

## 3.8 HYDROLOGY, DRAINAGE, AND WATER QUALITY

This section describes the existing hydrologic and water quality setting for the project site, including climate, hydrology, groundwater, flooding, and water quality. Applicable regulations and policies regarding hydrology and water quality are discussed, and impacts that may result from project implementation are identified. Mitigation measures are recommended to reduce potential impacts, where appropriate. Water supply and its relationship with groundwater is addressed in Section 3.14, “Utilities.”

A comment was received from the Central Valley Regional Water Quality Control Board in response to the notice of preparation. The information provided has been incorporated into the following analysis, as appropriate.

### 3.8.1 Environmental Setting

#### CLIMATE

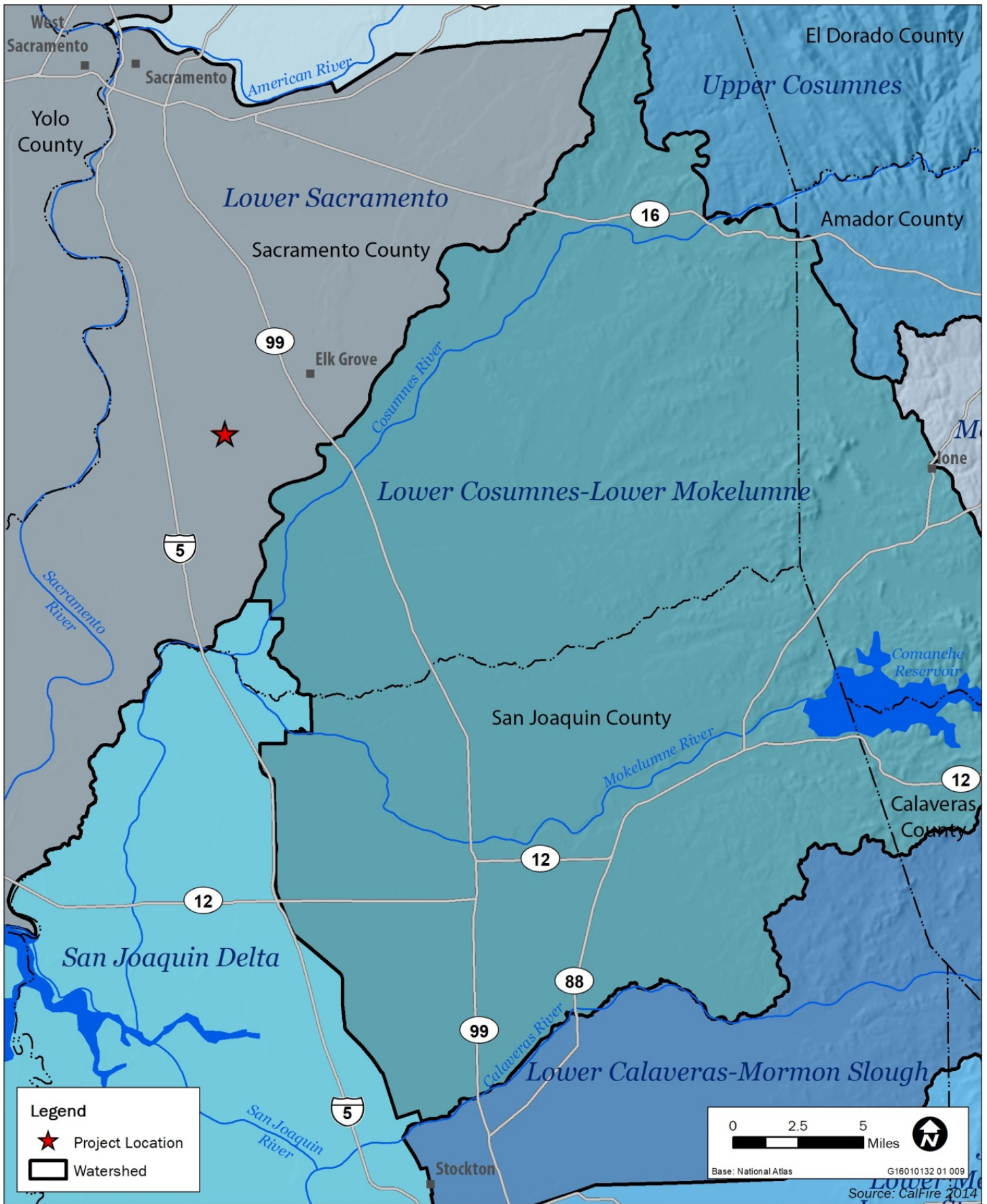
The climate in Sacramento County is Mediterranean, with cool wet winters and warm dry summers. The mean annual precipitation in the project vicinity for the period between 1941 and 2010, was approximately 19 inches. Most precipitation occurred from November through April. During the period of record, annual precipitation has varied from 6 inches (1976) to 33 inches (1983), with a one-day high of 3.8 inches on October 13, 1962 (Western Climate Center 2012).

#### HYDROLOGY

Sacramento County contains six major watersheds: the Lower Sacramento River, the North Fork American River, the South Fork American River, the San Joaquin Delta, the Lower Cosumnes-Lower Mokelumne Rivers, and the Upper Cosumnes River. The project site is located within the Lower Sacramento River Watershed, and drains into the San Joaquin Delta Watershed (Exhibit 3.8-1). The 384-mile Sacramento River is the largest river in California and carries approximately 31 percent of the total runoff water in the state (Sacramento County 2011). The Lower Sacramento River Watershed is located in the northwest portion of Sacramento County, and is the largest watershed in the county. Major tributaries within the Lower Sacramento River Watershed include Cache Creek, Putah Creek, and the Feather River.

The SOIA area (or “project site”) lies within the City’s Drainage Shed C, which covers nearly 7,900 acres in southern Sacramento County (Figure 2.0-4 in the City of Elk Grove Southeast Area Strategic Plan Draft EIR). The watershed generally slopes from east to west with an average slope of about 0.10 percent. The existing land use in the watershed is agricultural except for the Elk Grove Promenade site, which covers 525 acres in the upstream (eastern) portion of the watershed. Although the Promenade project stalled before completion, many of the site improvements were constructed, including roads, parking lots, buildings, and underground utilities including a storm drainage pipe system. The pipe system that collects runoff from the Promenade site delivers it to a detention basin that was constructed on the west side of the approved but unbuilt Sterling Meadows project. Downstream of this existing detention basin, runoff is conveyed through an agricultural drainage channel until it reaches Bruceville Road. At that point, the channel exits the City boundary and continues west for approximately 22,000 feet where it crosses under Interstate 5 and enters the Stone Lakes National Wildlife Refuge (City of Elk Grove 2014: 5.9-1).

Hydrology in the SOIA area is dominated by irrigation runoff and seasonal stormwater runoff from surrounding residential developments and direct precipitation. All natural drainage courses within the project site have been altered because of agricultural development. Runoff within the site occurs primarily within a network of agricultural ditches. While the project site contains mostly agricultural and developed land, a review of aerial imagery and a site visit on April 10, 2017 suggest that the northwest portion of the project site may contain wetland habitat.



**Exhibit 3.8-1**

**Watersheds in the Project Vicinity**



## GROUNDWATER

The Sacramento Valley Groundwater Basin is the major groundwater basin in the Sacramento River hydrologic region. There are 18 groundwater subbasins. The project site is within Groundwater Basin 5-21.65, the South American subbasin. The South American subbasin is bounded by the American River on the north, the Cosumnes and Mokelumne Rivers on the south, and the Sacramento River on the west. The aquifer system is recharged by streams and rivers within the subbasin; primarily the American, Cosumnes, and Sacramento Rivers. The South American Subbasin is not considered to be in overdraft according to State of California Department of Water Resources (DWR) Bulletin 118 (DWR 2016). Groundwater from the South American subbasin is used conjunctively to supply water to the Sacramento County Water Agency's (SCWA's) Zone 40, which includes the SOIA area.

SCWA is a party to the Water Forum Agreement, which established co-equal objectives of 1) providing a reliable and safe water supply for the region's economic health and planned development through the year 2030; and 2) preserving the fishery, wildlife, recreational, and aesthetic values of the lower American River. Additional diversions of surface water, increased conjunctive use of surface water and groundwater, expanded water demand management programs, and recycled water were identified to meet the first objective. Modifications to American River flow patterns were proposed to improve in-stream fish habitat. Based on the hydraulic boundaries of river sources, the Water Forum defined three groundwater subbasins. Zone 40 lies entirely within the Central Basin which is a component of the South American subbasin (SCWA 2005).

Groundwater in the Central Basin is generally classified as occurring in a shallow or upper unconfined aquifer zone (Laguna or Modesto Formation) and in an underlying deeper semi-confined aquifer zone (Mehrten Formation). These formations are typically composed of lenses of inter-bedded sand, silt, and clay, interlaced with coarse-grained stream channel deposits. The shallow aquifer extends approximately 200 to 300 feet below the ground surface. The deep aquifer is separated from the shallow aquifer by a discontinuous clay layer that serves as a semi-confining layer for the deep aquifer. The base of the potable water portion of the deep aquifer averages approximately 1,400 feet below the ground surface. Groundwater used in the Central Basin is supplied from both the shallow and deeper aquifer systems (SCWA 2016).

Groundwater elevations generally declined consistently from the 1950s and 1960s until 1995. From 1995 to 2003, groundwater levels have increased partially because of the increased use of surface water in the Central Basin by SCWA and other water agencies, and the fallowing of previously irrigated agricultural lands transitioning into new urban development areas in accordance with the Sacramento County and City of Elk Grove General Plans.

Historic groundwater extraction from the Central Basin in the past has resulted in a general lowering of groundwater elevations near the center of the basin away from the sources of recharge. These depressions historically coalesced into a single cone of depression centered near Elk Grove. Historic groundwater pumping in the region has also resulted in groundwater depressions on either side of the Cosumnes River, which has hydraulically separated the river from the groundwater basin near the City of Elk Grove.

In general, the rest of the Central Basin does not show any distinctive patterns with respect to regional groundwater elevations, and the water table tends to mimic the local topography. Groundwater levels in the Central Basin are anticipated to stabilize as SCWA's conjunctive use program is fully implemented (SCWA 2016).

The Sacramento Central Groundwater Authority's South American Subbasin Alternative Submittal (Sacramento Central Groundwater Authority 2016) evaluated the change in groundwater storage in the Central Basin from 2005 to 2015. The total annual average change in storage over the 2005 to 2015 was estimated to be approximately 4,000 acre-feet per year. This is representative of a basin in equilibrium where natural recharge from deep percolation, hydraulically connected rivers, and boundary subsurface inflows are keeping up with active pumping and changes in hydrology. Over the 10-year period, the basin continues to recover at its deepest points and management is now focused on working with affected agencies to keep water from leaving the basin, and improving basin conditions where and when possible, in

accordance with the Central Sacramento County Groundwater Management Plan (Central Sacramento County GMP) (Sacramento Central Groundwater Authority 2016).

Groundwater storage in the recharge area underlying Elk Grove and surrounding areas is continuing to increase from recharge from conjunctive use and surface water use expansion, increased use of recycled water, and water conservation. The increase in storage in this portion of the subbasin has filled the long-term cone of depression and has eroded the ridge of higher groundwater separating it from the Cosumnes Subbasin (Sacramento Central Groundwater Authority 2016). The Water Forum Agreement set the long-term average annual extraction of groundwater (i.e., sustainable yield) from the Central Basin at 273,000 acre-feet per year. Groundwater extraction has been within the Water Forum Agreement's sustainable yield from 2005 (252,984 afy) to 2015 (217,111 afy). The least amount of groundwater extraction over this period occurred in 2011 (202,324 afy) and the most occurred in 2008 (260,200 acre-feet per year). The average groundwater extraction during the drought years (2011–2015) was approximately 219,000 acre-feet per year (Sacramento Central Groundwater Authority 2016).

Groundwater in the upper aquifer system is of higher quality than that found in the lower aquifer system, although there are some occurrences of arsenic and nitrate. The lower aquifer system contains higher concentrations of iron and manganese, and total dissolved solids. Water from the upper aquifer generally does not require treatment other than disinfection for public drinking water systems, unless high arsenic or nitrate values are encountered. Wells that pump from the lower aquifer often require treatment for iron and manganese (SCWA 2016).

## FLOODING

The 100-year flood refers to the flood resulting from a storm event that has a probability of occurring once every 100 years, or a 1 percent chance of occurring in any given year. Areas mapped in the 100-year floodplain area are subject to inundation during a 100-year storm event. The project site lies outside of the designated 100-year floodplain. In addition, according to the Federal Emergency Management Agency (FEMA) flood insurance rate map (FIRM), the project site is not located within the 100-year floodplain and the nearest area within the 100-year floodplain is located near Stone Lakes Basin, approximately 0.3 miles northwest of the SOIA area.

However, a portion of the SOIA area is within the 200-year floodplain identified by the City of Elk Grove (as shown in Exhibit 3.8-2). This map identifies areas where higher standards of development and flood protection may be required before issuance of building permits. The City's 200-year floodplain boundary was developed using data provided by DWR, supplemented by floodplain studies commissioned by the City covering local creek systems that have watershed areas of at least 10 square miles. This includes the Laguna Creek and Deer Creek/Cosumnes River watersheds, as well as the Sacramento River watershed, which affects local creek systems.

## Dam Failure

Dam failure is caused by various impacts to the structure, including earthquake, erosion, structural failure, or foundation leakage. Failure of Folsom Dam (including the earth-filled dikes) could affect the City of Elk Grove and the surrounding unincorporated area. However, the SOIA area is not within the inundation area for Folsom Dam (Sacramento County 2016). Further, no flood control dams are located along the Cosumnes River.

## WATER QUALITY

Water quality refers to the chemical and physical properties of water, which affects the uses and users of that water. Surface water quality within the Lower Sacramento River Watershed is generally good, and no waterbodies within the watershed are included on the state's list of "impaired water bodies" under Section 303(d) of the federal Clean Water Act (CWA). The land surrounding the project site includes agricultural land which may contain residual agricultural chemicals (e.g., pesticides, herbicides) that could be present within runoff near the project site (City of Elk Grove 2016).

## STORMWATER

The Sacramento County Department of Water Resources provides stormwater drainage to various service areas in unincorporated Sacramento County and the cities of Citrus Heights, Elk Grove, and Rancho Cordova. The Drainage Division reviews new development improvement plans for adherence to drainage requirements, and provides hydraulic and hydrologic study of watersheds for new development and planning purposes. The project site is not currently in Sacramento County Department of Water Resources' stormwater utility service area.

The City of Elk Grove provides local stormwater drainage services to development within the City's boundaries. The areas to the north, east, and west of the project site are provided drainage services by the City of Elk Grove. The Water Resources Division reviews drainage studies and plans for new development to ensure that new storm drainage facilities meet the goals of the City of Elk Grove's Storm Drain Master Plan to accommodate the stormwater runoff generated from new structures and roads and safely convey stormwater to the Sacramento and Cosumnes Rivers (LAFCo 2016: 4.0-15 to 4.0-16). Monthly stormwater utility fees are collected to maintain publicly-owned water drainage facilities, manage flood control, and execute the Stormwater Quality Program. Storm drainage within the City is conveyed through a storm drainage and flood control collection system consisting of approximately 400 miles of underground pipes and 60 miles of natural and constructed channels.

### 3.8.2 Regulatory Framework

#### FEDERAL

##### Federal Emergency Management Agency

In 1968, Congress created the National Flood Insurance Program in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. FEMA administers the National Flood Insurance Program to provide subsidized flood insurance to communities that comply with FEMA regulations to limit development in floodplains. FEMA also issues flood insurance rate maps that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. FEMA has established a minimum level of flood protection for new development as the 1-in-100 Annual Exceedance Probability (i.e., 100-year flood event).

##### Clean Water Act

The U.S. Environmental Protection Agency (EPA) is the lead federal agency responsible for water quality management. The Clean Water Act (CWA) is the primary federal law that governs and authorizes water quality control activities by EPA, as well as the states.

Section 402 of the CWA establishes the NPDES permit program to regulate the discharge of pollutants from point sources. The CWA defines point sources of water pollutants as "any discernible, confined, and discrete conveyance" that discharges or may discharge pollutants. These are sources from which wastewater is transmitted in some type of conveyance (e.g., pipe or channel) to a waterbody, and are classified as municipal or industrial. Municipal point sources consist primarily of domestic treated sewage and processed water, including municipal sewage treatment plant outfalls and stormwater conveyance system outfalls. These outfalls contain harmful substances that are emitted directly into waters of the U.S. Without a permit, the discharge of pollutants from point sources into navigable waters of the U.S. is prohibited. NPDES permits require regular water quality monitoring. In California, the NPDES permit program is administered by the State Water Resources Control Board (SWRCB).



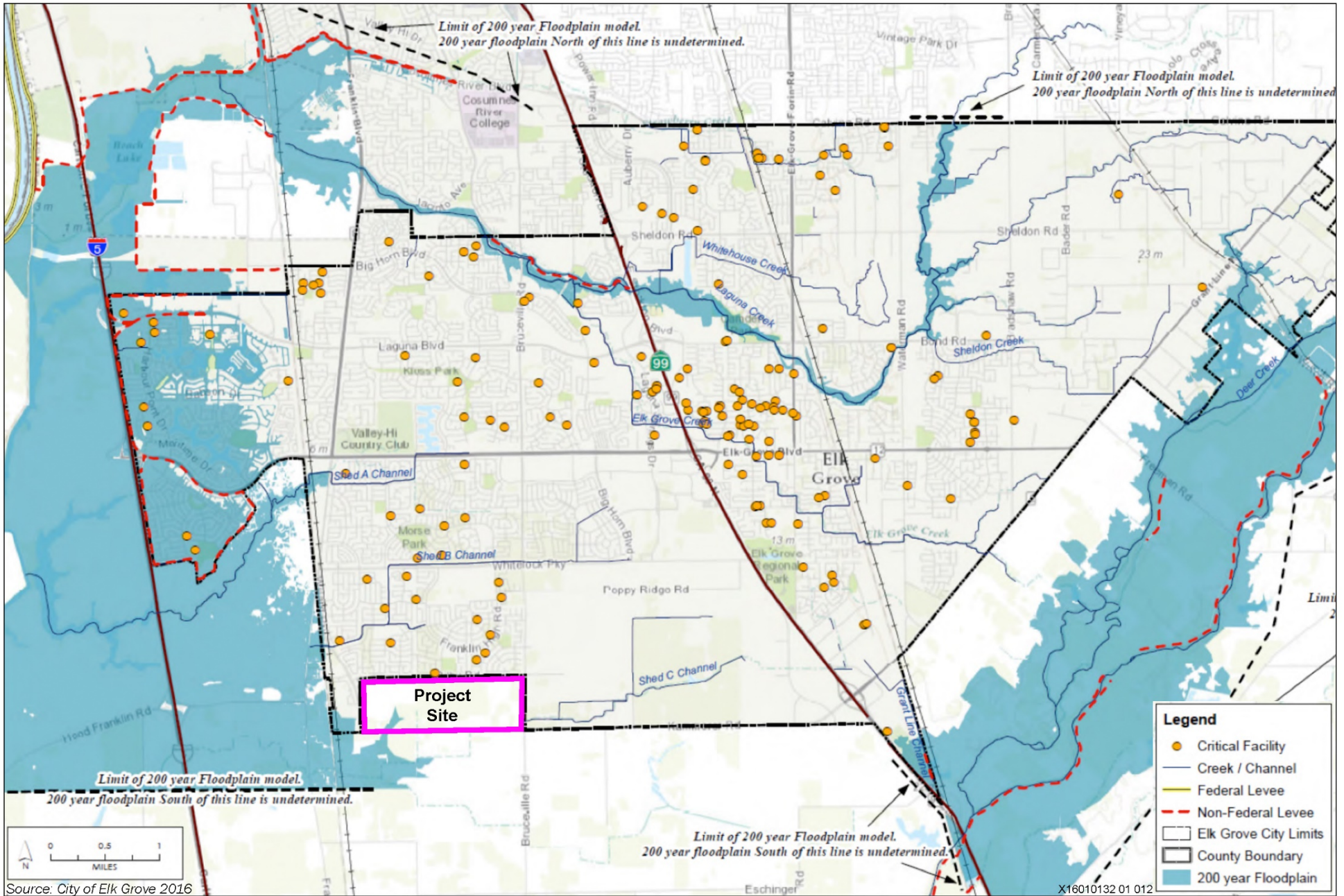


Exhibit 3.8-2

200-year Floodplain



### Provision C.3

On May 17, 1996, U.S. Environmental Protection Agency (EPA) published an Interpretive Policy Memorandum on Reapplication Requirements for Municipal Separate Storm Sewer Systems (MS4s), which provided guidance on permit application requirements for regulated MS4s. MS4 permits include requirements for post-construction control of stormwater runoff in what is known as Provision C.3. The goal of Provision C.3 is for the Permittees to use their planning authorities to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows from new development and redevelopment projects. This goal is to be accomplished primarily through the implementation of low impact development (LID) techniques.

### Federal Antidegradation Policy

The federal antidegradation policy, established in 1968, is designed to protect existing uses and water quality and national water resources. The federal policy directs states to adopt a statewide policy that includes the following primary provisions:

- ▲ existing in-stream uses and the water quality necessary to protect those uses shall be maintained and protected;
- ▲ where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and
- ▲ where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

### Water Quality Criteria/Standards

Pursuant to federal law, EPA has published water quality regulations under Title 40 of the Code of Federal Regulations (CFR). Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the act, water quality standards consist of designated beneficial uses of the water body in question and criteria that protect the designated uses. Section 304(a) requires EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. As described in the discussion of state regulations below, SWRCB and its nine regional water quality control boards (RWQCBs) have designated authority in California to identify beneficial uses and adopt applicable water quality objectives.

### National Toxics Rule and California Toxics Rule

In 1992, EPA issued the National Toxics Rule (NTR) (40 CFR 131.36) under the CWA to establish numeric criteria for priority toxic pollutants in 14 states and jurisdictions, including California, to protect human health and aquatic life. The NTR established water quality standards for 42 pollutants for which water quality criteria exist under CWA Section 304(a) but for which the respective states had not adopted adequate numeric criteria. EPA issued the California Toxics Rule (CTR) in May 2000. The CTR establishes numeric water quality criteria for 130 priority pollutants for which EPA has issued Section 304(a) numeric criteria that were not included in the NTR.

### National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program was established in the CWA to regulate municipal and industrial discharges to surface waters of the United States. NPDES permit regulations have been established for broad categories of discharges including point source municipal waste discharges and nonpoint source stormwater runoff. Each NPDES permit identifies limits on allowable

concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. “Nonpoint source” pollution originates over a wide area rather than from a definable point. Nonpoint source pollution often enters receiving water in the form of surface runoff and is not conveyed by way of pipelines or discrete conveyances. 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 RWQCBs in California are responsible for implementing the NPDES permit system (see the discussion of state regulations below).

### **Section 303(d) Impaired Waters List**

Under Section 303(d) of the CWA, states are required 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 total maximum daily load (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.

There are no 303(d) listed water features on or adjacent to the SOIA area.

## **STATE**

### **State Water Resources Control Board**

Created by the State Legislature in 1967, SWRCB protects water quality by setting statewide policy, coordinating and supporting RWQCBs efforts, and reviewing petitions that contest RWQCBs actions. There are nine RWQCBs that exercise rulemaking and regulatory activities by basins. The project site is located within the Central Valley RWQCB Region 5S.

### **Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act) is California’s statutory authority for the protection of water quality. Under the Porter-Cologne Act (California Water Code Section 13000) the SWRCB, and the RWQCBs, are responsible for administering federal and state water quality regulation and permitting duties. The act sets forth the obligations of the SWRCB and RWQCBs under the CWA to adopt and periodically update water quality control plans, or basin plans. Basin plans are plans in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The Porter-Cologne Act also requires waste dischargers to notify the RWQCBs of such activities by filing Reports of Waste Discharge and authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements, NPDES permits, Section 401 water quality certifications, or other approvals.

### **National Pollutant Discharge Elimination System Permits**

SWRCB has required specific NPDES permits for a variety of activities that have potential to discharge pollutants to waters of the state and adversely affect water quality. To receive an NPDES permit a Notice of Intent to discharge must be submitted to SWRCB and design and operational best management practices (BMPs) must be implemented to reduce the level of contaminated runoff. BMPs can include the development and implementation of regulatory measures (local authority of drainage facility design) various practices, including educational measures (workshops informing public of what impacts result when household chemicals are dumped into storm drains), regulatory measures (local authority of drainage facility design), public policy measures (label storm drain inlets as to impacts of dumping on receiving waters), and



structural measures (filter strips, grass swales, and retention basins). NPDES permits also have inspection, monitoring, and reporting requirements.

### **Municipal Stormwater NPDES Permit**

The City of Elk Grove has jurisdiction over aspects of stormwater management in the City. The City is a joint participant with Sacramento County's NPDES permit. The permit allows the City to discharge urban runoff from Municipal Separate Storm Sewer Systems (MS4s) in its municipal jurisdiction. The permit requires that the City impose water quality and watershed protection measures for all development projects. The NPDES also requires a permit for every new construction project that implements the following measures:

- ▲ eliminate or reduce non-stormwater discharges to stormwater systems and other waters;
- ▲ develop and implement a stormwater pollution prevention plan (SWPPP); and
- ▲ perform inspections of stormwater control structures and pollution prevention measures.

### **Construction General Permit**

Projects that would disturb 1 or more acres of soil, or would disturb less than 1 acre of soil but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, and ground disturbance. The Construction General Permit authorizes the discharge of stormwater to surface waters from construction activities. It prohibits the discharge of materials other than stormwater and authorized non-stormwater discharges and all discharges that contain a hazardous substance in excess of reportable quantities established in Title 40, Sections 117.3 or 302.4 of the CFR, unless a separate NPDES permit has been issued to regulate those discharges.

The Construction General Permit requires that all developers of land where construction activities will occur over more than 1 acre do the following:

- ▲ complete a Risk Assessment to determine pollution prevention requirements pursuant to the three Risk Levels established in the General Permit,
- ▲ eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the Nation,
- ▲ develop and implement a stormwater pollution prevention plan (SWPPP), which specifies BMPs that will reduce pollution in stormwater discharges to the Best Available Technology Economically Achievable/ Best Conventional Pollutant Control Technology standards, and
- ▲ perform inspections and maintenance of all BMPs.

Typical BMPs contained in SWPPPs are designed to minimize erosion during construction, stabilize construction areas, control sediment, control pollutants from construction materials, and address post construction runoff quantity (volume) and quality (treatment). The SWPPP must also include a discussion of the program to inspect and maintain all BMPs.

### **State Nondegradation Policy**

In 1968, as required under the federal antidegradation policy described previously, the SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states that 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.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements permitting processes.

### **Sustainable Groundwater Management Act**

The Sustainable Groundwater Management Act (SGMA) was enacted in September of 2014. Pursuant to SGMA, sustainable groundwater management is the management and use of groundwater in a manner that can be maintained during a 50-year planning and implementation horizon without causing undesirable results. Local implementation of the SGMA is not subject to LAFCo purview. The SGMA establishes a new structure for locally managing California's groundwater and includes the following key elements:

- ▲ provides for the establishment of a Groundwater Sustainability Agency (GSA) by one or more local agencies overlying a designated groundwater basin or subbasin, as established by DWR Bulletin 118-03;
- ▲ requires all groundwater basins found to be of "high" or "medium" priority to prepare Groundwater Sustainability Plans (GSP).;
- ▲ provides for the proposed revisions, by local agencies, to the boundaries of a DWR Bulletin 118 basin, including the establishment of new subbasins;
- ▲ provides authority for DWR to adopt regulations to evaluate GSPs, and review the GSPs for compliance every 5 years;
- ▲ requires DWR to establish BMPs and technical measures for GSAs to develop and implement GSPs; and
- ▲ provides regulatory authorities for the SWRCB for developing and implementing interim groundwater monitoring programs under certain circumstances (such as lack of compliance with development of GSPs by GSAs).

### **Central Valley Flood Protection Board Floodplain Regulations**

In 2007, the governor signed Senate Bill No. 5 (Stats. 2008, ch. 302; SB 5), Assembly Bill No. 5 (Stats. 2007, ch. 366; AB 5), AB 70 (Stats. 2007, ch. 367), AB 162 (Stats. 2007, ch. 369), and AB 156 - all of which deal with flood management in the Central Valley.

AB 5 and SB 5 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. In addition, the program required that cities and counties in the Sacramento-San Joaquin Valley amend their general plans and zoning ordinances to be consistent with a newly adopted flood plan within 36 months of flood plan adoption, and established other flood protection regulations for local land-use decisions consistent with the Central Valley Flood Protection Plan. Further, SB 5 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 by the year 2022). Other non-urban areas remain subject to the pre-existing 100-year standard for protection.

AB 70 states that local governments could be held financially liable if they unreasonably approve new developments that are susceptible to flood damage. AB 162 requires local governments to consider flood risks in their general plans (after January 1, 2009), including:

- ▲ annually review areas covered by the general plan that are subject to flooding as identified by FEMA or the State Department of Water Resources;
- ▲ include flood hazards in the safety element of their general plan, with goals, policies, and objectives for the protection of the community;
- ▲ for communities/counties within the Central Valley, submit the safety element to the State Central Valley Flood Protection Board for review; and
- ▲ consider flood risk in evaluating the available land suitable for urban development if the flood protection infrastructure required for development would be impractical because of cost or other considerations.

As required by the flood management requirements in the Government Code, the City of Elk Grove has incorporated CVFPP measures into the Safety Element of its general plan through the inclusion of Urban Level Flood Protection mapping, as well as through more extensive flood risk analysis. Related measures have been incorporated into Title 23 of the Municipal Code. The City applies more stringent development standards in identified areas when considering approval of future projects and developments.

### **Safe Drinking Water Act**

As mandated by the Safe Drinking Water Act (Public Law 93-523), passed in 1974, EPA regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA primary and secondary maximum contaminant levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the Safe Drinking Water Act enacted in 1986 established an accelerated schedule for setting drinking water MCLs. EPA has delegated to the DHS the responsibility for California's drinking water program. DHS is accountable to EPA for program implementation and for adoption of standards and regulations that are at least as stringent as those developed by EPA. Title 22 of the California Administrative Code (Article 16, Section 64449) defines secondary drinking water standards, which are established primarily for reasons of consumer acceptance (i.e., taste) rather than for health issues.

### **LOCAL**

The project site lies within the jurisdictional boundaries of Sacramento County; therefore, the County's policies, as well as the Sacramento LAFCo's policies, would apply. Furthermore, if the SOIA is approved, it may lead to annexation to the City of Elk Grove. Thus, applicable policies of the City of Elk Grove's General Plan are described below.

### **Central Sacramento County Groundwater Management Plan**

The Central Sacramento County Groundwater Management Plan (CSCGMP) represents an established framework for maintaining sustainable groundwater resources for the various users overlying the basin in Sacramento County between the American and Cosumnes Rivers (SCGA 2006). It includes specific goals, objectives, and an action plan to provide a "road map" for the governance body as the steps necessary to manage the basin are taken in coordination with various stakeholders. The CSCGMP is intended to be adaptive to changing conditions within the groundwater basin and is updated and refined as needed to reflect progress made in achieving the CSCGMP's objectives. A goal of the CSCGMP is to ensure a viable groundwater resource for beneficial uses, including water for purveyors, agricultural, agricultural residential, industrial, and municipal supplies while maintaining and enhancing flows in the Cosumnes River. It is used as a tool to help ensure a long-term reliable water supply for rural domestic, agricultural, urban, business/industrial, environmental, and development uses in the region. The California Water Code requires that a groundwater management plan contain numerous technical provisions, which are briefly summarized as follows:

- ▲ An inventory of water supplies and a description of water uses within a given region. This information is summarized in a water balance showing overall water demands and available water supplies.
- ▲ Basin Management Objectives that are designed to protect and enhance the groundwater basin.
- ▲ Monitoring and management programs that ensure the Basin Management Objectives are being met.
- ▲ Description of stakeholder involvement and public information plan and programs for the groundwater basin.

The Water Forum estimated that the long-term average annual sustainable yield of the Central Basin was 273,000 afy, while extractions were estimated at 250,000 afy. The CSCGMP identifies provisions to maintain groundwater pumping levels within the sustainable yield, including reducing demand, conjunctive use, and aquifer storage and recovery projects.

### **Sacramento Central Groundwater Authority Alternative Submittal**

SGMA established a process for local agencies (LAFCo is not subject to this process) to develop an Alternative submittal in lieu of a groundwater sustainability plan, if the Alternative satisfies the objectives of SGMA via a similar level of groundwater management through the agencies' existing groundwater management plan, and/or by providing sufficient factual evidence demonstrating the subbasin has operated within its locally established sustainable yield for at least 10 years. According to the groundwater sustainability plan regulations, Alternatives will be evaluated by the same criteria that will be used to assess groundwater sustainability plans.

The Sacramento Central Groundwater Authority prepared and submitted a final draft of the Alternative Submittal to DWR on December 14, 2016. The Alternative Submittal provides a similar level of detail as required in a groundwater sustainability plan and shows groundwater management would continue to occur consistent with the existing Central Sacramento County GMP. The Alternative Submittal demonstrates subbasin operations from 2005 to 2015 did not exceed the sustainable yield conditions set forth by the Water Forum Agreement of 273,000 afy. If approved, the 273,000 afy sustainable yield set forth by the Water Forum Agreement will be incorporated into the Alternative Submittal, and will be the base year for measuring the long-term sustainability of groundwater in the subbasin. DWR's timetable for approval and adoption of the Alternative submittal is not known at this time.

### **Sacramento LAFCo Policies, Standards, and Procedures**

The following Sacramento LAFCo policies, standards, and procedures relate to hydrology and water quality.

#### **Chapter IV. General Standard**

**Section F.** Application of the California Environmental Quality Act to Changes of Organization or Reorganization and Spheres of Influence.

- ▲ **Standard F.4.** In preparing an Initial Study for the project subject to LAFCo review, the LAFCo will generally consider the project to have the potential to significantly affect the environment if one or more of the following situations exists:
  - If buildout of the project may result in the capacity of any public service or facility being exceeded or substantially affected. For the purposes of this provision, public facilities or services include, but are not limited to: sewage disposal, water service, flood control facilities, drainage facilities, law enforcement, fire protection, school, parks, libraries, gas and electric service, and solid waste disposal. A public service or facility shall be considered "substantially affected" if the additional demand generated by the project would result in the facility or service exceeding 110 percent of its design capacity, or 120 percent of the available capacity.
  - If the project has substantial growth-inducing potential because it would result in:



- providing or requiring flood control or other public facility which will protect the public safety so as to permit new development in an area substantially larger than the proposed project;
- providing any other public service or facility to a substantial area which could not grow without such service; and
- encouraging or fostering growth in a substantial area.

### **Sacramento County General Plan**

The following policies from the Conservation Element and Safety Element of the *Sacramento County General Plan* (Sacramento County 2011) are directly related to hydrology and water quality resource management issues and are applicable to the project:

#### **Conservation Element**

- ▲ **Policy CO-24.** Comply with the Sacramento Areawide NPDES Municipal Permit.
- ▲ **Policy CO-26.** Protect areas susceptible to erosion, natural water bodies, and natural drainage systems.
- ▲ **Policy CO-27.** Support surface water quality monitoring programs that identify and address causes of water quality degradation.
- ▲ **Policy CO-28.** Comply with other water quality regulations and NPDES permits as they apply to County projects or activities, such as the State's Construction General Permit and Aquatic Pesticides Permit.
- ▲ **Policy CO-30.** Require development projects to comply with the County's stormwater development/design standards, including hydromodification management and low impact development standards, established pursuant to the NPDES Municipal Permit.

#### **Safety Element**

- ▲ **Policy SA-7.** In accordance with the County Floodplain Management Ordinance, the County shall locate, when feasible, new essential public facilities outside of flood hazard zones including hospitals and health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities; or identify construction methods or other methods to minimize damage if these facilities are located in flood hazard zones.
- ▲ **Policy SA-8.** Maintain the structural and operational integrity of essential public facilities during flooding.
- ▲ **Policy SA-13.** Where new upstream development in Sacramento County will increase or potentially impact runoff onto parcels downstream in a neighboring jurisdiction, such as the City of Sacramento, Sacramento County will coordinate with the appropriate neighboring jurisdiction to mitigate such impacts.

### **City of Elk Grove General Plan**

The following policies from the City of Elk Grove General Plan (City of Elk Grove 2016) are directly or indirectly related to hydrology, water quality, or flooding, and are applicable to the project:

#### **Conservation and Air Quality Element**

- ▲ **Policy CAQ-1:** Reduce the amount of water used by residential and non-residential uses by encouraging water conservation.
- ▲ **Policy CAQ-5:** Roads and structures shall be designed, built, and landscaped so as to minimize erosion during and after construction.

- ▲ **Policy CAQ-12:** The City shall seek to ensure that the quality of groundwater and surface water is protected to the extent possible.
- ▲ **Policy CAQ-13:** Implement the City's NPDES permit through the review and approval of development projects and other activities regulated by the permit.
- ▲ **Policy CAQ-14:** The city shall seek to minimize the amount of impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and use on-site infiltration of runoff in areas with appropriate soils where the infiltration of storm water would not pose a potential threat to groundwater quality.
- ▲ **Policy CAQ-16:** Future land uses that are anticipated to utilize hazardous materials or waste shall be required to provide adequate containment facilities to ensure that surface water and groundwater resources are protected from accidental releases. This shall include double containment, levees to contain spills, and monitoring wells for underground storage tanks, as required by local, state and federal standards.
- ▲ **Policy CAQ-18:** Post-development peak storm water runoff discharge rates and velocities shall be designed to prevent or reduce downstream erosion, and to protect stream habitat.

#### **Safety Element**

- ▲ **Policy SA-12:** The City opposes the construction of flood control facilities that would alter or reduce flows in the Cosumnes River and supports retention of the Cosumnes River floodplain in non-urban uses consistent with location in an area subject to flooding.
- ▲ **Policy SA-13:** The City shall require that all new projects not result in new or increased flooding impacts on adjoining parcels on upstream and downstream areas.
- ▲ **Policy SA-14:** The City shall locate, and encourage other agencies to locate, new essential government service facilities and essential health care facilities outside of 100- year and 200-year flood hazard zones, except in cases where such locations would compromise facility functioning.
- ▲ **Policy SA-19:** The City will not enter into a development agreement, approve a building permit or entitlement, or approve a tentative or parcel map for a project located within an urban level of flood protection area unless it meets one or more established flood protection findings.
- ▲ **Policy SA-25:** Parcels should not be created on which the presence of easements, floodplain, marsh or riparian habitat, or other features would leave insufficient land to build and operate structures. This policy shall not apply to open space lots specifically created for dedication to the City or another appropriate party for habitat protection, flood hazard management, drainage, or wetland maintenance.
- ▲ **Policy SA-28:** The City shall require all new urban development projects to incorporate runoff control measures to minimize peak flows of runoff and/or assist in financing or otherwise implementing Comprehensive Drainage Plans.

#### **Public Facility Element**

- ▲ **Policy PF-6:** The City shall seek to protect the quality and quantity of groundwater resources, including those which serve households and businesses which rely on private wells.

### **City of Elk Grove Storm Drainage Master Plan**

The City of Elk Grove adopted a comprehensive Storm Drainage Master Plan to provide a variety of drainage concepts for upgrading the existing storm drainage and flood control collection system. The plan identifies and analyzes the existing drainage deficiencies throughout the City, provides a range of drainage concepts for the construction of future facilities required to serve the City at buildout of the General Plan, and establishes criteria for selecting and prioritizing projects.

### **City of Elk Grove Municipal Code Chapter 15.12**

Elk Grove Municipal Code Chapter 15.12 establishes the authority of the City to conduct inspections and enforcement related to control of illegal and industrial discharges to the City storm drainage system and local receiving waters.

### **City of Elk Grove Municipal Code Chapter 16.44**

Elk Grove Municipal Code Chapter 16.44 establishes administrative procedures, standards for review and implementation, and enforcement procedures for controlling erosion, sedimentation, other pollutant runoff, and the disruption of existing drainage and related environmental damage. This chapter requires that prior to grading activities, a detailed set of plans be provided that include measures to minimize erosion, sediment, and dust created by improvement activities.

## **3.8.3 Environmental Impacts and Mitigation Measures**

Aspects of the project with the potential to affect hydrology and water quality include ground disturbance activities, such as grading, that could potentially result in temporary impacts to hydrological features within the project site, and residential development, that could potentially result in depletion of groundwater supplies. This section describes construction-related and permanent discharge-related effects on hydrology and water quality within the project area that would result from development of the SOIA area upon annexation to the City, and relates these effects to significance criteria to make determinations regarding environmental effects.

### **ANALYSIS METHODOLOGY**

Evaluation of potential hydrologic and water quality impacts was based on a review of existing information from previously completed documents that address water resources in the project vicinity. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects, based on the standards of significance presented in this chapter. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, state, and local ordinances and regulations.

Water quality impacts associated with temporary construction activities were assessed in a qualitative manner. The potential short-term, construction-related effects of grading and land disturbance were assessed based on the probability of seasonal exposure to rainfall and runoff, routes of exposure for contaminants to enter surface water, and the magnitude and duration of construction relative to the potential water quality parameters expected to be affected by the activity.

### **THRESHOLDS OF SIGNIFICANCE**

Based on Appendix G of the State CEQA Guidelines, a hydrology and water quality impact would be significant if implementation of the proposed project would do any of the following:

- ▲ violate any water quality standards or waste discharge requirements;
- ▲ substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- ▲ substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial on- or off-site erosion or siltation;

- ▲ substantially alter the existing drainage pattern of the 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 which would result in on- or off-site flooding;
- ▲ 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;
- ▲ Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- ▲ otherwise substantially degrade water quality;
- ▲ place housing within a 100-year or 200-year flood hazard area as mapped on a federal Flood Hazard Boundary or FIRM or other flood hazard delineation map;
- ▲ place within a 100-year or 200-year flood hazard area structures that would impede or redirect flood flows;
- ▲ expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- ▲ result in inundation by seiche, tsunami, or mudflow.

## ISSUES NOT EVALUATED FURTHER

Because of the distance from the nearest open waterbody, the Pacific Ocean (more than 88 miles west of the project site), the proposed project would not be affected by inundation as a result of seiche or tsunami. In addition, the project site is relatively flat, with no steep areas that would have the potential to generate mudflows during operation. Therefore, these issues are not addressed further.

While no on-site drainage system has been identified for the SOIA area to support future development, it is assumed that drainage improvements would be limited to on-site improvements. The development of the SOIA area (including drainage improvements) is addressed in the technical sections of this EIR.

## IMPACT ANALYSIS

### **Impact 3.8-1: Short-term construction-related and operational water quality degradation.**

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Development of the SOIA area as a result of future annexation could result in water quality degradation from construction activities, as well as from operational sources of water pollutants. This impact would be **potentially significant**.

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Storm drainage within this SOIA area has historically been achieved via ditches as part of the various agricultural operations. Though the project itself would not include any development or construction that would affect water quality or waste discharge requirements, approval of the SOIA would potentially allow for the SOIA area to be developed. Construction and operation of such development could result in activities with the potential to degrade water quality.

Project construction activities may involve ground-disturbance, trenching, facility construction, and vegetation removal. These activities would create the potential for soil erosion and sedimentation of stormwater drainage systems, both within and downstream of the project site. The construction process may also result in accidental release of other pollutants to surface waters, including oil and gas, chemical substances used during construction, waste concrete, and wash water. Many construction-related waste



products have the potential to degrade existing water quality by altering the dissolved-oxygen content, temperature, pH, suspended-sediment and turbidity levels, or nutrient content, or by causing toxic effects in the aquatic environment.

The Section 402 NPDES Construction General permits require project proponents to incorporate general site design control measures into project design. These control measures may include conserving natural areas, protecting slopes and channels, and minimizing impervious areas. Treatment control measures may include use of vegetated swales and buffers, grass median strips, detention basins, wet ponds, or constructed wetlands, infiltration basins, and other measures. Filtration systems may be either mechanical (e.g., oil/water separators) or natural (e.g., bioswales and settlement ponds). Selection and implementation of these measures would occur on a project-by-project basis depending on project size and stormwater treatment needs. NPDES MS4 permittees (e.g., City of Elk Grove) are also required to develop and enforce ordinances and regulations to reduce the discharge of sediments and other pollutants in runoff, and must verify compliance. NPDES Construction General permittees are required to develop a SWPPP for each site, which include BMPs to reduce potential construction impacts. New development that would introduce 10,000 or more square feet of new impervious surfaces would be required under Provision C.3 of the NPDES program to incorporate LID strategies such as stormwater reuse, on-site infiltration, and evapotranspiration.

In addition, any future development within SOIA area would have to adhere to City of Elk Grove NPDES permit requirements and City of Elk Grove Municipal Code requirements related to Stormwater Management and Discharge Control (Chapter 15.12). As established in the City of Elk Grove's Improvement Standards Section 11 Stormwater Quality Protection, developers meeting the project area disturbance threshold of 1 acre or more must obtain coverage under the SWRCB General Permit for Storm Water Discharges Associated with Construction Activity (Construction General Permit) prior to commencing construction activities, and projects smaller than 1 acre of disturbed soil area must prepare a Water Pollution Control Plan. Permit requirements include development and implementation of a SWPPP prior to disturbing a site. The SWPPP has to include a site-specific listing of the potential sources of stormwater pollution, anticipated stormwater discharge locations, BMPs for construction waste handling and disposal, and non-stormwater management, among other items.

Development within the SOIA area would increase impervious surfaces, which could result in additional stormwater runoff. Common urban pollutants (e.g., petroleum hydrocarbons, lubricants, herbicides and pesticides, sediments, and metals [generated by the wear of automobile parts]) could be transported in runoff, washed by rainwater from rooftops and landscaped areas into on-site and local drainage networks, and potentially adversely affect the quality of receiving surface waters or groundwater. Infiltration of stormwater runoff into the soil would also likely decrease because of an increase in impermeable surfaces. As part of a future development, a stormwater drainage system would be required to collect and convey stormwater runoff from developed areas. Future stormwater drainage systems could include open channels and multi-use stormwater quality/detention facilities.

According to the City of Elk Grove's Storm Drainage Master Plan (2011), LID must be incorporated into future development projects in the City, based on the requirements of the City's NPDES stormwater permit. LID emphasizes the use of on-site natural features integrated with engineered hydrologic controls distributed throughout a watershed that promote infiltration, filtration, storage, and evaporation of runoff close to the source to manage stormwater. Any future development would be required to submit stormwater drainage designs, including a comprehensive drainage study consistent with the Storm Drainage Master Plan to the City of Elk Grove for approval.

Typical BMPs used to meet regulatory standards include:

#### **Construction**

- ▲ Limit excavation and grading activities to the dry season (April 15 to October 15) to the extent possible to reduce the chance of severe erosion from intense rainfall and surface runoff, as well as the potential for soil saturation in swale areas.

- ▲ Cover stockpiles of loose material; diverting runoff away from exposed soil material; locating and operating sediment basin/traps to minimize the amount of off-site sediment transport and dissipate energy; and removing any trapped sediment from the basin/trap for placement at a suitable location on-site, away from concentrated flows, or removal to an approved disposal site.
- ▲ Provide erosion protection on all exposed soils either by revegetation or placement of impervious surfaces after completion of grading.
- ▲ Store hazardous materials such as fuels and solvents used on the construction sites in covered containers that are protected from rainfall, runoff, and vandalism.

#### Operation

- ▲ Design roadway and parking lot drainage to run through grass median strips that are contoured to provide adequate storage capacity and to provide overland flow, detention, and infiltration before runoff reaches culverts or detention basins. Oil and sediment separators or absorbent filter systems may also be installed within the storm drainage system to provide filtration of stormwater before discharge to reduce the potential for water quality impacts.
- ▲ Use integrated pest management techniques (i.e., methods that minimize the use of potentially hazardous chemicals) in landscaped areas.
- ▲ Handle, store, and apply potentially hazardous chemicals in accordance with all applicable laws and regulations.
- ▲ Implement an erosion control and revegetation program designed to allow re-establishment of native vegetation on slopes in undeveloped areas as part of the long-term sediment control plan.
- ▲ Use alternative discharge options to protect sensitive fish and wildlife populations in areas where habitat for fish and other wildlife would be threatened by facility discharge.

While the above provisions would apply to future development in the SOIA area upon annexation, there are no proposed stormwater management plans for the project to demonstrate compliance. Thus, this impact would be **potentially significant**.

#### **Mitigation Measure 3.8-1: Development of a drainage master plan for the SOIA area.**

At the time of any application to annex territory within the Bilby Ridge SOIA area, the City of Elk Grove shall require that the applicants prepare and implement an update to the City of Elk Grove Storm Drainage Master Plan that incorporates the SOIA area or a drainage master plan for the entire SOIA area that includes the following items and shall be consistent with the City of Elk Grove Storm Drainage Master Plan:

- ▲ an accurate calculation of pre-project and post-development runoff scenarios, obtained using appropriate engineering methods that accurately evaluate potential changes to runoff, including increased surface runoff;
- ▲ details on on-site detention basin and drainage channel design that are consistent with the requirements of the City of Elk Grove and provide enough storage to accommodate peak storm events and no increase post-development flows or flood conditions off-site;
- ▲ identification of any drainage facility connections or coordination with the planned Southeast Area Plan drainage channel east of the SOIA area;
- ▲ identification of design features that avoid site development from occurring in the 200-year floodplain;

- ▲ implementation of appropriate BMPs to address construction and operational stormwater quality consistent with City requirements;
- ▲ a description of any treatments necessary to protect earthen channels from erosion, and modifications that may be needed to existing underground pipe and culvert capacities;
- ▲ a description of the proposed maintenance program for the on-site drainage system; and
- ▲ a description of the project-specific standards for installing drainage systems.

Evidence of compliance with this mitigation measure shall be provided in the annexation application to LAFCo.

#### **Significance after Mitigation**

Implementation of Mitigation Measure 3.8-1 would require that stormwater drainage master planning be prepared for the entire SOIA area as part of future site development. This process would require compliance with City stormwater quality requirements that are tied to its NDPES permit requirements to protect surface water quality. Thus, implementation of Mitigation Measure 3.8-1 would mitigate this impact to **a less-than-significant level**.

#### **Impact 3.8-2: Deplete groundwater supplies or interfere substantially with groundwater recharge.**

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Future development of the SOIA area upon annexation could result in groundwater usage and creation of impervious surfaces that could block groundwater recharge. Sacramento County Water Agency manages its water supply in a conjunctive manner to protect groundwater resources and has adequate water supplies available for the project. Further, the SOIA area soil conditions do not provide for effective groundwater recharge in the region. Project groundwater impacts would be **less than significant**.

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Future development of the SOIA area could affect groundwater in two ways: additional demand for water could increase the use of groundwater, and addition of impervious surfaces could limit groundwater recharge.

Future development within the project site would likely lead to increased demand for groundwater. The project site is located within SCWA Zone 40, and is part of the South Service Area (SCWA 2011). The South Service Area is supplied by a mix of surface water, groundwater, and recycled water (SCWA 2011). Currently, the SCWA only serves residential areas within the South Service Area, but it is likely that new development would be included in this service area as well.

The project site was included in the SCWA Zone 40 Water Supply Master Plan's (SCWA 2005) 2030 Study Area. As evaluated further in Section 3.14, "Utilities," the SCWA manages water conjunctively; adjusting the mix of surface and groundwater supplied based on rainfall and availability of surface water. The WSIP (SCWA 2016) projects that total water demand in the service area, including water system losses will be 102,400 afy in the year 2052. The service area has adequate planned supply facilities to be able to address both the wet/average years and dry years. The excess supply during normal years is projected to range from 140,000 afy in 2020 to 84,600 afy in 2052, and in dry years the excess supply is projected to range between 60,700 afy in 2020 and 11,800 afy in 2052 (SCWA 2016). Although development of the SOIA area was not considered in the cumulative buildout land use assumptions for the Zone 40 Water Supply Master Plan, the addition of 1,009.5 afy of potential project water demand (see Table 3.14-4) based on the conceptual land use plan (see Exhibit 2-4) (a 1 percent increase) would not drastically change the assumptions used by SCWA, which have a margin of error and are updated on a regular basis to reflect changes in land use and consumption rates. It is estimated that the SOIA area utilizes 765 to 1,615 afy of groundwater under current agricultural operations. Thus, the project may result in net increase of 145.5 acre-feet per year in water demand or a net decrease of 814.6 afy in water demand from future development depending upon the final land use scenario.

The Water Forum estimated that the long-term average annual sustainable yield of the Central Basin was 273,000 afy, while extractions were estimated at 217,111 afy in 2015. The CSCGMP identifies provisions to maintain groundwater pumping levels within the sustainable yield, including reducing demand, conjunctive use, and aquifer storage and recovery projects that apply to SCWA's water supply provision of the project. The Sacramento Central Groundwater Authority Alternative Submittal demonstrates subbasin operations from 2005 to 2015 did not exceed the sustainable yield conditions set forth by the Water Forum Agreement of 273,000 afy. If approved, the 273,000 afy sustainable yield set forth by the Water Forum Agreement will be incorporated into the Alternative Submittal, and will be the base year for measuring the long-term sustainability of groundwater in the subbasin.

The project's increased water demands would not cause groundwater pumping within the Central Basin to exceed its sustainable yield. Thus, the future development of the SOIA is not expected to substantially deplete groundwater supplies or lower groundwater levels beyond projected levels.

Infiltration rates can vary and largely depend on the characteristics of the exposed overlying soils and vegetation. The project site is considered to be a "very poor" groundwater recharge area because of soil conditions (UC Davis 2017). As discussed above, on-site drainage plans would be designed to retain, capture, and convey increased runoff in accordance with the city design standards and State requirements such as Provision C.3 site control features. These standards and regulations generally require or encourage the use of LID features such as vegetated swales, permeable paving, use of landscaping for infiltration, and other measures that would retain runoff as much as possible and allow for on-site infiltration.

Thus, the potential for subsequent development projects in the SOIA area to deplete groundwater resources or interfere with groundwater recharge is considered **less than significant**.

### Mitigation Measures

No mitigation is required.

### Impact 3.8-3: Alteration of drainage pattern or increase in rate or amount of surface runoff in a manner that would result in substantial erosion or siltation.

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Future development of the SOIA area upon annexation could lead to alteration of the drainage pattern of the site. This could result in increased stormwater runoff and an increase in susceptibility to downstream flooding and sediment issues. This would be a **potentially significant** impact.

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The project site is currently primarily agricultural land. No change in land use, drainage, or rate of stormwater runoff would result from the SOIA. However, this analysis considers the potential effects on drainage if the project site is annexed and developed in a manner consistent with the conceptual land use plan in the future.

As discussed above, development of the SOI area would increase the quantity of impervious surfaces, which could alter the drainage pattern, or increase the rate or amount of surface runoff. The increased runoff could also discharge at a greater rate, leading to higher peak flows during storm events that could increase the potential for stormwater to cause flood conditions and to transport urban pollutants.

The project site contains a network of irrigation ditches, which would likely be replaced by other stormwater infrastructure when the land is developed. The project site is not covered under the Storm Drainage Master Plan area but is adjacent to both Drainage Shed B and Drainage Shed C and would likely require coordination with the planned drainage improvements for the Southeast Area Plan.

The planned storm drainage improvements associated with Southeast Area Plan (east of the SOIA area) would involve off-site excavation to deepen the existing channel downstream of Bruceville Road. The excavation would be limited to construction of a small pilot channel to eliminate existing high points in the existing channel, which would allow the planned Southeast Area Plan channel to be constructed deeper. This



off-site excavation is only intended to provide extra depth in the on-site channel and is not intended to provide a significant increase in capacity downstream of Bruceville Road. It is estimated that the pilot channel would extend approximately 3,200 feet downstream of Bruceville Road and the average depth of excavation would be approximately 1.8 feet. (City of Elk Grove 2014: 5.9-16)

Additionally, projects would be required to comply with the City of Elk Grove's General Plan policy CAQ-18 regarding stormwater runoff discharge rates (City of Elk Grove 2016). Further, NPDES Provision C.3 requirements include post-construction drainage control requirements that address the volume of off-site flows, which can be effective in reducing sedimentation effects on downstream receiving waters. Project proponents are required to plan, design, and develop sites to: (1) protect areas that provide important water quality benefits necessary to main riparian and aquatic biota, and/or are particularly susceptible to erosion and sediment loss; (2) limit increases of impervious areas; (3) limit land disturbance activities such as clearing and grading, and cut-and-fill to reduce erosion and sediment loss; (4) limit disturbance of natural drainage features and vegetation; and (5) reduce erosion and, to the extent practicable, retain sediment on-site during and after construction.

Although the local, State, and federal policies and regulations specified above would provide for analysis of potential impacts and preventative measures to limit or avoid substantial alteration of the existing drainage pattern of the SOIA area, individual projects would have the potential to adversely affect surface runoff at a project-specific level because of the addition of impervious surfaces. This would be a **potentially significant** impact.

## Mitigation Measures

Implement Mitigation Measure 3.8-1.

### Significance after Mitigation

Implementation of Mitigation Measure 3.8-1 would require that stormwater drainage master planning be prepared for the entire SOIA area as part of future site development that would require compliance with City drainage and stormwater quality requirements as well as ensure coordination with planned drainage improvements associated with the Southeast Area Plan. Thus, implementation of Mitigation Measure 3.8-1 would mitigate this impact to a **less-than-significant level**.

## **Impact 3.8-4: Place structures or housing within a flood hazard area or result in loss, injury, or death due to flooding.**

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A portion of the SOIA area is mapped as 200-year floodplain that could expose future SOIA area residents to flooding. This would be a **potentially significant impact**.

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While the SOIA would not result in physical changes to the site, the project would remove an obstacle to future annexation and development which could result in structures and housing being exposed to flooding from a 200-year event (see Exhibit 3.8-2). Siting structures in flood zones can result in direct effects on new development related to flooding where substantial damage can occur. In addition, structures that impede flood flows can cause a backwater effect by potentially raising flood levels, causing more severe flooding impacts to existing vulnerable areas, or by exposing new areas that would not have previously flooded to flooding impacts. Pursuant to SB 5, the City prohibits development in the 200-year floodplain unless certain findings are made. Thus, this impact would **potentially significant**.

As discussed above, the SOIA area is located outside of the Folsom Dam inundation zone. In addition, there are no levees within or adjacent to the SOIA area. Therefore, any future development within the SOIA area would not expose people or structures to a risk of loss, injury or death from flooding as a result of the failure of a levee or dam.

## Mitigation Measures

Implement Mitigation Measure 3.8-1.

### Significance after Mitigation

Mitigation Measure 3.8-1 would result in a drainage master plan for the entire SOIA area would include design features that avoid site development from occurring in the 200-year floodplain. Thus, this impact would be **less than significant** with mitigation.