

9 HYDROLOGY AND WATER QUALITY

9.1 INTRODUCTION

This chapter provides relevant to hydrology and water quality impacts under NEPA and CEQA in connection with the Proposed Action and alternatives. This chapter includes: introduction, environmental and regulatory setting, impact analysis methods and assumptions, significance criteria, environmental effects of the action and alternatives, and mitigation measures to address effects that are identified as significant. This addresses conditions such as the extent and quality of surface water, runoff and drainage patterns, groundwater, and flood conditions in the Plan Area. Water supply is addressed in Chapter 7, *Public Services and Utilities*.

9.1.1 Data Sources

The following sources of information were reviewed to prepare the hydrology and water quality chapter.

- ▲ *The Yolo County 2030 Countywide General Plan (Yolo County General Plan) (Yolo County 2009a);*
- ▲ *The Yolo County 2030 Countywide General Plan EIR (Yolo County General Plan EIR) (Yolo County 2009b);*
- ▲ *City of Davis General Plan (City of Davis 2007);*
- ▲ *City of West Sacramento General Plan 2035 Policy Document (City of West Sacramento 2016);*
- ▲ *City of Winters General Plan (City of Winters 1992);*
- ▲ *City of Woodland General Plan Update (City of Woodland 2017); and*
- ▲ Various documents and resources available from the California Department of Water Resources website (www.water.ca.gov) as indicated in Chapter 23, *References*.

9.1.2 Definitions

The term 100-year flood refers to a flood event that has a one in 100 chance, or one percent chance, of being equaled or exceeded in any one year. Particular water elevations or flow rates are typically attributed to the 100-year flood event. A 100-year floodplain refers to the area along a waterway that would be inundated during a 100-year flood event. The actual area inundated may be minimized by levees, bypasses, and other flood control features so that a location designated as being within the 100-year floodplain may remain protected from flood waters during a 100-year flood event if the protection features do not fail. 100-year flood protection refers to a location having sufficient flood protection to not be inundated when water elevations or flows in the applicable water body reach the designated 100-year levels.

The same principles apply to a 200-year flood, 200-year floodplain, and 200-year flood protection, but the water level/flow has a one in 200 chance, or 0.5-percent chance, of being equaled or exceeded in any one year. The same applies to terms associated with a 500-year flood, but the water level/flow has a one in 500, or 0.2-percent chance, of being equaled or exceeded in any one year.

9.2 AFFECTED ENVIRONMENT

9.2.1 Environmental Setting

Yolo County's existing conditions related to water resources, hydrology, and water quality are described below and major hydrologic features are shown in Exhibit 9-1. The following sections summarize the Yolo County General Plan EIR information as it pertains to water resources.

YOLO COUNTY CLIMATE AND TOPOGRAPHY

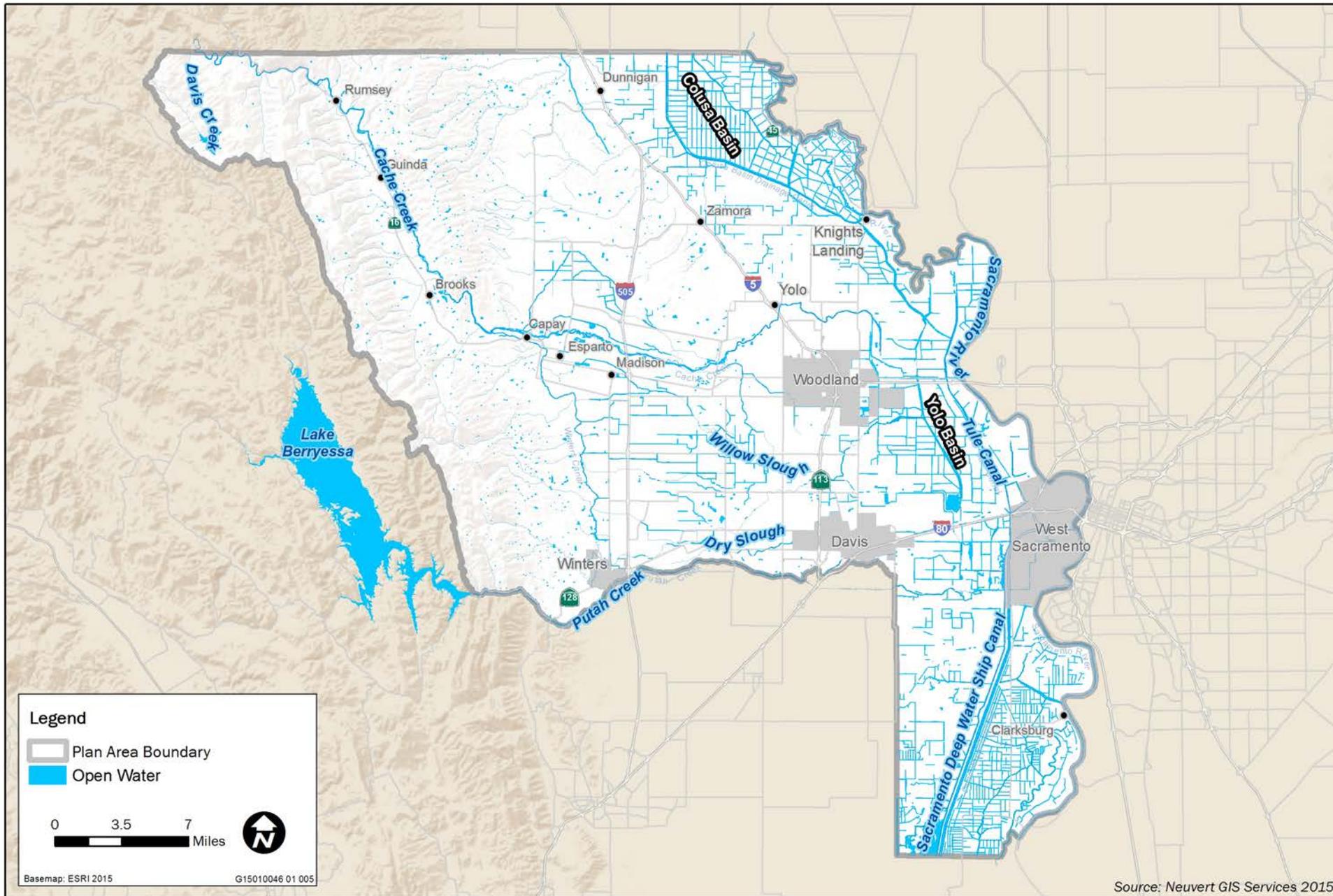
Yolo County has a Mediterranean climate characterized by hot, dry summers and temperate, rainy winters. Yolo County is comprised of two distinct climate zones. The northern and central areas of Yolo County experience hot summers and moderately cold winters, while the southeastern County receives marine air influence from the San Joaquin-Sacramento Delta regions that reduce the temperature extremes. During winter, fair weather alternates with periods of extensive clouds and precipitation. During the summer, temperatures generally average a high of 95° F and a low in the mid-50s. Winter temperatures average a high in the 50s, and low of 38 to 40° F. Much of the precipitation received in Yolo County falls on the Vaca Mountains (part of the Coast Range geomorphic province) to the west of the County, annually averaging 34 inches along the western edge of the County. Rainfall in the eastern County averages approximately 20 inches. Precipitation occurs primarily in the form of rain from October through April, with very little precipitation during the hot, dry summers.

The highest elevations in the County are found along Little Blue Ridge and Blue Ridge (approximately 3,100 feet above mean sea level), decreasing to 5 feet above sea level near the Sacramento River on the eastern edge of the County, with the lowest portions of the Yolo Basin just below sea level. The County is located such that approximately the western 30 percent is located in California's Coast Ranges with the eastern remainder in the Great Valley. The Great Valley portion of the County consists of gently sloping to level alluvial areas, while the Coast Ranges part of the County consists of moderately sloping to very steep uplands and terraces and is characterized by northwest-southeast trending ridges and valleys (Yolo County 2009b).

SURFACE WATER HYDROLOGY

Surface water hydrology for Yolo County is described below based on information from the Yolo County General Plan EIR (Yolo County 2009b:641-642):

- ▲ The unincorporated areas of Yolo County contain approximately 7,300 acres of surface waters.
- ▲ Surface water in Yolo County generally drains from west to east.
- ▲ The major watersheds in Yolo County are the Sacramento River, Cache Creek, Putah Creek, and Willow Slough. Constructed features such as the Yolo Bypass water conveyance channels also act as localized watersheds.
- ▲ Surface water primarily originates from the Cache Creek and Putah Creek watersheds, and the Sacramento River.



Legend

-  Plan Area Boundary
-  Open Water

0 3.5 7 Miles 

Basemap: ESRI 2015 G15010046 01 005

Source: Neuvirt GIS Services 2015

Exhibit 9-1

Major Hydrologic Features within Yolo County



FLOODING

Flooding for Yolo County is described below based on information from the Yolo County General Plan EIR (Yolo County 2009b; 642, 645-651):

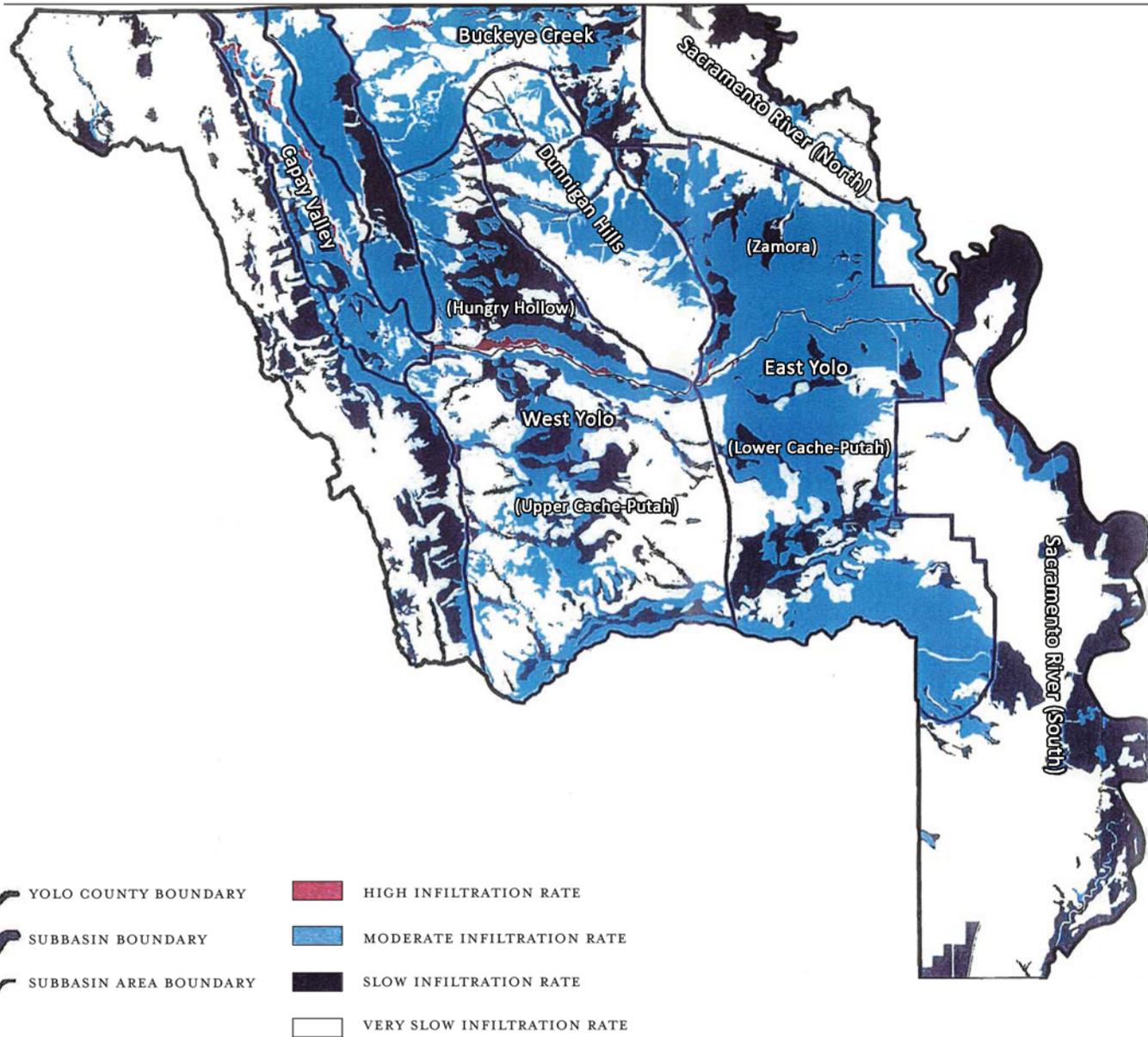
- ▲ The Cache Creek Basin, the Sacramento River corridor, Willow Slough, Colusa Basin Drain, and Dry Slough are the primary areas with potential for flooding.
- ▲ Areas that are within the 100-year floodplain consist of residential and agricultural areas along Cache Creek, the Colusa Basin Drainage Canal, Knights Landing Ridge Cut, the Sacramento River, and the majority of the lower eastern portion of the County.
- ▲ The 500-year floodplain is most extensive north of the City of Woodland, west of the City of Davis, east of the Yolo Bypass, and through the City of West Sacramento south to Clarksburg.
- ▲ Yolo County has approximately 215 miles of levees that provide flood control, and are managed by various agencies including Reclamation Districts, flood control agencies (e.g., West Sacramento Flood Control Agency, the California Department of Water Resources (DWR) and the U.S. Army Corps of Engineers (USACE).
- ▲ As part of the Sacramento River Flood Control Project, high flows that pass over Fremont Weir and through the Sacramento Weir are diverted through the Yolo Bypass located in the Yolo Basin.
- ▲ To the west of Yolo County are the Indian Valley Dam and Reservoir, the Cache Creek Dam at Clear Lake, and the Monticello Dam on Putah Creek at Lake Berryessa. If any of these dams were to fail, or if the nearest upstream dams along the Sacramento, Feather, or American rivers failed, flooding would occur in Yolo County.

GROUNDWATER RESOURCES

A description of groundwater resources is provided below based on information from the Yolo County General Plan EIR (Yolo County 2009b, p:638):

- ▲ The Yolo subbasin which is located within the broader Sacramento Valley Groundwater Basin. The Yolo subbasin underlies the majority of Yolo County. Fresh water is primarily found in upper layers of coarse textured, buried river and stream deposits and in the deeper Tehama Formation. The Tehama Formation ranges from 1,500 to 2,500 feet thick and is the largest source of fresh water in the subbasin (DWR 2004). Beneath the Tehama Formation are brackish volcanic and marine sedimentary rocks with low permeability. The upper limit of these rocks generally coincides with the fresh/saline boundary.
- ▲ Yolo County is underlain by a substantial amount of groundwater, which is divided into six subbasins: Capay Valley, Buckeye Creek, Dunnigan Hills, West Yolo, East Yolo, and Sacramento River. The locations of these subbasins are displayed on Exhibit 9-2.
- ▲ Subsidence is the lowering of the land-surface elevation. In Yolo County, as much as 4 feet of land subsidence due to groundwater withdrawal has occurred since the 1950s, particularly in the area between the towns of Zamora, Knights Landing, and Woodland. The land subsidence has damaged or reduced the integrity of highways, levees, irrigation canals, and wells (Yolo County 2009b).

DWR describes groundwater levels in the Yolo subbasin as declining during periods of drought, which are often combined with increased groundwater pumping, but generally recovering quickly during wet years. Long term trends do not indicate significant declines in water levels, with the exception of pumping depressions in the vicinity of Davis, Woodland, and the Dunnigan/Zamora areas (DWR 2004). Groundwater storage for the Yolo Subbasin in the aquifer found between 20 and 420 feet below ground surface has been estimated as 6,455,940 acre-feet (af).



Source: Yolo County 2009

X15010046 01 009

Exhibit 9-2

Relative Soil Infiltration Properties and Delineation of Groundwater Sub-basins in the Plan Area



WATER QUALITY

Water quality in Yolo County is described based on information from the Yolo County General Plan EIR (Yolo County 2009b:651-652), supplemented with additional information from DWR and other sources provided below.

Groundwater

The groundwater in the Yolo subbasin is generally high in calcium (generally over 180 milligrams per liter [mg/L] CaCo₃) and magnesium, with localized areas of high selenium and boron. Total dissolved solids are 574 ppm on average (DWR 2004). In the east Yolo subbasin, beneath the City of Davis and UC Davis, average concentration of arsenic in the Tehama formation are 0.04 mg/L, which exceeds the U.S. Environmental Protection Agency (EPA) maximum contaminant level of 0.01 mg/L (Yolo County 2009b). Elevated concentrations of selenium, nitrate, and boron have been detected in groundwater along Cache Creek and the Cache Creek Settling Basin area. The intrusion of saline or brackish water into fresh water aquifer systems is generally associated with coastal areas. However, the intrusion of saline or brackish water from the Delta area may occur in the Sacramento Valley, including eastern Yolo County if overdrafting of deep wells lowers the water levels in the groundwater basin. If salt water intrusion were to occur on a widespread basis in this area, the local water supply would be adversely affected.

Sacramento River, Yolo Bypass, and Associated Canals

The Sacramento River is listed by the EPA under Section 303(d) of the Clean Water Act as being impaired by unknown toxicity starting from Red Bluff and by mercury starting at Hamilton City all extending to the Sacramento River–San Joaquin River Delta. In 2003, the Water Board adopted a total maximum daily load (TMDL) for discharges of diazinon to the Sacramento and Feather Rivers (EPA and SWRCB 2006); but it was removed from the 303(d) list in 2012 (EPA and SWRCB 2014). TMDLs for mercury were set in 2012, while TMDLs for toxicity are still under development. Pesticides from agricultural use are also contaminants of concern to water quality of the Sacramento River.

The concentration of chemical contaminants within the Yolo Bypass is influenced directly by discharges from Cache Creek and the Knights Landing Ridge Cut. High concentrations of nutrients and contaminants, perhaps from agricultural fields and abandoned mines, were detected at creek discharge points where spring rains, flush accumulated nutrients to the tidal area of the Sacramento River. As a result, the Sacramento River is also listed as impaired for Chlordane, DDT (dichlorodiphenyltrichloroethane), dieldrin, and PCBs (polychlorinated biphenyls). In addition, the City of Woodland discharges its wastewater effluent to the Tule Canal, which flows to the Yolo Bypass. The Tule Canal is listed as impaired for Boron, *Escherichia coli* (*E.coli*), fecal coliform and salinity.

Clear Lake and Cache Creek

Erosion and groundwater discharges from aquifers associated with marine sediments and marine sedimentary rocks have resulted in release of high boron and mercury concentrations to the Cache Creek watershed. The Yolo County Flood Control and Water Conservation District monitors boron and mercury at seven locations throughout the watershed. Boron concentrations typically range from 0.7 mg/L in the spring to 2.2 mg/L in the winter, and the average concentration during the irrigation season is less than 1.0 mg/L. Many fruit and nut tree crops are sensitive to boron concentrations as low as 0.5-1.0 mg/L, although some of these crops are successfully grown in the Capay Valley. Clear Lake and Cache Creek are both listed as impaired for mercury on the 303(d) list (EPA and SWRCB 2014). These drainage basins are an identified source of mercury and contribute a substantial portion of total mercury load delivered to the Sacramento-San Joaquin Delta. Mercury contamination originates from past mining activities, geothermal springs, erosion of naturally occurring mercury-containing soils, and atmospheric deposition near Clear Lake and at tributaries to Cache Creek. Consequently, high concentrations of mercury have been detected during in the Cache Creek channel and the Yolo Bypass. Numeric targets for methylmercury, a particularly toxic form of mercury that can bioaccumulate in fish and other organisms, have been established in an effort to protect the health of humans and wildlife consuming substantial amounts of fish from Clear Lake and its drainage

basin. A mercury TMDL plan was approved for Clear Lake in 2003 and for Cache Creek in 2005. The mercury TMDLs for Clear Lake and its drainage basin include an implementation plan that presents a strategy and proposes actions to reach established numeric targets to reduce the mercury load. Davis Creek (a tributary of Cache Creek, below Davis Creek Reservoir) also is listed as impaired for mercury (SWRCB 2014). In addition, Clear Lake is listed as impaired for nutrients and a TMDL for nutrients was approved in September of 2007. Cache Creek is also impaired for unknown toxicity.

Lake Berryessa and Lower Putah Creek

The soils and surface waters of the Putah Creek watershed contain elevated concentrations of mercury and boron. Lake Berryessa and Lower Putah Creek, downstream of Lake Solano, are listed as impaired by mercury on the EPA 303(d) list. During low flows in summer months, the majority of flow within Putah Creek originates from the UCD wastewater treatment plant outfall. Lake Berryessa and Lower Putah Creek downstream of Lake Solano are also listed for mercury impairment. TMDLs for mercury in Lake Berryessa and Lower Putah Creek have not yet been established.

Willow Slough

Willow Slough is included in the Clean Water Act (CWA) 303(d) list of impaired water bodies for boron, *Escherichia coli* (*E. coli*), and fecal coliform. TMDLs for mercury in Lake Berryessa and Lower Putah Creek have not yet been established. Previous monitoring studies conducted by the Yolo County Department of Health Services and UCD noted invertebrate and algae impairment from unknown causes and sources. The City of Davis discharges its wastewater effluent to Willow Slough, although a new wastewater treatment plant is being built.

COASTAL HAZARDS

The potential for coastal hazards such as tsunamis, seiche, and sea level rise to affect environmental resources in Yolo County are low; of (Yolo County 2009b). A summary, based on the information found in the Yolo County General Plan EIR (Yolo County 2009b:652-653), and supplemented by information from other sources, is included here.

Tsunami

Tsunamis are long period water waves caused by underwater seismic events, volcanic eruptions, or undersea landslides. Areas that are highly susceptible to tsunami inundation tend to be low-lying coastal areas, such as tidal flats, marshlands, and former bay margins that have been artificially filled. According to the Yolo County General Plan EIR, Tsunami wave run-up elevations for the Sacramento River in the Yolo County area have not been quantified, but would not be expected to represent a hazard for Yolo County given its distance (more than 50 miles) from the coast.

Seiche

A seiche is the oscillation of a body of water at its natural period. Seiches occur most frequently in enclosed or semi-enclosed basins such as lakes, bays or harbors. Since Yolo County is generally subject to only low to moderate levels of earthquake-induced groundshaking, hazard of a seiche is not considered high. However, in the event that significant groundshaking does occur, the County of Yolo Emergency Plan has identified the following primary areas in the County in which a seiche could occur: Lake Berryessa; the Sacramento River, which could affect bordering communities including Knights Landing and Clarksburg; the Yolo Bypass when water is present in the bypass; and Lake Washington Harbor, the Port of West Sacramento, and the Deep Water Ship Channel. Since Lake Berryessa is closest of these areas to active faults, it is perhaps the most likely to experience a seiche. Based on a review of the available literature, however, no identified or measurable seiches have been documented in Yolo County surface water bodies.

Sea Level Rise

The most recent cycle of global climate change is a warming trend of the earth's atmosphere (an increase of approximately 1.8°F in the last 100 years) which has resulted in sea level rise. In the San Francisco Bay

area, the background rate of sea level rise has been estimated to be approximately 0.085 inches per year over the past 100 years. The western edge of Yolo County is more than 50 miles inland from the Pacific Ocean. As stated above, the lowest point in the County is at approximately 5 feet above sea level near the Sacramento River on the eastern edge of the County. This location is more than 80 miles from the Pacific Ocean. Given these conditions, the County is not susceptible to projected sea level rise conditions. Also see Chapter 16, *Climate Change*, for further consideration of sea level rise.

9.2.2 Regulatory Setting

FEDERAL LAWS AND REGULATIONS

Federal Clean Water Act

Section 404

The CWA consists of the Federal Water Pollution Control Act of 1972 and subsequent amendments. The CWA provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters. Section 404 of the act prohibits the discharge of fill material into waters of the United States, including wetlands, except as permitted under separate regulations by USACE and EPA. To discharge dredged or fill material into waters of the United States, including wetlands, Section 404 requires projects to receive authorization from the Secretary of the Army, acting through the USACE.

Section 402

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit program to regulate discharges of pollutants into waters of the United States. An NPDES permit sets specific discharge limits for point sources discharging pollutants into waters of the United States and establishes monitoring and reporting requirements, as well as special conditions. Two types of nonpoint source discharges are controlled by the NPDES program: discharges caused by general construction activities and the general quality of stormwater in municipal stormwater systems. The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving waters to the maximum extent practicable. The Regional Water Quality Control Boards (RWQCBs) in California are responsible for implementing the NPDES permit system (see the discussion of state regulations below).

Section 401

Under CWA Section 401, applicants for a Section 404 permit must obtain certification for the discharge. The certification must be obtained from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. Water quality certification requires evaluation of potential impacts in light of water quality standards and CWA Section 404 criteria governing discharge of dredged and fill materials into waters of the United States. The federal government delegates water pollution control authority under CWA Section 401 to the states (and in California, ultimately to the RWQCBs).

Section 303

Section 303(d) of the CWA requires states to develop lists of water bodies that do not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that the state develop a TMDL for each of the listed pollutants. The TMDL is the amount of the pollutant that the water body can receive and still be in compliance with water quality objectives. The TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. EPA must either approve a TMDL prepared by the state or disapprove the state's TMDL and issue its own. NPDES permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. After implementation of the TMDL, it is anticipated that the problems that led to placement of a given pollutant on the Section 303(d) list would be remediated.

Executive Order 11988—Floodplain Management

Executive Order 11988, Floodplain Management, requires federal agencies to prepare floodplain assessments for proposed projects located in or affecting floodplains. An agency proposing to conduct an action in a floodplain must consider alternatives to avoid adverse effects and incompatible development in the floodplain. If the only practicable alternative involves siting in a floodplain, the agency must minimize potential harm to or development in the floodplain and explain why the action is proposed in the floodplain.

Federal Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. The NFIP makes federally-backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. The Federal Emergency Management Agency (FEMA) manages the NFIP. FEMA creates Flood Insurance Rate Maps that designate 100-year floodplain zones and delineate flood hazard areas. A 100-year floodplain zone is the area that has a one in one hundred (1 percent) chance of being flooded in any one year based on historical data.

STATE LAWS AND REGULATIONS

Porter-Cologne Act

Enacted by the California Legislature in 1969, the Porter-Cologne Water Quality Control Act established the State Water Resources Control Board (SWRCB), the primary state agency for protecting the quality of the state's surface and groundwater supplies and enforcing the CWA. The Act also divided the state into nine regional basins, each with a RWQCB. Administration of the Porter-Cologne Act is delegated by the SWRCB to the nine RWQCBs.

The Porter-Cologne Act authorizes the SWRCB to prepare comprehensive water quality control plans or "Basin Plans" for major watersheds in California. For each waterbody, the Basin Plans identify beneficial uses of water to be protected, establish water quality objectives (ambient standards) necessary to support the beneficial uses, and outline the actions needed to bring waterbodies into compliance with water quality objectives.

The Central Valley RWQCB, which regulates water quality within the Plan Area, implements the policies of the SWRCB by making policy recommendations and issuing permits to improve water quality in its jurisdiction. Policy recommendations are made in the Water Quality Control Plans (Basin Plans) for the Central Valley.

The Central Valley RWQCB regulates discharges to water resources through the issuance of a variety of permits, including Wastewater Permits (discharges of treated wastewaters to surface water bodies), Municipal Stormwater Permits (municipal processes for stormwater quality control), and General NPDES Stormwater Permits for construction and industrial activities.

Basin Plan (Regional Water Quality Control Board)

The Central Valley RWQCB implements the Basin Plan, which is a master policy document for managing water quality in the Sacramento River Basin (which includes the County) and the San Joaquin River Basin. The Basin Plan establishes beneficial uses of surface water and groundwater within this region. All groundwater in the Sacramento River Basin is considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply. Specific narrative and numerical water quality objectives (e.g., color and concentration limits, respectively) have been developed in the Basin Plan to protect beneficial use designations through the adoption of waste discharge requirements (WDRs) and cleanup abatement orders.

Beneficial Uses

The Basin Plan (Central Valley RWQCB 1998) defines and designates the existing beneficial uses for surface and groundwater in the Plan area.

Existing beneficial uses of waterways in the Plan area include:

- ▲ **Municipal and Domestic Supply**-waters used for community, military, or individual water supply systems including, but not limited to, drinking water supply
- ▲ **Agricultural Supply** -waters used for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, and support of vegetation for range grazing.
- ▲ **Water Contact Recreation**- water used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These include, but are not limited to swimming, water-skiing, fishing, and others.
- ▲ **Noncontact Water Recreation**-used of waters used for recreational activities involving proximity to water, but not normally involving body contact with water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, and others.
- ▲ **Wildlife Habitat**-uses of waters that support wildlife habitats including, but not limited to, the preservation and enhancement of vegetation and prey species, such as waterfowl.
- ▲ **Freshwater Habitat** -uses of water that support warm (and potentially cold) water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
- ▲ **Spawning, Reproduction, and Development**- uses of water s that support high quality aquatic habitat necessary for reproduction and early development of fish and wildlife.

The beneficial uses of groundwater in Central Valley Region include the following:

- ▲ **Municipal and Domestic Supply** – Definition provided above.
- ▲ **Agriculture Supply** – Definition provided above.
- ▲ **Industrial Service Supply** – Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.
- ▲ **Industrial Process Supply** – Uses of water for industrial activities that depend primarily on water quality.

NPDES General Permits for Stormwater Discharges

The SWRCB adopted the statewide NPDES General Construction Permit in August 1999. The state requires that projects disturbing more than one acre of land during construction file a Notice of Intent with the RWQCB to be covered under this permit. Construction activities subject to the General Construction Permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters. A stormwater pollution prevention plan (SWPPP) must be developed and implemented for each site covered by the permit. The SWPPP must include best management practices (BMPs) designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving off-site into receiving waters throughout the construction and life of the project; the BMPs must address source control and, if necessary, pollutant control.

In addition to the General Construction Permit, the Industrial General Permit covers activities such as manufacturing, agriculture, and mining, as defined in 40 CFR Section 122.26(b)(14). As with the General Construction Permit, the Industrial General Permit requires the development of a SWPPP, use of Best Available Technology Economically Achievable, and Best Conventional Pollutant Control Technology to achieve performance standards.

Municipal Program

The State Board regulates stormwater discharges from municipal storm sewer systems (MS4s discharges) by the General Permit for Discharges of Storm Water from Small Municipal Separate Storm Sewer Systems program. This permit was issued in two phases. Under Phase I, which started in 1990, the Water Boards issued NPDES stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities. There are no medium or large MS4s in Yolo County. Phase II covered small municipalities, including non-traditional MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes. Woodland, Davis, Yolo, UC Davis, and West Sacramento are each covered under a Phase II MS4 General Permit. Yolo County was required under the NPDES MS4 program to implement a Water Board approved Storm Water Management Plan.

A requirement of the Phase II General Permit is that small MS4s develop measures to limit peak stormwater runoff discharge rates from new development. Specifically, post-development peak stormwater runoff discharge rates shall not exceed the estimated pre-development rate for developments where the increased peak stormwater discharge rate will result in increased potential for downstream erosion, also referred to as hydromodification.

California Nondegradation Policy

In 1968, the SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy provides as follows:

- a) Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water;
- b) Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet waste discharge requirements.

State Implementation Policy

The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SWRCB 2005) addresses a gap in water quality standards covering priority toxic pollutants. The SIP established the policy for development of new standards for a variety of toxic pollutants, as required by the CWA. It applies to discharges of toxic pollutants into California's inland surface waters, enclosed bays, and estuaries subject to regulation under the Porter-Cologne Water Quality Control Act and the CWA. Such regulation may occur through the issuance of NPDES permits, the issuance or waiver of WDRs, or other regulatory approaches.

Executive Order B-29-15

On April 1, 2015, the Governor of California proclaimed a continued state of emergency due to severe drought conditions, directing the SWRCB to enhance emergency regulations adopted in 2014 and reaffirmed on March 17, 2015. The Governor's Executive Order B-29-15 sets 2013 as a base water use year and directed the SWRCB to impose restrictions to achieve a statewide 25 percent water reduction through February 28, 2016. On May 5, 2015, the SWRCB adopted an emergency regulation requiring an immediate 25 percent reduction in overall potable urban water use statewide in accordance with Executive Order B-29-15.

Delta Protection Commission

The Delta Protection Act of 1992 (California Water Code Section 12220) established the Delta Protection Commission (DPC). The Delta Reform Act of 2009 (SBX7-1) amended the 1992 act in November 2009. The Commission has land use planning jurisdiction over the Delta Primary Zone, which generally consists of lands in the central portion of the Delta that were not within either the urban limit line or sphere of influence of any

local government's general plan. The Primary Zone, which comprises 487,625 acres, or approximately 66%, of the Delta, encompasses portions of San Joaquin, Contra Costa, Solano, Yolo, and Sacramento Counties. The Secondary Zone is the area outside the Primary Zone and within the "Legal Delta." The Primary Zone is within the planning area of the DPC but the Secondary Zone is not. Lands in Yolo County that are overlaid by the Primary and Secondary Delta Zones are shown in Figure 5-3, and are comprised of areas in the southeastern corner of the county, which includes lands that are part of the Yolo Bypass (Yolo County 2009a).

The Delta Protection Act created a 23-member Delta Protection Commission. The Delta Reform Act reduced the number of Delta Protection Commission members from 23 to 15 members. The mission of the Delta Protection Commission (Commission) is to adaptively protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment consistent with the Delta Protection Act and the Land Use and Resources Management Plan (LURMP) for the Primary Zone. The Primary Zone of the Sacramento-San Joaquin Delta includes approximately 500,000 acres of waterways, levees and farmed lands extending over portions of five counties: Solano, Yolo, Sacramento, San Joaquin and Contra Costa. The goal of the Commission is to ensure improved flood protection, and orderly, balanced conservation and development of Delta land resources including, but not limited to, agriculture, wildlife habitat, and recreational activities. The LURMP was developed in response to the Delta Protection Act of 1992 by the State Delta Protection Commission. The LURMP sets out findings, policies, and recommendations resulting from background studies in the areas of environment, utilities and infrastructure, land use, agriculture, water, recreation and access, levees, and marine patrol/boater education/safety programs. The LURMP was adopted by the state in 1995 (and revised in 2002 and 2010) for the purpose of providing direction to local jurisdictions in the Delta region on land use decisions. General Plan polices that pertain to the portion of the County located within the Delta primary zone, designated within the General Plan as Delta Protection Overlay, must be consistent with the LURMP. The LURMP was adopted by the County as a General Plan amendment on March 18, 1997 by Resolution No. 97-34.

California WaterFix/EcoRestore

The California WaterFix project consists of a water conveyance facility with three new intakes on the Sacramento River and dual tunnels to convey water to existing state and federal pumping plants. This system would include construction of two 30-mile long tunnels, each 40 feet in diameter and 150 feet underground. The tunnels would pump as much as 9,000 cubic feet of water per second from the three new intakes on the Sacramento River near Courtland to the Clifton Court Forebay. This project and California EcoRestore replace the Bay Delta Conservation Plan (BDGP), which previously proposed the same project as an HCP/NCCP. The state is no longer pursuing mitigation through an HCP/NCCP. Instead, construction and operation impacts are proposed to be mitigated through about 2,300 acres of habitat restoration and up to 13,300 acres of habitat protection (e.g., conservation easements). California EcoRestore would restore at least 30,000 acres of habitat in the Sacramento – San Joaquin Delta completely independent of habitat restored as mitigation under California WaterFix, including the lower Yolo Bypass and the Clarksburg region. The WaterFix/EcoRestore are still in the planning phases and have not yet started construction of projects.

Central Valley Flood Protection Board

In 2007 California Senate Bill 5 (SB5-2007) and California Assembly Bill 5 (AB5-2007), both dealing with flood management in the Central Valley were adopted. Between them, they renamed the Department of Water Resources Reclamation Board as the Central Valley Flood Protection Board (CVFPB), and expanded its size, duties, and powers, including a requirement that the CVFPB prepare and adopt a Central Valley Flood Protection Plan by 2012 and update the plan on a 5-year cycle. In addition, the program required that cities and counties in the Sacramento–San Joaquin Valley, including Yolo County, amend their General Plan and Zoning Ordinances to be consistent with newly adopted flood protection standards within 36 months of flood plan adoption, and established other flood protection requirements for local land-use decisions consistent with the Central Valley Flood Protection Plan. Further, SB5-2007 established higher standards of flood protection (generally 200-year protection) for urban and urbanizing areas (defined as areas of at least 10,000 residents, or which will grow to 10,000 or more within the next 10 years). Other areas remain subject to the pre-existing 100-year standard for flood protection (DWR 2008). The initial 2012 CVFPB was completed, and the first 5-year update is in preparation.

The Central Valley Flood Protection Board, is required to enforce standards for the construction, maintenance, and protection of adopted flood control plans that will protect public lands from floods. The jurisdiction of the board includes flood control facilities throughout Yolo County. According to Section 8709.22 of the California Water Code, a permit is required prior to construction within the board's jurisdiction for the following actions:

- ▲ The placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projections, fill, embankment, building, structure, obstruction, encroachment, or excavation; the planting or removal of vegetation; and any repair or maintenance that involves cutting into the levee.
- ▲ Existing structures that predate permitting or where it is necessary to establish the conditions normally imposed by permitting. The circumstances include those where responsibility for the encroachment has not been clearly established or ownership and use have been revised.
- ▲ Vegetation plantings require submission of detailed design drawings; identification of vegetation type; plant and tree names (both common and scientific); quantities of each type of plant and tree; spacing and irrigation method; a vegetative management plan for maintenance to prevent the interference with flood control operations, levee maintenance, inspection, and flood fight procedures.

Dam Inundation Mapping Requirement

The California Code of Regulations, Section 8589.5, requires that dam owners submit flood routing information, land surveys to delineate the floodplain, and a technical report to support a dam failure inundation map to the Office of Emergency Services. The purpose of the program is to provide decision support for emergency preparedness planning, mitigation, response to, and recovery from potential damage to life and property from dam inundation flood waves. Based upon approved inundation maps, or the delineated areas, cities and counties with territory in the mapped areas are required to adopt emergency procedures for the evacuation and control of populated areas below the dams (COES 2008). The technical study must contain information about dam specifications, physical conditions affected by the dam, including downstream areas and floodwater routing, and the cities, towns, and County areas which could be affected by a dam failure. The requirements of the technical study can also include modeling of worst case breaching parameters and identification of the downstream hazard potential from partial or complete failure of the dam. The technical study and dam inundation map must be updated when a dam is enlarged.

Levee Flood Protection Zones

As of October of 2007, AB 156-2007 requires the DWR to prepare Levee Flood Protection Zones (LFPZ) maps using the best available information. The LFPZ maps were developed for areas protected by the 1,600 miles of state and federal project levees in the Central Valley. In addition to the total inundation areas, those regions that have depths greater than 3 feet also will be identified. Under Water Code section 9110(b), "Levee Flood Protection Zone" means the area, as determined by the Central Valley Flood Protection Board or DWR, which is protected by a project levee. DWR delineated the LFPZs by estimating the maximum area that may be flooded if a project levee fails with flows at maximum capacity that may reasonably be conveyed (http://www.water.ca.gov/floodmgmt/lrafmo/fmb/fes/levee_protection_zones/LFPZ_maps.cfm).

Groundwater Management Act

As of January, 1993, AB 3030 California's Groundwater Management Act, (Water Code Sections 10750–10756) provides guidelines by which local agencies not having authority for groundwater management can acquire that authority over the management of groundwater resources in basins recognized by the DWR. Its intent is to promote the voluntary development of groundwater management plans and provide criteria for the plans in order to ensure sustainable groundwater supplies for the future. The Act stipulates the technical components of a groundwater management plan as well as procedures for such a plan's adoption, including passage of a formal resolution of intent to adopt a groundwater management plan, and holding a public hearing on the proposed plan. The Act also allows agencies to adopt rules and regulations to implement an adopted plan, and empowers agencies to raise funds to pay for the facilities needed to manage the basin,

such as extraction wells, conveyance infrastructure, recharge facilities, and testing and treatment facilities. SB 1938 of-2002 also requires basin management objectives and other additions to be included in local groundwater management plans to comply with California Water Code.

Streambed Alteration Agreements

Sections 1600-1603 of the CFGC requires project proponents to notify CDFW before any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake; or deposit debris, waste or other materials that could pass into any river, stream or lake. Preliminary notification and CDFW review of a submitted notification generally occurs during the environmental review process. When an existing fish or wildlife resource may be substantially adversely affected, including adverse effects to water quality, CDFW is required to propose reasonable changes to the project to protect those resources. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

LOCAL LAWS AND REGULATIONS

Yolo County 2030 Countywide General Plan

The Conservation and Open Space Element of the *Yolo County General Plan* describes existing water resources in Yolo County and presents goals, policies, and actions intended to protect those resources. The following policies related to water resources from multiple Elements of the *Yolo County General Plan* are potentially relevant to the Plan:

- ▲ **Policy CO-2.22.** Prohibit development within a minimum of 100 feet from the top of banks for all lakes, perennial ponds, rivers, creeks, sloughs, and perennial streams. A larger setback is preferred. The setback will allow for fire and flood protection, a natural riparian corridor (or wetland vegetation), a planned recreational trail where applicable, and vegetated landscape for stormwater to pass through before it enters the water body. Recreational trails and other features established in the setback should be unpaved and located along the outside of the riparian corridors whenever possible to minimize intrusions and maintain the integrity of the riparian habitat. Exceptions to this action include irrigation pumps, roads and bridges, levees, docks, public boat ramps, and similar uses, so long as these uses are sited and operated in a manner that minimizes impacts to aquatic and riparian features.
- ▲ **Policy CO-5.3.** Manage the County's groundwater resources on a sustainable yield basis that can provide water purveyors and individual users with reliable, high quality groundwater to serve existing and planned land uses during prolonged drought periods.
- ▲ **Policy CO-5.5.** Integrate water conservation and water quality protection into all aspects of the planning and development process.
- ▲ **Policy CO-5.6.** Improve and protect water quality for municipal, agricultural, and environmental uses.
- ▲ **Policy CO-5.9.** Within the Delta Primary Zone, ensure compatibility of permitted land use activities with applicable water policies of the Land Use and Resource Management Plan of the Delta Protection Commission.
- ▲ **Policy CO-5.14.** Require that proposals to convert land to uses other than agriculture, open space, or habitat demonstrate that groundwater recharge will not be significantly diminished.
- ▲ **Policy CO-5.32.** In water districts where there is insufficient water to serve new development, require new development to offset demand through one or more of the following measures as appropriate, so that there is no net increase in demand: use of reclaimed water, water catchments and reuse on-site; water retention serving multiple sites; retrofits of existing uses in the district to offset increased demand;

and other such means. These measures should be achieved in partnership with the applicable water district.

- ▲ **Policy LU-3.7.** Prohibit the designation of new urban development in places with one or more of the following characteristics:
 - Areas where there are significant hazards and where there are no plans to adequately mitigate the risk (e.g. floodplains, high fire hazard areas, unstable soils, known seismic faults, etc.).
 - Areas where there are significant natural resources (e.g. groundwater recharge, wildlife habitat, mineral or timber resources, scenic areas, etc.).
- ▲ **Policy LU-4.2.** Continue active involvement with State and regional efforts to establish policy, regulation and management for the Delta, to promote the economic and social sustainability of the town of Clarksburg, the viability of the Agricultural District, the habitat needs of the Yolo Natural Heritage Program and the water resources needed for the success of each of these efforts.
- ▲ **Policy CC-3.10.** In addition to Table LU-11, achieve the following within the Dunnigan Specific Plan growth boundary:

G. Preserve the Tehama-Colusa Canal as Dunnigan’s western boundary and as an important source of future water.
- ▲ **Policy CI-4.5.** Roads and road-related structures (bridges, culverts, retaining walls, abutments, etc.) located in or near watercourses shall be placed, designed, built, and landscaped so as to minimize the impact to riparian corridors. Structures shall reduce erosion during and after construction, accommodate flood flows, and minimize grading on slopes greater than 20 percent.
- ▲ **Policy PF-2.2.** Construct on-site stormwater detention facilities that are designed so that runoff from the 100-year storm event does not: (1) result in an increase in peak release rate; (2) result in a time decrease associated with the time of concentration; (3) contribute to adjacent flood problems; and/or (4) significantly alter the direction of runoff.
- ▲ **Policy PF-2.3.** Design new stormwater facilities to enhance recreational, habitat, and/or aesthetic benefits, as well as to integrate with existing parks and open space features.
- ▲ **Policy PF-2.4.** Encourage sustainable practices for stormwater management that provide for groundwater recharge and/or improve the quality of runoff through biological filtering and environmental restoration.
- ▲ **Policy AG-2.1.** Protect areas identified as significantly contributing to groundwater recharge from uses that would reduce their ability to recharge or would threaten the quality of the underlying aquifers.
- ▲ **Policy AG-2.2.** Preserve water resources for agriculture, both in quantity and quality, from competition with development, mitigation banks and/or interests from outside of the County.

Yolo County Flood Management Ordinance

When the County joined the NFIP, it adopted and began to enforce minimum floodplain management standards. FEMA worked closely with the state and the county to identify flood hazard areas, flooding risk, and to establish minimum floodplain management standards. The floodplain management standards are designed to prevent new development from increasing the flood threat and to protect new and existing buildings from anticipated flood events. To satisfy the requirements of the Floodplain Management Ordinance, projects planned for construction within a special flood hazard area must meet development and construction standards specifically designed to prevent or limit flood damage. If a property proposed for

development is determined to be in a FEMA special flood hazard area, the applicant will be required to obtain a floodplain permit from the Building Inspection Division before applicable permits can be issued.

Yolo County Emergency Preparedness

The Yolo County Office of Emergency Services is responsible for coordinating the county government's role in preparation and response to a disaster or large scale emergency within the county. Countywide emergency preparedness plans outline procedures for coordination and response. The County's federally approved Yolo Operational Area Multi-Hazard Mitigation Plan provides the framework for this disaster response.

Stormwater Management Program

The EPA regulates urban stormwater discharges as point sources and requires municipalities to obtain NPDES permits for these discharges, as described above. The County developed a Storm Water Management Program (SWMP) Planning Document in March of 2003 (revised in October 2004) to address stormwater quality within the County's jurisdiction. The SWMP addresses a wide variety of activities conducted in urbanized areas of the County that are sources of pollutants in stormwater. The SWMP was submitted with the Notice of Intent to comply with the permit to the Water Board, indicating the County's commitment to managing properties, facilities and operations within its jurisdiction to protect stormwater resources and the quality of receiving waters.

Integrated Regional Water Management Program

The Yolo County Integrated Regional Water Management Program (IRWMP) was completed by the Water Resources Association of Yolo County in 2007 which is comprised of multiple public water purveying entities to identify issues related to water supply, water quality, flood management and drainage, recreation, and riparian and aquatic ecosystem enhancement. The IRWMP contains a list of priority projects and integrated actions that are planned and implemented within Yolo County.

Cache Creek Area Plan

The *Off-Channel Mining Plan for Lower Cache Creek (OCMP)* together with the *Cache Creek Resources Management Plan for Lower Cache Creek (CCRMP)* comprise the *Cache Creek Area Plan (CCAP)*. The CCAP describes approaches for managing riparian habitats along Cache Creek from the Capay Dam to I-5, in particular, for restoring habitats, reducing erosion, maintaining flood capacity, and improving water quality. Among the goals of the plan is to promote coordination of local, state, and federal regulation of activities within Cache Creek. The OCMP was established as a comprehensive and integrated planning framework for regulating and protecting the Cache Creek area. The OCMP accommodates gravel mining on the creek terraces (but not in-channel) while emphasizing habitat restoration, open space, and reclamation of mined lands to agricultural use (Yolo County 1996a). The OCMP describes a future groundwater recharge and storage program and allows for future recreation opportunities along the creek. The CCRMP is a comprehensive creek management plan that eliminated commercial in-channel aggregate mining, established an improvement program for implementing on-going projects to improve channel stability, and ensured restoration of riparian habitat along creek banks in the future (Yolo County 1996b, Revised 2002).

City of Davis General Plan

The City of Davis General Plan contains the following policies related to hydrology and water quality that are potentially relevant to the Plan:

- ▲ **Policy WATER 2.2.** Manage groundwater resources so as to preserve both quantity and quality.
- ▲ **Policy WATER 2.3.** Maintain surface water quality.
- ▲ **Policy WATER 3.2.** Coordinate and integrate design, construction, and operation of proposed stormwater retention and detention facilities City-wide, to minimize flood damage potential and improve water quality.
- ▲ **Policy HAZ 1.1.** Site and design developments to prevent flood damage.

City of Woodland General Plan

The City of Woodland General Plan contains the following policies related to hydrology and water quality and are potentially relevant to the Plan:

- ▲ **Policy 5.I.1:** Storm Drainage System and Cost Recovery. Maintain and improve the storm drainage system for the existing Woodland community. Ensure that increased storm drainage system capacity is available to serve planned urban development within the Planning Area consistent with this General Plan. Accommodate increase in flows and loadings from the existing community with the capital costs and benefits allocated equitably and fairly between existing users and new users, as authorized by law.
- ▲ **Policy 5.I.2:** Storm Drainage Facilities Master Plan. Update the Storm Drainage Facilities Master Plan as needed to plan for and direct the collection, repurposing, and/or disposal of stormwater and to provide site-appropriate solutions that protect surface water quality in the Planning Area waterways.
- ▲ **Policy 5.I.4:** Low Impact Development. Require new development and redevelopment projects to incorporate site design and low impact development runoff requirements, in accordance with the Municipal Code to reduce runoff rates, filter out pollutants, and facilitate groundwater infiltration. Such features may include, but are not limited to:
 - Canopy trees or shrubs to absorb rainwater;
 - Grading that lengthens flow paths over permeable surfaces and increases runoff travel time to reduce the peak hour flow rate and the number of required drain inlets;
 - Partially removing curbs and gutters from parking areas where appropriate to allow stormwater sheet flow into vegetated areas;
 - Use of permeable paving in parking lots and other areas characterized by significant impervious surfaces;
 - On-site stormwater detention, use of bioswales and bioretention basins to facilitate infiltration;
 - Integrated or subsurface water retention facilities to capture rainwater for use in landscape irrigation and other non-potable uses; and
 - Innovative engineering practices that allow for compact, connected, and walkable urban design.
- ▲ **Policy 5.I.5:** Prohibiting Grading Activities in Rainy Season. Prohibit grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of storm drainage facilities.
- ▲ **Policy 7.A.1:** Surface Water Project. Continue to cooperate with the City of Davis and UC Davis to operate the Surface Water Project in order to balance the groundwater supply and protect against aquifer overdrafts and water quality degradation.
- ▲ **Policy 7.A.2:** Groundwater Management. Support local efforts to establish a Groundwater Sustainability Agency and adopt a Groundwater Management Plan. Ensure that the City of Woodland and local watershed agencies retain local authority to regulate and manage groundwater.
- ▲ **Policy 7.A.3:** Watershed Protection. Support local and regional efforts to protect the Sacramento River, Cache Creek, Putah Creek, and Willow Slough watersheds.
- ▲ **Policy 7.A.4:** Best Management Practices. Continue to require the use of feasible and practical best management practices (BMPs) and promote Low Impact Development to protect receiving waters from the adverse effects of construction activities and urban and agricultural runoff.
- ▲ **Policy 8.B.1:** Floodplain Zoning. Continue to implement floodplain zoning and undertake other actions appropriate and/or required to comply with State flood risk management requirements, and to maintain the City's eligibility under the Federal Flood Insurance Program.

- ▲ **Policy 8.B.2:** Flood Hazard Evaluation. Require evaluation of potential flood hazards prior to approval of development projects. Require proponents of new development to submit accurate topographic and flow characteristics information. This will include depiction of the 200-year floodplain boundaries under fully-developed, pre- and post-project runoff conditions.
- ▲ **Policy 8.B.3:** New Development in Flood Hazard Zones. No subdivisions, development agreements, or permits that would place development within a flood hazard zone can be approved unless the City makes explicit findings that either existing flood management facilities provide an adequate level of protection from flooding, the City has conditioned the project to provide an adequate level of protection, or the local flood management agency has made adequate progress on the construction of a flood protection system that will provide adequate protection.

City of Winters General Plan

The City of Winters General Plan contains the following policies related to hydrology and water quality and are potentially relevant to the Plan:

- ▲ **Policy VI.A.2.** In reviewing development proposals, the City shall consider the project's potential for adversely affecting water quality in Putah Creek, Dry Creek, and the area's groundwater and shall condition development approvals to avoid or adopt all feasible measures to mitigate any identified significant effects.
- ▲ **Policy VI.A.6.** The City shall condition development approvals to minimize the discharge of sediment from grading into Putah Creek and Dry Creek
- ▲ **Policy VI.D.1.** The City shall require that all new development along Putah Creek east of Railroad Avenue be set back at least 100 feet from the top of the creek bank, that all new development along Putah Creek west of Railroad Avenue be set back at least 50 feet from the top of the creek bank, and that all new development along Dry Creek be setback at least 50 feet from the top of the creek bank. Where there is no discernable bank, the setback shall be measured from the line closest to the creek where riparian vegetation is permanently established.
- ▲ **Policy VI.D.4.** Any upstream development that creates potential erosion impacts on Dry Creek and Putah Creek shall be required to adopt all feasible measures to mitigate such impacts.
- ▲ **Policy VII.B.1.** The City shall continue to participate in the National Flood Insurance Program. To this end, the City shall ensure that its regulations are in full compliance with standards adopted by the Federal Emergency Management Agency.
- ▲ **Policy VII.B.2.** Construction of storm drainage improvements shall be required, as appropriate, to prevent flooding during periods of heavy rainfall.
- ▲ **Policy VII.B.3.** The City shall impose appropriate conditions on grading projects performed during the rainy season to ensure that silt is not conveyed to the storm drainage system.

West Sacramento General Plan

The City of West Sacramento General Plan contains the following policies related to hydrology and water quality and potentially relevant to the HCP/NCCP:

Goal PR-4. To maintain an adequate level of service in the City's storm drainage system to accommodate runoff from existing and future development, prevent property damage due to flooding, and improve environmental quality.

- ▲ **Policy PFS-4.1. Public Improvement Design.** The City shall design public improvements such as streets, parks, and plazas for retention and infiltration of stormwater by diverting urban runoff to bio-filtration systems such as greenscapes.
- ▲ **Policy PFS-4.2. Accommodate New and Existing Development.** The City shall continue to expand and develop stormwater drainage facilities to accommodate the needs of existing and planned development.
- ▲ **Policy PFS-4.6. Enhance Recreation.** The City shall require new stormwater drainage facilities to be designed to enhance recreation and habitat and be integrated into existing parks and open space features.
- ▲ **Policy PFS-4.7. Fix Local Flooding.** The City shall continue to identify and correct problems of localized flooding within the city. Where practical and economical, the City shall upgrade existing drainage facilities as necessary to correct localized flooding problems.
- ▲ **Policy PFS-4.8. Rainwater Catchment.** The City shall encourage the use of rainwater catchment facilities and improvements where appropriate, cost effective, safe, and environmentally sustainable.
- ▲ **Policy PFS-4.9. Grading Projects.** The City shall impose appropriate conditions on grading projects performed during the rainy season to ensure that silt is not conveyed to storm drainage systems.
- ▲ **Policy PFS-4.10. Diversion.** The City shall require new development to be designed to prevent the diversion of floodwaters onto neighboring parcels.
- ▲ **Policy PFS-4.11.** The City shall require construction of storm drainage improvements, as appropriate, to prevent flooding during periods of heavy rainfall.

Goal NRC-4. To preserve and protect water quality in the City's natural water bodies and drainage systems and the area's groundwater basin.

- ▲ **Policy NCR-4.1. Integrated Water Management Program.** The City shall continue to integrate water management programs that emphasize multiple benefits and balance the needs of agricultural and urban users.
- ▲ **Policy NCR-4.2. Open Space Buffers.** The City shall conserve and, where feasible, create or restore open space areas that serve to protect water quality such as riparian corridors, buffer zones, wetlands, undeveloped open space areas, levees, and drainage canals.
- ▲ **Policy NRC-4.5. No Adverse Impact.** The City shall not approve new development that has a significant potential for adversely affecting water quality in the city's natural waterbodies and drainage systems including the Sacramento River, the Deep Water Ship Channel, Lake Washington, or the area's groundwater basin.
- ▲ **Policy NCR-4.6. New Development.** The City shall require new development to protect the quality of water resources and natural drainage systems through site design, source controls, runoff reduction measures, best management practices (BMPs), and Low Impact Development (LID).

Goal NRC-5. To preserve and protect West Sacramento's water resources and supply.

- ▲ **Policy NCR-5.2. Groundwater Sustainability.** The City shall protect the sustainability of groundwater resources for urban and agricultural uses.
- ▲ **Policy NCR-5.3. Groundwater Recharge.** The City shall protect and require new development to preserve, where feasible, areas that provide important groundwater recharge and stormwater management

benefits such as undeveloped open spaces, natural habitat, riparian corridors, wetlands, and natural drainage areas.

Goal S-2. To prevent loss of life, injury, and property damage due to flooding.

- ▲ **Policy S-2.1 Flood Insurance Program.** The City shall continue to participate in the National Flood Insurance Program, and ensure that local regulations are in full compliance with standards adopted by the Federal Emergency Management Agency.
- ▲ **Policy S-2.9. 200-Year Flood Protection in New Development.** The City shall require new development to achieve a minimum of 200-year level of flood protection either through: i) the construction of flood management improvements or other mitigation measures beyond those required by the City's Floodplain Management Ordinance (Title 18 of the Municipal Code); or ii) payment of in-lieu flood management fees.
- ▲ **Policy S-2.11. New Development.** The City shall require evaluation of potential flood hazards prior to approval of development projects to determine whether the proposed development is reasonably safe from flooding and consistent with California Department of Water Resources (DWR) Urban Level of Flood Protection Criteria. The City shall not approve new development or a subdivision or enter into a development agreement for any property within a flood hazard zone unless the adequacy of flood protection specific to the area has been demonstrated.

9.3 ENVIRONMENTAL CONSEQUENCES

9.3.1 Methodology and Significance Criteria

METHODS AND ASSUMPTIONS

Evaluation of the potential impacts that may result from each alternative is based on a review of the covered activities as described in the Yolo HCP/NCCP; review of the Yolo County General Plan, and planning documents from the Cities of Davis, West Sacramento, Winters, and Woodland; and the assumption that activities under each alternative will comply with applicable local, State, and federal regulations and general plan policies.

As described in Section 3.3, the issuance of ITPs by the Wildlife Agencies from any entity other than the U.S. Fish and Wildlife Service (USFWS) or California Department of Fish and Wildlife (CDFW)—together with subsequent adoption and implementation of the Plan by the Applicants consistent with the Permits—is the Proposed Action considered in this EIS/EIR. Issuance of permits by the Wildlife Agencies only provides compliance with the federal Environmental Species Act and California Natural Community Conservation Planning Act.

All covered activities are subject to the approval authority of one or more of the Applicants with jurisdiction over such projects, and HCP/NCCP approval and permit issuance for take of covered species does not confer or imply approval from any entity other than the USFWS or CDFW to implement the covered activities. Rather, as part of the standard approval process, individual projects will be considered for further environmental analysis and generally will receive separate, project-level environmental analysis review under CEQA and, in some cases, NEPA for those projects involving federal Agencies.

The assessment of potential effects on hydrology and water quality in the Plan Area is based on the anticipated changes in land cover and land uses over a 50-year study period, corresponding to the permit term under the Proposed Action Alternative.

Anticipated changes in land cover/land use for each alternative are described in Chapter 2, *Proposed Action and Alternatives*. See Chapter 3, *Approach to the Analysis*, for a description of the methodology used across all resource chapters for the analysis of cumulative effects.

As described in Chapter 2, *Proposed Action and Alternatives*, the Conservancy has proposed a number of changes to the HCP/NCCP since the release of the Draft on June 1, 2017. These changes are described and Characterized in Section 2.3.2, *Alternative B – Proposed Action Alternative (Permit Issuance/Plan Implementation)*, of Chapter 2.

These proposed changes fall into several categories;

- ▲ Copy edits such as correction of spelling errors,
- ▲ Minor text clarifications and corrections such as providing or correcting cross references to other parts of the document,
- ▲ Minor numeric corrections, such as small adjustments to acreages of particular land cover types,
- ▲ Providing updated information since publication of the Draft HCP/NCCP such as including information from the City of Woodland General Plan Update 2035, which was adopted after the Draft HCP/NCCP was published,
- ▲ Clarifications or enhancements to particular plan elements such as new or updated Avoidance and Minimization Measures (AMMs),
- ▲ Increased details on plan implementation such as providing additional information on the content of the Implementation Handbook, and
- ▲ Changes in assumptions regarding costs and funding to reflect updated information.

These proposed changes have been analyzed to determine whether they would result in any changes to the impact analysis or conclusions reached in the Draft EIS/EIR. This analysis is provided in Section 24.2, *Evaluation of Proposed Modifications to the Draft HCP/NCCP*. The analysis substantiates that the proposed changes to the HCP/NCCP do not alter the analysis or impact conclusions provided in the Draft EIS/EIR for hydrology and water quality. Therefore, no changes to the analysis provided below are merited.

SIGNIFICANCE CRITERIA

Effects would be significant if an alternative would result in the following:

- ▲ violate any water quality standards or waste discharge requirements;
- ▲ substantially deplete groundwater supplies or substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- ▲ substantially alter the existing drainage pattern of a site or area, including through the modification of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off the site;
- ▲ substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off the site;

- ▲ create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- ▲ otherwise substantially degrade water quality;
- ▲ place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map, the 200-year flood hazard boundary as defined by the Central Valley Flood Protection Plan in urban areas, or other flood hazard delineation map;
- ▲ place structures within a 100-year flood hazard area, the 200-year flood hazard boundary as defined by the Central Valley Flood Protection Plan in urban areas, that would impede or redirect flood flows;
- ▲ expose people or structures to a substantial risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- ▲ inundation by seiche, tsunami, or mudflow.

ISSUES NOT EVALUATED FURTHER

As discussed above in Section 9.2.1, *Environmental Setting*, the potential for coastal hazards such as tsunami or seiche to affect environmental resources in Yolo County are very low. The distance of the Plan Area from the coast (over 50 miles at the closest point) greatly reduces the chances of inundation by tsunami, and there is no record of seiche occurring in or near the Plan Area. The topography of the western portion of the Plan Area may lend itself to risk of mudflow, however no development covered activities are located in this area. The majority of the plan area and the areas in which development covered activities would occur is flat and not likely to be subject to mudflows. Given these conditions, these issues are not evaluated further in this chapter.

9.3.2 Effects of Proposed Action and Alternatives

ALTERNATIVE A—NO ACTION ALTERNATIVE (NO PERMIT/NO PLAN IMPLEMENTATION)

Environmental Consequences/Environmental Effects

As described previously in Chapter 2, *Proposed Action and Alternatives*, under the No Action Alternative (Alternative A), take associated with development would occur over the 50-year study period consistent with the local general plans and other applicable planning documents (e.g., community plans, specific plans, recreation plans). As also described in Chapter 2, for purposes of this analysis, development and related activities (e.g., operations and maintenance) under the No Action Alternative are considered using the same organizational categories identified in the Yolo HCP/NCCP; urban projects and activities; rural projects and activities, which includes rural public services, infrastructure, and utilities, agricultural economic development and open space; and public and private operations and maintenance. Under the No Action Alternative, the Plan would not be approved and implemented and no Endangered Species Act authorizations would be issued by USFWS or CDFW related to the Plan. Endangered species permitting and mitigation would continue on an individual project-by-project basis.

Urban projects and activities would be concentrated within the Cities of Davis, West Sacramento, Winters, and Woodland. Rural projects and activities would primarily occur within and around the existing communities within the unincorporated county (primarily Clarksburg, Dunnigan, Esparto, Elkhorn, Knights Landing, and Madison). Activities associated with the rural public services, infrastructure, and utilities, and agricultural economic development and open space categories would occur in various locations in the unincorporated county. Public and private operations and maintenance activities would occur both in the incorporated cities and the unincorporated county.

Urban and rural projects and activities under the No Action Alternative can result in violations of water quality standards or waste discharge requirements. However, projects and activities would be subject to water quality discharge standards including the provisions of the CWA, Porter-Cologne Act, the statewide General Construction Permit, and the Industrial General NPDES Permit as discussed above in Section 8.2.2, *Regulatory Setting*. These activities would also be subject to general plan polices that help reduce and prevent water quality impacts such as, Yolo County Policy CO-2.22, which requires a 100-foot buffer from the top of banks of all lakes, perennial ponds, rivers, creeks, sloughs and perennial streams.

General urban and rural development activities under the No Action Alternative can result in depletion of groundwater supplies or interfere with groundwater recharge for projects that replace land uses that utilize surface water with activities that utilize groundwater, and for projects that increase impervious surfaces in areas of moderate or better infiltration rates (Exhibit 9-2). However, activities under the No Action Alternative would be implemented under California regulations governing water use and groundwater including Executive Order B-29-15 and the Groundwater Management Act, as well as groundwater provisions of the Yolo County General Plan and applicable local general plans. Taken as a whole, these regulations are intended to reduce water use and subsequent overdraft of groundwater. The Yolo County General Plan also contains Policy CO-5.14 that addresses the need for open space to preserve groundwater recharge.

Those activities under the No Action Alternative that greatly increase impervious surfaces or require a substantial amount of grading could alter the existing drainage pattern in a manner that would result in erosion, siltation, and/or environmental harm, or could increase the rate or amount of surface runoff in a manner that would result in flooding. As discussed in Section 9.2.1, *Environmental Setting*, the Plan Area contains a number of impaired waterways under Section 303(d) of the Clean Water Act, including Cache Creek, Lower Putah Creek and the Sacramento River. Stormwater discharge standards for runoff to these impaired waters and other waters within the Plan Area under the No Action Alternative would be subject to the provisions of the Sacramento River Basin Plan, the statewide NPDES General Construction Permit, the California Non-degradation Policy, State Implementation Policy, as well as the Yolo County Storm Water Management Program and applicable general plan polices. In addition to these regulations and policies, planning for future stormwater drainage is conducted as part of the Yolo County IRWMP, and it is anticipated that stormwater facilities would be constructed under the No Action Alternative that would have benefits to water quality.

General urban and rural development activities under the No Action Alternative may place housing within a 100-year flood hazard area, or the 200-year flood hazard boundary as defined by the Central Valley Flood Protection Plan in urban areas, and may place structures within a 100-year flood hazard area, or the 200-year flood hazard boundary as defined by the Central Valley Flood Protection Plan in urban areas that would impede or redirect flood flows. As described in Section 9.2.1, *Environmental Setting*, and further in the Yolo County General Plan EIR, there are several areas within the Plan Area that are within a 100-year floodplain, 500-year floodplain, or otherwise have the potential for flooding (e.g., localized creek flooding). Areas that are within the 100-year floodplain consist of residential and agricultural areas along Cache Creek, the Colusa Basin Drainage Canal, the Sacramento River, and the majority of the lower eastern portion of the County. The 500-year floodplain is most extensive north of the city of Woodland, west of the City of Davis, east of the Yolo Bypass, and through the City of West Sacramento south to Clarksburg. Additional areas, primarily located along the Sacramento River and lower Willow Slough are proposed to be re-designated as part of the 100-year floodplain. Rural and urban residential development and other covered activities under the No Action Alternative would likely occur in these floodplains. However, appropriate construction standards and mitigation measures would be required, flood control projects are also anticipated to be built under the No Action Alternative that would result in a reduced flood risk.

The land use pattern proposed under the No Action Alternative could result in projects and activities that could expose people or structures to a substantial risk of loss, injury or death involving flooding from the failure of a levee or dam. As described in Section 9.2.1, *Environmental Setting*, and further in the Yolo County General Plan EIR, there are approximately 215 miles of levees located within the Plan Area, and to the west of the plan area are the Cache Creek Dam at Clear Lake and the Monticello Dam on Putah Creek at

Lake Berryessa. If any of these levees or dams were to fail, or if dams located upstream of the County along the Sacramento, Feather, or American rivers failed, there is a potential for flooding to occur in Yolo County. However, there are no indications of particular dam failure risk associated with these dams. Portions of levees within Yolo County have been de-certified, however some projects such as the West Sacramento levee improvement program and feasibility studies are underway to improve the level of flood protection provided by levees and other flood control features.

Under the No Action Alternative, it is assumed that there would primarily be a continuation of existing conditions in the Expanded Plan Area along the south side of Putah Creek in Solano County. The land is primarily used for agriculture and this land use would continue. Some agricultural land in this area is currently under agricultural or other conservation easements, such as those purchased through the City of Davis Open Space Program, and it is anticipated that some additional landowners would also place their land under easement in the future. It is also expected that under the No Action Alternative, the riparian forest along Putah Creek would continue to be protected via various laws and regulations (e.g., Section 1600 of the Fish and Game Code, see Chapter 4, *Biological Resources*) and enhanced through activities such as those implemented by the Lower Putah Creek Coordinating Committee. These conservation and enhancement activities in the Expanded Plan Area are likely to have a benefit to water quality by limiting development in the area and enhancing riparian habitat that provides a buffer between the Creek and adjacent land uses.

As necessary, under the No Action Alternative, project applicants would be required to implement mitigation measures to reduce potentially significant and significant impacts to biological resources. Mitigation measures are likely to include on-site areas of preservation within a specific project site, and smaller, non-contiguous areas of preservation lands throughout Yolo County. Generally, these required mitigation actions under the No Action Alternative would either retain lands in their existing condition (i.e., preserve habitat, including agricultural lands), or convert lands to a more natural state (i.e., habitat establishment/re-establishment). These mitigation actions would generally have benefits to hydrology and water quality. By preserving lands for sensitive species, these lands would no longer be subject to development and the associated potential for increased ground water use, reduced recharge, increased stormwater runoff, and increased flood risk.

Cumulative Effects

Expansion of development in urban and rural areas (i.e., Davis, West Sacramento, Winters, Woodland) over the past century has resulted in an increase in the amount of agricultural and natural landscapes converted to residential, commercial and other uses. This past development has increased demand on groundwater resulting in ground subsidence in some locations within the Plan Area. Past development has also increased impervious surfaces reducing the surface area of land available for groundwater recharge and increasing runoff. Residential development in the plan area has also increased the number of residences and structures located within floodplains, and increased sewage discharges and other mechanisms carrying pollutants to waters within the Plan Area, resulting in several water bodies being listed as impaired under Section 303(d) of the CWA. In total, there is a currently adverse cumulative effect on hydrology and water quality within the Plan Area.

Additional foreseeable future development in the county beyond the covered activities included under the No Action Alternative would include activities such as solar and wind energy development, Caltrans infrastructure projects, and additional flood control activities. These additional development activities would have similar impacts to hydrology and water quality as projects under the No Action Alternative.

These additional foreseeable activities and those included under the No Action Alternative would be implemented under the same existing federal, State and local polices and regulations as described in Section 9.2.2, *Regulatory Setting*. These regulations are anticipated to result in reduced water quality and hydrologic impacts when compared to past development. Although impacts may be less than those from past development, when combined with additional development projects within the county, activities under

the No Action Alternative may contribute to a cumulatively considerable contribution to a significant cumulative effect on water quality and hydrology within the Plan Area.

ALTERNATIVE B—PROPOSED ACTION (PERMIT ISSUANCE/PLAN IMPLEMENTATION)

The Proposed Action Alternative (Alternative B) incorporates the same development-related activities identified for the No Action Alternative (urban projects and activities, rural projects and activities, and public and private operations and maintenance), with the HCP/NCCP providing a mechanism for the Wildlife Agencies to provide incidental take authorization for these lawfully undertaken covered activities. Hydrology and water quality impacts as a result of these activities would be the same as described under the No Action Alternative and a comparison of the impacts from these activities to those under the No Action Alternative is not discussed further in the impact discussions below.

Where the Proposed Action Alternative differs from the No Action Alternative is in the implementation of the Yolo HCP/NCCP, including its conservation strategy and neighboring landowner protection program, as well as the required implementation of Avoidance and Minimization Measures (AMMs) during implementation of covered activities. The following impact discussions focus on these elements of the HCP/NCCP that differ from the No Action Alternative. Components of the conservation strategy include but are not limited to habitat assessment surveys and population surveys; habitat management; restoration, enhancement, and creation of habitats; conversion of agricultural lands to create habitat; construction of facilities necessary for management and maintenance; and monitoring; and control of invasive nonnative species. However, the primary result of the neighboring landowner protection program, from a hydrology and water quality perspective, would be the general preservation of existing conditions on lands adjacent to Yolo HCP/NCCP reserve system lands. The voluntary neighboring landowner protection program is described in more detail in Chapter 2, *Proposed Action and Alternatives*. Since the program would not change conditions related to hydrology and water quality (e.g., water demand, ground disturbance, level or location of development), it would not have an effect relative to this issue area and is not evaluated further in the impact discussions below.

All covered actions implemented under the Proposed Action Alternative including both development and conservation actions, would be subject to AMMs required by the HCP/NCCP, which would reduce hydrologic and water quality impacts. The AMMs that would reduce the likelihood of hydrology and water quality impacts are shown in Table 9-1 and discussed in detail in Appendix C.

Table 9-1 Yolo HCP/NCCP Avoidance and Minimization Measures Applicable to Hydrology Water Quality

General Project Design
AMM1, Establish Buffers AMM2, Design Developments to Minimize Indirect Effects at Urban-Habitat Interfaces
General Construction and Operations and Maintenance
AMM3, Confine and Delineate Work Area AMM8, Avoid and Minimize Effects of Construction Staging Areas and Temporary Work Areas
Sensitive Natural Communities
AMM9, Establish Buffers around Sensitive Natural Communities AMM10, Avoid and Minimize Effects on Wetlands and Waters

Note: In the Draft EIS/EIR, this table also included AMM21, Implement Performance Standards of the Off-Channel Mining Plan and the Cache Creek Resources Management Plan. This AMM has been removed from the HCP/NCCP; however, this does not affect the impact analysis below as the performance standards of the Off-Channel Mining Plan and the Cache Creek Resources Management Plan (both described above in Section 9.2.2, Regulatory Setting, in the section describing the Cache Creek Area Plan) must be implemented whether this version of AMM21 had remained in the HCP/NCCP or not.

Effect HYDRO-1: Result in a violation of any water quality standard or waste discharge requirement.

Under the Proposed Action Alternative, the implementation of the conservation strategy includes conservation easements that would maintain current agricultural practices, which would not cause any changes from existing conditions that would result in violations of a water quality standard or alterations in waste discharge timing, volume, or quality. Implementation of the conservation strategy would also include habitat enhancement, restoration, and creation for covered species, as well as operations and maintenance within the reserve system which may require ground disturbance and have a potential for violations of water quality standards and waste discharge requirements. However, these conservation activities under the Proposed Action Alternative would be subject to the various laws, regulations, and policies, described previously that would result in the protection of water quality, and are no more likely to result in violations of water quality standards or waste discharge requirements than the similar conservation activities under the No Action Alternative.

In addition, as discussed above, covered actions which require ground disturbance and the potential for discharge implemented as part of the conservation strategy under the Proposed Action Alternative would be subject to AMMs required by the HCP/NCCP. These AMMs would reduce the likelihood of a violation of any water quality standard or waste discharge requirement. Potential effects from implementation of conservation strategy actions under the Proposed Action Alternative are subject to existing regulations; therefore, they would not result in a violation of any water quality standard or waste discharge requirement. In addition, AMMs would further reduce the likelihood of a violation.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **beneficial**.

CEQA Level of Significance: As compared to Existing Conditions, this impact is **less than significant**.

No mitigation is required.

Effect HYDRO-2: Substantially deplete groundwater supplies or interfere substantially with groundwater recharge.

The covered activities associated with the conservation strategy under the Proposed Action Alternative would maintain agricultural practices on existing agricultural lands through conservation easements which would maintain similar water usage, and maintain the potential for groundwater recharge. Lands where habitat is enhanced, restored, or created may require irrigation on a temporary basis to establish new vegetation. However, the need for irrigation would be temporary (typically 1-3 years), and where habitat enhancement, restoration, or creation is undertaken on former agricultural lands, the temporary habitat irrigation would generally use less water than the previous agricultural practices. Habitat areas would also preserve recharge potential when located on lands that are suitable for groundwater recharge. Because the conservation actions under the Proposed Action Alternative and those under the No Action Alternative would be subject to the same regulations and policies and likely result in similar ground water usage and infiltration rates, it is likely that they would have similar effects on groundwater supplies and recharge. Potential effects from implementation of conservation strategy actions under the Proposed Action Alternative would not result in a change in the substantive depletion of groundwater supplies or substantive interference with groundwater recharge.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **less than significant**.

CEQA Level of Significance: As compared to Existing Conditions, this impact is **less than significant**.

No mitigation is required.

Effect HYDRO-3: Substantially alter the existing drainage pattern in a manner that would result in substantial erosion, siltation, and/or environmental harm, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding.

In general terms, the covered activities that are part of the implementation of the conservation strategy under the Proposed Action Alternative (e.g., establishment of a reserve system; habitat enhancement,

restoration, and creation) are similar to mitigation actions that would occur on a project by project basis under the No Action Alternative.

These actions under the Proposed Action Alternative are no more likely to substantially alter the existing drainage pattern in a manner that would result in substantial erosion, siltation, and/or environmental harm, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding than under the No Action Alternative. In addition, conservation activities under the Proposed Action Alternative would be required to implement AMMs that would result in reduction in erosion and siltation through the implementation of buffers from wetlands, riparian habitats and waters, as well as limiting temporary construction footprints (Table 9-1) within the Plan Area. Therefore, it is likely that any potential effects associated with the alteration of drainage patterns that would result in erosion or substantively increase the rate or amount of surface runoff in a manner that would result in flooding as a result of implementation of the Proposed Action Alternative.

Potential effects from implementation of conservation strategy actions under the Proposed Action Alternative would not result in the alteration of drainage patterns that would result in erosion or substantively increase the rate or amount of surface runoff in a manner that would result in flooding and would be subject to AMMs.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **beneficial**.

CEQA Level of Significance: As compared to Existing Conditions, this impact is **less than significant**.

No mitigation is required.

Effect HYDRO-4: Create or contribute runoff water that would provide substantial additional sources of polluted runoff, exceed the capacity of existing or planned stormwater drainage systems or otherwise substantially degrade water quality.

Activities that are part of the conservation strategy under the Proposed Action Alternative would maintain existing agricultural uses through conservation easements; enhance, restore, and create habitat for covered species; and maintain and operate reserve system lands. These activities are highly unlikely to create additional sources of polluted runoff, degrade water quality, or alter stormwater drainage. Conservation actions under the Proposed Action Alternative would also be subject to the same regulations and policies related to water quality and stormwater drainage and discharge described above for the No Action Alternative. Additionally, conservation activities under the Proposed Action Alternative would be subject to AMMs that would have the potential to reduce the volume and increase the quality of runoff reaching impaired waters by the implementation of buffers from wetlands, riparian habitats and waters, as well as limiting temporary construction footprints (Table 9-1). Conservation actions under the Proposed Action Alternative would also be subject to the current regulations and policies related to water quality and stormwater drainage and discharge. Additionally, conservation activities under the Proposed Action Alternative would be subject to AMMs that would have the potential to reduce the volume and increase the quality of runoff.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **beneficial**.

CEQA Level of Significance: As compared to Existing Conditions, this impact is **less than significant**.

No mitigation is required.

Effect HYDRO-5: Place housing, or place structures that would impede or redirect flood flows within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map, or other flood hazard delineation map, or within the 200-year flood hazard boundary as defined by the Central Valley Flood Protection Plan in urban areas; within a 100-year flood hazard area.

Implementation of the conservation strategy under the Proposed Action Alternative does not include residential development, and as such it would not place housing within flood hazard areas. While there may be structures associated with the reserve system (e.g., gates, fences), they would not be of sufficient size or

mass to impede or redirect flood flows. In addition, the purchase of reserve system lands within flood hazard areas would reduce potential future effects from development by removing the potential for residential and other development on those lands.

Since the conservation actions under the Proposed Action Alternative and those under the No Action Alternative are likely to be similar in nature (containing no development component), and be subject similar policies and regulations regarding activities in floodplains, it is likely they would result in similar effects associated with the placement of housing within a 100-year flood hazard area, or placement of structures within a 100-year flood hazard area that would impede or redirect flood flows.

Potential effects from implementation of conservation strategy actions under the Proposed Action Alternative would not result in the placement of housing within a 100-year flood hazard area, or placement of structures within a 100-year flood hazard area that would impede or redirect flood flows.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **less than significant**.

CEQA Level of Significance: As compared to Existing Conditions, this impact is **less than significant**.

No mitigation is required.

Effect HYDRO-6: Expose people or structures to a substantial risk of loss, injury or death involving flooding from the failure of a levee or dam.

As described in Section 9.2.1, *Environmental Setting*, and further in the Yolo County General Plan EIR, there are approximately 215 miles of levees located within the Plan Area, and to the west of the Plan Area are the Cache Creek Dam at Clear Lake, and the Monticello Dam on Putah Creek at Lake Berryessa. If any of these levees or dams were to fail, or if upstream dams located along the Sacramento, Feather, or American rivers failed, there is a potential for flooding to occur in Yolo County.

As discussed in Effect HYRO-5 above, implementation of the conservation strategy under the Proposed Action Alternative does not include residential development, nor is it likely to expose structures to increased risk of loss due to the failure of a levee or dam.

The conservation actions under the Proposed Action Alternative and those under the No Action Alternative are likely to be similar in nature (containing no development component), and would be subject to similar risk from the failure of a flood control feature.

Potential effects from implementation of conservation strategy actions under the Proposed Action Alternative would not include residential development, nor is it likely to expose structures to increased risk of loss due to the failure of a levee or dam. *No mitigation is required.*

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **less than significant**.

CEQA Level of Significance: As compared to Existing Conditions, this impact is **less than significant**.

Cumulative Effects

The existing cumulative condition in the Plan Area resulting from past and present projects is described above for the No Action Alternative and remains the same for the Proposed Action Alternative.

The contribution of the conservation strategy under the Proposed Action Alternative to the cumulative condition of hydrology and water quality in the Plan Area would include the establishment of conservation easements which would maintain existing agricultural uses, and the restoration, enhancements, and creation of habitat for covered species which may have a benefit to the hydrology and water quality in the Plan Area over existing conditions by removing the development potential and restoring natural communities on reserve system lands. In addition, conservation activities that require ground disturbance such as some habitat restoration would be subject to the AMMs listed in Table 9-1 above and discussed in detail in

Appendix C. When implemented, these AMMs would further reduce the potential effects to hydrology and water quality from conservation activities. Therefore, implementation of the conservation strategy under the Proposed Action Alternative would result in a reduced cumulatively considerable contribution to a significant cumulative effect from the combined effects of past, current, and probable future projects on hydrologic and water quality resources in the Plan Area, when compared to the No Action Alternative, and therefore results in a beneficial effect relative to the No Action Alternative.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **less than significant**.

CEQA Level of Significance: As compared to Existing Conditions, this impact is **less than significant**.

ALTERNATIVE C-REDUCED TAKE ALTERNATIVE

The Reduced Take Alternative (Alternative C) would include the same categories of development related covered activities as the Proposed Action Alternative (Alternative B); however, under The Reduced Take Alternative, there are eight areas designated for development under the Proposed Action Alternative, where no activities that would result in take of covered species would be permitted. These locations are in the vicinity of Clarksburg, Davis, the Dunnigan area, Woodland, and West Sacramento (Exhibit 2-6). All other elements of the Plan (e.g., covered species, covered activities, Plan Area, conservation strategy, monitoring, funding) remain the same. See Section 2.3.3, *Alternative C-Reduced Take Alternative* for more information on this alternative.

Effects to hydrology and water quality as a result of implementation of the Reduced Take Alternative would be similar to those discussed above for the No Action and the Proposed Action Alternatives. However, activities that could result in take (e.g., development) would be reduced by approximately 1,335 acres within specific areas in the vicinity of impaired waters such as Clarksburg, West Sacramento, and the Woodland Elkhorn Specific Plan area. Therefore, there would be less potential for effects on hydrology and water quality compared to the effects of ground disturbance and other activities described for the No Action Alternative. However, the prohibition on take in these areas could result in the development planned for these specific areas being diverted to another part of the Plan Area in the vicinity of other impaired waters which would reduce this benefit.

The Reduced Take Alternative includes implementation of the Yolo HCP/NCCP and associated conservation strategy and AMMs for covered activities. This would further reduce any potential for some hydrologic and water quality effects when compared to the No Action Alternative as discussed for the Proposed Action Alternative above.

Overall, under The Reduced Take Alternative, Effect Hydro-1, Hydro-2, Hydro-3, Hydro-4, and Hydro-6 would not be appreciably different from what is described for the Proposed Action Alternative.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **less than significant**.

CEQA Level of Significance: As compared to the Proposed Action Alternative, this impact similar and is **less than significant**.

No mitigation is required.

Effect HYDRO-5: Place housing, or place structures that would impede or redirect flood flows within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map, or other flood hazard delineation map, or within the 200-year flood hazard boundary as defined by the Central Valley Flood Projection Plan in urban areas; within a 100-year flood hazard area.

The existing conditions of floodplains under the Reduced Take Alternative are described in Section 9.2.1, *Environmental Setting*, and the federal, State and local regulations and policies regarding development and other activities in floodplains are discussed in Section 9.2.2, *Regulatory Setting*, and referenced in the

Proposed Action Alternative above. Some of the rural and urban residential development and other covered activities under the Reduced Take Alternative would occur within floodplains. However, under the Reduced Take Alternative, some lands that would be developed under the No Action Alternative are assumed to only be used for activities that would not result in take of covered species. It is not expected that under these conditions that housing and similar development would be permissible. These locations are in the vicinity of Clarksburg, Davis, the Dunnigan area, Woodland, and West Sacramento, and approximately 860 acres of these lands are within the 100-year floodplain, approximately 310 acres are within the 200-year flood hazard boundary as defined by the Central Valley Flood Protection Plan in urban areas, and approximately 11 acres are within the 500-year floodplain.

The Reduced Take Alternative would result in approximately 860 fewer acres of activities that could result in take of covered species within 100-year floodplains, approximately 310 fewer acres within the 200-year flood hazard boundary as defined by the Central Valley Flood Protection Plan in urban areas, and approximately 11 fewer acres within 500-year floodplains than the No Action Alternative.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **beneficial**.

CEQA Level of Significance: As compared to the Proposed Action Alternative, this impact is less and is **less than significant**.

No mitigation is required.

Cumulative Effects

The existing cumulative condition in the Plan Area resulting from past and present projects is described above for the No Action Alternative and remains the same for the Reduced Take Alternative.

The individual effects on hydrology and water quality in the Plan Area from The Reduced Take Alternative would be similar to those under the Proposed Action Alternative, however due to an overall reduction in development under The Reduced Take Alternative the potential effects would also be reduced.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **beneficial**.

The Reduced Take Alternative would make less of a cumulatively considerable contribution to a significant cumulative effect.

CEQA Level of Significance: As compared to the Proposed Action Alternative, this impact is less and is **less than significant**.

ALTERNATIVE D- REDUCED DEVELOPMENT ALTERNATIVE

The Reduced Development Alternative (Alternative D) would include the same categories of development related covered activities as the Proposed Action Alternative (Alternative B), but under the Reduced Development Alternative, development within a portion of the west side of the Dunnigan area and the Elkhorn Specific Plan Area would not be covered activities (Exhibit 2-7). There are no immediate plans to develop these areas in the near term, but some type of development could potentially occur within the term of the permit. If such development were to occur, it would not be considered a covered activity under the HCP/NCCP. (See Section 2.3.4, *Alternative D-Reduced Development Alternative* for more information on this alternative). Effects related to hydrology and water quality as a result of implementation of The Reduced Development Alternative would be similar to those discussed under the No Action Alternative and the Proposed Action Alternative; however, given that less development could occur within the two designated areas, there is the potential for less adverse effects from development related to hydrology and water quality. If these areas were developed some time in the future, or if this development was displaced to other locations within the Plan Area, effects on hydrology and water quality would be the same as those for the Proposed Action Alternative, although the HCP/NCCP would not be available as a mechanism to address

losses of these resources. Mitigation would be more similar to what would occur under the No Action Alternative.

Effects to hydrology and water quality as a result of implementation of the Reduced Development Alternative would be similar to those discussed above for the No Action and the Proposed Action Alternatives. However, as AMMs would be implemented for some, but not all activities under this alternative, the resulting impacts would be less than those for the No Action Alternative, but greater than the Proposed Action Alternative.

Overall, under The Reduced Development Alternative, Effect Hydro-1, Hydro-2, Hydro-3, Hydro-4, and Hydro-6 would not be appreciably different from what is described for the Proposed Action Alternative, although some activities would not be implemented under the Yolo HCP/NCCP and therefore without AMMs.

Under The Reduced Development Alternative, Effect Hydro-5 would also not be appreciably different from what is described under the Proposed Action Alternative, although development within a portion of the Elkhorn Specific Plan Area, would not be covered under the HCP/NCCP, but some type of development could potentially occur in the future. If such development were to occur, it may be located within a flood hazard area. Thus the area of potential development within flood hazard areas is not appreciably different from that under the Proposed Action Alternative.

However, due to the implementation of some activities without AMMs, overall effects would be somewhat less beneficial relative to the Proposed Action Alternative.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **beneficial**.

CEQA Level of Significance: As compared to the Proposed Action Alternative, this impact is similar and is **less than significant**.

No mitigation is required.

Cumulative Effects

The existing cumulative condition in the Plan Area resulting from past and present projects is described above for the No Action Alternative and remains the same for The Reduced Development Alternative. The contribution of The Reduced Development Alternative to the cumulative condition of hydrology and water quality in the Plan Area would be similar to that of the Proposed Action Alternative, in the type, scope and location of activities implemented, as well as the implementation of AMMs that would further reduce negative effects on water quality. However, unlike the Proposed Action Alternative, under The Reduced Development Alternative, some activities that could potentially be implemented in the future would not be covered under the Yolo HCP/NCCP and would not be subject to the same AMMs.

NEPA Level of Significance: As compared to the No Action Alternative, this impact is **beneficial**.

Overall effects would be somewhat less beneficial relative to the Proposed Action Alternative.

CEQA Level of Significance: As compared to the Proposed Action Alternative, this impact is similar and is **less than significant**.

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