
5.9 HYDROLOGY AND WATER QUALITY

This section describes existing drainage and water resources in the Planning Area and the region, and evaluates potential impacts of the Project with respect to flooding, surface water resources and quality, and groundwater resources. Water supply impacts are evaluated in Section 5.12, Public Utilities.

5.9.1 EXISTING SETTING

SURFACE WATER

Hydrology

Sacramento County is part of the Sacramento River watershed, which covers approximately 27,000 square miles, with 400 miles of riverbed from Lake Shasta to the convergence of the Sacramento-San Joaquin Delta. The Planning Area is also part of this watershed. Laguna Creek, the Cosumnes River, and the Sacramento River are the main surface hydrological features in and near the Planning Area.

Surface water resources in the Planning Area are part of the Morrison Creek Stream Group, and include Elder, Elk Grove, Laguna (and tributaries), Morrison, Strawberry, and Whitehouse Creeks. The Morrison Creek Stream Group drainage basin covers 192 square miles. The nine creeks that drain into Morrison Creek flow southwest and eventually drain into the Beach-Stone Lakes area west of Interstate 5 (I-5). Florin, Gerber, and Unionhouse Creeks are located close to the Planning Area in Sacramento County. Deer Creek is in the eastern portion of the Planning Area, parallel to the Cosumnes River. The Cosumnes River floodplain forms the eastern border of the Planning Area, and the river is part of the San Joaquin River watershed. **Figure 5.9-1** shows the location of major surface water features in and around the Planning Area.

Laguna Creek, the main creek that flows through the City, has been altered by development. Channels, levees, and culverts have been created to alleviate the possibility of flooding, as well as accommodate different development scenarios. Other creeks in the Planning Area have also been similarly altered. However, the Cosumnes River is one of the last free-flowing, undammed rivers on the western slope of the Sierra Nevada.

Drainage

Urban runoff within the City limits is conveyed through a storm drainage and flood control collection system that includes nearly 400 miles of underground piping and 60 miles of natural and constructed channels. The City owns and operates these facilities and channels, including pump stations, levees, detention basins, and other flood control features. The system manages drainage from 13 contributing watersheds and 10 major natural creeks that convey runoff in the City, which are listed in **Table 5.9-1** and **Table 5.9-2**, respectively. The City's watersheds ultimately drain into the Stone Lakes National Wildlife Refuge area of Sacramento County, with the exception of the Deer Creek and Grant Line Channel watersheds, which drain to Deer Creek and ultimately to the Cosumnes and Mokelumne Rivers.

5.9 HYDROLOGY AND WATER QUALITY

**TABLE 5.9-1
DRAINAGE WATERSHEDS IN THE CITY**

Deer Creek Watershed	Laguna Creek Watershed	Elk Grove Creek Watershed
Grant Line Channel Watershed	Laguna Stone Lake Watershed	Laguna West Channel Watershed
Laguna West Lakes Watershed	Lakeside Watershed	Shed A Watershed
Shed B Watershed	Shed C Watershed	Strawberry Creek Watershed
Whitehouse Creek Watershed		

Source: City of Elk Grove 2016a

**TABLE 5.9-2
RUNOFF CONVEYANCE CREEKS AND CHANNELS IN THE CITY**

Elk Grove Creek	Laguna Creek	Strawberry Creek
Whitehouse Creek	Deer Creek	Franklin (Shed A) Channel
Erhardt (Shed B) Channel	Shed C Channel	Grant Line Channel
Laguna West Channel		

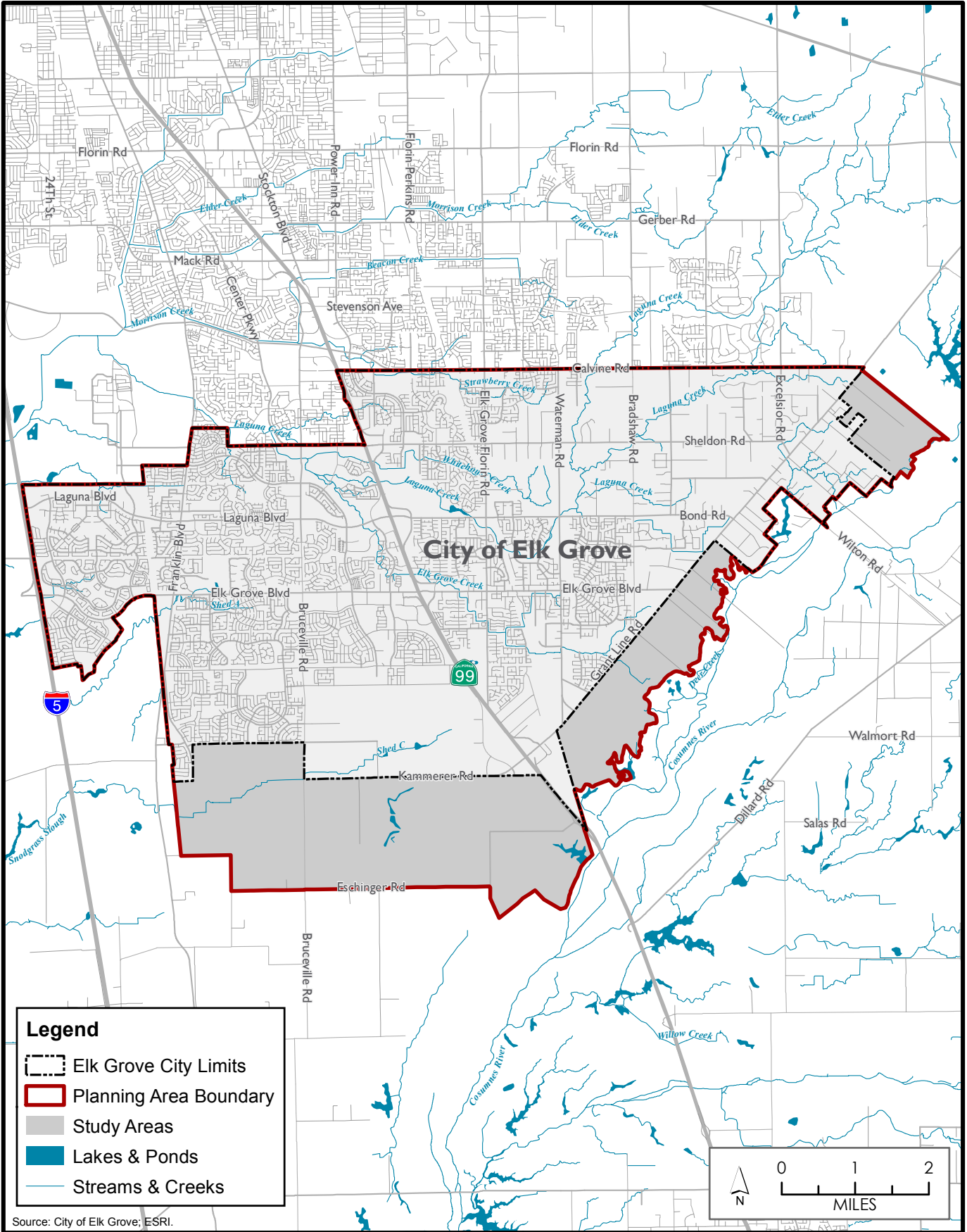
Source: City of Elk Grove 2016a

In 2011, the City approved a Storm Drainage Master Plan (SDMP), which identifies and analyzes the existing drainage deficiencies throughout the City, provides a range of drainage concepts for the construction of future facilities, and establishes criteria for selecting and prioritizing drainage improvements. The SDMP addresses drainage issues for four separate regions, each of which has unique and different land use characteristics (City of Elk Grove 2011). The four regions are located within the current City limits and do not extend into the Study Areas.

- *Elk Grove Creek Region:* Southeast portion of the City, beginning just east of Grant Line Road and joining Laguna Creek just west of State Route (SR) 99.
- *Shed C Region:* Southernmost portion of the City, beginning on the west side of SR 99 and continuing southwest outside the City limits to the Stone Lakes National Wildlife Refuge west of Interstate 5.
- *East Elk Grove Area/Rural Region:* Bounded by Waterman Road on the west, Calvine Road on the north, and Grant Line Road/City boundary on the east, this area includes Grant Line Channel, Deer Creek, and Laguna Creek.
- *Other Urbanized Areas:* Includes developed areas in the City that are built out with residential, commercial, or industrial land uses.

The Study Areas have minimal existing storm drainage services because they are primarily agricultural. Nearly all the natural drainage courses in the area east of SR 99 have been altered by agricultural activities, and surface water flows are channeled into agricultural and roadside ditches.

T:\GIS\Elk_Grove\MXDs\General_Plan_Update\Elk\Figure 5.9-1 Water Features.mxd (1/3/2018)



City of Elk Grove
Development Services

Figure 5.9-1
Water Features

5.9 HYDROLOGY AND WATER QUALITY

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Flooding

Flooding affects portions of the Planning Area. Flood Insurance Rate Maps (FIRMs) for the City issued by the Federal Emergency Management Agency (FEMA) identify areas in the City that are within 100- and 500-year flood zones. FEMA establishes these flood zones to estimate the potential frequency of flooding in any given year, based on historical average recurrence intervals. The 100-year floodplain zone estimates inundation areas based on a flood that has a 1 percent chance of occurring in any given year. In the Planning Area, 100-year flood zones include areas along Laguna Creek in the northwest and north-central portion of the City, and along the Cosumnes River to the southeast, primarily outside of City limits, but still within the Planning Area; see **Figure 5.9-2**. Flood risk is intensified in the lower stream reaches by high tides occurring in the Delta at the same time as strong offshore winds during heavy rainfall. A majority of the special flood hazard areas in the City are in Zone A or Zone AE, as designated by FEMA. Both zones correspond with the 100-year floodplain, and mandate flood insurance for certain homeowners with mortgages. Zone A shows no base flood elevations (BFE), while Zone AE has a BFE of less than 1 foot. The BFE represents the computed elevation to which water is expected to rise during the base flood event, and is used to determine floodproofing requirements for buildings. A 500-year flood event, which has a 0.2 percent chance of occurring in any given year, is possible in the northern portion of the City along the Sacramento River and Laguna Creek.

200-Year Floodplain

In the latter part of 2007, the governor signed six Senate and Assembly bills that addressed flood protection that were intended to improve flood management at the state and local levels. One bill (Senate Bill [SB] 5) defined the “urban level of flood protection” as the “level of protection that is necessary to withstand flooding that has a 1-in-200 chance of occurring in any given year using criteria consistent with, or developed by, the California Department of Water Resources [DWR].” SB 5 does not specify any enforcement authority for urban level of flood protection but relies on the due diligence of cities and counties to incorporate flood risk considerations into floodplain management and planning.

The limits of the 200-year floodplain are shown in **Figure 5.9-3**. This map identifies areas where higher standards of development and flood protection may be required prior to the issuance of building permits. **Figure 5.9-3** 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. These areas include the Laguna Creek and Deer Creek/Cosumnes River watersheds, as well as the Sacramento River watershed, which affects local creek systems.

The City commissioned hydrologic modeling to supplement the DWR 200-year floodplain mapping of Laguna Creek to account for levee improvements completed or in process that were not included in the DWR mapping. The Sacramento Area Flood Control Agency (SAFCA) is in the process of implementing a levee improvement project to provide 200-year flood protection for the Sacramento River, and the US Army Corps of Engineers has completed improvements to the Folsom Dam spillway on the American River. These projects were not accounted for in the DWR mapping. Because of these improvements, the City’s supplemental 200-year floodplain calculations use a scenario in which the levees and dams along the Sacramento and American Rivers do not fail.

The City’s supplemental mapping also differs from DWR 200-year floodplain mapping by adding 200-year water surface elevations along Deer Creek. The DWR did not assess Deer Creek since

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no State flood improvement projects are located in this watershed. Levees in this area have not been certified to provide 100-year protection and have failed in the past during large storm events. Therefore, modeling for this area considers the possibility of extensive levee failure, especially along the north bank of the Cosumnes River.

The area potentially affected by a 200-year flood event in the City is located along Deer Creek and the Cosumnes River. Much of this land is preserved for agricultural use and would be at limited risk of damage from flood hazard zones. However, a 200-year flood event caused by levee breaks along the Sacramento River could result in flooding in small portions of Laguna West, an existing residential neighborhood on the western side of the City. If, in the future, the City were to consider expanding beyond its existing Planning Area north or south along I-5, development in these areas would also be at risk in a 200-year flood event.

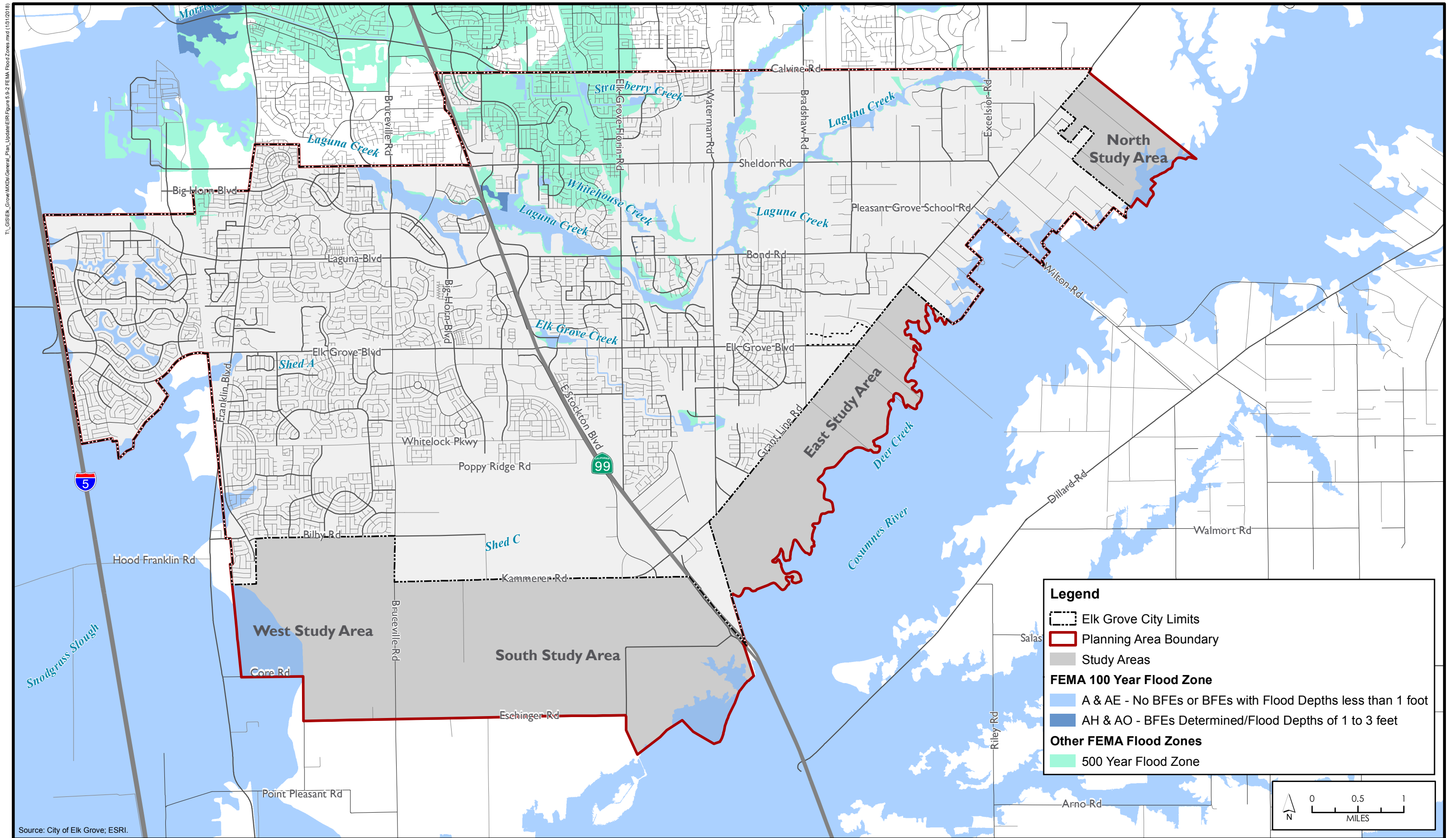
The City recognizes that flood risk conditions can change over time through natural processes or project improvements on the local or regional scale. Therefore, the 200-year flood map is considered the base case for establishing potential flood risk. The City will keep updated data on the 200-year floodplain through an annual review, accounting for the results of new technical studies and changes in flood protection infrastructure. This updated information will be referenced during the development review process for areas on the base case 200-year flood map, as shown in **Figure 5.9-3**.

As required by the flood management requirements in Government Code Section 65302(g), the City has incorporated Central Valley Flood Protection Plan (CVFPP) measures into the Safety Element of the General Plan through the inclusion of urban level flood protection mapping, as well as through more extensive flood risk analysis. The City has also incorporated related measures into Title 23 of the Municipal Code. The City applies these more stringent development standards in identified areas when considering approval of future projects and developments (City of Elk Grove 2016b).

Levees

The existing levee system in areas surrounding the City was initially constructed by hand labor, and later by dredging to hold back river floods and tidal influences, in order to obtain additional lands for grazing and crop growing. Continued maintenance is necessary to hold these levees against the river floods that threaten surrounding areas. Because levees are vulnerable to peat oxidation as well as sand, silt, and peat erosion, new material is continually added to maintain them. Subsiding farmlands adjacent to levees may increase water pressure against the levees, adding to the potential for levee failure. In addition, many levees, known as non-project levees, are not maintained to any specified standard, which can increase the likelihood of failure and inundation. Levee failures can be difficult to predict, since even inspected project levees are prone to failure under certain conditions. The DWR has, using the best available information, identified areas where flood levels would be more than 3 feet deep if a project levee were to fail; these areas are known as Levee Flood Protection Zones.

Levee construction, operation, and maintenance that is the responsibility of a federally authorized flood project in the State is considered part of the State Plan of Flood Control. These are referred to as "project levees." There are no project levees in the City, although several project levees are located outside of the Planning Area along the Sacramento River. Non-project levees are levees that were generally constructed prior to project levees and without federal or State assistance, and are not part of the State Plan of Flood Control. Non-project levees are located along the eastern side of I-5 and along Morrison Creek, Laguna Creek, and the Cosumnes River, and provide flood protection to the community.



Source: City of Elk Grove; ESRI.



City of Elk Grove
Development Services

Figure 5.9-2

FEMA Flood Zones

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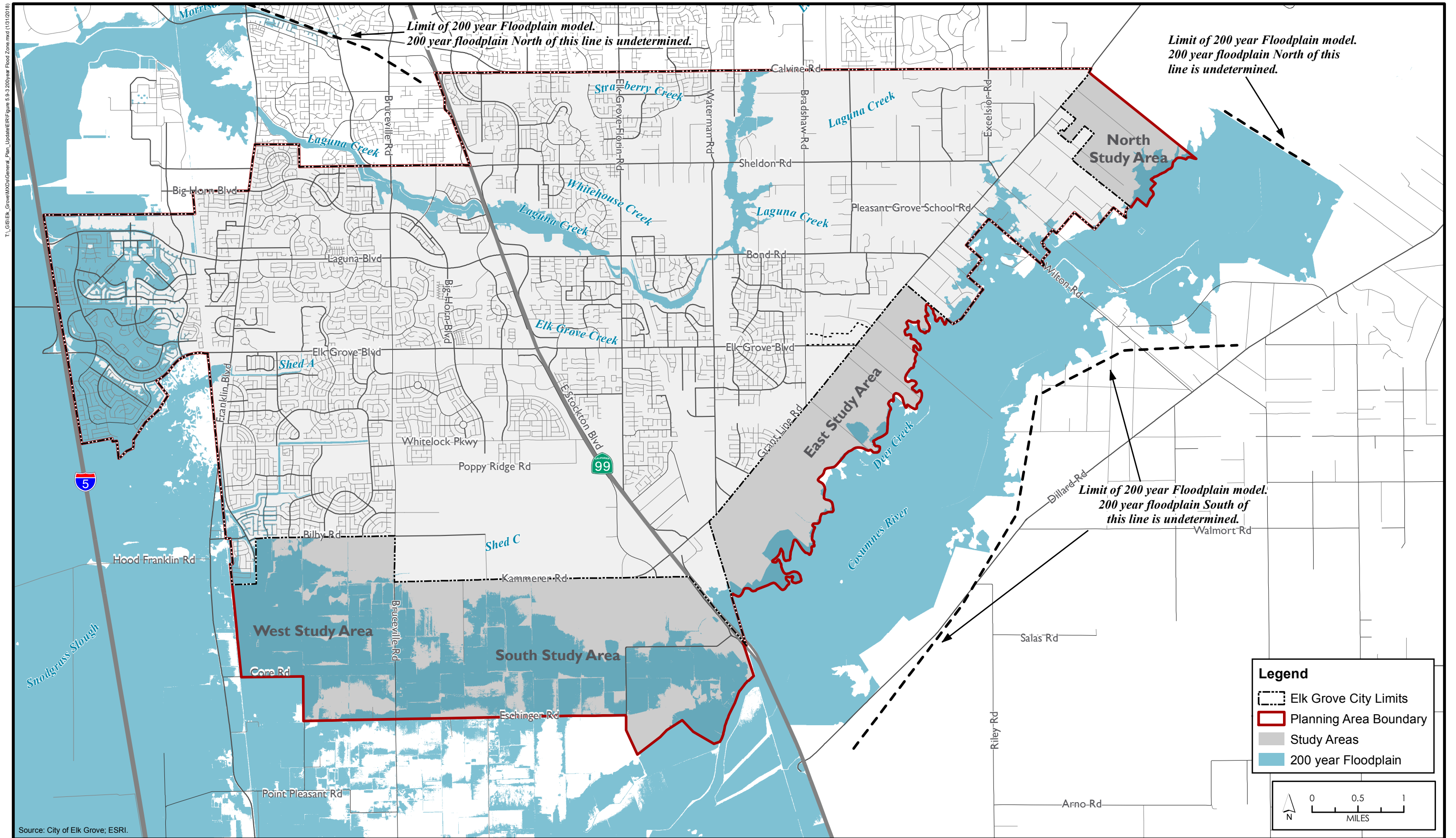


Figure 5.9-3
200 year Floodplain

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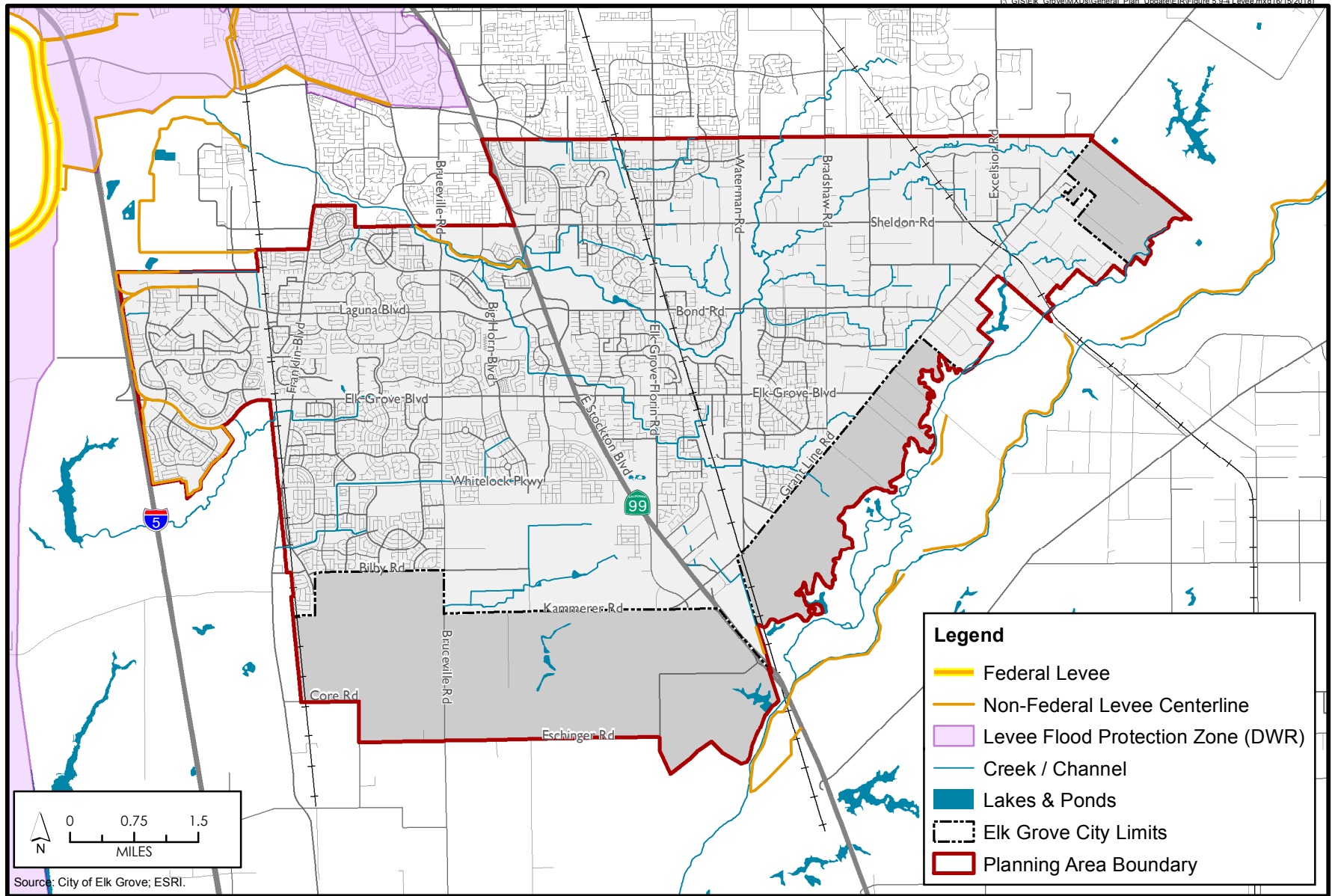


Figure 5.9-4

DWR Levee Flood Protection Zones

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The City conducts levee operation and maintenance activities that result in recommendations as well as requirements for specific levee inspections and maintenance operations. **Figure 5.9-4** identifies the locations of project levees, non-project levees, and DWR Levee Flood Protection Zones that affect the Planning Area.

Dams

Dam inundation refers to flooding that occurs when dams fail. Typically, dam failure results when a dam is not structurally sound to withstand damages resulting from seismic activity. The degree and rapidity of dam failure depends on the dam's structural characteristics and the level of stress due to the seismic event. The Governor's Office of Emergency Services provides model estimates of degree and extent of flooding that would occur in the case of a dam failure in or near the City. Although they are not located in the Planning Area, Folsom Dam (South Fork American River) and Sly Park Dam (which stores water diverted from the North Fork Cosumnes River at Jenkinson Lake) have the potential to cause flooding in the Planning Area, specifically in the northwestern and southeastern portions, in the event of dam failure. Dam inundation areas are shown in **Figure 5.9-5**.

Climate Change

Climate change will likely result in new flooding hazards throughout California. Climate change-induced sea level rise is likely to create hydrologic changes in the San Francisco Bay and Delta that could affect the City. While uncertainty exists regarding the extent of sea level rise, there is consensus that it will increase the frequency, duration, and magnitude of flood events in the San Francisco Bay and Sacramento-San Joaquin Delta (Bay-Delta) area that borders the western edge of the City. Given a 1-foot rise in sea level, as predicted in low-end sea level rise projections, the occurrence of a 100-year storm surge-induced flood event would shift to once every 10 years. In other words, the frequency of a 100-year event could increase tenfold. Sea level rise and the associated increases in flood events would place greater strain on existing levee systems and could expand floodplains affecting the City. In addition to the pressure resulting from sea level rise, climate change is anticipated to result in increased severity of winter storms, particularly in El Niño years. Such weather events will result in higher levels of seasonal flooding than those currently experienced. Such changes in weather events will further strain levees and increase floodplain areas (City of Elk Grove 2016b).

Surface Water Quality

Section 303(d) of the federal Clean Water Act establishes the total maximum daily load (TMDL) process, which requires states to identify waters whose water quality is "impaired" (affected by the presence of pollutants or contaminants), and to establish a TMDL or the maximum quantity of a particular contaminant that a water body can assimilate without experiencing adverse effects on the waterbody's identified beneficial uses. The 303(d) list, approved by the EPA, identifies these impaired water bodies. According to the most recent 303(d) list, Elder, Elk Grove, and Morrison creeks are designated as impaired water bodies for various pesticides and sediment toxicity, resulting from urban runoff, agriculture, and unknown sources. The segment of the Sacramento River west of the Planning Area is listed for diazinon and mercury. The Delta waterways (northern portions), which are the downstream receiving waters for the Sacramento River, are designated as impaired water bodies. The upper Cosumnes River (above Michigan Bar) is listed for invasive species from an unknown source, and Deer Creek in Sacramento County is listed for iron from an unknown source (SWRCB 2010).

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Surface Water Use

The Sacramento County Water Agency (SCWA) manages water supplies in the greater Sacramento area. These supplies consist of surface water, groundwater, recycled water, and purchased water. The SCWA relies fully on local water supplies with no use of imported water. Water programs utilized to maximize regional supply reliability include the Water Forum Agreement, to which SCWA is a signatory. The coequal objectives of the Water Forum Agreement are to (1) provide a reliable and safe water supply for the region's economic health and planned development through the year 2030; and (2) preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River. The Water Forum Agreement contains seven major elements to meet its objectives, including purveyor-specific agreements.

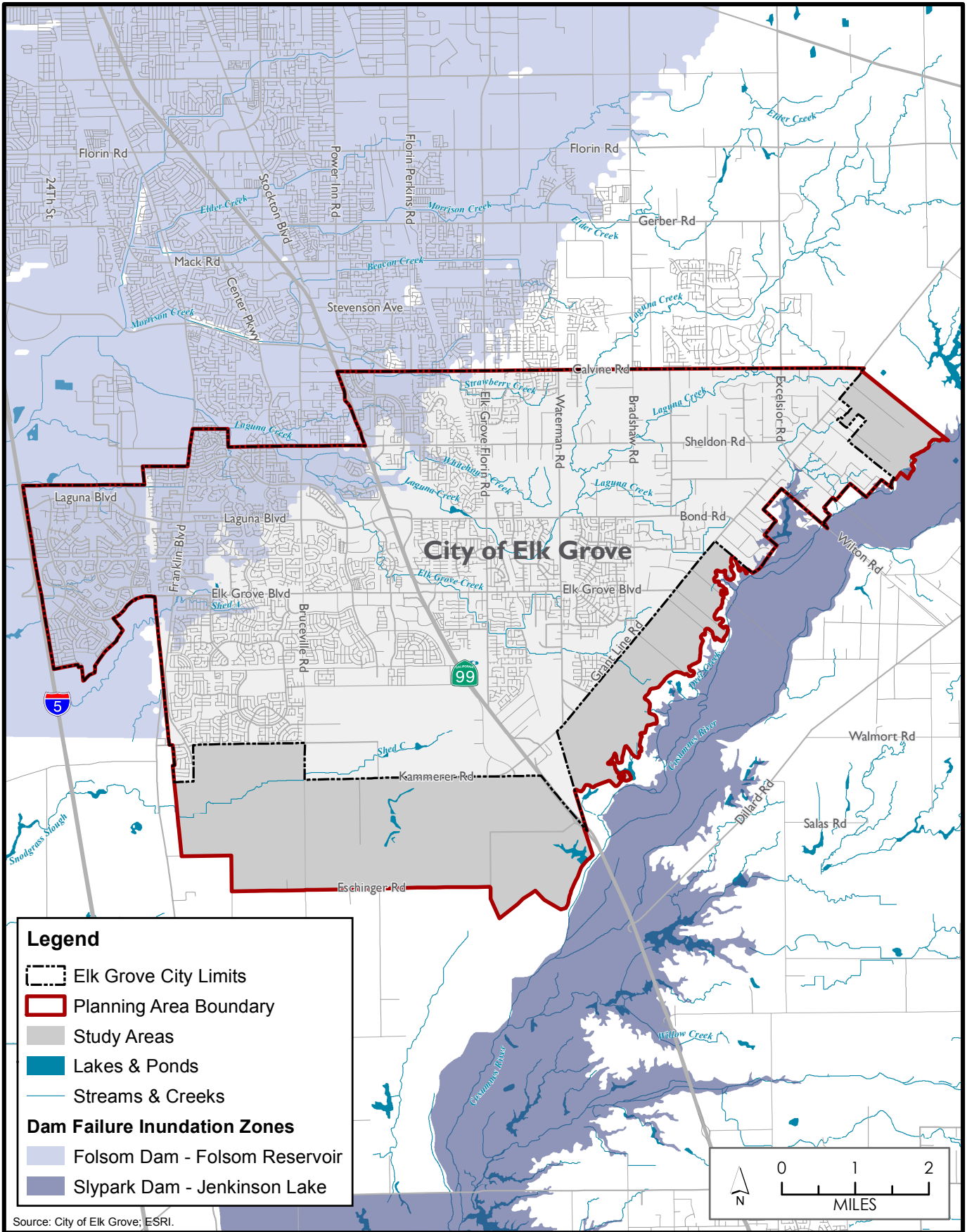
Climate change is anticipated to have an impact on water demands and supplies. A quantitative vulnerability assessment prepared by the Regional Water Authority and included in the American River Basin Integrated Regional Water Management Plan evaluated the effects on both surface water and groundwater. The quantitative assessment indicates that surface water supplies would be reduced and would be mostly associated with reduced diversions from the American River. Planned actions to address vulnerabilities from the climate change assessment include decreasing urban per capita water demand and continuing current efforts such as implementing conjunctive use management, recycled water use, and interconnections between adjacent water purveyors (SCWA 2016, Section 6.11). Additional information on surface water use and supply and related water supply planning considerations is presented in Section 5.12, Public Utilities.

GROUNDWATER

Hydrogeology

The Central Valley of California contains the largest basin-fill aquifer system in the State. From north to south, the aquifer system is divided into the Sacramento Valley, Sacramento-San Joaquin Delta, and the San Joaquin Valley subregions. The City is situated within the Sacramento Valley Groundwater Basin, South American Subbasin. Within the larger South American Subbasin, there are three groundwater basins—North, Central, and South—in Sacramento County; the Planning Area overlies the Central Basin. The Central Basin also includes areas of Sacramento County and the City of Sacramento, surrounding the Planning Area. Groundwater in the Central Basin generally occurs in a shallow aquifer zone (Laguna or Modesto Formation) or in an underlying deeper aquifer zone (Mehrtens Formation). There is some potential for movement of groundwater between the two aquifers, usually the result of heavy groundwater pumping, and the effects on groundwater levels are a function of whether the pumping occurs in the shallow aquifer or the deeper aquifer.

Groundwater in the Planning Area moves from sources of recharge to areas of discharge. Recharge to the local aquifer system occurs along active river and stream channels where extensive sand and gravel deposits exist, particularly along the American, Cosumnes, and Sacramento River channels. Additional recharge occurs along the eastern boundary of Sacramento County at the transition point from the consolidated rocks of the Sierra Nevada to the alluvial deposited basin sediments. This typically occurs through fractured granitic rock that makes up the Sierra Nevada foothills. Other sources of recharge in the area include deep percolation from applied surface water, precipitation, and small streams.



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Groundwater Levels

Changes in the groundwater surface elevation result from changes in groundwater recharge, discharge, and extraction.

Intensive groundwater extraction from the South American Subbasin has, in the past, resulted in a general lowering of groundwater elevation. Most of these decline areas are on the eastern side of the subbasin, close to where multiple groundwater remediation programs have been established to address past practices of disposing of chemical constituents that are harmful to drinking water supplies. There is a groundwater level decline in the southeast part of the subbasin near where Deer Creek flows out of the foothills into the Central Valley. This decline is also due to remediation activities, reductions in minimum discharge requirements of El Dorado Irrigation District's wastewater discharge flowing into the Deer Creek watershed, and State drought conditions reducing the total base flow of Deer Creek in 2015.

Decline areas along the Cosumnes River are a direct result of drought conditions and less total available water for recharge from flows down the Cosumnes River to the Delta and from water held back for recharge via temporary flash dams. Groundwater in this portion of the basin is reliant on Cosumnes River recharge, and local agricultural practices are in place to capture as much water as possible for recharge purposes during late spring of each year. This decline area is expected to recover, and has shown past resilience with the return of wet year conditions.

Decline areas in the Cosumnes Subbasin to the south are the result of reliance on groundwater by growing water demands in municipal, agriculture, and aquaculture uses, and have been exacerbated by the drought's impact on Cosumnes River flows. The level of groundwater level decline in the Cosumnes Subbasin and impacts to the South American Subbasin have not risen to the level of an undesirable effect. The annual average storage loss in the decline areas is calculated to be 11,000 acre-feet per year (AFY).

A recharged area in the western portion of the South American Subbasin, underlying the City and surrounding areas, is the result of in-lieu recharge from the construction of large conjunctive use and surface water infrastructure facilities; fallowing and urban development of historically irrigated agricultural lands; 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.

A recharged area underlying the American River near the City of Sacramento's Fairbairn Water Treatment Plant and Diversion Structure has occurred likely because of a long-term average increase in flows in the lower American River, with the filling of a cone of depression in that area between 2005 and 2015. The overall gain in storage, based on the recharged areas only within the South American Subbasin, is approximately 66,000 AF. The average annual storage increase over these recharged areas totals 7,000 AFY.

The difference in total annual average change in storage over the 2005 to 2015 timeframe is calculated to be approximately 4,000 AFY. This equates to 4 to 5 large municipal wells in the subbasin, and 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.

Groundwater sustainability has existed since the mid-1980s when recovery of the basin began after a period of overdraft (i.e., when more groundwater is extracted than is replaced). Between 2005 and 2015, the basin continues to recover at its deepest points (SCGA 2016, pp. ES-8–ES-9).

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Groundwater Supply and Use

Groundwater Management

The City does not directly manage groundwater supplies. The Sacramento Central Groundwater Authority (SCGA) manages groundwater in the Central Basin portion of the South American Subbasin. The SCGA was formed in 2006 through a joint powers agreement signed by the cities of Elk Grove, Folsom, Rancho Cordova, and Sacramento, and Sacramento County. Among its many purposes, the SCGA is responsible for managing the use of groundwater in the Central Basin to ensure long-term sustainable yield, and facilitating a conjunctive use program. The framework for maintaining groundwater resources in the Central Basin is the SCWA Groundwater Management Plan, which includes specific goals, objectives, and an action plan to manage the basin. The plan also prescribes a well protection program to protect existing private domestic well and agricultural well owners from declining groundwater levels resulting from increased groundwater pumping due to new development in the basin (SCWA 2016).

The Sustainable Groundwater Management Act enacted by the State legislature in 2014, with subsequent amendments in 2015, directs the DWR to identify groundwater basins and subbasins in conditions of critical overdraft. Neither of the two subbasins that supply the SCWA are on the list issued by DWR in 2015. Groundwater basins designated as high or medium priority and critically overdrafted must be managed under a groundwater sustainability plan by January 31, 2020. All other high- and medium-priority basins must be managed under such a plan by January 31, 2022. The two subbasins that supply the SCWA are covered by the latter deadline. The act also requires formation of groundwater sustainability agencies. The SCGA is currently in discussions with other groundwater basin users of the South American Subbasin to evaluate options for management of the basin to meet agency and groundwater sustainability plan requirements (SCWA 2016).

The Sustainable Groundwater Management Act also authorizes a groundwater management agency in a basin compliant with the California Statewide Groundwater Elevation Monitoring program to prepare an "Alternative" to a groundwater sustainability plan. The SCGA submitted a Final Draft South American Subbasin Alternative Submittal document to the DWR for review in December 2016 (SCGA 2016). As of March 2018, DWR has not made a decision on the adequacy of the Alternative Submittal (SCGA 2018: Section 2.2).

The SCGA has prepared an annual report describing groundwater conditions in the South American Subbasin for the 2017 Water Year (i.e., inclusive of months October 2016 to September 2017) in support of its pending Alternative Submittal, described above. The report is intended to convey monitoring and water use data to gauge performance of the groundwater subbasin relative to the sustainability goal set forth in the Alternative Submittal. Total groundwater extractions for the 2017 water year were estimated to be approximately 219,193 AF. Relative to the Alternative Submittal, data show an improvement in groundwater conditions throughout the subbasin and a marked increase in total groundwater storage in the subbasin. As stated in the annual report, subbasin conditions continue to show sustainability in areas of active management, including significant improvements to the Elk Grove cone of depression (SCGA 2018).

Under the Water Forum Agreement, the long-term average annual pumping from the Central Basin is limited to 273,000 AFY. Monitoring and data analysis by the SCGA indicate that subbasin operations from 2005 through 2017 have not exceeded the sustainable yield conditions set forth in the Water Forum Agreement. Groundwater production in the South American Subbasin has varied from a low of approximately 202,300 AFY in 2011 to a high of 260,200 AFY in 2008, with

agriculture the primary water use sector accounting for approximately 65 percent of extractions (SCGA 2016, Section 2.3.1; SCGA 2018: Section E.7).

Groundwater Supply and Demand Projections

Three water purveyors provide service to the Planning Area: the SCWA, Elk Grove Water District (EGWD), and Omochumne-Hartnell Water District. Only the SCWA and EGWD extract groundwater as part of their supplies.

Sacramento County Water Agency

Groundwater is a component of SCWA's water supply portfolio and consists of both groundwater from its wells and remediated groundwater that is extracted by others.¹ Although the Water Forum Agreement establishes a limit on the Central Basin's pumping amount, it does not assign or allocate a specific groundwater pumping amount for SCWA in the Central Basin. Groundwater pumping by the SCWA in the larger South American Subbasin between 2011 and 2015 has decreased from a high of approximately 34,600 AFY in 2011 to approximately 24,600 AFY in 2015 (SCWA 2016, Table 6-2). This amount is approximately 10 percent, on average, of the Water Forum Agreement limit for the entire Central Basin.

The SCWA 2015 Urban Water Management Plan (UWMP) (2016, Table 6-12) provides projections of "reasonably available" groundwater volume, based on groundwater supply capacity, with safe yield not quantified. For 2020 and 2025, the reasonably available groundwater volume is projected to be 47,000 AFY, increasing to 52,000 AFY in 2030, and 62,000 AFY in 2035 and 2040. The remediated supply (8,900 AFY) is the same through the planning period, but the SCWA may vary the amount.

Even though the surface water supplies are not available consistently, the SCWA has available groundwater supplies to meet future demand for its existing service area boundary and, during dry years, can replace the reduction in surface water supplies (SCWA 2016, Section 7.1). While groundwater is more consistently available over different climate year types, it has been constrained by groundwater contamination plumes, some naturally occurring contaminants, and the long-term need to not exceed the safe yield.

Elk Grove Water District

The EGWD provides service to residents and businesses for an approximately 13-square-mile area in the current City limits. The Sheldon/Rural Area Community Plan and Eastern Elk Grove Community Plan areas are in the eastern part of the EGWD service area boundary.

The EGWD's service area is separated into two subareas. Service Area 1 relies entirely on groundwater from seven wells and a potable groundwater treatment plant owned by the EGWD (Railroad Street Treatment and Storage Facility). Service Area 2 is served by water purchased from the SCWA, which delivers both surface water and groundwater from its

¹ SCWA has a remediated groundwater supply of 8,900 AFY in accordance with the terms and conditions in the agreement entitled "Agreement between Sacramento County, SCWA, and Aerojet-General Corporation with Respect to Transfer of GET Water" dated May 18, 2010. The remediated groundwater is pumped from the northern portion of the South American Subbasin and discharged into the American River from Aerojet's Groundwater Extraction and Treatment (GET) facilities in the Rancho Cordova area that are used for groundwater cleanup operations. This remediated groundwater supply is diverted by the SCWA from the Sacramento River at Freeport along with SCWA's surface water supplies.

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conjunctive use operations; but as a matter of practice, water served to customers in Service Area 2 is almost entirely derived from SCWA's production wells (EGWD 2016, p. 3-1).

The EGWD covers approximately 3 percent of the entire Central Basin. Taking into account the Groundwater Management Plan's overall estimated sustainable groundwater yield of 273,000 AFY, the EGWD has 9,168 AFY of groundwater available within its service area. In 2015, the district supplied 5,312 acre-feet of water, 1,914 of which was supplied by the SCWA and 3,398 of which was produced from the EGWD's groundwater wells. The EGWD projects that total demand for both service areas would increase from 7,694 AFY in 2020 to 8,059 AFY in 2040, and that there would be sufficient water to meet current needs and anticipated future demand. The EGWD assumed the majority of growth resulting in future demand would be in Service Area 2 (EGWD 2016, Table 4-5, Table 4-6, p. 4-10 and p. 4-12).

Groundwater Quality

The groundwater quality in the South American Subbasin is generally good, although iron and manganese are common and there are some occurrences of arsenic and nitrate. 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 (which is known to occur naturally in aquifer sediments) and nitrate. 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. The lower aquifer system contains higher concentrations of iron, manganese, and total dissolved solids (TDS), and wells that pump from the lower aquifer often require treatment for iron and manganese. Most of the SCWA's Zone 40 wells have iron and manganese treatment facilities. Principal groundwater contaminant plumes within the South American Subbasin emanate from source areas including Mather Field, Aerojet, Boeing, the former Army Depot, and various landfills. The presence of these contaminant plumes has impacted some existing municipal wells. Significant remediation efforts/programs by federal, State, and local government agencies are in progress to clean up the contaminated groundwater and confine the contaminant plumes from further spreading. Currently, remediated groundwater is discharged into natural water bodies and flows out of the South American Subbasin, as noted above. There are ongoing discussions and negotiations between purveyors and parties responsible for the cleanup to keep the remediated groundwater in the South American Subbasin and put it to beneficial use (SCWA 2016).

Climate Change

Climate change is anticipated to have an impact on groundwater. Groundwater stores are directly linked to surface water in Sacramento County and snowmelt in the Sierra Nevada; therefore, increased average temperatures and changes in the timing, amounts, and snow/rain form of precipitation could affect local aquifer recharge for groundwater supplies. Groundwater use typically increases during droughts. With the potential for precipitation patterns to become more erratic and less predictable, groundwater may become a more significant resource as part of an overall water supply portfolio. Due to increased uncertainty in the amount and timing of water availability and the stress placed on aquifers during droughts, there may be increased challenges in providing adequate groundwater supplies to meet future demand (Ascent Environmental 2017).

A quantitative vulnerability assessment prepared by the Regional Water Authority and included in the American River Basin Integrated Regional Water Management Plan evaluated the effects on both surface water and groundwater and identified the need for increased groundwater pumping to meet urban and agricultural demands. The long-term average groundwater

pumping in the Central Basin would increase by 6 percent. Groundwater elevations would decrease from 6 to 15 feet from the baseline condition in SCWA's service area (SCWA 2016, Section 6.11).

5.9.2 REGULATORY FRAMEWORK

FEDERAL

Clean Water Act

The Clean Water Act (CWA) regulates the discharge of pollutants into watersheds throughout the nation.

Sections 401 and 404

Sections 401 and 404 of the CWA are administered through the regulatory program of the US Army Corps of Engineers and regulate the water quality of all discharges of fill or dredged material into waters of the United States, including wetlands and intermittent stream channels. Additional information on Sections 401 and 404 of the CWA is provided in Section 5.4, Biological Resources.

Section 402 – National Pollutant Discharge Elimination System

As authorized by Section 402(p) of the CWA, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The State Water Resources Control Board (SWRCB) issues NPDES permits to cities and counties through the Regional Water Quality Control Boards (RWQCB). It is the responsibility of the RWQCBs to preserve and enhance the quality of the State's waters by developing water quality control plans and issuing waste discharge requirements. Waste discharge requirements for discharges to surface waters also serve as NPDES permits.

Section 303 – List of Impaired Water Bodies

CWA Section 303(d) requires that all states in the United States identify water bodies that do not meet specified water quality standards and that do not support intended beneficial uses. Identified waters are placed on the Section 303(d) List of Impaired Water Bodies. Once waters are placed on this list, states are required to develop TMDLs limit for each water body and each associated pollutant/stressor.

National Flood Insurance Program

FEMA oversees floodplains and administers the National Flood Insurance Program (NFIP). Special flood hazard areas (those subject to inundation by a 100-year flood) are identified by FEMA through regulatory flood maps called FIRMs. Participants in the NFIP must satisfy certain mandated floodplain management criteria. The City, along with Sacramento County, participates in the NFIP and implements the program requirements, which include regulations for development in floodplains, through Chapter 16.50 of the Municipal Code.

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STATE

Porter-Cologne Water Quality Control Act

In 1969, the California legislature enacted the Porter-Cologne Water Quality Control Act to preserve, enhance, and restore the quality of the State's water resources. The act established the SWRCB and nine RWQCBs as the principal State agencies with the responsibility for controlling water quality in California. Under the act, water quality policy is established, water quality standards are enforced for both surface water and groundwater, and discharges of pollutants from point and nonpoint sources are regulated. The SWRCB is responsible for implementing the CWA and issues NPDES permits to cities and counties through the RWQCBs. The Planning Area is located in a portion of the State that is regulated by the Central Valley RWQCB.

Under CWA Section 303(d) and the Porter-Cologne Water Quality Control Act, the State of California is required to establish beneficial uses of State waters and to adopt water quality standards to protect those beneficial uses. The Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin (Basin Plan), prepared by the Central Valley RWQCB, establishes water quality objectives and implementation programs to meet stated objectives and to protect the beneficial uses of water in the Sacramento-San Joaquin River Basin. The Basin Plan requirements apply to the Sacramento River and its tributaries, such as the Cosumnes River and streams and creeks in and adjacent to the Planning Area.

Municipal Stormwater NPDES Permit

NPDES discharge requirements address waste discharge, such as stormwater, from municipal separate storm sewer systems (MS4s). The City jointly participates as an MS4 permittee, together with Citrus Heights, Folsom, Galt, Rancho Cordova, Sacramento, and the County of Sacramento. NPDES permit terms are five years. The current region-wide permit (Order No. R5-2016-0040) adopted by the Central Valley RWQCB in June 2016 allows each permittee to discharge urban runoff from MS4s in its respective municipal jurisdiction, and requires Phase I MS4 permittees to enroll under the region-wide permit as their current individual permits expire. Regional MS4 permit activities are managed jointly by the Sacramento Stormwater Quality Partnership, which consists of the seven jurisdictions covered by the permit.

Under the permit, each permittee is also responsible for ensuring that stormwater quality management plans are developed and implemented that meet the discharge requirements of the permit.² Under the 2016 permit, measures should be included in the stormwater quality management plan that demonstrate how new development would incorporate low-impact development (LID) design in projects. The new permit also includes requirements for addressing TMDLs. The City's Department of Public Works is responsible for ensuring its specific MS4 permit (Order No. R5-2016-0040-005) requirements are implemented. Compliance with the MS4 permit is regulated through Chapter 15.12 of the City's Municipal Code.

Construction General Permit

The SWRCB has adopted a General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (CAS000002, Waste

² The most recent stormwater quality improvement plan was prepared by the Sacramento Stormwater Quality Partnership in 2009 and approved by the RWQCB. The MS4 General Permit requires the continued implementation of the permittees' 2009 plan and the associated annual work plans. The City submitted a 3-year Work Plan (2016-2019) with its Notice of Intent in November 2016 to augment the 2009 annual work plan.

Discharge Requirements, Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and Order 2012-0006-DWQ). The Construction General Permit applies to any construction activity affecting 1 acre or more. The focus of the permit is to minimize the potential effects of construction runoff on receiving water quality. The permit requires preparation of a stormwater pollution prevention plan (SWPPP) that identifies best management practices (BMPs) describing erosion control measures.

Project proponents are required to submit a Notice of Intent, a site map, a signed certification statement, an annual fee, and an SWPPP. The permit program is risk-based, wherein a project's risk is based on the project's potential to cause sedimentation and the risk of such sedimentation on the receiving waters. A project's risk determines its water quality control requirements, ranging from Risk Level 1, which consists of only narrative effluent standards, implementation of BMPs, and visual monitoring, to Risk Level 3, which consists of numeric effluent limitations, additional sediment control measures, and receiving water monitoring. Additional requirements include compliance with post-construction standards focusing on low-impact development, preparation of rain event action plans, increased reporting requirements, and specific certification requirements for certain project personnel.

The SWPPP must include BMPs to reduce construction effects on receiving water quality by implementing erosion control measures and reducing or eliminating non-stormwater discharges. Examples of typical construction BMPs include using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; and installing sediment control devices such as gravel bags, inlet filters, fiber rolls, or silt fences to reduce or eliminate sediment and other pollutants from discharging to the drainage system or receiving waters.

Certain activities during construction may also need to conform to the Waste Discharge Requirements included in the General Order for Dewatering and Other Low Threat Discharges to Surface Waters (Water Quality Order No. 5-00-175). The Dewatering General Order requires that a permit be acquired for dewatering and other low threat discharges to surface waters, provided they do not contain significant quantities of pollutants and either: (1) are four months or less in duration, or (2) the average dry weather discharge does not exceed 0.25 million gallons per day (mgd). Activities that may require the acquisition of such a permit include well development, construction dewatering, pump/well testing, pipeline/tank pressure testing, pipeline/tank flushing or dewatering, condensate discharges, water supply system discharges, and other miscellaneous dewatering/low threat discharges. However, the actions applicable to site development may already be covered under the Construction General Permit, in which case a separate permit may not be required.

Industrial Stormwater General Permit

Stormwater discharges associated with industrial sites must comply with the regulations contained in the Industrial Stormwater General Permit (Order No. 2014-0057-DWQ).

Central Valley Flood Protection Act

SB 5, which became effective January 1, 2008, is one of several pieces of interrelated legislation comprising the Central Valley Flood Protection Act of 2008 (California Water Code Section 9600). SB 5 requires all cities and counties in the Sacramento-San Joaquin Valley to make findings related to an urban level of flood protection or the FEMA standard of flood protection before: (1) entering into a development agreement for any property that is located within a

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flood hazard zone; (2) approving a discretionary permit or other discretionary entitlement, or a ministerial permit that would result in the construction of a new residence, for a project that is located within a flood hazard zone; or (3) approving a tentative map, or a parcel map for which a tentative map was not required, for any subdivision that is located within a flood hazard zone.

As set forth in Section 65865.5 of the Government Code, the possible findings are:

- (1) The facilities of the State Plan of Flood Control or other flood management facilities protect the property to the urban level of flood protection in urban and urbanizing areas or the national Federal Emergency Management Agency standard of flood protection in nonurbanized areas.
- (2) The city or county has imposed conditions on the development agreement that will protect the property to the urban level of flood protection in urban and urbanizing areas or the national Federal Emergency Management Agency standard of flood protection in nonurbanized areas.
- (3) The local flood management agency has made adequate progress on the construction of a flood protection system that will result in flood protection equal to or greater than the urban level of flood protection in urban or urbanizing areas or the national Federal Emergency Management Agency standard of flood protection in nonurbanized areas for property located within a flood hazard zone, intended to be protected by the system. For urban and urbanizing areas protected by project levees, the urban level of flood protection shall be achieved by 2025.
- (4) The property in an undetermined risk area has met the urban level of flood protection based on substantial evidence in the record.

REGIONAL

Central Valley Flood Protection Plan

California Water Code Section 8710-8723 established the authority of the Central Valley Flood Protection Board (CVFPB) to regulate construction, maintenance, and protection of adopted plans of flood control that protect public lands from floods. Implementing regulations are set forth in Title 23 of the California Code of Regulations Section 112. Adopted plans of flood control include federal-State facilities of the State Plan of Flood Control, regulated streams, and designated floodways. The geographic extent of CVFPB jurisdiction includes the Central Valley, and all tributaries and distributaries of the Sacramento and San Joaquin Rivers, and the Tulare and Buena Vista basins. As required under the Central Valley Flood Protection Act of 2008, the CVFPB prepared a Central Valley Flood Protection Plan in 2012. A five-year update was adopted in August 2017.

As required by the flood management requirements in Government Code Section 65302(g), the City has incorporated CVFPP measures into the General Plan through the inclusion of urban level flood protection mapping, as well as through more extensive flood risk analysis, as described above.

Sacramento Area Flood Control Agency

The SAFCA was formed in 1989 through a joint powers agreement between the City of Sacramento, the County of Sacramento, the County of Sutter, the American River Flood Control District, and Reclamation District No. 1000 to address the Sacramento area's vulnerability to catastrophic flooding. SAFCA conducts flood control improvement projects such as levee enforcement and dam improvements.

SAFCA's mission is to provide the region with at least a 100-year level of flood protection as quickly as possible, while seeking a 200-year or greater level of protection over time. The SAFCA board of directors implemented a development fee program to ensure that new structures placed in the 200-year floodplain do not increase Sacramento's exposure to flood damages and the associated governmental costs. The fee program is intended to fund a series of flood risk reduction projects that will achieve the goal of at least a 200-year level of protection (SAFCA 2017).

Senate Bill 610 (California Water Code Section 10910) – Groundwater Supply Planning

Senate Bill 610 (Sections 10910 et seq. of the California Water Code) sets forth the circumstances in which CEQA lead agencies must seek preparation of, or prepare themselves, water supply assessments (WSAs) for certain types of proposed projects. The specific criteria for which project types require a WSA are defined in Section 10912. SB 610 functions together with CEQA, in that a WSA must be included in any environmental document for any project subject to SB 610, which includes negative declarations and draft and final EIRs. Additional information on SB 610 requirements are included in Section 5.12, Public Utilities, subsection 5.12.1, Water Service. If groundwater is a part of supply, pursuant to Section 10910, the WSA is required to provide an analysis of the sufficiency of groundwater from the basin from which a proposed project will be supplied to meet the projected demand associated with that project. The groundwater component of the WSA must include and consider information about groundwater sustainability plans or approved alternative, among other items.

Sustainable Groundwater Management Plan

As described above under the "Groundwater Management" subheading, the SCGA is currently in discussions with other groundwater basin users of the South American Subbasin to evaluate options for management of the basin to meet Sustainable Groundwater Management Act requirements (SCWA 2016). The Sustainable Groundwater Management Act also authorizes a groundwater management agency in a basin compliant with the California Statewide Groundwater Elevation Monitoring program to prepare an "Alternative" to a groundwater sustainability plan. The SCGA submitted a Final Draft South American Subbasin Alternative Submittal document to DWR for review in December 2016 (SCGA 2016). Approval is anticipated in 2018, but as of the date of publication of this Draft EIR, DWR had not yet approved the alternative submittal (SCGA 2018).

LOCAL

Sacramento County Storm Drainage Utility Zone 11A

Most of the City is within the boundaries of Zone 11A of the Sacramento County Storm Drainage Utility. The City participates in the regional trunk drainage development fee program, which is specific to Zone 11A. Under a development impact fee program administered by Sacramento County, development in Zone 11A pays a Beach Stone Lake volume mitigation fee held in a trust for a future project. The Sacramento County Department of Water Resources pays flood insurance premiums for many homes in this floodplain from interest earned on funds held in the account.

Sacramento County Water Agency Zone 40

The SCWA created Zone 40 through Resolution No. 663 in May 1985. The purpose of Zone 40 is the acquisition, construction, maintenance, and operation of facilities for the production, conservation, transmittal, distribution, and sale of groundwater and surface water for the present

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and future beneficial use of the lands or inhabitants in the zone. The boundaries and scope of Zone 40's activities also include the use of recycled water in conjunction with groundwater and surface water. Most of the Planning Area is within Zone 40. The Zone 40 Water Supply Master Plan, adopted in 2005, provides a plan of water management alternatives to be implemented and revised as availability and feasibility of water supply sources change in the future. The Zone 40 Groundwater Management Plan is a planning tool that assists the SCWA in maintaining a safe, sustainable, and high-quality groundwater resource for users of the groundwater basin underlying Zone 40. Section 5.12, Public Utilities, provides additional information regarding water supply and delivery.

City of Elk Grove Development Standards

Stormwater Management and Discharge Control Ordinance

Municipal Code Chapter 15.12 provides authority to the City for inspection and enforcement related to control of illegal and industrial discharges to the City storm drainage system and local receiving waters. It also addresses the requirement for BMPs and regulations to reduce pollutants in the City's stormwater.

Land Grading and Erosion Control Ordinance

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 to ensure compliance with the City's NPDES permit. The Chapter requires that prior to grading activities, a detailed set of plans be developed that include measures to minimize erosion, sediment, and dust created by development activities.

Flood Damage Prevention

Municipal Code Chapter 16.50 regulates development in flood-prone areas through specific siting and design requirements consistent with FEMA regulations.

Flood Combining District

As required by the CVFPP flood management requirements, the City has incorporated related measures into Title 23 of its Municipal Code. Section 23.42.040 establishes a flood (F) combining district comprising all known land covered by rivers, creeks, and streams and land subject to flooding within the City. For certain regulations and standards, the district is divided into three components: F 100 corresponding to the 100-year floodplain; F 200 corresponding to the 200-year floodplain; and F 100/200 corresponding to the area overlapped by both the 100-year and 200-year floodplain. This section also identifies specific restrictions (e.g., buildings and structures) and development standards. Section 23.42.040.E (Findings) specifically incorporates Government Code Section 65007(n) concerning urban level of flood protection for the 200-year floodplain.

City of Elk Grove Storm Drainage Master Plan

The City's comprehensive SDMP identifies drainage concepts for upgrading the existing storm drainage and flood control collection system. The SDMP identifies and analyzes 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 existing General Plan, and establishes

criteria for selecting and prioritizing projects. The SDMP may also be utilized for the development of a capital drainage financing program (City of Elk Grove 2011).

5.9.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following CEQA Guidelines Appendix G thresholds of significance. A project is considered to have a significant effect on the environment if it will:

- 1) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water or groundwater quality.
- 2) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- 3) 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 which would result in substantial erosion or siltation on- or off-site.
- 4) 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 flooding on- or off-site.
- 5) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- 6) Conflict with or obstruction implementation of water quality control plan or sustainable groundwater management plan.
- 7) Place housing 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.
- 8) Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- 9) 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.
- 10) Inundation by seiche, tsunami, or mudflow.

In the event of dam failure, Folsom Dam and Sly Park Dam have the potential to cause flooding in the Planning Area, as shown in **Figure 5.9-4**. Flooding from Folsom Dam would affect existing development in the northwestern part of the City, which is already urbanized. The US Army Corps of Engineers is completing improvements to the Folsom Dam spillway on the American River to help reduce downstream flood risk. Flooding from Sly Park Dam would generally follow the Cosumnes River and would only affect a small area located between the North and East Study Areas. The potential for flooding from failure of either Folsom Dam or Sly Park Dam would not be

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exacerbated by the Project. Therefore, this issue (Standard of Significance 9) as it relates to flooding due to dam failure is not subject to further analysis in this Draft EIR.

Section 1.0, Introduction, of this Draft EIR identifies that the proposed Project would result in no impacts related to inundation by seiche, tsunami, and mudflow. Therefore, this issue (Standard of Significance 10) is not addressed further in the Draft EIR.

METHODOLOGY

Drainage, Stormwater Runoff, and Water Quality

The evaluation of surface water and groundwater quality impacts is qualitative and is based on a review of development assumptions for the Planning Area in the context of existing drainage and water quality management programs, policies, permits, and regulations.

Flood Hazard

Flood hazard impacts are evaluated qualitatively based on FEMA FIRMs for 100-year flood hazards, the City's 200-year flood mapping prepared in accordance with State law, and review of the Land Use Diagram, General Plan policies, and Municipal Code regulations.

Groundwater

The analysis of impacts on groundwater is based on a water demand estimate (see Impact 5.12.1.1 in Section 5.12, Public Utilities) and review of the SCWA's 2015 UWMP, Zone 40 Groundwater Management Plan, Water Forum Agreement, and the SCGA plan for the South American Subbasin. Additional information is provided in Section 5.12, Public Utilities.

General Plan Policies and Standards

The proposed Project contains the following policies and standards for managing future development in the City to protect hydrology and water quality.

Policy NR-3-1: Ensure that the quality of water resources (e.g., groundwater, surface water) is protected to the extent possible.

Policy NR-3-2: Integrate sustainable stormwater management techniques in site design to reduce stormwater runoff and control erosion.

Standard NR-3-2.a: Where feasible, employ on-site natural systems such as vegetated bioswales, living roofs, and rain gardens in the treatment of stormwater to encourage infiltration, detention, retention, groundwater recharge, and/or on-site water reuse.

Policy NR-3-3: Implement the City's National Pollutant Discharge Elimination System permit through the review and approval of development projects and other activities regulated by the permit.

Policy NR-3-4: Ensure adequate water supply is available to the community by working with water providers on facilities, infrastructure, and appropriate allocation.

- Policy NR-3-5:** Continue to coordinate with public and private water users, including users of private wells, to maintain and implement a comprehensive groundwater management plan.
- Policy ER-2-1:** Oppose the construction of flood management facilities that would alter or reduce flows in the Cosumnes River and support retention of the Cosumnes River floodplain in nonurban uses consistent with location in an area subject to flooding.
- Policy ER-2-2:** Require that all new projects not result in new or increased flooding impacts on adjoining parcels or on upstream and downstream areas.
- Policy ER-2-3:** 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 ER-2-4:** Relocate or harden existing essential government service facilities and essential health care facilities that are currently located inside of 100-year and 200-year flood hazard zones.
- Policy ER-2-5:** Give priority to the designation of appropriate land uses in areas subject to flooding to reduce risks to life and property. Construction of new flood management projects shall have a lower priority, unless land use controls (such as limiting new development in flood-prone areas) are not sufficient to reduce hazards to life and property to acceptable levels.
- Policy ER-2-6:** Development shall not be permitted on land subject to flooding during a 100-year event, based on the most recent floodplain mapping prepared by FEMA or updated mapping acceptable to the City of Elk Grove. Potential development in areas subject to flooding may be clustered onto portions of a site which are not subject to flooding, consistent with other policies of this General Plan.
- Policy ER-2-7:** A buildable area outside the 100-year floodplain must be present on every residential lot sufficient to accommodate a residence and associated structures. Fill may be placed to create a buildable area only if approved by the City and in accordance with all other applicable policies and regulations. The use of fill in the 100-year floodplain to create buildable area is strongly discouraged and shall be subject to review to determine potential impacts on wildlife, habitat, and flooding on other parcels.
- Policy ER-2-8:** 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, identified in Figure 8-2 [of the General Plan], unless it meets one or more established flood protection findings. Findings shall be based on substantial evidence, and substantial evidence necessary to determine findings shall be consistent with criteria developed by DWR.
- The four potential findings for a development project within the 200-year floodplain, as shown on Figure 8-2, are: 1) the project has an urban level of

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flood protection from flood management facilities that is not reflected in the most recent map of the 200-year floodplain; 2) conditions imposed on the project will provide for an urban level of flood protection; 3) adequate progress has been made toward construction of a flood protection system to provide an urban level of flood protection for the project, as indicated by the Central Valley Flood Protection Board; or 4) the project is a site improvement that would not result in the development of any structure, and would not increase risk of damage to neighboring development or alter the conveyance area of a watercourse in the case of a flood.

- Policy ER-2-9:** Ensure common understanding and consistent application of urban level of flood protection criteria and conditions.
- Policy ER-2-10:** Work with regional, county, and State agencies to develop mechanisms to finance the design and construction of flood management and drainage facilities to achieve an urban level of flood protection in affected areas.
- Policy ER-2-11:** Vehicular access to the buildable area of all parcels must be at or above the 10-year flood elevation.
- Policy ER-2-12:** Creation of lots whose access will be inundated by flows resulting from a 10-year or greater storm shall not be allowed. Bridges or similar structures may be used to provide access over creeks or inundated areas, subject to applicable local, State, and federal regulations.
- Policy ER-2-13:** Discourage the number of crossings over natural creeks to reduce potential flooding and access problems.
- Policy ER-2-14:** Parcels should not be created where any of the parcel's access or preservation 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 ER-2-15:** Where necessary due to clear dangers to life or property, the City will support the construction of flood hazard management projects.
- Policy ER-2-16:** New and modified bridge structures shall not cause an increase in water surface elevations of the 100-year floodplain exceeding 1 foot, unless analysis clearly indicates that the physical and/or economic use of upstream property will not be adversely affected.
- Policy ER-2-17:** 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.
- Policy ER-2-18:** Drainage facilities should be properly maintained to ensure their proper operation during storms.
- Policy ER-6-8:** Continue to participate in the Sacramento Stormwater Quality Partnership to educate and inform the public about urban runoff pollution, work with

industries and businesses to encourage pollution prevention, require construction activities to reduce erosion and pollution, and require developing projects to include pollution controls that will continue to operate after construction is complete.

Policy INF-1-1: Water supply and delivery systems shall be available in time to meet the demand created by new development, or shall be assured through the use of bonds or other sureties to the City's satisfaction.

Policy INF-2-3: Reduce the potential for health problems and groundwater contamination resulting from the use of septic systems.

Policy INF-2-4: Residential development on lots smaller than 2 gross acres shall be required to connect to public sewer service, except in the Rural Area.

Policy INF-2-5: Independent community sewer systems shall not be established for new development.

Policy LU-5-12: Integrate sustainable stormwater management techniques in site design to reduce stormwater runoff and control erosion.

Standard LU-5-12.a: Where feasible, require on-site natural systems such as vegetated bioswales, green roofs, and rain gardens in the treatment of stormwater to encourage infiltration, detention, retention, groundwater recharge, and/or water reuse on-site.

PROJECT IMPACTS AND MITIGATION MEASURES

Water Quality (Standards of Significance 1 and 3)

Impact 5.9.1 Implementation of the proposed Project would result in future development in the Planning Area that would involve construction-related activities that could expose soil to erosion during storm events, causing degradation of water quality. Urban runoff from new projects in the Planning Area post-construction could also contribute pollutants that could affect surface water or groundwater quality. This is a **less than significant** impact.

Construction Water Quality Impacts

Construction activities associated with development of future projects in the Planning Area would include grading, demolition, and vegetation removal, which would disturb and expose soils to water erosion, increasing the amount of silt and debris entering downstream waterways. In addition, refueling and parking of construction equipment and other vehicles on project sites during construction could result in oil, grease, or related pollutant leaks and spills that may discharge into storm drains. Improper handling, storage, or disposal of fuels and materials or improper cleaning of machinery close to the on-site drainage canal could degrade water quality.

Operational Water Quality Impacts

Future development under the proposed Project would result in additional urbanization in the Planning Area. Direct surface water quality impacts could occur from the following general land use activities:

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- Residential: Maintenance of yards associated with the use of fertilizers, herbicides, and pesticides, driveways (parked vehicles and car washing), roadways (vehicle operation), and pet care.
- Commercial/Industrial/Community: Stormwater runoff from parking lots and outdoor storage areas, maintenance of landscaped areas including the use of fertilizers, herbicides, and pesticides, and motor vehicle operation and maintenance.
- Recreation/Education: Maintenance of parks and playfields associated with the use of fertilizers, herbicides, and pesticides, and motor vehicle operation and maintenance.

Runoff typically contains oils, grease, fuel, antifreeze, and byproducts of combustion (such as lead, cadmium, nickel, and other metals), as well as nutrients, sediments, and other pollutants. Additionally, animal waste from pets (e.g., dogs and cats) could lead to fecal contamination of water sources. Precipitation during the early portion of the wet season (December to April) displaces these pollutants into stormwater runoff, resulting in high pollutant concentrations in the initial wet weather runoff. This initial runoff, containing peak pollutant levels, is referred to as the “first flush” of storm events. It is estimated that during the rainy season, the first flush of heavy metals and hydrocarbons would occur during the first 5 inches of seasonal rainfall.

Development in portions of the Planning Area that are largely undeveloped would substantially increase the impervious surface area, thus increasing runoff flow rates (see Impact 5.9.2). This could result in an increase of such urban runoff pollutants, first flush roadway contaminants, and nutrients (e.g., fertilizers) and other chemicals. These constituents could result in water quality impacts to on- and off-site drainage flows to area waterways. Conversely, conversion of agricultural lands to urban uses with limited landscaping could result in an overall reduction of fertilizers, pesticides, and animal waste in runoff entering downstream waterways.

Existing Regulations and Standards and Proposed General Plan Policies That Provide Mitigation

Construction

Individual development projects in the Planning Area would be required to comply with Chapter 16.44 of the Elk Grove Municipal Code, which requires implementation of measures to minimize erosion, sediment, dust, and other pollutant runoff created by improvement activities. Individual development projects that would disturb 1 acre or more would also be required to obtain coverage under the State’s Construction General NPDES permit, which requires projects to develop and implement a SWPPP that includes BMPs and requires inspections of stormwater control structures and pollution prevention measures. Examples of typical construction BMPs include using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as straw bales or plastic, to minimize the amount of uncontrolled runoff that could enter drains or surface water. The discharger must also install structural controls, such as sediment control, as necessary, which would constitute best available technologies to achieve compliance with water quality standards. Compliance with these requirements would ensure that site development activities do not result in the movement of unwanted material into waters within or outside the Planning Area.

Operation

The City implements a stormwater quality program to preserve and improve water quality in its natural waterways, which includes ongoing compliance with the joint MS4 NPDES permit, stream maintenance, permit inspections and construction compliance, and collaboration with the other joint permittees in the Sacramento Stormwater Quality Partnership. The partnership educates and informs the public about urban runoff pollution, encourages public participation in cleanup events, works with industries and businesses to encourage pollution prevention, and requires development projects to implement construction and post-construction pollution controls. Drainage plans for future development projects must be designed to provide flood protection and mitigation, stormwater quality treatment, and hydromodification mitigation.

Potential impacts to water quality from construction and operation activities would be addressed through the existing requirements of the State's Construction General Permit, Municipal Code Chapter 16.44, and the MS4 permit. These regulations require the use of effective construction phase, source control, and treatment control BMPs that include site preparation, runoff control, sediment retention, and other similar measures. The effectiveness of BMPs would be ensured through routine City inspections and monitoring and reporting to the RWQCB, as directed under General Plan Policy NR-3-3. In addition, several policies address requirements for water quality protection through the use of stormwater runoff controls, including NR-3-1, NR-3-2, and ER-2-17, as well as LU-5-12 and its implementing standard LU-5-12.a, which require sustainable stormwater management techniques.

Conclusion

Construction projects that disturb soil and operational stormwater discharges from new impervious surfaces could contain sediment and chemical pollutants that, if conveyed to local waterways, could adversely affect water quality. Discharges to land could also affect groundwater quality. Through compliance with applicable water quality regulations and proposed General Plan policies, the proposed Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water or groundwater quality. And, as a result, it would not violate the Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin (Basin Plan). Impact associated with implementation of the proposed Project would be **less than significant**.

Mitigation Measures

No additional mitigation required beyond compliance with existing regulations and General Plan policies and standards.

Drainage Patterns and Stormwater Runoff (Standard of Significance 5)

Impact 5.9.2 Implementation of the proposed Project would result in future urbanization in the Planning Area that would increase stormwater runoff as a result of changes in drainage patterns and increases in impervious surface. This impact is **potentially significant**.

Drainage patterns of a site may be altered by grading, excavation, or cut-and-fill activities that alter the site's topography. Changes in drainage patterns could result in the redirection of stormwater flows over a site. These changes can be localized and temporary during construction activities, when alteration of drainage patterns has the potential to cause or exacerbate erosion if soils are exposed to rainfall. Permanent changes in drainage patterns in

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combination with the addition of new impervious surfaces can increase the rate and volume of stormwater runoff.

The General Plan Land Use Map (**Figure 2.0-3**) establishes the general pattern of uses in the Planning Area. Within the City limits, infill-type development and development near transportation modes would be encouraged under the proposed Project. This type of future development would not have a substantial effect on drainage patterns or stormwater runoff volumes. Some additional runoff due to changes in drainage patterns and increases in impervious surfaces would be expected if vacant or underutilized parcels, which are primarily located in the eastern part of the Planning Area, are urbanized. Stormwater management within the City limits would be guided by the SDMP.

For future development in the Study Areas, which are not covered by the SDMP, future uses could include a range of residential housing types and densities, employment centers, commercial, public facilities, and parks and open space. The South and West Study Areas, because they are currently primarily agricultural and largely undeveloped, would experience the greatest amount of planned growth. Future development in these areas would substantially increase the overall impervious surface area, which would then be expected to generate a substantial increase in runoff flow rates compared to existing conditions.

Existing Regulations and Standards and Proposed General Plan Policies That Provide Mitigation

Section 16.44 of the Municipal Code requires projects that would increase drainage flows and have the potential to exceed the capacity of existing drainage facilities to identify, on project plans, the improvements needed to accommodate the increased flows. This would be accomplished through preparation of site-specific drainage studies, which must include, at a minimum, a description of existing conditions, the effects of project improvements, all appropriate calculations, a watershed map, potential increases in downstream flows and volumes, proposed on-site improvements, and drainage easements, if necessary, to accommodate flows from the site. The site-specific drainage studies must demonstrate how each project would meet the performance standards set forth in the City's NPDES MS4 permit. These studies must be reviewed and approved by the Public Works Department prior to improvement plan approval for new development.

General Plan Policies NR-3-2, NR-3-3, and LU-5-12 would require projects to integrate sustainable stormwater management techniques in site design to reduce stormwater runoff and to comply with the City's NPDES MS4 permit, including incorporation of LID design features, to reduce stormwater flows. In accordance with Policy ER-2-17, all new urban development projects, regardless of whether they are located within the existing City limits or in the Study Areas, would be required to minimize peak flows or runoff and/or assist in financing or otherwise implementing comprehensive drainage plans to mitigate their contribution to stormwater flows and potential impacts on drainage system capacity. Proposed drainage plans would also need to demonstrate how they support and/or would be integrated with drainage concepts for the construction of future facilities under the SDMP for the four separate regions within the City limits. Policy ER-2-18 requires that drainage facilities be maintained to ensure proper operation during storms.

Conclusion

Implementation of the proposed Project would result in future urbanization in the Planning Area that would increase stormwater runoff as a result of changes in drainage patterns and increases in impervious surfaces. With adherence to General Plan policies, the City's NPDES MS4 requirements, and Section 16.44 of the Municipal Code, all of which would be confirmed by City

staff during project approval and entitlement processes, future projects that could be constructed in the Planning Area under the proposed Project would not create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems, or contribute additional sources of polluted runoff. This impact would be **less than significant**.

Mitigation Measures

No additional mitigation required beyond compliance with existing regulations and General Plan policies and standards.

Flood Hazard (Standards of Significance 4, 7, and 8)

Impact 5.9.3 Future development in the Planning Area may occur in locations subject to 100- and/or 200-year flood risk, including flooding from levee failure, or could place structures where they may have the potential to impede or redirect flood flows. This is a **less than significant** impact.

In the Planning Area, 100-year flood zones include areas along Laguna Creek in the northwest and north-central portion of the City, and along the Cosumnes River to the southeast, primarily outside of the City limits, but still within the Planning Area (**Figure 5.9-2**). As shown in **Figure 5.9-3**, a portion of the Planning Area along Deer Creek and the Cosumnes River is within the 200-year flood zone. On the City's western border, a 200-year flood event caused by levee breaks along the Sacramento River could result in flooding in portions of Laguna West, an existing residential neighborhood, as well as the Hood-Franklin Road area and the West Study Area. Areas along Deer Creek and Cosumnes River would be preserved for agricultural use and would be at limited risk of damage from flood events.

Within the City limits, infill-type development would largely occur in locations not subject to 100-year and/or 200-year flood hazards. Some locations east of SR 99 that are vacant or undeveloped may have localized flood hazard risks. The Study Areas could include a range of residential housing types and densities, employment centers, commercial uses, public facilities, and parks and open space. Portions of the West Study Area may be subject to flood hazard from levee breaks, while the North and East Study Areas' flood hazards are primarily associated with proximity to Deer Creek and the Cosumnes River. However, the Open Space/Conservation District concept for the Study Areas includes natural resources such as rivers or streams and related floodplains; thus, the potential for highly developed urban areas that could be subject to flood risk in the Study Areas would be minimal. Nonetheless, development in any Study Area must comply with annexation policies identified in the General Plan and would be subject to more detailed planning (e.g., specific plan).

Existing Laws, Regulations, and Proposed General Plan Policies That Provide Mitigation

Site-specific flood hazard risk is one of many factors that would be used in siting and designing land development projects, as required under General Plan Policies ER-2-6, ER-2-7, ER-2-11, ER-2-13, and ER-2-14. As directed under Policy ER-2-8, the City would not be allowed to 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 protection area unless it makes one of the four findings in Government Code Section 65865.5, which are listed in the Regulatory Framework, above.

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Prior to approval of a development project in flood-prone locations, a project proponent would also be required to demonstrate to the satisfaction of the City that the design and structures comply with applicable flood protection regulations set forth in Chapter 16.50 of the City's Municipal Code. If a project is within a flood combining district, it would also be required to comply with Section 23.42.040 of the Municipal Code, which restricts building in certain flood zones and provides standards to protect the health, general welfare, and safety of the public for development that is allowed in certain flood zones. Implementation of General Plan policies and the City's flood ordinances would ensure new development is adequately protected from flood hazard in accordance with federal and State regulations. General Plan policies (e.g., ER-2-2 and ER-2-13) and City ordinances also provide a mechanism to ensure new development, which could include new creek or stream crossings, would not site structures or features where they have the potential to affect floodplain storage capacity or adversely redirect or impede flood flows. The City also intends to support retention of the Cosumnes River floodplain in non-urban uses consistent with location in an area subject to flooding, as provided in Policy ER-2-1.

The City recognizes that flood risk conditions can change over time through natural processes or project improvements on the local or regional scale. Therefore, the 200-year flood map is considered the base case for establishing potential flood risk. The City will keep updated data on the 200-year floodplain as part of the General Plan annual review and reporting process, accounting for the results of new technical studies and changes in flood protection infrastructure. This updated information will be referenced during the development review process for areas on the base case 200-year flood map.

In addition, development within existing City limits or the Study Areas may result in an increase in impervious surfaces, as explained in Impact 5.9.2. An increase in impervious surfaces could increase the rate and volume of stormwater runoff into local creeks and streams, which could exacerbate flood hazards in areas already subject to flood risk. This potential impact would be mitigated by adhering to General Plan Policy ER-2-17, which requires that all new projects incorporate runoff control measures to minimize peak flow runoff and/or assist in financing or otherwise implementing comprehensive drainage plans. Projects must also comply with the City's NPDES MS4 permit and Municipal Code.

Conclusion

Future development in the Planning Area may occur in locations subject to 100- and/or 200-year flood risk, including flooding from levee failure, or could place structures where they may have the potential to impede or redirect flood flows. However, with implementation of General Plan policies and existing regulations, exposure of new development to flood hazard risk and the potential for future development to cause new flooding or exacerbate flood hazards would be **less than significant**.

Mitigation Measures

No additional mitigation required beyond compliance with existing laws, regulations, and proposed General Plan policies and standards.

Groundwater Supplies (Standard of Significance 2 and 6)

Impact 5.9.4 The proposed Project would increase the demand on water supplies, some of which would be groundwater. This impact would be **potentially significant**.

Under the General Plan Land Use Map, the proposed Project would add approximately 24,000 new residential units to the Planning Area to buildout assumptions of the current General Plan, with most of that development directed to the West and South Study Areas. It would also add approximately 25,000 jobs, which would be accommodated in future employment centers and commercial uses in the West and South Study Areas. Impact 5.12.1.1 in Section 5.12, Public Utilities, presents the water supply analysis for the proposed Project. Relevant portions that pertain to groundwater supplies are summarized below.

In the area served by EGWD Service Area 2, which relies primarily on groundwater, the proposed Project provides development capacity for 1,400 units, which would be less than the 2,000 units of future growth projected by the EGWD in its 2015 UMWP and would not, therefore, be anticipated to exceed demand projections. Little growth is anticipated in Service Area 1. As noted above, the EGWD projects that there would be sufficient water to meet current needs and anticipated future demand, and groundwater is part of the supply that would meet that demand.

Therefore, almost all new demand anticipated under the proposed Project would result from development in the Study Areas. The SCWA would be the likely purveyor of water supply for the Study Areas not served by the EGWD or the Omoichumne-Hartnell Water District, because the Planning Area is located in Sacramento County. The SCWA, as a member of the SCGA, actively participates in implementation of a Groundwater Management Plan, which was developed to maintain a safe and sustainable groundwater resource within the Central Basin. Subbasin operations from 2005 through 2015 have not exceeded the sustainable yield conditions set forth in the Water Forum Agreement (SCGA 2016, page ES-5 and Section 2.3.1). The groundwater basins are not critically overdrafted or adjudicated. Groundwater is more consistently available over different climate year types compared to surface water supplies, and the SCWA has available groundwater supplies to be able to replace the reduction in surface water supplies in dry years, for locations within its existing service area (SCWA 2016, Section 7.1).

Table 5.12-1 in Section 5.12, Public Utilities, which summarizes the SCWA's retail supply available through its UWMP planning period, shows that supplies would increase slightly. The additional supply is a function solely of increases in groundwater pumping (surface water and other supplies are held constant). The SCWA is not projecting a shortfall and therefore has not identified future water supply projects (other than infrastructure-related projects) that could meet future additional demand. As explained in Impact 5.12.1.1 in Section 5.12, Public Utilities, in 2025 and beyond for the first- and third-year multiple dry year scenarios, there may not be sufficient surplus water with SCWA's existing supplies and entitlements to meet proposed Project demands. In addition, the West and South Study Areas are not in SCWA's current service area. Climate change may also affect the reliability of groundwater supplies.

Surface water from the City of Sacramento's American River Place of Use would not be available for the Study Areas unless the SCWA obtains approvals from the DWR to modify the Place of Use. Based on the data, analysis, and information presented in the UWMP, it is possible that Study Area demand may need to be met with increased groundwater pumping from the Central Basin in shortfall years, or the SCWA could seek to increase surface water supplies.

The City would not direct how water supplies would be managed. If it is conservatively assumed that the Study Area demand were to be served entirely by groundwater, the additional demand, when added to a recent historic high of 34,600 acre-feet annually, could exceed the SCWA's projection of available groundwater volume in 2020 and 2025, but may be accommodated beyond that. However, this estimate does not account for cumulative future demand on groundwater supplies.

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As described in the Existing Setting subsection, groundwater levels have been recovering after a period of overdraft. Conditions are 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. Maintaining the regional long-term average groundwater extraction rate at or below the sustainable yield of 273,000 acre-feet annually established by the Water Forum for the Central Basin, which is the responsibility of the SCGA, is mandatory. The extent to which a determination of the specific volume of additional groundwater development that may be needed to serve the proposed Project is beyond the scope of this EIR. The management of groundwater resources to ensure compliance would not be within the purview of the City to implement or monitor.

Existing Laws and Proposed General Plan Policies That Provide Mitigation

Policy INF-1-1 requires that water supply must be available in time to meet the demand created by new development, or shall be assured through the use of bonds or other sureties to the City's satisfaction. To accomplish this, as directed by Policy NR-3-4, long-term water supply planning to meet buildout demand for the Study Areas will need to be coordinated with the SCWA. There are established laws, regulations, and mechanisms in place that provide for such planning. When groundwater is a part of supply, pursuant to California Water Code Section 10910, the WSA, where one is required, must provide an analysis of the sufficiency of groundwater from the basin from which a proposed project will be supplied to meet the projected demand associated with that project. The groundwater component of the WSA must include and consider information about groundwater sustainability plans or approved alternative, among other items. The evaluation and analysis needed to demonstrate sufficient supply, along with necessary environmental review and implementation of mitigation measures, would be the responsibility of the SCWA, not the City.

Conclusion

Although existing programs are in place to protect groundwater resources in the Central Basin to ensure the sustainable yield set forth in the Water Forum Agreement, it is conservatively concluded this is a **potentially significant** impact because the proposed Project may contribute to conditions that could affect aquifer volume or groundwater levels, and the City has no authority over management of groundwater resources. Further, the development of future groundwater supplies by the SCWA (if determined by the SCWA to be necessary) could result in environmental impacts, some of which may be significant. Examples of such impacts could include effects on biological resources, changes in surface water flows, or changes in groundwater levels. The SCWA would need to conduct project-level CEQA and possibly NEPA analysis, as necessary, to analyze specific impacts and identify any required mitigation measures.

As of the time of preparation of this Draft EIR, DWR has not approved a sustainable groundwater management plan for the South American Subbasin. As such, the proposed Project would not conflict with the plan.

Mitigation Measures

MM 5.9.4 Implement mitigation measure **MM 5.12.1.1** (Plan for Services).

Mitigation measure **MM 5.12.1.1** requires demonstration of adequate water supply prior to annexation through preparation of a Plan for Services prepared by the City and submitted to Sacramento LAFCo for approval. Condition (2) specifically requires that the Plan for Services

demonstrate the water purveyor is a signatory to the Water Forum Agreement and that groundwater will be provided in a manner that ensures no overdraft will occur (i.e., the sustainable yield for the Central Basin will not be exceeded). LAFCo would condition future annexations on compliance with mitigation measure MM 5.12.1.1. Documenting sufficient water supply, which would include groundwater, would conform to Policy INF-1-1 requirements. However, the evaluation and analysis needed to demonstrate sufficient supply, along with necessary environmental review and implementation of mitigation measures to ensure groundwater resources would not be adversely affected, would be the responsibility of SCWA, not the City. Such an evaluation by the City would be remote and speculative, considering the programmatic nature of this Draft EIR. There is no additional feasible mitigation to reduce this impact to less than significant, and this would remain a **significant and unavoidable** impact.

5.9.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for drainage and water quality impacts in the Sacramento River watershed, which receives drainage from the portions of the Morrison Creek Stream Group, and the American River, which flows through El Dorado and Sacramento Counties, as well as the Cosumnes River watershed in El Dorado County. The cumulative setting for groundwater impacts is the area that pumps groundwater from the Central Basin portion of the South American Subbasin, which includes the Cities of Elk Grove, Sacramento, and Folsom as well as areas of unincorporated Sacramento County.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Drainage and Water Quality Impacts (Standards of Significance 1, 3, and 5)

Impact 5.9.5 Development of the Planning Area, in combination with other development in the Sacramento River and Cosumnes River watersheds, would increase the potential for pollutants to be discharged to surface water and groundwater. The proposed Project's contribution would be **less than cumulatively considerable**.

Cumulative development would alter drainage patterns through the conversion of undeveloped land to developed uses. This would result in an increase in impervious surfaces, which would change the rate and volume of stormwater runoff across individual project sites, as well as contribute flows to local creeks and streams that drain the various locations. Increased water levels in local creeks and streams resulting from stormwater runoff have the potential to cause flooding. In locations where a 100-year or 200-year flood hazard risk exists, flooding could be exacerbated. Sacramento County and El Dorado County Subdivision Ordinances require drainage plans be submitted prior to the approval of tentative maps. The drainage analysis must include an analysis of upstream, on-site, and downstream facilities, and off-site drainage facilities. Tentative maps must include details on the location and size of proposed drainage structures. As a performance standard, measures must be implemented to provide for no net increase in peak stormwater discharge relative to current conditions, both to ensure that the 100-year flood is maintained at or below current elevations, and that people and structures are not exposed to additional flood risk. Each county also regulates development within the 100-year floodplain under its respective ordinances to ensure development does not increase flood risk or expose new uses to flood hazards. All cumulative projects would be required to comply with these requirements and standards.

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Construction activities in the creek watersheds that drain to the Cosumnes and American Rivers could cumulatively affect water quality if measures are not implemented to control the type and amount of pollutants potentially carried to waterways. Cumulative development would involve soil disturbance through such activities as vegetation removal, grading, and excavation. These disturbances would expose the native soil to wind- and water-generated erosion, most likely at accelerated rates. As such, surface runoff could transport increased sediment loads. Sediment from erosion can have short- and long-term water quality effects, including increased turbidity and sedimentation, which could result in adverse impacts on fish and wildlife habitat, reduced efficacy of diversion structures, impaired recreation and aesthetic values, and increased downstream flood hazards due to a decrease in channel capacity. Erosive conditions created during grading activities can persist well into the post-construction time frame. The amount and rate of erosion is variable and depends on a range of factors, including soil characteristics (e.g., susceptibility to erosion), the time of year of construction activities, the intensity and duration of precipitation, and the amount of vegetative cover. Another potential source of water quality impairment is the accidental release of petroleum-based fluids used in heavy equipment and machinery or from construction materials that contain hazardous materials and/or heavy metals.

Post-construction cumulative water quality effects could be expected from continued development in the creek subwatersheds that drain to the Sacramento and Cosumnes Rivers. Cumulative development would result in increased impervious surfaces that increase the rate and amount of runoff which, in turn, could increase urban contaminant loading, which could adversely affect existing water quality. The primary sources of pollution include runoff from roadways, parking lots, and landscaped areas, non-stormwater connections to local drainage systems, accidental spills, and illegal dumping.

Project applicants would be required to apply for coverage and comply with the various federal, State, and local permits, which include the General NPDES Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-006-DWQ). In Sacramento County, post-construction stormwater runoff must be managed in accordance with a stormwater quality management program required under NDPEs MS4 general permit Order No. R5-2016-0040 issued to the cities of Elk Grove, Citrus Heights, Folsom, Galt, Rancho Cordova, Sacramento, and the County of Sacramento. In El Dorado County, stormwater runoff is managed through its Small Municipal Separate Storm Sewer Systems General Permit No. CAS000004 [Order 2013-001-DWQ] [Small MS4 Permit]. Finally, EGMC Chapter 15.12 (Stormwater Management and Discharge Control) requires minimization of impacts from site modification activities. Thus, cumulative development in other jurisdictions within the Sacramento River and Cosumnes River watersheds would control runoff from projects such that substantial pollutants would not be discharged to surface water and groundwater. This cumulative impact would, therefore, be less than significant.

The proposed Project's contribution to the cumulative impact of development on water quality from stormwater runoff would be reduced through runoff controls, sediment retention, LID features, and other similar measures required by General Plan policies, the City's NPDES MS4 permit, and the Municipal Code, as described in Impact 5.9.1. Compliance with these policies and regulations would minimize the proposed Project's contribution to a level that is **less than cumulatively considerable**, and the cumulative impact would remain less than significant.

Mitigation Measures

No additional mitigation required beyond compliance with existing regulations and General Plan policies and standards.

Cumulative Flood Hazard Impacts (Standards of Significance 4, 7, and 8)

Impact 5.9.6 Development of the Planning Area, in combination with cumulative development in the Sacramento River watershed, including its American River and Cosumnes River tributaries, could be located in areas subject to 100-year and/or 200-year flood hazard. The proposed Project's contribution would be **less than cumulatively considerable**.

Areas of 100-year and 200-year flood hazard risk are present throughout Sacramento County. Cumulative development could result in placement of housing or structures in floodplains. Impacts would be site-specific, and flood hazard risk associated with floodplains would be mitigated through implementation of FEMA-required flood protection design and as required by local ordinances, and, where applicable, General Plan policies of affected jurisdictions. In addition, cities and counties would be required to make the appropriate Government Code findings pursuant to the CVFPP. This would be a less than significant cumulative impact. Because the proposed Project would also be required to comply with the same FEMA-required flood protection design, the proposed Project's contribution would be less than cumulatively considerable relative to placement of housing and/or structures in flood-prone areas.

However, cumulative urbanization in the region would continue to increase drainage flows through the creation of impervious surfaces, including roads, parking lots, and rooftops, which could generate stormwater runoff. Increased drainage flows could exceed existing and/or planned drainage or stormwater management facilities, causing new flooding or exacerbating existing flooding. This is considered a significant cumulative impact.

The City's SDMP identifies deficiencies in the City's drainage system and plans for necessary improvements to accommodate drainage flows as the City is built out in accordance with the proposed Project. In addition, Section 16.44 of the Municipal Code requires projects that would increase drainage flows and have the potential to exceed the capacity of existing drainage facilities to identify, on project plans, the improvements needed to accommodate the increased flows. Implementation of the City's SDMP and compliance with this existing requirement would ensure that future development projects in the Planning Area are designed and constructed with adequate drainage facilities to minimize flooding. Therefore, contributions by the Project would be **less than cumulatively considerable**.

Mitigation Measures

No additional mitigation required beyond compliance with existing regulations and General Plan policies and standards.

Cumulative Groundwater Use (Standard of Significance 2 and 6)

Impact 5.9.7 Development of the Planning Area, in combination with other development in the Central Basin, would increase demand for groundwater and could potentially interfere with recharge of the aquifer. The proposed Project's contribution would be **potentially cumulatively considerable**.

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As cumulative development occurs in the region, the demand for groundwater resources may increase, resulting in greater withdrawals from the Central Basin portion of the South American subbasin. Continued implementation of the Water Forum Agreement and the Groundwater Management Plan, which would be the responsibility of SCWA, would protect the Central Basin from overdraft by limiting withdrawals to below the established sustainable yield. This would be considered a less than significant cumulative impact.

The proposed Project, as described under Impact 5.9.4, could increase demand for water resources, a portion or all of which would be met with groundwater, at the discretion of the SCWA. Because the West and South Study Areas have not been included in the projected demand relative to supply, and additional groundwater production may be needed to meet proposed Project demand and may result in withdrawals that exceed the 273,000 acre-feet annual sustainable yield, the proposed Project's contribution to this impact would be **potentially cumulatively considerable**.

Mitigation Measures

No additional feasible mitigation available beyond compliance with existing laws, proposed General Policies, and mitigation measure **MM 5.12.1.1**.

Mitigation measure MM 5.12.1.1 is intended to ensure that sufficient water supplies are available to meet the demand of new development in the Planning Area, in addition to existing and planned development under normal, single dry, and multiple dry years. However, the determination of whether additional groundwater production is needed and how it would be managed to ensure compliance with the Water Forum Agreement is not within the purview of the City to implement. Therefore, because the proposed Project's contribution to the impact would be cumulatively considerable and unavoidable, the cumulative impact would be **significant and unavoidable**.

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