselves.

In the Sacramento and San Joaquin valleys, flood protection and drainage efforts during the 19th and 20th centuries facilitated the conversion of extensive areas of natural vegetation to agricultural use. However, before the 1960s, valley land uses were principally agriculture and open space, and urban uses were limited to small farm communities and only a few cities. Expansion from the Bay Area and local industrial growth over the past 30 years have resulted in the creation of major urban centers throughout the Sacramento and San Joaquin Valley and foothills. Agricultural acreage peaked around 1959, and has since gradually declined as urban areas have expanded into the floodplains of the Sacramento and San Joaquin rivers.

Despite this urban growth, agriculture remains the predominant land use in this geographic area, and agriculture and food processing are still the area's major industries. The historical floodplains and flood basins of the Sacramento and San Joaquin rivers and their tributaries are especially important for agriculture. The loamy, well-drained soils that developed on floodplains are among the most productive for a variety of crops, particularly fruit and nut crops (e.g., walnuts) (Begg et al. 1998). The finer textured and often poorly drained soils of flood basins in the Sacramento Valley are particularly well suited for cultivation of rice, a major crop in this geographic area.

The Sacramento and San Joaquin valleys have extensive infrastructure for flood protection and drainage; however, inundation by floodwaters, soil saturation by high groundwater, or both still constrain the productivity and value of extensive areas of agricultural land in the valleys. Although some agriculture (e.g., rice) may benefit from occasional flooding, most agricultural land exposed to periodic flooding experiences not only crop losses, but damage to infrastructure (including ditches, pumps, and roads), and thus, additional maintenance costs. Flood bypasses have the additional constraint of often not allowing orchards or vineyards, which increase vegetation roughness and reduce flood conveyance capacity. High groundwater levels can limit potentially suitable crops, reduce productivity, impede the use of farm machinery, and/or require the additional cost of pumping and drainage.

No single commodity dominates agricultural production in the Sacramento and San Joaquin Valley and foothills. In fact, the Sacramento and San Joaquin valleys are among the world's most diverse agricultural areas. The most valuable agricultural commodities produced in the counties of the

Sacramento and San Joaquin valleys and foothills demonstrate this diversity. Table 3.3-5 summarizes the 10 commodities generating the most total revenue in 2009 by county in the Sacramento and San Joaquin valleys.

Table 3.3-5. Most Valuable Agricultural Products in 2009 in Counties within the Extended Systemwide Planning Area[1]

Agricultural Product[2]	Counties within the Extended Systemwide Planning Area																							
	Amador	Butte	Calaveras	Colusa	Contra Costa	El Dorado	Fresno	Glenn	Lake	Madera	Mariposa	Merced	Nevada	Placer	Sacramento	San Joaquin	Shasta	Solano	Stanislaus	Sutter	Tehama	Tuolumne	Yolo	Yuba
Field Crops																								
Corn, Field and Grain					X										X									
Field Crops, Unspecified	X							X	X		X												X	X
Alfalfa	X				X			X				X			X			X					X	
Hay	X			X												X	X							
Rice		X		X				X						X			X			X			X	X
Seed Crops		X		X														X			X		X	
Silage																			X					
Wheat				X										X				X		X				
Vegetable Crops																								
Beans																				X				
Corn, Sweet					X			X																
Cucumbers																								
Garlic																								
Potatoes, Sweet												X												
Tomatoes				X	X		X					X				X		X	X	X			X	
Vegetables, Unspecified	X			X	X				X						X			X				X	X	
Fruit and Nut Crops																								
Almonds		X		X			X	X		X		X				X			X		X		X	
Apples						X										X								
Cherries					X											X								
Citrus							X																	
Fruit and Nut, Other		X		X	X	X					X		X	X								X		X
Grapes	X		X		X	X	X		X	X	X		X		X	X		X		X	X		X	
Olives			X					X													X			
Peaches		X					X													X				X
Pears						X			X					X	X									

Table 3.3-5. Most Valuable Agricultural Products in 2009 in Counties within the Extended Systemwide Planning Area[1] (contd.)

Agricultural Product[2]	Counties within the Extended Systemwide Planning Area																							
	Amador	Butte	Calaveras	Colusa	Contra Costa	El Dorado	Fresno	Glenn	Lake	Madera	Mariposa	Merced	Nevada	Placer	Sacramento	San Joaquin	Shasta	Solano	Stanislaus	Sutter	Tehama	Tuolumne	Yolo	Yuba
Pistachios										X														
Prunes		X						X												X	X			X
Walnuts		X	X	X				X	X					X		X		X	X	X	X		X	X
Livestock and Poultry																								
Cattle	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Dairy							X	X		X		X			X	X		X	X		X			X
Goats and Kids	X																							
Livestock & Poultry Products, Misc.	X					X					X		X	X			X					X		
Poultry			X				X			X	X	X			X				X					
Sheep and Lambs											X		X									X		
Other																								
Apiary Products		X		X													X				X	X		
Christmas Trees & Cut Greens			X			X																		
Forest Products or Firewood																	X					X		
Nursery Products	X	X	X			X			X	X			X	X	X		X	X	X	X				
Pasture	X		X		X	X			X		X		X	X			X					X		X

Sources: USDA 2009, 2010

Notes:

[1] Based on the 10 leading commodities for gross value of agricultural production by county in 2009. However, several different commodities listed in the table represent a single group of multiple products; therefore, the total products for each county do not necessarily equal 10 products per county.

[2] Categories of agricultural products are grouped from categories in county agricultural commissioner reports as follows (grouped category—included category; included category): Alfalfa—alfalfa; hay, alfalfa. Apiary Products—apiary; pollination; apiary products, bees, unspecified; apiary industry. Cattle—cattle, calves only; cattle and calves; cattle, dairy heifers, replacement; cattle, heifers and steers, fed; cattle, milk cows; cattle, stockers, feeders; cattle, beef cow, breeding. Christmas Trees & Cut Greens—Christmas trees and cut greens, Christmas trees. Cherries—cherries; cherries, sweet. Chickens and Eggs—chickens, all; chickens, broilers; eggs, chicken, market. Citrus—citrus, oranges, tangerines and mandarins. Corn, Field or Grain—corn, field; corn, grain. Dairy—dairy; milk, market; milk, market, fluid; milk, manufacturing. Forest Products or Firewood—forest products; forest products, firewood. Fruit & Nut, Other—apricots; fruit and nut, miscellaneous; kiwi, nectarines. Grapes—grapes; grapes, unspecified; grapes, raisin; grapes, wine. Hay—hay, grain; hay, all; hay, other, unspecified. Livestock & Poultry Products, Misc.—livestock and poultry products, miscellaneous; livestock, unspecified. Nursery Products—deciduous fruit and nut nursery; nursery, flower prop. materials; nursery products; nursery plants, strawberry. Pasture—pasture, range; pasture, irrigated; pasture, all; rangeland. Peaches—peaches; peaches, clingstone. Pears—pears, Asian; pears, Bartlett; pears, unspecified. Poultry—chickens, all; chickens, broilers; eggs, chicken; market poultry; turkeys. Rice—rice, wild; rice, milling; rice, seed; rice. Silage—silage, all; corn, silage. Seed Crops—seed crops; seed, sunflower, certified. Tomatoes—tomatoes; tomatoes, fresh market; tomatoes, manufacturing. Walnuts—walnuts; walnuts, English. Wheat—wheat; wheat, irrigated.

Nearly 40 different commodities are listed in the table, many of which are groups of multiple products. Milk and cream, grapes, nursery products, almonds, and cattle are the top five grossing commodities in California; all these commodities are prominent throughout the Sacramento and San Joaquin valleys. Fresno County was the highest grossing county in California with a production value of $5.37 billion. In addition to Fresno County, Merced, Stanislaus, and San Joaquin counties were ranked in the top 10 highest grossing counties in California. As a consequence of this crop and regional diversity, there is not a unified "agricultural community" that encompasses the Sacramento and San Joaquin Valley and foothills in its entirety. Instead, there are many agricultural interests with different concerns and whose common concerns (water and environmental issues, for example) are not unique to the valley.

However, several field, vegetable, fruit and nut, and livestock commodities are important throughout the Sacramento and San Joaquin valleys. Livestock and dairy products are important in almost every county in the geographic area, along with alfalfa, hay, pasture, and silage to sustain livestock. Grapes, almonds, and walnuts, as well as rice in the Sacramento Valley, are also important crops.

Important Farmland As of 2006, approximately 2.7 million acres in the Sacramento and San Joaquin Valley and foothills were designated as Important Farmland (Table 3.3-6). With 400,500 acres, Merced County had the largest amount of Important Farmland in the Sacramento and San Joaquin Valley and foothills.

Table 3.3-6. Acreage of Important Farmland in the Sacramento and San Joaquin Valley and Foothills

Category of Important Farmland	Acres
Prime Farmland	1,450,200
Farmland of Statewide Importance	540,200
Unique Farmland	310,600
Farmland of Local Importance	445,100
Total	**2,660,100**

Sources: DOC 2011; data compiled by AECOM in 2011
Note:
Acreages have been rounded (either up or down) to the nearest thousand acres.

Williamson Act Lands As of 2008, approximately 1.9 million acres of land in the San Joaquin Valley and foothills were under Williamson Act contract, including 183,200 acres that were identified as Farmland Security Zones (FSZs) (Table 3.3-2). (For more information about FSZs, see the description of the Williamson Act below in the discussion of State regulations in Section 3.3.2, "Regulatory Setting.") Approximately 67,300

acres of the Williamson Act contract lands were in the nonrenewal process. With approximately 300,000 acres, Madera County has the largest amount of land under Williamson Act contract in the Sacramento and San Joaquin Valley and foothills.

Forest Land The Sacramento and San Joaquin Valley and foothills support a variety of both upland and lowland forest habitats. Coniferous, hardwood, and hardwood-conifer forest habitats are found at the upper-elevation limits of the valley and foothills, primarily upslope of the reservoirs in the northern part of this geographic area. Woodlands are found primarily in the foothills of the Sacramento and San Joaquin Valley. The woodlands and forests of riparian areas are distributed throughout the elevation range of the foothills and valleys, and are the primary type of forest land on the floor of the Sacramento and San Joaquin valleys. However, in general, only narrow remnants of these riparian forests remain in the valleys; and often, because levees have been placed close to river channels, the remaining riparian vegetation is confined primarily to the interior of and on levee slopes. Approximately 885,000 acres of forest land have been identified in the Sacramento and San Joaquin Valley and foothills (Table 3.3-7).

Table 3.3-7. Habitats and Acreage of Forest Land in the Sacramento and San Joaquin Valley and Foothills

Habitat Type	Acres
Coniferous forests	123,000
Hardwood and hardwood-conifer forests	384,000
Woodlands	318,000
Riparian	60,000
Total	**885,000**

Sources: CAL FIRE 2003; DFG 2010

Note:
Acreages have been rounded (either up or down) to the nearest thousand acres.

Butte, Shasta, Tehama, El Dorado, and Tuolumne counties were the top five timber-producing counties in the Sacramento and San Joaquin Valley and foothills (DFA 2010). Although some coniferous, hardwood, and hardwood-conifer forests are managed for timber production, woodlands and riparian areas generally are not. The oak woodlands of the foothills and valleys are generally managed as rangeland, and to a lesser extent are managed for their habitat, recreation, and other public benefits. Forest land in riparian areas is managed primarily for fish and wildlife, water quality, and recreation.

Delta and Suisun Marsh Delta agricultural lands were "reclaimed" by constructing levees and draining marshy areas. In less than 100 years, between 1850 and 1930, hundreds of thousands of acres of land went into agricultural production. Historically, asparagus, corn, alfalfa, and sugar beets were the dominant crops grown in the Delta. However, a wide variety of crops have been grown in the Delta. In 2008, the main crops grown in the Delta were corn, alfalfa, tomatoes, and wine grapes (DWR 2009).

The periphery of the Delta has undergone rapid urbanization associated with substantial population growth. Current and future population growth will increase the demand for developable land, particularly near the Bay Area, Stockton, and Sacramento. This demand results in the conversion of open space, primarily agricultural land, to residential and commercial uses. In the recent past, thousands of acres of agricultural lands were developed for residential and other urban uses. Between 1990 and 2004, about 40,000 acres of agricultural land in the Delta were converted to urban and conservation uses.

Important Farmland As of 2006, approximately 550,000 acres in the Delta and Suisun Marsh area were designated as Important Farmland (Table 3.3-8). At 266,500 acres, San Joaquin County has the largest amount of Important Farmland in the Delta and Suisun Marsh area.

Table 3.3-8. Acreage of Important Farmland in the Delta and Suisun Marsh

Category of Important Farmland	Acres
Prime Farmland	423,100
Farmland of Statewide Importance	34,400
Unique Farmland	31,300
Farmland of Local Importance	61,200
Total	**550,100**

Sources: DOC 2011; data compiled by AECOM in 2011

Note:
Acreages have been rounded (either up or down) to the nearest thousand acres.

Williamson Act Lands As of 2007, approximately 440,000 acres of land in the Delta and Suisun Marsh area were under Williamson Act contract, including 32,000 acres that were identified as FSZs (Table 3.3-2). Approximately 29,000 acres of these lands were in the nonrenewal process. At approximately 190,000 acres, San Joaquin County has the largest amount of land under Williamson Act contract in the Delta and Suisun Marsh area.

Forest Land Approximately 5,000 acres of forest land have been identified in the Delta and Suisun Marsh (Table 3.3-9). Almost all of this forest land consists of riparian habitats. These areas are typically found in the Delta and Suisun Marsh as long, linear patches bordering waterways and agricultural or urban land. Riparian vegetation is most extensive on the waterside of levees, but patches of riparian vegetation are also found on the interior of Delta islands along levee toes; along drainage channels; along pond margins; and in abandoned, low-lying fields. Forest land in riparian areas is managed primarily for habitat and water quality values, and to a lesser extent for recreation and other public benefits.

Table 3.3-9. Habitats and Acreage of Forest Land in the Delta and Suisun Marsh

Habitat Type	Acres
Coniferous forests	–
Hardwood and hardwood-conifer forests	–
Woodlands	<1,000
Riparian	5,000
Total	**5,000**

Sources: CAL FIRE 2003; DFG 2010

Note:
Acreages have been rounded (either up or down) to the nearest thousand acres.

Sacramento and San Joaquin Valley Watersheds

This section summarizes the acreages of Important Farmland, land under Williamson Act contract, and forest land within the portion of the Sacramento and San Joaquin Valley watersheds located outside of the valley and foothills themselves. The portions of the watersheds located within the Sacramento and San Joaquin Valley and foothills are discussed separately above.

Agriculture and forestry resources in the Sacramento and San Joaquin Valley watersheds are similar to those discussed above for the valley and foothills; however, the watersheds also include areas of higher elevations that support substantial amounts of timber production that are not found in the valley. Climate, soils, and water supply limit other agricultural land uses at higher elevations. Alfalfa is the primary crop grown at middle to upper elevations, followed by wine grapes (DWR 2009).

Important Farmland As of 2006, approximately 2.1 million acres in the Sacramento and San Joaquin Valley watersheds were designated as Important Farmland (Table 3.3-10). This land is primarily farmland at lower to middle elevations that is outside of the area designated by this

PEIR as the Sacramento and San Joaquin Valley and foothills. Approximately 1 million acres of the total Important Farmland in the Sacramento and San Joaquin Valley watersheds are located within Fresno County (Figure 3.3-1).

Table 3.3-10. Acreage of Important Farmland in the Sacramento and San Joaquin Valley Watersheds

Category of Important Farmland	Acres
Prime Farmland	655,100
Farmland of Statewide Importance	270,200
Unique Farmland	310,600
Farmland of Local Importance	866,500
Total	**2,100,400**

Sources: DOC 2011; data compiled by AECOM in 2011

Note:
Acreages have been rounded (either up or down) to the nearest thousand acres.

Williamson Act Lands As of 2007, approximately 3.9 million acres of land in the Sacramento and San Joaquin Valley watersheds were under Williamson Act contract, including 86,900 acres that were identified as FSZs (Table 3.3-2). Approximately 113,000 acres of these lands were in the nonrenewal process. With 910,200 acres and 680,300 acres, respectively, Fresno and Tehama counties have the largest amount of land under Williamson Act contract in the Sacramento and San Joaquin Valley watersheds.

Forest Land Approximately 10.3 million acres of forest land have been identified in the Sacramento and San Joaquin Valley watersheds (Table 3.3-11). The watersheds support the same general types of forest habitats as the Sacramento and San Joaquin Valley and foothills—riparian, woodland, hardwood and hardwood-conifer forest, and coniferous forest habitats. (See Tables 3.6-1 and 3.6-5 in Section 3.6, "Biological Resources—Terrestrial.") However, the watersheds support much more extensive areas of hardwood, hardwood-conifer, and coniferous forests, including several higher elevation types of these forest habitats that are not found in the valley and foothills. Extensive areas of forest land in the watersheds are managed for timber production. In addition to timber production, coniferous, hardwood, and hardwood-conifer forests are managed for other public benefits, including habitat and recreation. Woodlands are managed primarily as rangeland, and to a lesser extent for habitat, recreation, or other public benefits. Forest land in riparian areas is managed primarily for its habitat, water quality, and recreation benefits.

Table 3.3-11. Habitats and Acreage of Forest Land in the Sacramento and San Joaquin Valley Watersheds

Habitat Type	Acres
Coniferous forests	6,691,000
Hardwood and hardwood-conifer forests	1,482,000
Woodlands	2,089,000
Riparian	21,000
Total	**10,283,000**

Sources: CAL FIRE 2003; DFG 2010

Note:
Acreages have been rounded (either up or down) to the nearest thousand acres.

SoCal/Coastal CVP/SWP Service Areas

The portion of the SoCal/coastal CVP/SWP service areas outside of the Extended SPA and the Sacramento and San Joaquin Valley watersheds covers a vast geographic area. Therefore, agricultural lands and forest land are even more varied in this portion of the study area than in the Sacramento and San Joaquin Valley and foothills and the watershed areas.

Outside of the fast-growing population centers, most of the land within the SoCal/coastal CVP/SWP service areas is rural; irrigated agriculture is the predominant land use and driver of the local and regional economies.

The following discussion summarizes the acreages of Important Farmland, lands under Williamson Act contract, and forest land in the SoCal/coastal CVP/SWP service areas outside of the Extended SPA and the Sacramento and San Joaquin Valley watersheds. As stated previously, the proposed program does not include management actions that would be implemented in the SoCal/coastal CVP/SWP service areas, and implementation of the proposed program would not result in long-term reductions in water deliveries to the SoCal/coastal CVP/SWP service areas (see Section 2.6, "No Near- or Long-Term Reduction in Water or Renewable Electricity Deliveries"). The proposed program, therefore, would not affect agriculture and forestry resources within the SoCal/coastal CVP/SWP service areas, and these resources are not discussed in detail.

Important Farmland In 2006, approximately 4.1 million acres in the SoCal/coastal CVP/SWP service areas were designated Important Farmland (Table 3.3-12). With approximately 50 percent (2.1 million acres) of this Important Farmland—940,000 acres, 560,000 acres, and 560,250 acres, respectively—Kern, Kings, and Tulare counties have the largest amount of Important Farmland in the SoCal Coastal CVP/SWP

service areas outside of the Extended SPA and the Sacramento and San Joaquin Valley watersheds.

Table 3.3-12. Acreage of Important Farmland in the SoCal/Coastal CVP/SWP Service Areas

Category of Important Farmland	Acres
Prime Farmland	2,000,000
Farmland of Statewide Importance	1,150,600
Unique Farmland	400,100
Farmland of Local Importance	500,100
Total	**4,050,800**

Sources: DOC 2011; data compiled by AECOM in 2011

Note:
Acreages have been rounded (either up or down) to the nearest thousand acres.

Williamson Act Lands As of 2007, approximately 6.1 million acres of land in the SoCal/coastal CVP/SWP service areas outside of the Sacramento and San Joaquin Valley and foothills and the watershed areas were under Williamson Act contract, including 501,000 acres that were identified as FSZs (Table 3.3-2). Approximately 236,900 acres of these lands were in the nonrenewal process. At 1.7 million and 1 million acres, respectively, Kern and San Luis Obispo counties have the largest amount of land under Williamson Act contract in the SoCal/coastal CVP/SWP service areas.

Forest Land Approximately 2.8 million acres of forest land were identified in the SoCal/coastal CVP/SWP service areas (Table 3.3-13).

Table 3.3-13. Habitats and Acreage of Forest Land in the SoCal/Coastal CVP/SWP Service Areas

Habitat Type	Acres
Coniferous forests	252,000
Hardwood and hardwood-conifer forests	370,000
Woodlands	2,097,000
Riparian	86,000
Total	**2,805,000**

Sources: CAL FIRE 2003; DFG 2010

Note:
Acreages have been rounded (either up or down) to the nearest thousand acres.

3.3.2 Regulatory Setting

The following text summarizes federal, State, and regional and local laws and regulations pertinent to evaluation of the proposed program's impacts on agriculture and forestry resources.

Federal

Federal Farmland Protection Act Policy The U.S. Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture (formerly known as the U.S. Soil Conservation Service) is the agency primarily responsible for implementing and administering the Federal Farmland Protection Policy Act. This law is intended to minimize federal contributions to the conversion of farmland to nonagricultural uses by ensuring that federal programs are administered in a manner compatible with state government, local government, and private programs designed to protect farmland. For the purposes of the law, federal programs include construction projects—such as highways, airports, dams, flood protection projects, and federal buildings—sponsored or financed in whole or part by the federal government, and the management of federal lands.

State

California Farmland Conservancy Program DOC's California Farmland Conservancy Program (CFCP) was established in 1996 to encourage the permanent conservation of productive agricultural lands in collaboration with local entities. In creating the CFCP, the California Legislature recognized the important contribution that farmland makes to the state's food supply and the additional benefits that farmland provides—conserving wildlife habitat, protecting wetlands, and preserving scenic open space.

The CFCP supports local efforts to conserve farmland by providing grant funds for the purchase of agricultural conservation easements. Agricultural conservation easements are deed restrictions to ensure that a given piece of agricultural land can never be used for purposes that would interfere with farming, leaving farmers free to make all ongoing agricultural management decisions on their land. Grant funds are made available through a competitive process to qualified entities, including nonprofit land trusts and local governments, to purchase conservation easements from landowners. The CFCP also provides planning and technical assistance grants to these same qualified local entities to facilitate development of local and regional farmland conservation strategies.

Important Farmland DOC, in conjunction with NRCS, has adopted categorical definitions of Important Farmland for purposes of land use inventories. These definitions recognize the land's suitability for agricultural production, rather than solely reflecting the physical and

chemical characteristics of the soil. To this end, the FMMP was established, and the Important Farmland Map Series was developed based on U.S. Soil Conservation Service soil surveys. The maps prepared by NRCS classify land into one of eight categories (DOC 2008):

- *Prime Farmland* is land that has the best combination of physical and chemical characteristics for crop production, as well as high soil quality, appropriate growing season, and adequate moisture supply to sustained high crop yields.

- *Farmland of Statewide Importance* is land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production. The definition is similar to that for Prime Farmland except that crop production characteristics are considered good, not the best.

- *Unique Farmland* does not meet the definition of either Prime Farmland or Farmland of Statewide Importance, but it is being used for specific crops of high economic value. This farmland type has a special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of specific crops.

- *Farmland of Local Importance* is land of importance to the local economy, as defined by each county's local advisory committee and adopted by its board of supervisors. Farmland of Local Importance either is currently producing or has the capability to produce, but does not meet the definition of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland.

- *Grazing Land* is land with existing vegetation that is suitable for grazing.

- *Urban and Built-up Lands* are occupied by structures with a density of at least one dwelling unit per 1.5 acres, or approximately six structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, and public utility structures, and for other developed purposes.

- *Water* is defined as perennial water bodies with an extent of at least 40 acres.

- *Other Lands* do not meet the criteria of the remaining categories. Common examples include low-density rural developments, vegetative and riparian areas not suitable for livestock grazing, confined-animal

agriculture facilities, strip mines, borrow pits, water bodies smaller than 40 acres, and vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres.

Important Farmland is classified by DOC as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. Together, Important Farmland and Grazing Land are defined by DOC as "Agricultural Land." In 2006, DOC estimated that California had approximately 30.8 million acres of agricultural land, of which approximately 12.4 million acres were identified as Important Farmland.

Important Farmland is defined in Appendix G of the CEQA Guidelines as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. These farmland types are defined together under the term "Agricultural Land" in CEQA (PRC Sections 21060.1 and 21095; CEQA Guidelines, Appendix G).

Williamson Act The California Land Conservation Act of 1965 (the Williamson Act) is one of the state's primary agricultural conservation tools. Under this law, local governments can enter into contracts with private property owners to protect land (within agricultural preserves) for agricultural and open space purposes. Williamson Act contracts are required to be a minimum initial term of 10 years, and are automatically extended each year for an additional year, unless either party (landowner or the contracting city or county) notifies the other of the intent not to renew the contract. Of California's 58 counties, 53 have adopted the Williamson Act program.

FSZs, also known as Super Williamson Act lands, were authorized by a 1998 amendment to the Williamson Act with the same general intent as Williamson Act contracts. Under FSZ provisions, the landowner agrees to keep land that is threatened by development in agricultural use for at least 20 years; in return, the landowner receives the benefits of lower property tax bills, parcel tax exemptions, annexation exemptions, and exemptions from school use. Accordingly, FSZs increase both the duration and the protection of Williamson Act status. An FSZ must be located in an agricultural preserve (an area designated as eligible for a Williamson Act contract). Agricultural landowners in FSZs must enter into contracts with counties for a minimum term of 20 years that are also renewed automatically each year, and are ensured an additional 35 percent tax benefit over and above the standard Williamson Act contract (DOC 2007). The FSZ program has been adopted by 25 counties, although not all of those counties have executed contracts.

As of January 1, 2007, 16.6 million acres were enrolled under the Williamson Act statewide. This total represents approximately half of California's farmland and nearly one-third of its privately owned land. As stated previously, the nonrenewal process is the most common mechanism for terminating Williamson Act contracts. Nonrenewal trends may be seen as an indicator of likely farmland conversion in particular locations.

State budget constraints have resulted in a lack of funding for subvention payments to local governments for the property tax losses they incur by enrolling agricultural land in Williamson Act contracts. These losses could subsequently affect how counties and cities participate in the Williamson Act program. In the long term, the loss of Williamson Act subvention payments could result in a decrease in the amount of land placed into Williamson Act contracts, the cancellation of contracts, or an increase in nonrenewal initiations; or it could cause counties and cities to opt out of the Williamson Act program.

Forest Land, Timberland, and the Forest Taxation Reform Act As stated previously, forest land is defined as native tree cover greater than 10 percent that allows for management of timber, aesthetics, fish and wildlife, recreation, and other public benefits (PRC Section 12220(g)). A subset of forest land, timberland is land that is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products (PRC Section 4526), and that can produce an average annual volume of wood fiber of at least 20 cubic feet per acre per year at its maximum production (PRC Section 51104(g)).

The Forest Taxation Reform Act, enacted in 1976, provides guidelines that allow cities and counties with qualifying timberland to adopt TPZs that protect timberlands from incompatible uses. TPZs are privately owned land or land acquired for State forest purposes. When a TPZ is established, a private landowner agrees to commit the land to forest production for 10 years. In return, the approving jurisdiction grants the landowner a 35 percent reduction in property taxes. The California Department of Forestry and Fire Protection has jurisdiction over timber harvest and timberland conversion decisions in TPZs, which it passes down to county agriculture departments.

As mentioned previously, rezoning of TPZ timberlands provides landowners flexible land management options, such as to establish vineyards or subdivide parcels for future development.

Regional and Local

Local governments and land trusts maintain agricultural conservation easements with the general purpose of retaining land for agricultural uses.

In addition, city and county general plans include goals, objectives, and policies that preserve and guide development of agricultural lands within their local jurisdictions and may identify mitigation ratios for conversion of agricultural lands to nonagricultural uses.

Cities and counties often adopt urban limit lines, establish buffers between agriculture and other approved uses, adopt right-to-farm ordinances, support the Williamson Act program, control subdivisions of land, define land use types allowed within agricultural areas, and establish minimum agricultural parcel sizes.

Should a place-based project be defined and pursued as part of the proposed program, and should the CEQA lead agency be subject to the authority of local jurisdictions, the applicable county and city policies and ordinances would be addressed in a project-level CEQA document as necessary.

3.3.3 Analysis Methodology and Thresholds of Significance

This section provides a program-level evaluation of the direct and indirect effects on agriculture and forestry resources of implementing management actions included in the proposed program. These proposed management actions are expressed as NTMAs and LTMAs. The methods used to assess how different categories of NTMAs and LTMAs could affect agriculture and forestry resources are summarized in "Analysis Methodology"; thresholds for evaluating the significance of potential impacts are listed in "Thresholds of Significance." Potential effects related to each significance threshold are discussed in Section 3.3.4, "Environmental Impacts and Mitigation Measures for NTMAs," and Section 3.3.5, "Environmental Impacts, Mitigation Measures, and Mitigation Strategies for LTMAs."

Analysis Methodology

Impact evaluations were based on a review of the management actions proposed under the CVFPP, expressed as NTMAs and LTMAs in this PEIR, to determine whether these actions could potentially result in impacts on agriculture and forestry resources. NTMAs and LTMAs are described in more detail in Section 2.4, "Proposed Management Activities." The overall approach to analyzing the impacts of NTMAs and LTMAs and providing mitigation is summarized below and described in detail in Section 3.1, "Approach to Environmental Analysis"; analysis methodology specific to agricultural resources is described below. NTMAs can consist of any of the following types of activities:

- Improvement, remediation, repair, reconstruction, and operation and maintenance of existing facilities

- Construction, operation, and maintenance of small setback levees
- Purchase of easements and/or other interests in land
- Operational criteria changes to existing reservoirs that stay within existing storage allocations
- Implementation of the vegetation management strategy (VMS) included in the CVFPP
- Initiation of conservation elements included in the proposed program
- Implementation of various changes to DWR and Statewide policies that could result in alteration of the physical environment

All other types of CVFPP activities fall within the LTMA category. NTMAs are evaluated using a typical "impact/mitigation" approach. Where impact descriptions and mitigation measures identified for NTMAs also apply to LTMAs, they are also attributed to LTMAs, with modifications or expansions as needed. However, because many LTMAs are more general and conceptual, additional impacts are described in a broader narrative format. Impacts of LTMAs that are addressed in this narrative format are those considered too speculative for detailed evaluation consistent with Section 15145 of the CEQA Guidelines.

Implementation of the proposed program could result in construction-related, operational, and maintenance-related impacts on agriculture and forestry resources—specifically, temporary and permanent conversion of Important Farmland to nonagricultural uses; conversion of agricultural lands under Williamson Act contracts to nonagricultural uses, resulting in the cancellation of Williamson Act contracts on these lands; or conversion of forest land to nonforest uses. DOC's Important Farmland and Williamson Act maps were used to determine the agricultural significance of the lands in the study area. In addition, the California Department of Forestry and Fire Protection's California Fire and Resource Assessment Program maps were used to identify forest land in the study area. For the purposes of this analysis, agriculture and forestry resources are defined as follows:

- Important Farmland, defined in Appendix G of the CEQA Guidelines as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (PRC Section 21060.1)
- Williamson Act lands that are under continuing-term and nonrenewal contracts

- Forest land, defined in PRC Section 12220(g) as land with greater than 10 percent cover by any native tree species, including hardwoods, under natural conditions that allows for management of one or more forestry resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits

Geographic information system (GIS) data were analyzed to assist in identifying areas of existing agricultural lands that could be affected by implementing the proposed program—lands identified as Important Farmland, Williamson Act land, or forest land. A qualitative discussion of the potential effects on agricultural lands and forest lands is presented below; the potential change in Important Farmland, Williamson Act land, and forest land is described to the extent feasible. Conveyance-related management activities, implementation of policies associated with the urban level of flood protection, and other management activities could directly and indirectly result in changes in land use patterns that cause discontinuation of agricultural uses that result in a substantial adverse physical environmental effect. The impacts associated with those changes in land use patterns are presented in Section 3.14, "Land Use and Planning."

Thresholds of Significance

The following applicable thresholds have been used to determine whether implementing the proposed program would result in a potentially significant environmental impact. These thresholds are based on Appendix G of the CEQA Guidelines, as amended. An agricultural or forestry resources impact is considered potentially significant if implementation of the proposed program would do any of the following when compared against existing conditions:

- Convert a substantial amount of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to nonagricultural use

- Convert a substantial amount of land in an area designated by existing zoning for agricultural use or under a Williamson Act contract, or in a Farmland Security Zone to an inconsistent use

- Convert to a nonforest or timberland use, or cause rezoning of, a substantial amount of land designated by existing zoning for, forest land (as defined in PRC Section 12220(g)), timberland (as defined in PRC Section 4526), or timberland zoned Timberland Production (as defined in PRC Section 51104(g))

- Convert a substantial amount of forest land to a nonforest use

- Involve other changes in the existing environment that, due to their location or nature, could result in substantial conversion of Farmland to nonagricultural use or substantial conversion of forest land to nonforest use

Based on GIS analysis, numerous tracts of land in the Extended SPA are classified as Important Farmland and are under Williamson Act contracts (Figure 3.3-1 and Figure 3.3-2, respectively). The acreages of Important Farmland are summarized in Tables 3.3-6 and 3.3-8 and the acreages of lands under Williamson Act contracts are summarized in Table 3.3-2. The number of these acres could be affected temporarily or permanently by the Plan is unknown and would be determined as individual projects are proposed.

This PEIR does not use numeric thresholds for determining the potential significance of impacts from the proposed program. It identifies six different types of impacts on agriculture and forestry resources. Within each type, some specific projects may have adverse environmental impacts, others may have beneficial environmental impacts, and others may have no impacts. If the analysis below concludes that there would be a potentially significant adverse environmental impact from one or more projects, it concludes that a significant adverse impact would occur. Whether or not a specific project that reduces or terminates agricultural activities would have a significant impact on the environment and whether it could be mitigated must be determined on a case-by-case basis when the specific project is proposed.

Where appropriate, project proponents should work with local agencies and other State agencies, including DOC and the California Department of Food and Agriculture, to identify design features of the project that will benefit both agriculture and natural resources. The reduction or termination of agricultural uses, by itself, does not necessarily constitute a significant adverse impact on the environment. The Land Evaluation and Site Assessment (LESA) process can be a useful tool for evaluating the potential agricultural use of land and for evaluating the impact of an action on the agricultural or potential agricultural use of a piece of land. However, the Land Evaluation and Site Assessment process should not be exclusively relied upon to evaluate the environmental impact of conversion of agricultural land, particularly when the conversion is to nonurban use. Other factors that should be considered in determining the significance of changes in agricultural use on the environment include consistency with State and federal laws and policies and local and regional plans; whether there is a significant or irreversible change in the use of Important

Farmland; whether the proposed use constitutes an irretrievable and permanent loss of the use of the land for agricultural purposes; current and future uses of the land; current and future environmental services provided by the agricultural land; outside factors contributing to use or nonuse of the land for agriculture, such as frequent flooding or availability of water for irrigation; what is happening on near or adjacent land, including Williamson Act contracts; and benefits to proximate agricultural land caused by the project, such as improved flood control.

3.3.4 Environmental Impacts and Mitigation Measures for NTMAs

This section describes the physical effects of NTMAs on agriculture and forestry resources. For each impact discussion, the environmental effect is determined to be either less than significant, significant, potentially significant, or beneficial compared to existing conditions and relative to the thresholds of significance described above. These significance categories are described in more detail in Section 3.1, "Approach to Environmental Analysis." Feasible mitigation measures are identified to address any significant or potentially significant impacts. Actual implementation, monitoring, and reporting of the PEIR mitigation measures would be the responsibility of the project proponent for each site-specific project. For those projects not undertaken by, or otherwise subject to the jurisdiction of, DWR or the Central Valley Flood Protection Board (Board), the project proponent generally can and should implement all applicable and appropriate mitigation measures. The project proponent is the entity with primary responsibility for implementing specific future projects and may include the Board and DWR; reclamation districts; local flood control agencies; and other federal, State, or local agencies. Because various agencies may ultimately be responsible for implementing (or ensuring implementation of) mitigation measures identified in this PEIR, the text describing mitigation measures below does not refer directly to the Board and DWR but instead refers to the "project proponent." This term is used to represent all potential future entities responsible for implementing, or ensuring implementation of, mitigation measures.

Impact AG-1 (NTMA): ***Conversion of Substantial Amounts of Important Farmland to Nonagricultural Uses and Conversion of Land under Williamson Act Contracts to an Inconsistent Use Resulting from Conveyance-Related Management Activities***

Construction activities to repair, reconstruct, and improve levees would directly and indirectly affect agricultural land uses in the Extended SPA. Both lands classified as Important Farmland (i.e., Prime Farmland, Unique Farmland, or Farmland of Statewide Importance) and lands under

Williamson Act contracts would be affected. The activities that would affect such lands consist of raising or improving existing levees; constructing floodwalls, seepage and stability berms, and setback levees; and installing relief wells, toe drains, and landside slope armoring.

Repairing, reconstructing, and improving existing levee systems could directly and permanently convert Important Farmland to nonagricultural uses (i.e., convert it to flood control facilities) and cause Williamson Act contracts to be cancelled where these activities would require widening or extension of existing levee footprints or construction of setback levees. The specific locations of levee repairs, reconstruction, and improvements are unknown at this time, and the acreage of Important Farmland and Williamson Act contract lands that could be affected cannot be sufficiently defined and would be determined as individual projects are proposed. However, large amounts of Important Farmland and land under Williamson Act contracts exist in the Extended SPA, and these lands are known to abut levees in various locations. Therefore, it is reasonable to assume that these activities would result in direct and permanent conversion of Important Farmland to nonagricultural uses (i.e., flood control facilities) and cancellation of Williamson Act contracts at some locations.

Construction-related activities also include developing temporary facilities such as staging areas, access haul roads, and borrow sites. Land at construction staging areas and access haul roads could be temporarily removed from agricultural production to accommodate preconstruction and construction activities. Construction staging areas and access haul roads could be located on Important Farmland or on lands under Williamson Act contracts. In some instances, such temporary disturbance would not conflict with the provisions of Williamson Act contracts because the temporary development of dirt roads or work areas is consistent with activities typically implemented as part of agricultural operations. Sites temporarily disturbed during project construction would be stabilized against erosion consistent with required storm water pollution prevention plans (SWPPPs) (see Subsection 3.21.2, “Regulatory Setting,” in Section 3.21, “Water Quality,” for a discussion of the development and implementation of SWPPPs). These sites would typically be restored to preproject conditions (unless a landowner specifically requests otherwise) and could be returned to agricultural uses after construction is complete if a landowner chooses to do so. Using borrow sites, though often resulting in a temporary disturbance, has a greater potential to result in permanent construction-related effects on agricultural resources than using other temporary construction facilities.

Constructing, replacing, and repairing earthen flood protection facilities (e.g., levees, earthen dams) could require borrow soil. The amounts

required could range from a few hundred cubic yards for minor levee repairs to more than a million cubic yards for projects involving miles of levee widening, setbacks, or relocation. For smaller projects, borrow may be purchased from existing commercial sources; however, as projects become larger, purchasing borrow material typically becomes cost prohibitive and project-specific borrow sites are developed. The locations of borrow sites would depend on the availability of material at each site, proximity of each borrow site to the project being constructed (the length of the haul route), willingness of landowners to allow use of the site, and quality of the borrow materials.

Borrow sites could be on Important Farmland or on lands under Williamson Act contracts. In many instances, after reclamation of borrow sites consistent with the Surface Mining and Reclamation Act (SMARA) (see Subsection 3.10.2, "Regulatory Setting," in Section 3.10, "Geology, Soils, and Seismicity (Including Mineral and Paleontological Resources)," for a description of SMARA requirements), the sites would be returned to agricultural production. Such sites would retain their designation as Important Farmland, and Williamson Act contracts would be retained. However, it can also be assumed that some borrow sites in areas of Important Farmland or on Williamson Act contract lands would be permanently converted to nonagricultural uses. For example, what is in effect a hole created by the borrow site could be converted to a wetland mitigation site or a stormwater detention pond. In these instances, a net loss in acreage of Important Farmland would occur, and lands that were under Williamson Act contracts may be ineligible for reenrollment under a new contract.

The acreages of Important Farmland and land under Williamson Act contracts that may be directly converted to nonagricultural uses through development of borrow areas cannot be quantified or reasonably estimated at this time. However, it is reasonable to assume that a limited number of such conversions would occur during implementation of the CVFPP.

Repairing, reconstructing, and improving levees would modify levee footprints, or constructing new or setback levees could indirectly convert to nonagricultural uses agricultural lands that are classified as Important Farmland or are under Williamson Act contracts. If this were to occur where levee footprints and borrow sites transect properties, agricultural parcels could be fragmented or be reduced in size. The parcels could also become irregularly shaped to such a degree as to make continuing agricultural land uses difficult or infeasible (e.g., no longer cost effective to cultivate because of lost economies of scale on a smaller parcel). If agricultural production can no longer feasibly continue on a parcel because it is too small or no longer of a shape suitable for continued cultivation, it

can be assumed that the parcel (1) would be converted to another use, (2) would no longer qualify as Important Farmland if it previously had that designation, and (3) would not be eligible for Williamson Act contracts.

Where setback levees would be constructed, agricultural lands on the waterside of the setback levee may no longer be suitable for agricultural production because they would be inundated during high-water events. Soil conditions in a parcel may not change, agricultural infrastructure may remain in place (e.g., irrigation facilities), and other factors critical to agricultural productivity may remain unaffected. However, regular inundation of agricultural lands in the expanded floodway may make agricultural production no longer feasible and the land could be converted to another use (e.g., habitat restoration). Still, this may not always be the case, because under appropriate conditions multiple types of crops are currently cultivated in floodways in the Central Valley. The acreages of Important Farmland and land under Williamson Act contracts that may be directly converted to nonagricultural uses through changes in parcel size or configuration or placement of land in floodways cannot be quantified or reasonably estimated at this time. However, it is reasonable to assume that a limited number of such conversions would occur during implementation of the CVFPP.

Improvements to the flood protection provided by conveyance facilities as part of NTMAs would also, in some areas, reduce the frequency and severity of flood events that adversely affect agricultural lands. This could reduce the potential for conversion of agricultural land to other uses in some instances by reducing catastrophic losses that might lead to the abandonment of agricultural operations and conversion of the land to another purpose. Therefore, implementation of conveyance NTMAs could have a beneficial effect. This beneficial effect cannot be quantified or reasonably estimated at this time; however, it is highly unlikely that it could fully compensate for losses of agricultural land under the proposed program.

As described above, repairs, reconstruction, and improvements of flood protection facilities included as part of the NTMAs could directly and indirectly convert Important Farmland to nonagricultural uses or cause Williamson Act contracts to be cancelled. As described above, the exact amount of land that could be affected is not known and each project would need to be examined on a case-by-case basis. Although no numeric thresholds have been established, it is likely that these actions would result in conversion of substantial amounts of Important Farmland and cancellation of a substantial number of Williamson Act contracts, which could have a potentially significant impact on the environment. Therefore, this impact would be **potentially significant**.

Mitigation Measure AG-1a (NTMA): ***Preserve Agricultural Productivity of Important Farmland to the Extent Feasible***

In a May 4, 2005, memorandum to California Resources Agency departments, boards, and commissions, the Secretary stated that "in selecting and developing resource-related projects, departments under the Resources Agency should consider ways to reduce effects on productive agricultural lands" and encouraged departments to incorporate, where appropriate, the strategies identified in the CALFED Bay-Delta Program (CALFED) EIR to reduce the impact of the CALFED Ecosystem Restoration Program on agricultural land and water use.

The measures listed below include the applicable strategies identified in the CALFED EIR and some additional measures. Not all measures listed below may be applicable to each management action. Rather, these measures serve as an overlying mitigation framework to be used for specific management actions. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action.

The project proponent will ensure that the following measures are implemented as applicable to reduce effects and preserve agricultural productivity on Important Farmland:

- Site projects and project footprints to minimize the permanent conversion of Important Farmland to nonagricultural uses.

- Identify and implement project design features that will benefit flood management, agriculture, and natural resources.

- When selecting sites and methods for repair, reconstruction, and improvement of flood control facilities, minimize the splitting or fragmentation of parcels that are to remain in agricultural use.

- Maximize contiguous parcels of agricultural land of a size sufficient to support their efficient use for continued agricultural production.

- Where the construction or operation of a facility could limit access to ongoing agricultural operations, maintain a means of reasonably convenient access to these agricultural properties as part of project design, construction, and implementation.

- At borrow sites to be returned to agricultural production, remove and stockpile, at a minimum, the upper 2 feet of topsoil and replace the topsoil after project completion as part of borrow site reclamation.

Borrow site reclamation for agricultural production will also take into account the potential unique characteristics of soils for production of certain crops (e.g., clay pan soils for rice).

- In areas permanently disturbed by program activities, and where topsoil is removed as part of project construction (e.g., stripping topsoil under a levee foundation) and not reused as part of the project, make the topsoil available to less productive agricultural lands that could benefit from the introduction of good-quality soil. By agreement between the project proponent or landowners of affected properties and the recipient(s) of the topsoil, the recipient(s) would use the topsoil for agricultural purposes.

- Relocate and/or replace wells, pipelines, power lines, drainage systems, and other infrastructure that are needed for ongoing agricultural uses and would be affected by project construction or operation.

- Minimize disturbance of Important Farmland and continuing agricultural operations during construction by implementing the following measures:

  - To the extent possible, locate construction laydown and staging areas on sites that are fallow, already developed or disturbed, or to be discontinued for use as agricultural land.

  - Use existing roads to access construction areas to the extent possible.

- Coordinate with growers to develop appropriate construction practices to minimize construction-related impairment of agricultural productivity. Practices may include coordinating the movement of heavy equipment and implementing traffic control measures.

- Support the testing and application of alternative crops (i.e., agroforestry or energy crops) on idle farmland.

- Before an NTMA is implemented, search the CNDDB to determine whether sensitive communities, habitats, and species observation records may be present in or near the project area. These communities, habitats, and species occurrences will be identified, mapped, and quantified as deemed appropriate. The project proponent, assisted by the primary engineering and construction contractors, will coordinate with a qualified biologist to ensure that implementation of NTMAs [or LTMAs] minimizes direct and indirect disturbance of sensitive communities, habitats, and species to the extent feasible. In

consultation with USFWS and DFG, the project proponent will develop measures to minimize and, where appropriate, compensate for construction-related effects on sensitive communities, habitats, and species.

Mitigation Measure AG-1b (NTMA): ***Minimize Impacts on Williamson Act–Contracted Lands, Comply with Government Code Sections 51290–51293, and Coordinate with Landowners and Agricultural Operators***

The project proponent will consider the following mitigation measures and implement them, as applicable, to reduce effects on lands under Williamson Act contracts:

- The project proponent will comply with applicable provisions of California Government Code Sections 51290–51295 with regard to acquiring lands under Williamson Act contract. Sections 51290(a) and 51290(b) specify that State policy, consistent with the purpose of the Williamson Act to preserve and protect agricultural land, is to avoid locating public improvements and any public utilities improvements in agricultural preserves, whenever practicable. If such improvements must be located within a preserve, they will be located on land that is not under contract, if practicable.

- More specifically, the project proponent will comply with the following basic requirements stated in the California Government Code:

  - Whenever it appears that land within a preserve or under contract may be required for a public improvement, DOC and the city or county responsible for administering the preserve must be notified (Section 51291(b)).

  - Within 30 days of being notified, DOC and the city or county must forward comments, which will be considered by the proponent of the public improvement (Section 51291(b)).

  - A public improvement may not be located within an agricultural preserve unless findings are made that (1) the location is not based primarily on the lower cost of acquiring land in an agricultural preserve and (2) for agricultural land covered under a contract for any public improvement, no other land exists within or outside the preserve where it is reasonably feasible to locate the public improvement (Sections 51291(a) and 51291(b)). If the land is acquired for the purpose of flood damage reduction measures, the project proponent(s) is exempt from the findings required in California Government Code Section 51292 (Section 51293(e)(1)).

  - The contract is normally terminated for lands acquired by eminent domain or in lieu of eminent domain (Section 51295).

  - DOC must be notified within 10 working days upon completion of the acquisition (Section 51291(c)).

  - DOC and the city or county must be notified before completion of any proposed work of any significant changes related to the public improvement (Section 51291(d)).

  - If, after acquisition, the acquiring public agency determines that the property would not be used for the proposed public improvement, DOC and the city or county administering the involved preserve must be notified before the land is returned to private ownership. The land will be reenrolled in a new contract or encumbered by an enforceable restriction at least as restrictive as that provided by the Williamson Act (Section 51295).

- The project proponent will coordinate with landowners and agricultural operators to sustain existing agricultural operations, at the landowners' discretion, until the individual agricultural parcels are needed for project construction.

Mitigation Measure AG-1c (NTMA): ***Establish Conservation Easements Where Potentially Significant Agricultural Land Use Impacts Remain after Implementation of Mitigation Measures AG-1a (NTMA) and AG-1b (NTMA)***

As discussed in Mitigation Measures AG-1a (NTMA) and AG-1b (NTMA), in general, where there is a reduction or termination of agricultural activities to undertake flood protection, environmental protection, or other conservation measures, project proponents should consider other measures before considering purchasing easements or other measures of compensation (collectively referred to as "easements" below). If after implementing all other applicable measures, the proposed project could still result in a potentially significant environmental impact, easements should be considered. Easements are most likely appropriate where there would be serious degradation or elimination of the physical conditions or natural processes that provide the land's resource qualities for agriculture. In this situation, there would normally also be other impacts on the environment. Where easements are applicable, the following factors will be considered:

- Where easements are considered for other resources such as terrestrial biological resources, purchase of easements should be coordinated

where possible so that agricultural resources are also addressed. For example, if it were determined that a project would permanently terminate agricultural activities on a piece of land that served as Swainson's hawk foraging habitat, if an easement on another property were determined appropriate to address losses of Swainson's hawk foraging habitat, the replacement land could also support the same kind of agricultural activity as the original converted property.

- Applicable methods established in the area of the specific project activity will be considered. Methods for compensation may include but are not limited to establishing agricultural conservation easements, paying in-lieu fees toward agricultural conservation easements, supporting agricultural land trusts, and participating in habitat conservation plans or natural communities conservation plans that include conservation of agricultural lands. The appropriate ratio of purchase or establishment of agricultural conservation easements relative to conversion of Important Farmland will be established on a case-by-case basis for each project. Depending on the specifics of the impact, available agricultural conservation programs in various locations, and local or regional regulatory standards, there are some circumstances where less than a 1-to-1 compensation ratio may be appropriate, and other circumstances where greater ratios may be required. Where conservation easements are established by the project proponent, they may be held by land trusts, local governments, or other appropriate agencies that are responsible for ensuring that these lands are maintained in agricultural use.

When determining whether effects on agricultural land warrant purchase of an easement, the following factors should be considered:

- Whether the change would affect the use of the land for agricultural purposes (i.e., ceasing agricultural activities and allowing land to be fallowed or be used for resource restoration in such a way that land could be returned to agricultural production)

- Whether the change would permanently take land out of production (i.e., depositing sediment on agricultural lands)

- Whether the land could be used for agricultural production but has not been or is not likely to be able to be used for such purposes because of flooding, bad soils, lack of dependable water supplies, or other reasons

- Whether the land is currently being used for agricultural production and would not be able to be used for similar purposes in the future because

of the project, but the project would provide benefits to nearby or other land that could be or is being used for agricultural purposes

- Whether the land is currently being used for agricultural production and would not be able to be used for similar purposes in the future because of the project, but the land is not Prime Farmland, Unique Farmland, or Farmland of Statewide Importance

- Whether the land is currently being used for agricultural production and would not be able to be used for similar purposes in the future because of physical changes brought about by the project, and the land is Prime Farmland, Unique Farmland, or Farmland of Statewide Importance

- Whether the land would be converted to a use that would reduce ancillary environmental benefits

Implementing Mitigation Measures AG-1a (NTMA), AG-1b (NTMA), and AG-1c (NTMA) would substantially lessen significant impacts associated with conversion of agricultural land uses, including lands classified as Important Farmland. However, until the case-by-case analysis for each project is complete, it is not possible to conclude that all potentially significant impacts could and would be mitigated. Consequently, Impact AG-1 (NTMA) would be **potentially significant and unavoidable**.

Impact AG-2 (NTMA): ***Conversion of Important Farmland to Nonagricultural Uses and Conversion of Land under Williamson Act Contracts to an Inconsistent Use Resulting from Storage-Related Management Activities***

Reoperating water storage facilities (changing reservoir operations) to alter the timing, frequency, and magnitude of flood releases to downstream channels could affect flood stages and flow volumes along rivers. These alterations, if sufficiently large, could result in the conversion of Important Farmland to nonagricultural uses or the cancellation of Williamson Act contracts, particularly for agricultural lands within established floodways. For example, increases in the frequency or duration of inundation events could make agricultural lands in a floodway no longer suitable for cultivation; as a result, the land could be converted to another use and any Williamson Act contracts that might be in place could be cancelled.

However, operational changes to reservoir releases under NTMAs would be related to more effective use of weather forecasting and coordinated operation of facilities within the parameters of the existing reservoir flood control diagrams. These NTMAs would result in only minor changes in downstream river flows, and flood flows would be comparable to those of

the periodic flood flows that have occurred historically. Changes in flows under the NTMAs would not be sufficient to alter the suitability of existing agricultural lands for continued agricultural production.

In addition, operational changes to existing reservoirs would be implemented in ways that would not cause substantial or long-term effects on water supply reliability or deliveries to agricultural operations. As described in Section 2.6, "No Near- or Long-Term Reduction in Water or Renewable Electricity Deliveries," under the proposed program the overall volume of water stored and releases available for water supply would potentially change only during some critical dry years. During wet years, the proposed program would make additional water available for water bank deposits (e.g., increased allocations of water to groundwater storage) that could be used to compensate for reduced water supply during critical dry years. The proposed program includes a commitment to no substantial or long-term reduction in water supply reliability or deliveries to the Extended SPA or the SoCal/Coastal CVP/SWP service areas, and the actions included in the proposed program support this commitment. Therefore, no potential exists for a significant impact to water supply deliveries for agricultural or other uses, and changes in water supply would not result in conversions of agricultural land to other uses or cancellation of Williamson Act contracts.

Therefore, overall, Important Farmland would not be converted to nonagricultural uses, nor would Williamson Act contracts be cancelled, as a result of changes in the timing, magnitude, or frequency of flood releases included in the NTMAs. This impact would be **less than significant**. No mitigation is required.

Impact AG-3 (NTMA): ***Effects of Other NTMAs on Important Farmland and Williamson Act Contract Land***

Conducting other NTMAs in the Extended SPA could result in both conversion and preservation of agricultural land classified as Important Farmland and lands under Williamson Act contracts. Purchasing flood easements could provide beneficial effects by preventing development from occurring on agricultural land and preserving land uses compatible with periodic flooding, which may preserve agricultural land uses. As demonstrated throughout the Central Valley, multiple types of crops are currently cultivated in floodways under appropriate conditions. Conversely, agricultural lands within the floodway may no longer be suitable for certain types of agricultural production because they would be inundated during high-water events. Soil conditions in a parcel may not change, agricultural infrastructure may remain in place (e.g., irrigation facilities), and other factors critical to agricultural productivity may remain unaffected.

However, regular inundation within the expanded floodway may make certain types of agricultural production in the floodway no longer feasible.

Integration of environmental conservation elements into NTMAs is designed to enhance habitat and restore natural ecosystem processes and functions. These elements would be developed to increase the quantity, quality, diversity, and connectivity of riparian, wetland, floodplain, emergent, and shaded riverine aquatic habitats. As a result, conversion of agricultural land to nonagricultural uses would result in some areas from implementation of these elements. This land would typically be placed under a conservation easement or some other mechanism would be used to preserve the habitat in perpetuity and, therefore, such land would no longer qualify as Important Farmland if it previously had that designation. This land also would not be eligible for Williamson Act contracts.

The acreages of Important Farmland and land under Williamson Act contracts that may be directly converted to nonagricultural uses as a result of placement of land in floodways and implementation of conservation elements cannot be quantified or reasonably estimated at this time. However, it is reasonable to assume that conversions would occur during implementation of the CVFPP. This impact would be **potentially significant**.

Mitigation Measure AG-3 (NTMA): ***Implement Mitigation Measures AG-1a (NTMA), AG-1b (NTMA), and AG-1c (NTMA)***

Implementing applicable portions of this mitigation measure would substantially lessen significant impacts of Impact AG-3 (NTMA) associated with conversion of agricultural land uses, including lands classified as Important Farmland. However, until the case-by-case analysis for each project is complete, it is not possible to conclude that all potentially significant impacts could and would be mitigated. Consequently, Impact AG-3 (NTMA) would be **potentially significant and unavoidable**.

Impact AG-4 (NTMA): ***Conversion of Forest Land to Nonforest Uses Resulting from Conveyance-Related Management Activities***

Construction activities to repair, reconstruct, and improve levees may directly and indirectly convert riparian forest habitat to nonforest uses in the Extended SPA. The activities that could affect such habitat consist of erosion repairs; raising or improving existing levees; constructing floodwalls, seepage and stability berms, and setback levees; and installing relief wells, toe drains, and landside slope armoring. The acreages of forest land in the Extended SPA are summarized in Tables 3.3-7 and 3.3-9. A

detailed analysis of the potential effects of NTMAs on riparian forest habitat is presented in Impact BIO-T-1 (NTMA), "Construction-Related Effects of NTMAs on Sensitive Natural Communities and Habitats," in Section 3.6, "Biological Resources—Terrestrial."

This impact would be **significant**.

Mitigation Measure AG-4 (NTMA): ***Implement Mitigation Measure BIO-T-1a (NTMA), "Conduct Biological Resources Surveys to Quantify Sensitive Natural Communities in Project Areas, and Avoid, Minimize, and, Where Appropriate, Compensate for Construction-Related Effects"***

Implementing this mitigation measure, which is described in Section 3.6, "Biological Resources—Terrestrial," would reduce Impact AG-4 (NTMA) to a **less-than-significant** level.

Impact AG-5 (NTMA): ***Conversion of Forest Land to Nonforest Uses Resulting from Storage-Related Management Activities***

The frequency, timing, and duration of inundation for some patches of riparian vegetation would be modified to varying degrees should water storage facilities be reoperated under the NTMAs. A detailed analysis of the potential effects of reoperating water storage facilities on riparian forest habitat is presented in Impact BIO-T-6 (NTMA), "Effects of Reservoir Operational Criteria Changes on Sensitive Natural Communities and Habitats, Special-Status Plants and Wildlife, Wildlife Movement, and Local Plans and Policies," in Section 3.6, "Biological Resources—Terrestrial." As discussed in Impact BIO-T-6 (NTMA), reoperation of water storage facilities would not convert forest lands to nonforest uses. Therefore, this impact would be **less than significant**. No mitigation is required.

Impact AG-6 (NTMA): ***Effects of Other NTMAs on Forest Land***

Implementing the combined elements of the VMS would result in the removal of riparian forest habitat in some areas and the enhancement, restoration, or creation of riparian forest habitat in other areas. A detailed analysis of the potential effects of implementing the VMS on riparian forest habitat is presented in Impact BIO-T-7 (NTMA), "Effects of the Vegetation Management Strategy on Sensitive Natural Communities and Habitats, Special-Status Plants and Wildlife, and Wildlife Movement," in Section 3.6, "Biological Resources—Terrestrial." As discussed in Impact BIO-T-7 (NTMA), there is currently insufficient detail in these plans to ensure that, in all time periods and in all areas, there would be a balance between forest losses and gains, resulting in no net overall loss in the extent and quality of

riparian forest in the program area relative to existing conditions. Therefore, this impact would be **potentially significant**.

Mitigation Measure AG-6 (NTMA): ***Implement Mitigation Measure BIO-A-2b (NTMA), "Ensure Full Compensation for Losses of Riparian Habitat Functions and Values Caused by Implementing the Vegetation Management Strategy Along Levees"***

With implementation of this mitigation measure, which is described in Section 3.5, "Biological Resources—Aquatic," the amount of forest land removed would be fully compensated for through the planting of forest elsewhere. There would not be a net loss of forest land. Implementing this mitigation measure would reduce Impact AG-6 (NTMA) to a **less-than-significant** level.

3.3.5 Environmental Impacts, Mitigation Measures, and Mitigation Strategies for LTMAs

This section describes the physical effects of LTMAs on agriculture and forestry resources. LTMAs include a continuation of activities described as part of NTMAs and all other actions included in the proposed program, and consist of all of the following types of activities:

- Widening floodways (through setback levees and/or purchase of easements)
- Constructing weirs and bypasses
- Constructing new levees
- Changing operation of existing reservoirs
- Achieving protection of urban areas from a flood event with 0.5 percent risk of occurrence
- Changing policies, guidance, standards, and institutional structures
- Implementing additional and ongoing conservation elements

Actions included in the LTMAs are described in more detail in Section 2.4, "Proposed Management Activities."

Impacts and mitigation measures identified above for NTMAs would also be applicable to many LTMAs and are identified below. The NTMA impact discussions and mitigation measures are modified or expanded where appropriate, or new impacts and mitigation measures are included if

needed, to address conditions unique to LTMAs. The same approach to future implementation of mitigation measures described above for NTMAs and the use of the term "project proponent" to identify the entity responsible for implementing mitigation measures also apply to LTMAs.

LTMA Impacts and Mitigation Measures

Impact AG-1 (LTMA): ***Conversion of Substantial Amounts of Important Farmland to Nonagricultural Uses and Conversion of Land under Williamson Act Contracts to an Inconsistent Use Resulting from Conveyance-Related Management Activities***

As described in Impact AG-1 (NTMA), construction-related activities associated with construction staging areas, access haul roads, and borrow sites and activities to repair, reconstruct, and improve existing levee systems are assumed to result in the direct conversion of Important Farmland to nonagricultural uses and the cancellation of Williamson Act contracts. Indirect impacts could occur where project footprints and construction-related activities are incompatible with adjacent agricultural operations, resulting in the conversion of additional Important Farmland to nonagricultural uses and cancellation of Williamson Act contracts. These effects would be similar to those described above in Impact AG-1 (NTMA); however, the scale and magnitude of the effects would be greater for LTMAs. In addition, facilities associated with LTMAs would be constructed over a greater geographic area, and additional land would be required for staging areas, access haul roads, and borrow sites.

LTMAs could include removal of existing levees to widen floodways and widening or expansion of existing bypasses. Floodways would be expanded and extended to improve the flow carrying capacity of the channels, and the lands acquired for the expansion would be used for habitat restoration and environmentally friendly agricultural activities.

Expanded floodways would create space for river meandering, sediment erosion and deposition, natural ecosystem disturbance processes, and a healthy diversity of riverine habitat. Deposition of sediment on agricultural land does not necessarily remove it from production, such as in the vicinity of the Fremont Weir, where sediment has been deposited on adjacent agricultural lands. Conversely, sediment erosion and deposition and natural ecosystem disturbance processes could cause agricultural lands within the floodway to no longer be suitable for certain types of agricultural production or could result in the discontinuation of agricultural activities.

LTMAs could also include construction of new levees and new bypasses that could result in additional conversion of Important Farmland and cancellation of Williamson Act contracts. As described previously, the

exact amount of land that could be affected is not known, and each project would need to be examined on a case-by-case basis. Although no numeric thresholds have been established, it is likely that these actions would result in conversion of substantial amounts of Important Farmland and cancellation of a substantial number of Williamson Act contracts, which could have a potentially significant impact on the environment. Therefore, this impact would be **potentially significant**.

Mitigation Measure AG-1 (LTMA): ***Implement Mitigation Measures AG-1a (NTMA), AG-1b (NTMA), and AG-1c (NTMA)***

Implementing this mitigation measure would substantially lessen significant impacts of Impact AG-1 (LTMA) associated with conversion of agricultural land uses, including lands classified as Important Farmland. However, until the case-by-case analysis for each project is complete, it is not possible to conclude that all potentially significant impacts could and would be mitigated. Consequently, Impact AG-1 (LTMA) would be **potentially significant and unavoidable**.

Impact AG-2 (LTMA): ***Conversion of Important Farmland to Nonagricultural Uses and Conversion of Land under Williamson Act Contracts to an Inconsistent Use Resulting from Storage-Related Management Activities***

This impact would be the same as Impact AG-2 (NTMA). However, the potential scale and magnitude of changes in downstream flows could be somewhat greater for LTMAs because there may be operational changes at a greater number of reservoirs than under the NTMAs, and larger system improvements, such as new or widened flood bypasses that could also alter flow conditions. The LTMAs could also occur across a broader geographic setting than the NTMAs.

Operational changes to existing reservoirs would continue to be implemented in ways that would not cause substantial or long-term reductions in water supply deliveries for agricultural and other uses. In addition, although changes in downstream flows might be marginally greater than under the NTMAs, operational changes to existing reservoirs would remain relatively minor, and flow regimes would remain comparable to those of the periodic flood flows that have occurred historically. Changes in flows under the LTMAs would not be sufficient to alter the suitability of existing agricultural lands for continued agricultural production. Therefore, Important Farmland would not be converted to nonagricultural uses, nor would Williamson Act contracts be cancelled, as a result of changes in the timing, magnitude, or frequency of flood releases. This impact would be **less than significant**. No mitigation is required.

Impact AG-3 (LTMA): ***Effects of Other LTMAs on Important Farmland and Williamson Act Contract Land***

This impact would be the same as Impact AG-3 (NTMA). However, with a wider and more active implementation of conservation elements and actions increasing flood protection for urban lands, a larger overall acreage of Important Farmland would likely be converted to nonagricultural use and more lands currently under Williamson Act contracts would have contracts cancelled or expire. This impact would be **potentially significant**.

Mitigation Measure AG-3 (LTMA): ***Implement Mitigation Measures AG-1a (NTMA), AG-1b (NTMA), and AG-1c (NTMA)***

Implementing applicable portions of this mitigation measure would substantially lessen significant impacts of Impact AG-3 (LTMA) associated with conversion of agricultural land uses, including lands classified as Important Farmland. However, until the case-by-case analysis for each project is complete, it is not possible to conclude that all potentially significant impacts could and would be mitigated. Consequently, Impact AG-1 (LTMA) would be **potentially significant and unavoidable**.

Impact AG-4 (LTMA): ***Conversion of Forest Land to Nonforest Uses Resulting from Conveyance-Related Management Activities***

Where the LTMAs would continue activities included in the NTMAs, this impact would be the same as Impact AG-4 (NTMA). However, the scale and magnitude of the effects would be greater for LTMAs, and the LTMAs could also occur across a broader geographic setting than the NTMAs. The LTMAs include larger activities that could result in greater direct impacts on riparian forest habitats, such as widening or expansion of existing bypasses and constructing new levees and new bypasses. The opportunity for habitat restoration and enhancement would be considered during the evaluation of these LTMAs. However, the specific locations, designs, and scale of LTMAs are unknown at this time, and the effects on riparian forest habitats cannot be quantified or reasonably estimated. It is reasonable to assume that implementing LTMAs would result in direct and indirect effects on riparian forest habitats. Therefore, this impact would be **significant**.

Mitigation Measure AG-4 (LTMA): ***Implement Mitigation Measure AG-4 (NTMA)***

Implementing this mitigation measure would reduce Impact AG-4 (LTMA) to a **less-than-significant** level.

Impact AG-5 (LTMA): *Conversion of Forest Land to Nonforest Uses Resulting from Storage-Related Management Activities*

The effects of reoperating water storage facilities would be similar to those described in the discussion of Impact AG-5 (NTMA). However, the scale and magnitude of the effects could be somewhat greater for LTMAs because of the greater number of facilities involved and projects being implemented across a broader geographic setting than the NTMAs. Still, the proposed increased flexibility in reservoir operations would result in surface water fluctuations that would not be substantially different from existing conditions and would remain within historical fluctuation levels. Water levels in rivers below storage facilities already vary dramatically, and riparian forest habitats along these waterways have generally adapted to fluctuations in river levels. Implementing LTMAs would not alter flow regimes sufficiently to result in losses of riparian forest. For the reasons described in the discussion of Impact AG-5 (NTMA), this impact would be **less than significant**. No mitigation is required.

Impact AG-6 (LTMA): *Effects of Other LTMAs on Forest Land*

The effects of other LTMAs on forest land would be similar to those described for Impact AG-6 (NTMA). Although LTMAs would cover a larger geographic area, the same impact mechanisms would apply to riparian forest being gradually lost in some areas from implementation of the vegetation management approach, but replaced in other areas through conservation elements of the proposed program. However, it cannot be assured that during all time frames, the quantities of replacement riparian forest lands would be sufficient to fully compensate for the losses. Therefore, this impact would be **potentially significant**.

Mitigation Measure AG-6 (LTMA): *Implement Mitigation Measure AG-6 (NTMA)*

Implementing this mitigation measure would reduce Impact AG-6 (LTMA) to a **less-than-significant** level.

LTMA Impact Discussions and Mitigation Strategies

The impacts of the proposed program's NTMAs and LTMAs related to agriculture and forestry resources and the associated mitigation measures are thoroughly described and evaluated above. The general narrative descriptions of additional LTMA impacts and mitigation strategies for those impacts that are included in other sections of this draft PEIR are not required for agriculture and forestry resources because they would not affect these resources.

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