This section of the DEIR identifies the hydrological resources, the existing drainage conditions, and the surface and groundwater quality in the General Plan Planning Area. This section also evaluates the potential impacts with respect to flooding, drainage, erosion, water quality, and water supply, and identifies appropriate mitigation measures to lessen the identified impacts.

4.9.1 EXISTING SETTING

REGIONAL HYDROLOGY

Surface watersheds are those land areas that catch rain or snow and drain to specific marshes, streams, rivers, lakes, or the groundwater table. There are several watersheds in Sacramento County, including: the Lower Sacramento, the Lower American, the North Fork of the American, the Upper Butte, the Upper Yuba, the South Fork of the American, and the Upper Cosumnes. The largest watershed in the County is the Lower Sacramento Watershed, which covers approximately 27,000 square miles and drains the Sacramento Valley, the Modoc Plateau, and parts of the Cascade Range and Sierra Nevada Range. The Lower Sacramento Watershed is one of the largest watersheds in the United States and covers most of northern California. The main tributaries in the Lower Sacramento Watershed are the Feather, Yuba, Pit, and American Rivers. The Lower American, North Fork American, South Fork American, and Upper Cosumnes watersheds are adjacent to the Lower Sacramento Watershed. In addition to the natural hydrologic processes of rainfall runoff, snowmelt, and base flow from groundwater, the flows in the Sacramento River are greatly affected by reservoir releases, water diversions, irrigation return flows, and diversions through bypasses. Both the Sutter and Yolo bypasses have the capacity to carry larger volumes of water than the Sacramento River channel, and are used to prevent flooding during wetter years and higher flows.

SURFACE WATER RESOURCES

Major surface waters in the vicinity of the Rancho Cordova Planning Area include the American River, Folsom Reservoir, and Lake Natoma to the north; the Sacramento River to the west; and the Consumnes River to the southeast. Other surface waters within the Rancho Cordova Planning Area include the Folsom South Canal, Deer Creek, and the Morrison Creek Stream Group (Morrison, Laguna, Elder, Gerber, Unionhouse, Florin, Buffalo, and Frye Creek, as well as Rebel Hill Ditch) which generally flow in a southwesterly direction southeast of the General Plan Planning Area, as illustrated in **Figure 4.9-1**. The topography within the Planning Area includes gently rolling terrain, such as that found in the eastern Great Central Valley interrupted by numerous seasonal creeks and streams. These creeks and streams are largely ephemeral and intermittent, which is typical of areas that experience dry summers and cool, wet winters, as in this part of the Central Valley. Preliminary mapping conducted in preparation of the Draft South Sacramento County Habitat Conservation Plan (SSHCP) identified approximately 625 acres of vernal pools and approximately 212 acres of fresh water marshes within the Planning Area. Additionally, approximately 20,728 acres of Vernal Pool Grassland exist within the Planning Area. The reader is referred to Section 4.10 (Biological Resources) regarding wetland resources in the Planning Area.

Sacramento River

The Sacramento River drainage basin upstream of the Planning Area encompasses approximately 23,500 square miles and produces an average annual runoff of about 17,000,000 acre-feet (AF) at the Freeport gauging station (below the confluence with the American River). Principal reservoirs on the mainstream and tributaries to the Sacramento River and controlling flows in the lower Sacramento River include Lake Shasta, Trinity Lake, Lake Oroville, and Folsom Reservoir. Based on the 30-year record of data for the period 1968–1998, which spans a variety

of water year types, individual monthly average flows have ranged from a low of 4,500 cubic feet per second (cfs) in October 1978 to a maximum of 87,000 cfs in January 1997. The average monthly flow for the 30-year period ranges between 13,000 cfs and 40,600 cfs with the lowest flows occurring in October and peak flows in February. (EDAW, 2006)

American River, Folsom Reservoir, and Lake Natoma

The American River drainage basin encompasses approximately 1,900 square miles. Folsom Reservoir is the principal reservoir in the basin with a storage capacity of 975,000 AF. Several smaller reservoirs upstream of Folsom Reservoir contribute an additional 820,000 AF of storage capacity. Nimbus Dam impounds Lake Natoma downstream of Folsom Dam and regulates releases from Folsom Reservoir to the lower American River. The entrance facilities to the Folsom South Canal are located along the south shore of Lake Natoma immediately upstream of Nimbus Dam. Mean annual flow in the lower American River is 3,300 cfs; the design capacity of the channel for flood flows is 115,000 cfs. (EDAW, 2006)

Cosumnes River

The Cosumnes River watershed extends from its headwaters, at an elevation of approximately 7,500 feet on the western slope of the Sierra Nevada, to the confluence with the Mokelumne River, near Interstate and the Town of Mokelumne City. The Cosumnes River is the last major river on the western slope of the Sierra Nevada with no major dams. Minor dams on the river are used for recreational and agricultural irrigation purposes. (EDAW, 2006) During September and October, flows in the river are 27-30 cfs. Currently, surface flow ceases in a 5- to 10-mile section of the river (between Meiss Road and State Route 99) nearly every year at the end of California's dry season.

Cosumnes River Studies

The University of California, Davis has collaborated with the Cosumnes River Preserve, the United States Fish and Wildlife Service (USFWS), and other non-profit organizations to create a university/agency/foundation partnership with the purpose of advancing watershed science to support more effective and sustainable watershed restoration practices and addressing the information needs of adaptive management in the North Delta and the Cosumnes and Mokelumne River watersheds. A number of studies were conducted in a wide range of disciplines, including: hydrology, geology, engineering, ecology, and wildlife biology. The focus of the studies was to identify the interaction between regional groundwater elevations and surface water flows in the Lower Cosumnes River.

According to the studies, declining flows on the Cosumnes River in the past may have been linked to decreasing base-flows and the overall decline of groundwater tables; however, unequivocal proof of this relationship is difficult due to the limited amount of historical records on ground- and surface-water conditions in Sacramento County. The studies determined that groundwater levels around the river channel were possibly hydraulically connected with the river in the 1940's.

The UC Davis Center for Watershed Sciences (UCDCWS) conducted field investigations in 2003 concluding that under current conditions the Lower Cosumnes River (miles 0 to 36) is largely hydraulically disconnected from the regional aquifer. When a river and underlying aquifer are hydraulically disconnected, the only exchange between the two systems is seepage losses from the river to the aquifer. The hydraulic disconnect is the greatest in the middle reaches of the River (river miles 11 to 25.8), near Highway 99 and Meiss Road).

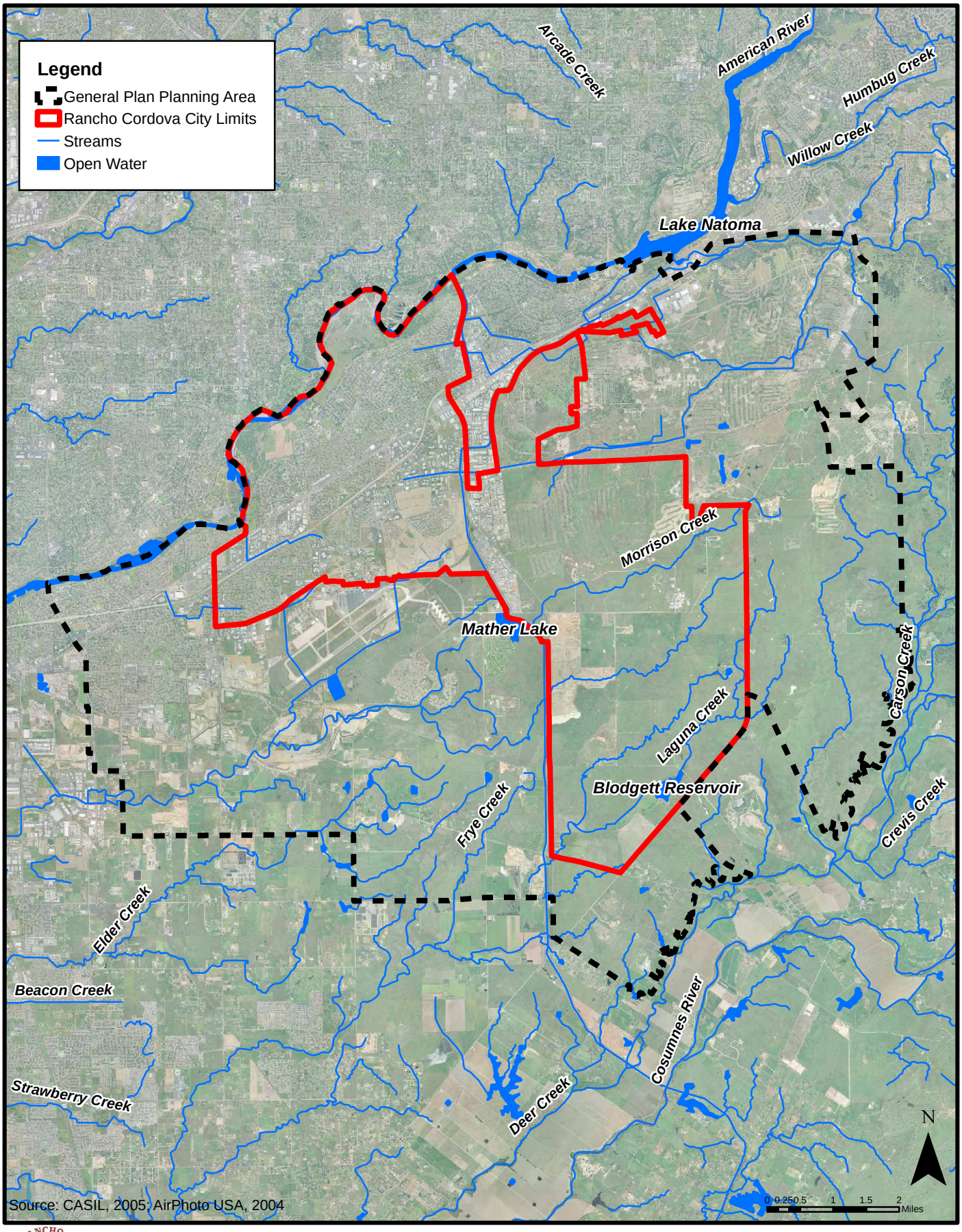

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Figure 4.9-1
Surface Water Resources
Within the General Plan Planning Area

However, UCDCWS simulations show that even under a no groundwater pumping scenario, the upper reaches of the Cosumnes (between Michigan Bar and Dillard Road) experiences net losses, which indicates that the Cosumnes River, even under natural conditions in its upper reaches, may have alternated between gaining and losing flows. This was concluded using historical data that suggests that the River along these reaches were most likely in hydraulic contact and received base flows along its entire length before major groundwater development and pumping occurred in the 1950's and 1960's.

UCDCWS simulations indicate that annual seepage losses ranged from 10,000 AF to 20,000 AF in both the lower and upper reaches of the River. Reducing seepage losses by reconnecting the regional aquifer would require enormous amounts of water. Based on UCDCWS simulations, annual groundwater pumping reductions from the groundwater basin of 166,000 acre-feet (AF) would be required to reconnect the River along its upper reaches and up to 250,000 AF of reductions would be required to hydraulically reconnect the River along its lower reaches where the disconnect is most pronounced (miles 0 to 36).

Based on historical groundwater data and conditions in Sacramento County, groundwater levels tend to decline for approximately 20 years due to groundwater pumping that exceeds the level of groundwater recharge. However, after the approximately 20 years of decline, groundwater recharge (mainly from stream recharge and subsurface boundary inflows) responds to the lowering of groundwater levels and eventually reaches a quasi-equilibrium position, in which groundwater levels stabilize with the long-term average levels remaining the same. When the County approved the SDCP/SRSP in 2001, based on historical data and extensive groundwater modeling, concluded that groundwater levels in the project area had been stabilized since 1993.

Given the current condition of the groundwater aquifer underlying southern Sacramento County, available data suggests that proposed groundwater extraction by SCWA Zone 40 (discussed below) will not significantly impact flows in either Deer Creek or the Cosumnes River. The evidence supporting this assertion is that the existing groundwater elevation and topographic data indicate that Deer Creek and as previously discussed the Cosumnes River are not in direct hydraulic connection with the underlying or adjacent unconfined groundwater system for the majority of their reaches through the central portion of Sacramento County. Based upon detailed groundwater modeling conducted by SCWA, the aquifer is not in direct connection with the Cosumnes River except at two places, upstream of Dillard Road and downstream of Twin Cities Road. Where there is no hydraulic connection, groundwater pumping would not affect Cosumnes River flows.

There are two locations where there is a hydraulic connection and the groundwater modeling evidence has shown that changes in groundwater elevations are less than 2 feet (and typically less than 1 foot) therefore, impacts resulting from proposed groundwater pumping (as part of implementation of Zone 40's WSMP, described below) on Deer Creek and the Cosumnes River would be very small and insignificant. This conclusion is based on SCWA's negotiated levels of acceptable impacts associated with operating the sub-basin as a specified extraction amount, defined in the Water Forum as a long-term sustainable average annual yield of 273,000 AF from the regional aquifer.

The impacts of long-term groundwater pumping in the region on the Cosumnes River were extensively studied in SCWA's Environmental Impact Report for its 2002 Zone 40 Water Supply Master Plan (discussed in more detail below). Based on detailed modeling, SCWA concluded that its proposed groundwater pumping would not, either alone or cumulatively with other development, have any adverse impact on Cosumnes River flows or adversely change the

duration, timing or frequency of surface flows in the Cosumnes River. Impacts on other resources (i.e., biology, water quality, etc) resulting from the cumulative pumping proposed as part of the Water Forum Agreement (WFA) and the Zone 40 Water Supply Master Plan (WSMP) were also addressed in the EIR for the Water Forum (State Clearinghouse Number 95082041), which was certified by the Sacramento County Board of Supervisors in 1999, and in the 2002 Zone 40 WSMP FEIR, which was certified by SCWA in 2005.

As described below, the Zone 40 conjunctive use process, which is the planned joint use of surface and groundwater to improve the overall water supply reliability, decreases the reliance on groundwater use throughout Zone 40It should be noted that under the Memorandum of Agreement for Management of Water and Environmental Resources Associated with the Lower Cosumnes River, Sacramento County Water Agency will provide 5,000 acre-feet or a contribution of capital towards the purchase of an alternative supply for the Cosumnes River Flow Augmentation Project (EDAW, 2006). The Cosumnes River Augmentation Project was established to attenuate flood flows, increase groundwater recharge, preserve and maintain existing remnant riparian habitats and reestablish floodplain habitats and not in response to historical or projected groundwater pumping from the regional aquifer.

Precipitation

According to the National Weather Service, the annual average precipitation for Sacramento County and the Rancho Cordova Planning Area ranges from 15 to 20 inches. There is very little snow that falls in the Sacramento Valley, so it is not considered a climatic feature of the valley floor. More characteristic of the valley is the dense fog occurring in mid-winter. Fog usually occurs in the morning hours, and may continue for several days in a row if atmospheric conditions are stagnant.

Drainage and Flooding

The Planning Area contains both natural waterways and constructed features (e.g., channel, siphons, overchutes, detention basins) that convey drainage. As shown in **Figure 4.9-1**, flows in the Planning Area primarily drain in a southwest direction into existing natural waterways. Major drainage/flood control features in the Planning Area include detention basins, channels, levees along the American River and Folsom Dam. The northern portion of the City and Planning Area (along US 50 and north) are located within the 500-year floodplain predictions by FEMA and the U.S. Army Corps of Engineers or as a result of complete failure of Folsom Dam. Failure of either the Cordova Meadows Levee or the Sunriver Levee along the American River could potentially result in the inundation of properties within the northern portion of the Planning Area. However, such an event has an extremely low probability of occurring and is not considered to be a reasonably foreseeable event. Currently, there are planning efforts by the U.S. Army Corps of Engineers to improve the flood capacity of Folsom Reservoir and there have been improvements made to security at Folsom Dam to minimize the threat of an intentional act of sabotage.

Currently the City experiences localized flooding issues associated with undersized drainage facilities in existing developed and developing areas. This includes existing drainage issues along Sunrise Boulevard south of White Rock Road where surface water flows exceed the capacity of drainage facilities (siphons and overchutes) of the Folsom South Canal. Existing 100-year peak flows are exceeded in several of these facilities and result in localized flooding along Sunrise Boulevard as well as discharge of drainage into the Folsom South Canal (Sacramento County, 2001; Wood Rogers, 2005).

The Federal Emergency Management Agency (FEMA) manages the National Flood Insurance Program (NFIP). The National Flood Insurance Program works with local units of government to assist them in education, technical assistance, and flood plain management. In addition, FEMA produces Flood Insurance Rate Maps (FIRM), which contain historic, meteorological, hydrologic, and hydraulic data, to determine open-space conditions, flood plain control and management, and potential development constraints. In addition, FIRM maps illustrate both 100- and 500-year floodplains and the Base Flood Elevation (BFE), which is the elevation associated with the flood having a one-percent annual chance of being equaled or exceeded in any given year. In addition, FIRM maps generally include:

- Common physical features, such as major highways, secondary roads, lakes, railroads, streams, and other waterways
- Special Flood Hazard Areas
- Base (1 percent annual chance) flood elevations or depths
- Flood insurance risk zones
- Areas subject to inundation by the 0.2 percent annual chance flood
- Areas designated as regulatory floodways
- Undeveloped coastal barriers

It is important to note that the term "100-year flood" is misleading. It is not the flood that will occur once every 100 years. Rather, it is the flood elevation that has a 1- percent chance of being equaled or exceeded each year. Thus, the 100-year flood could occur more than once in a relatively short period of time. The 100-year flood, which is the standard used by most Federal and state agencies, is used by the NFIP as the standard for floodplain management and to determine the need for flood insurance. A structure located within a special flood hazard area shown on an NFIP map has a 26 percent chance of suffering flood damage during the term of a 30-year mortgage. The Sacramento County Department of Water Resources has prepared its Local Floodplain Management Plan (2001), which is required for a community to participate in the NFIP. The Plan is reviewed annually by DWR to update factual data and to fully comply with the NFIP. The 100-year floodplain, streams, and the Planning Area's proximity to the American River and Cosumnes River are depicted in **Figure 4.9-2**.

Cosumnes River Floodplain Modeling

On January 2, 1997, the Cosumnes River experienced one of the most extensive flood events ever recorded. The flow was estimated to exceed a 100-year storm event and triggered numerous levee breaks that flooded over 24,000 acres. Over 80 homes were inundated, public roads and infrastructure were damaged, and watershed health was impaired. The Governor's Flood Emergency Action Team (FEAT) recommended that the County of Sacramento and Resource Conservation Districts form the Cosumnes River Task Force (CRTF) explore options for flood management.

The primary purpose of the CRTF is to develop a Coordinated Resource Management Plan (CRMP) to identify resource concerns, plan and implement improvements, and collaborate on common goals to improve watershed health. Through the CRMP, stakeholders are made aware that any potential solutions for improved flood management must also address concerns beyond the immediate impacts associated with flooding. The Task Force will also be examining

resource issues such as land use; infrastructure; water quality and supply; riparian and terrestrial wildlife habitat needs; channel maintenance; channel management including levee, floodway, easement, non-structural options; and other issues identified during the planning process. A major objective of the Task Force planning process is to provide a forum for discussion, education and understanding with regard to the complex issues surrounding watershed management. During the planning process, the Task Force hopes to develop consensus, form partnerships and provide opportunities to collaborate on alternative solutions for watershed improvement.

As described previously, several organizations and agencies are coordinating with the CRTF efforts in order to assess and restore the quality of the Cosumnes River watershed from impacts associated with historical groundwater pumping. The Mokelumne-Cosumnes Watershed Alliance is an organization made up of representatives from different groups (e.g., California Cattlemen's Association, California Rangeland Trust, CALFED Bay-Delta Program, City of Lodi, Delta Protection Commission, Department of Water Resources Central District, East Bay Municipal Utility District, Florin Resource Conservation District, Lodi-Woodbridge Winegrape Commission, Mountain Counties Water Resource Association, Natural Resource Conservation Service Sacramento County, The Nature Conservancy, North Delta Water Agency, The Reclamation Board, Reclamation District 38, Sacramento Area Flood Control Agency, Sacramento County Water Resources Division, San Joaquin Council of Governments, San Joaquin County Public Works, San Joaquin County Resource Conservation District, Sloughhouse Resource Conservation District, UC Davis Center for Integrated Watershed Science and Management, U.S. Army Corps of Engineers Sacramento District, U.S. Fish and Wildlife Service, and Woodbridge Irrigation District) that work together to preserve and improve the integration of environmental, flood control, and beneficial use opportunities in the Mokelumne and Cosumnes watersheds. Projects and studies involving the CRTF include, but are not limited to: the Cosumnes River Task Force Plan 2002, which provides direction for agencies and interested individuals of the issues, impacts and possible solutions regarding the watershed's overall health. The CRTF has also prepared the Cosumnes River Watershed and Assessment and Inventory Phase II Final Report, which outlines a watershed management plan to guide resource planning, restoration, enhancement, and water quality improvements in the watershed. Other studies and collaborative efforts include the Lower Cosumnes and Mokelumne Rivers Feasibility Study, and the Cosumnes Research Group. The Cosumnes Research Group, is a joint venture/partnership of the University of California, Davis and the Cosumnes River Preserve focusing on advancing watershed science to support more effective and sustainable watershed restoration practices and addressing the information needs of adaptive management in the North Delta and the Cosumnes and Mokelumne River watersheds.

GROUNDWATER RESOURCES

The Central Valley contains the largest basin-fill aquifer system in the state. The valley is in a structural trough about 400 miles long and from 20 to 70 miles wide and extends over more than 20,000 square miles. The trough is filled to great depths by marine and continental sediments, which are the result of millions of years of inundation by the ocean and erosion of rocks that form the surrounding mountains. Sand and gravel beds in this great thickness of basin-fill material form an important aquifer system. From north to south, the aquifer system is divided into the Sacramento Valley, the Sacramento-San Joaquin Delta, and the San Joaquin Valley groundwater basins, based on the various characteristics of the corresponding surface-water basins. These groundwater basins are further divided into subbasins. The Sacramento Valley Groundwater Basin and South American (or Central Area) Subbasin underlie the Rancho Cordova Planning Area.

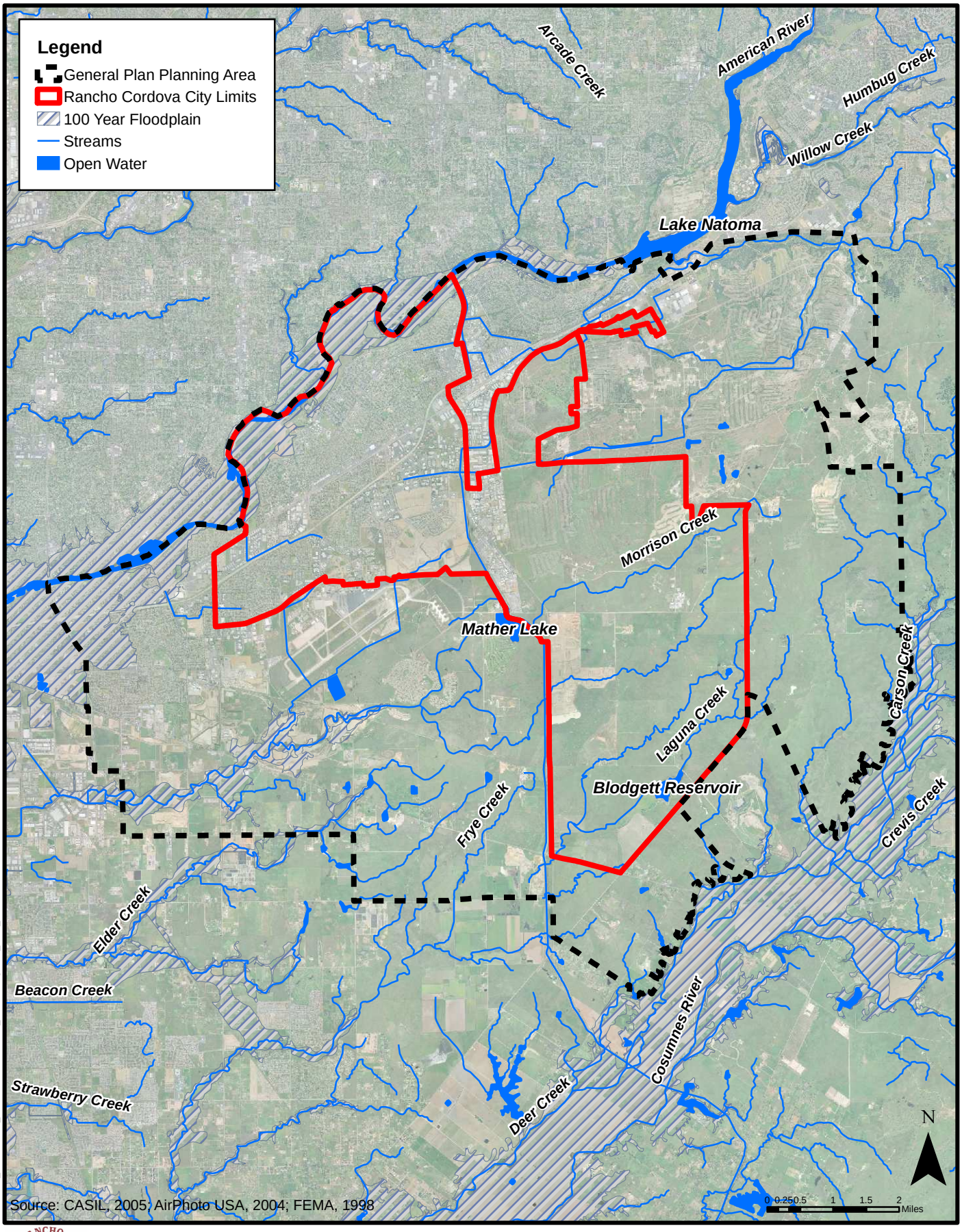

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Figure 4.9-2
Flood Zones
Within the General Plan Planning Area

The Sacramento Valley Groundwater Basin is formed primarily of sand and gravel with significant amounts of silt and clay, all of which have been eroded mainly from older rocks at the boundaries of the valley. The environments in which the continental sediments were deposited varied, although most were deposited in fluvial environments with resulting beds and lenses composed of fine-grained materials, such as silt and clay. In most parts of the valley, fine-grained materials compose 50 percent or more of the aquifer system. The most extensive clay bed, which is informally named "E-clay", consists primarily of Corcoran Clay. Because beds of silt and clay do not readily transmit water under natural conditions, they act as barriers to vertical flow and cause differences in hydraulic head with depth.

The South American Subbasin is bounded on the east by the Sierra Nevada Mountains, on the west by the Sacramento River, on the north by the American River, and on the south by the Cosumnes and Mokelumne Rivers. As part of the South American Subbasin, the Rancho Cordova Planning Area covers a shallow unconfined aquifer system, known as the water table aquifer, approximately 200 hundred feet below ground surface, and a deeper confined groundwater aquifer system ranging from a few hundred feet to over 2,000 feet below ground surface. The deeper aquifer system that becomes confined with depth is separated from the shallow aquifer by a discontinuous clay layer, not completely impermeable.

Prior to urban development, the Sacramento Valley groundwater aquifer system was under steady-state conditions in which natural recharge balanced natural discharge. Groundwater in the shallow part of the aquifer system flowed from areas of high altitude at the valley margins, where most of the recharge took place, down gradient to discharge into rivers and marshes near the valley axis. Under predevelopment conditions, streams emanating from the Coast and Cascade Ranges and the Sierra Nevada Mountain Range primarily recharged the aquifer system. Most of the recharge was in the northern and eastern parts of the Sacramento Valley. Precipitation falling on the valley floor during the rainy season provided only a small part of the total recharge. For the most part, precipitation evaporates or transpires through plants. In the Sacramento Valley groundwater aquifer system, precipitation was also carried by the Sacramento and the San Joaquin Rivers, and then drained to San Francisco Bay or the Tulare Basin.

Hydraulic head is a measurement used to indicate the amount of energy in groundwater per unit weight flowing through an aquifer. Under predevelopment conditions in the Sacramento Valley, the hydraulic head in the shallow unconfined aquifer was greater where water entered the aquifer system at the valley margins than the hydraulic head in the deeper confined groundwater aquifer. Thus, groundwater moved downward. Conversely, the head gradient was reversed where water left the aquifer. Typically, as water discharged to surface-water bodies, the hydraulic head in the unconfined aquifer was less than the hydraulic head in the confined aquifer. Here, the difference in hydraulic head created upward movement of the groundwater toward rivers and marshes. Precipitation that fell on the valley floor, and that was not lost to evapotranspiration, recharged the shallow water table aquifer and moved down the head gradient toward the rivers and surrounding marshes. Upward vertical flow from the confined aquifer was impeded by confining clay beds, which caused a pressure head in the deeper parts of the aquifer system. Because of the pressure head, wells that penetrated the deep aquifer in low-lying areas near rivers and marshes flowed during the early years of valley development, and did not require additional groundwater extraction.

By the early 1960's, urban development and agricultural activities had lowered groundwater elevations and altered groundwater flow patterns in the Sacramento Valley Groundwater Basin. Because the magnitude of the withdrawals caused hydraulic heads in the confined parts of the aquifer system to fall far below the elevation of the water table, the vertical hydraulic gradient

was reversed over much of the Sacramento Valley. As a result, much of the water in the upper unconfined zone of the aquifer system that flowed laterally toward the rivers under predevelopment conditions, instead, began flowing downward through the confining beds into the lower confined aquifer. Concurrent with an increase in surface-water imports in the early 1970's, groundwater withdrawals in the aquifer system decreased, which allowed groundwater levels in many areas to recover in the confined part of the aquifer system, in some cases to pre-1960 levels. With few exceptions, the groundwater flow patterns in the aquifer system today are similar to those in the mid 1970's (USGS, 1995).

As mentioned above, there is a potential for some vertical movement of groundwater between the shallow and deeper aquifer systems. Generally, the movement of groundwater occurs when a head differential exists between the aquifer systems. For instance, if heavy pumping in the deeper aquifer reduces the pressure head, then groundwater from the shallow aquifer will be induced to recharge the deeper aquifer. Conversely, if groundwater levels are decreased (by increased pumping) in the shallow aquifer, then the potential exists for the upward movement of groundwater to recharge the shallow aquifer. Groundwater recharge within the Rancho Cordova Planning Area occurs from a combination of three main sources: stream recharge (primarily from the Cosumnes and American Rivers within their channels and floodplains) subsurface inflows from adjacent areas; and percolation of rainfall and applied water. However, due to soil characteristics within the Planning Area, groundwater recharge capabilities are considered low.

WATER QUALITY

Surface Water Quality

The following waterways in or near the Planning Area are identified as impaired waterways by the State Water Resources Control Board under Section 303d of the Clean Water Act:

- American River (mercury and unknown toxicity)
- Elder Creek (chlorpyrifos and diazinon)
- Morrison Creek (diazinon)
- Sacramento River (diazinon, mercury and unknown toxicity)

Chlorpyrifos and diazinon are organophosphorus pesticides used for urban and agricultural pest control, while the source of mercury for the Sacramento and American rivers is associated with abandoned mines within their watersheds. Morrison Creek has been included in the Total Maximum Daily Load (TMDL) Report for Diazinon and Chlorpyrifos Impaired Urban Creeks in Sacramento County (September 2004). The Sacramento River water quality issues with diazinon have been addressed in a TMDL for the Sacramento and Feather rivers.

Water quality sampling has been conducted for Morrison Creek (near Bradshaw Road) during dry weather and wet weather conditions for 2003 and 2004 associated with the Sacramento County Coordinated Monitoring Program. Wet weather sampling has identified low levels of conventional inorganic minerals, but have shown elevated levels of coliform bacteria, total suspended solids and several polycyclic aromatic hydrocarbons (byproducts of combustion and are contained in asphalt sealants).

Groundwater Quality

The thickness of the aquifer saturated with freshwater (water with less than 1,000 milligrams per liter dissolved-solids concentration) in the aquifer system varies greatly and depends, for the

most part, on the depth to and permeability of the rocks that underlie continental deposits. In the Planning Area, the base of freshwater generally coincides with the base of continental deposits. The several isolated lenses of saline water that are within the freshwater zone may be evaporation residues or estuarine water that was trapped by subsequent sedimentation. The depth to the base of freshwater is as much as 2,500 feet in some portions of the Sacramento Valley.

Freshwater is available throughout the Central Valley. The concentration of dissolved solids in the groundwater reflects the general character of water in the streams that recharge the aquifer system. Dissolved-solids concentrations in the streams, in turn, are directly related to the type of rocks that form the geologic conditions of the area. Thus, groundwater in the Sacramento Valley has generally lower dissolved-solids concentrations than other sub-regions in the Central Valley. In general, dissolved-solids concentrations increase as the depth increases in the aquifer system. Therefore, the deeper wells are likely to produce water with larger dissolved-solids concentrations than the shallower wells in the aquifer system.

Groundwater Contamination

As discussed in Section 4.4, Hazards and Human Health, Planning Area groundwater has been contaminated and N-nitrosodimethylamine (NDMA), trichloroethylene (TCE), and ammonium perchlorate have been detected in groundwater plumes emanating from former McDonnell Douglas and Aerojet operations.

The reader is referred to Section 4.4 for a discussion on the Aerojet groundwater contamination and monitoring and remediation efforts currently ongoing.

WATER SUPPLY

The following information is a summary of technical data provided in the Water Supply Evaluation for the City of Rancho Cordova General Plan (EDAW, 2006), which is provided in **Appendix 4.9**. This Water Supply Evaluation was prepared to identify water supply needs of the proposed General Plan under buildout of proposed land uses in the City's current boundaries as well as the Planning Area outside of the City under the state law providing for coordination between cities and counties and water planning activities of water purveyors and agencies. This work involved consultation with the current public and private water purveyors in the Planning Area as well as requests for formal consultation regarding water supply availability by the City consistent with State CEQA Guidelines Section 15083.5 and Water Code sections 10910-10915.

Water Service Providers in the Planning Area

There are 3 water purveyors within the City's planning area: Sacramento County Water Agency (SCWA), Zone 40; Golden State Water Company (GSWC); and California-American Water Company (Cal-Am) (see **Figure 4.9-3**).

Urban Water Management Plans (UWMP) for all water purveyors were obtained and used in this evaluation. The UWMPs identified the purveyor's existing and projected future water supplies and projected water demands through 2030 within each of their service areas.

Sacramento County Water Agency (SCWA)

SCWA's service area (i.e., Zone 40) encompasses approximately 70 percent of the City's planning area and SCWA would be the primary water purveyor within the City. SCWA has engaged in a long-term water supply planning process through its participation in the regional Water Forum planning process and the recent adoption of its Zone 40 Water Supply Master Plan (WSMP) (2005) (described further below). The WSMP identifies the acreage of land area that could be served by existing and projected future water supplies through 2030 for an expected growth area of Sacramento County (as identified in the Sacramento County General Plan [1994]), based on planned land use pattern and density information available at the time the report was prepared. This area is known as the 2030 Study Area. SCWA's water supplies include surface water and groundwater resources that would, over the long-term, be conjunctively used to ensure that adequate groundwater levels are maintained throughout the Central Sacramento Groundwater Basin (Basin) and that both surface water and groundwater supplies are adequate to meet projected demands through 2030. While a majority of the City's planning area falls within Zone 40, only a portion falls within a subarea known as the 2030 Study Area.

The Planning Area is located within the SCWA Zone 40 North Service Area (NSA). Existing water demands for that part of the Planning Area within the NSA are 2,404 afy, and are projected to reach 37,314 afy by year 2030 (EDAW, 2006). SCWA has identified water supplies in the amount of 37,314 afy by year 2030 to serve that part of the City's Planning Area that is within SCWA Zone 40 NSA. With implementation of the Zone 40 WSMP, Zone 41 Urban Water Management Plan (UWMP), and Zone 41 Water System Infrastructure Plan (WSIP), and the NSA WSIP, Zone 40's NSA service area would be served with reliable, long-term water supplies. SCWA is a groundwater appropriator and intends to continue to extract groundwater to meet its customer demands within the limits of the negotiated sustainable yield of the Central Basin. SCWA has secured and is in the process of securing surface water entitlements that would allow SCWA to meet its projected 2030 water demands (see below). Because SCWA intends to continue pumping groundwater, it has secured most of its surface water rights, has secured rights to beneficial reuse of remediated groundwater within its service area, and is proceeding with development of several water supply treatment and conveyance facilities, SCWA water supplies are considered to have a high reliability of being delivered (see **Appendix 4.9**). However, additional conveyance and treatment facilities would need to be approved and constructed to deliver these supplies to the NSA.

Providing reliable service to NSA is perhaps the most challenging of the three (i.e., North, Central, and South) SCWA service areas. Challenges surrounding the provision of water to the NSA are: 1) the presence of groundwater contamination, 2) agreements prescribing the priority uses for replacement water supplies, 3) constructing the conveyance and treatment facilities to serve new development within Aerojet lands, 4) constructing the infrastructure necessary to serve new development in the Sunrise Douglas Community Plan area, 5) substantial changes in ground surface elevation creating a need for pressure zones, and 6) the relatively low yield of groundwater in the upper elevations where new development is taking place.

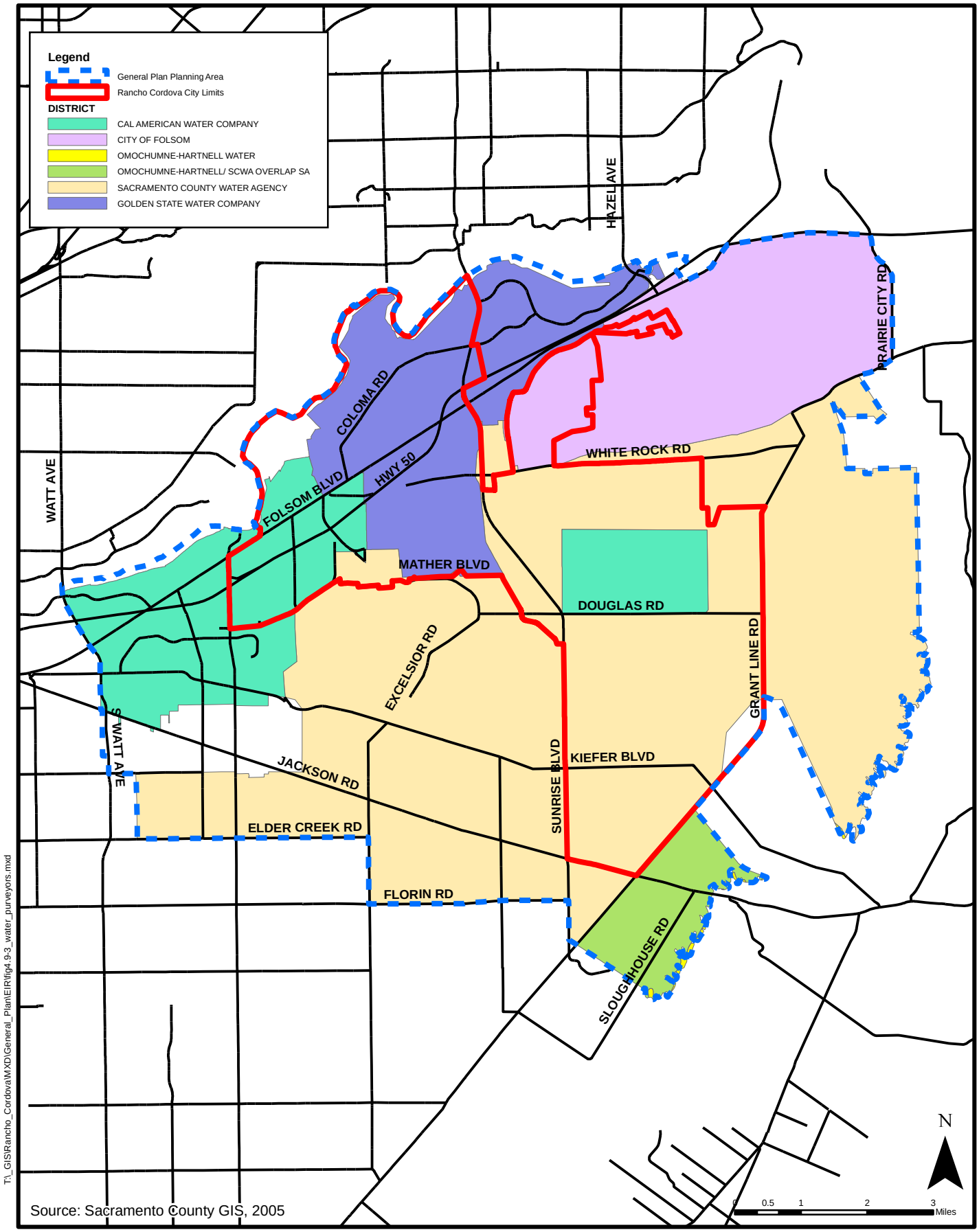

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Figure 4.9-3
Water Purveyors
Within the General Plan Planning Area

SCWA's use of replacement water supplies to serve the NSA and Aerojet lands is considered a challenge because the amount of replacement water supplies that SCWA has available to serve new growth and development is dependent upon the amount of water that is ultimately delivered to other water purveyors for replacement water supplies (see below). For example, GSWC has an agreement for replacement water supplies; 5,000 acre feet per year (afy) for diversion at the Folsom South Canal, and up to an additional 10,200 afy through SCWA Zone 40 facilities. SCWA has also indicated that it anticipates entering into an agreement with Cal-Am to provide replacement water supplies and is currently planning on providing 5,000 afy. However, a separate replacement water supply agreement does not currently exist between SCWA and Cal-Am. The highest priority use for remediated groundwater is for replacement water for GSWC and Cal-Am. Once replacement water supply obligations are met (maximum of 20,200 afy combined for GSWC and Cal-Am), SCWA would use excess replacement water supplies (approximately 15,000 afy) to serve new growth and development on Aerojet lands (Rio del Oro, Westborough, etc.).

While SCWA has planned for adequate infrastructure (see below) and the water supplies, themselves, are considered to have a high reliability of implementation (i.e., delivery to a designated user), SCWA could be limited in the amount of replacement water supplies (i.e., 15,000 afy) it is able to deliver to new development because GSWC's and Cal-Am's agreements to receive replacement water supplies have priority over SCWA's delivery of replacement water supplies to new development.

Water Supply Sources

Table 4.9-1 summarizes current and planned SCWA water supplies for Zone 40.

TABLE 4.9-1
AVERAGE ANNUAL CURRENT AND PLANNED WATER SUPPLIES
FOR SCWA ZONE 40 THROUGH YEAR 2030

Source	Water Supply (afy)
U.S. Bureau of Reclamation CVP Supply (SMUD 1, SMUD 2, and Fazio Water)	45,000
Appropriative Water Supplies [1]	14,586
Wholesale Water Agreement to serve the portion of Zone 40 that lies within the City of Sacramento's American River POU	9,300
Other Water Transfer Supplies[2]	5,200[2]
Zone 40 Groundwater[3]	40,900
Recycled Water (current use)[4]	4,400
Total Supplies	**114,186[5]**

Notes:
afy = acre-feet per year; CVP = Central Valley Project; GW = groundwater; POU = Place of Use; SMUD = Sacramento Municipal Utility District

1 *This reflects the expected long term average yield and not the contract amount*
2 *This is an estimate of water that would be purchased only in dry and critically dry water years e.g. years when rainfall and hence water supplies are below and substantially below average and is not included in the total supply calculation.*

3 Long-term annual average supply.
4 A master plan by Sacramento Regional County Sanitation District is currently under way to evaluate the potential of expanding deliveries of recycled water.
*5 Total water supplies identified in this table exceed those identified in Table 1 of the Water Supply Evaluation for the City of Rancho Cordova General Plan (see **Appendix 4.9**) because Table 1 reflects a scenario whereby SCWA's conjunctive use program would ensure water supplies did not exceed the WSMP Zone 40 water demands of 113,064 afy. Table 2 of the Water Supply Evaluation for the City of Rancho Cordova General Plan shows average-annual supplies, whereby the average annual groundwater supply may not be reflective of the total amount that is pumped in a year to meet the actual demand, but rather the long-term average groundwater supply that is projected to be available.*

Source: EDAW, 2006

As noted in **Table 4.9-1**, these water supply sources consist of the following:

- **Surface Water**

    - Appropriative Water Rights – SCWA has submitted an application to the SWRCB for the appropriation of water from the American and Sacramento Rivers. This water is considered "intermittent water" that typically would be available during the winter months of normal or wet years (e.g. years when rainfall and hence water supply are greater than average). This water could be used to meet system demands and possibly for future groundwater recharge through recharge percolating groundwater basins or direct injection of surface water into the aquifer. Based on water supply modeling (i.e., Calsim II) performed for the Zone 40 WSMP and the Freeport Regional Water Authority for the FRWP project, the maximum, minimum, and average annual use of appropriative water are projected to be 71,000 acre-feet (AF), 0 (acre-feet) AF, and 21,700 AF, respectively. In close to 30% of the years, 12,000 AF or less of appropriative water is projected to be used. The contract amount is based on the maximum water supply requirement of 71,000 afy.

    - Sacramento Utility District (SMUD) 1 Assignment - Under the terms of a three-party agreement (SCWA, SMUD, and the City of Sacramento), 15,000 acre-feet per year (afy) of SMUD's Central Valley Project (CVP) contract water to SCWA for municipal and industrial use. This CVP contract assignment is complete.

    - SMUD 2 Assignment - SMUD's PSA directs SMUD to assign a second 15,000 afy of surface water to SCWA for municipal and industrial uses and for SCWA to construct groundwater facilities necessary to provide water to meet SMUD's dry-year water shortage demand of up to 10,000 afy at its cogeneration facility. This CVP contract assignment is complete.

    - CVP Water Public Law 101-514 - In April 1999, SCWA obtained a CVP water service contract pursuant to Public Law 101-514 that provides a permanent water supply of 22,000 afy with 15,000 afy allocated to SCWA. This water supply is known as "Fazio" water.

    - Based on modeling performed for the Zone 40 WSMP, the maximum, minimum, and average annual use of CVP (SMUD 1, SMUD 2, and Fazio) water were projected to be 45,000 AF, 8,700 AF, and 38,000 AF, respectively. The 45,000 AF maximum reflects the firm supply of CVP water in most years. Lesser amounts result from CVP deficiencies or cutbacks in dry years as per the terms of the municipal supply contract.

- **Groundwater**

    - Over the long-term average, SCWA's extraction of groundwater would not exceed 40,900 afy. However, during drought years when surface water availability is limited,

groundwater production would increase to 70,000 afy to make up for the reduction in surface water deliveries (i.e., drought year cut backs). SCWA's source of groundwater supply comes from the Central Basin through a series of extraction wells and groundwater treatment plants. **Table 4.9-2** summarizes historic and projected groundwater pumping in Zone 40. This groundwater source would include (in the future) 15,000 afy for future growth in the Planning Area from the Eastern County Replacement Water Supply Project (see below).

TABLE 4.9-2
HISTORICAL AND PROJECTED GROUNDWATER PUMPING IN ZONE 40

Basin Name	Pumping by Year (afy)									
	2000	2001	2002	2003	2004	2010	2015	2020	2025	2030
Central Sacramento Zone 40	20,022	22,306	22,949	22,745	25,790	34,125	28,837	40,470	31,324	39,097

Notes:
afy = acre-feet per year. Projected groundwater pumping based on modeling performed for the Urban Water Management Plan and Zone 40 WSMP. Long-term average annual groundwater supply of 40,900 afy agreed to in the WFA used for planning purposes. The decrease in groundwater extractions in 2015 and in 2025 is a result of increase surface water treatment capacity coming on-line.
Source: EDAW, 2006

Existing SCWA Water Agreements

SCWA has entered into agreements that require the provision of water to other area water purveyors and interests. These are summarized below:

- *Aerojet and Boeing* – The Aerojet and Boeing agreements transfer ownership of remediated groundwater (associated with clean-up activities, see Section 4.4 [Hazards and Human Health]) to SCWA to be used as a replacement water supply for groundwater capacity lost by SCWA, Golden State Water Company (GSWC), and California-American Water Company (Cal-Am) as a result of past groundwater contamination.

- *Golden State Water Company* – SCWA's agreement with GSWC specifies delivering 5,000 afy of replacement to their intake facilities on the Folsom South Canal. GSWC's need for additional replacement water (i.e., water amounts greater than 5,000 afy) would be determined annually in a meet-and-confer session with SCWA. Regardless of demonstrated need, GSWC's maximum allocation of replacement water supply in any year could not exceed 15,200 AF (less the 5,000 afy delivered to GSWC at the Folsom South Canal).

- *California-American Water Company* – Currently, no separate replacement water supply agreement exists between SCWA and Cal-Am. However, it is the intent of SCWA to negotiate such an agreement. During negotiations SCWA has been working cooperatively with the City of Sacramento to investigate ways to deliver Place of Use (POU) surface water (or replacement water in dry years) to Cal-Am's service area that lies within the POU (this includes up to 5,000 afy of either POU or replacement water). This would allow groundwater currently being extracted in the POU area to be imported into areas affected by groundwater contamination.

- *Memorandum of Agreement (MOA) for Management of Water and Environmental Resources Associated with the Lower Cosumnes River* – Under the terms of this agreement,

SCWA would provide 5,000 afy of remediated groundwater or provide a contribution of capital towards the purchase of an alternative supply for the Cosumnes River Flow Augmentation Project. In any year that water is not required to fulfill the objectives of the Cosumnes River Augmentation Project SCWA reserves the right to use the 5,000 AF of water for other purposes. Remediated water would be conveyed down the Folsom South Canal for delivery to the Cosumnes River from October through December. This water would be delivered though facilities constructed as part of the Eastern County Water Supply Project.

Existing and Planned Water Supply Infrastructure Projects

The following are major water supply infrastructure projects that would provide water service to the Planning Area:

- *Zone 40 Central Water Treatment Plant* – SCWA plans to construct the 78-acre Central Water Treatment Plant (CWTP) and associated water supply facilities to provide up to 85 million gallons per day (mgd) of potable water to existing and approved urban development within the SCWA Zone 40 area. The CWTP site is located at the northeast corner of Florin and Knox Roads, west of the Florin Road/Excelsior Road intersection in Sacramento County. An associated SCWA corporation yard to house facilities and store equipment would be colocated on the site, along with a groundwater treatment facility. The CWTP would have the capacity to treat 85 mgd of raw surface water and 13 mgd of raw groundwater to serve approved land uses in the Zone 40 service area. Initial phases of facility construction are anticipated to be completed by 2010 with full buildout by 2019.

- *Freeport Regional Water Project (FRWP)* – SCWA and East Bay Municipal Utility District are constructing a diversion structure on the Sacramento River near the community of Freeport and a raw-water conveyance pipeline from the diversion structure to the central portion of Zone 40. SCWA is would construct a 85-mgd surface-water treatment facility in the central portion of Zone 40 (CWTP and described above), and the associated treated-water conveyance pipelines to deliver water to SCWA customers. This project is anticipated to be completed by 2010.

- *North Vineyard Well Field (formerly Excelsior Road Well Field) Project* – This well field would provide for the extraction of up to 10,000 afy of groundwater for replacement and/or new water supplies to serve existing or proposed development within Zone 40. Ultimately it would consist of up to eight wells located near Excelsior Road and Florin Road with a 30-inch raw-water pipeline to convey water to a new water treatment plant (Anatolia Water Treatment Plant located near the southeast corner of the intersection of Sunrise Boulevard and Douglas Road in the Sun Ridge Specific Plan area). The first phase consists of three wells (4,500 gallons per minute [gpm]) and would be expanded as new development or replacement supplies are needed. If wells within SCWA's Mather/Sunrise system (in the south west portion of the Planning Area) are shut down because of past groundwater contamination, any additional capacity remaining in the well field can be claimed as a replacement supply (as opposed to a new water supply) by SCWA. This project is currently being constructed, with the initial phase estimated to be complete at the end of 2006. The project is expected to be built out by 2011. Water from this project has been allocated to the approved Sun Ridge Specific Plan area within the City and is also anticipated to be the initial water source for the proposed The Preserve at Sunridge project immediately south of the Sun Ridge Specific Plan area (see **Appendix 4.9**).

- *Eastern County Replacement Water Supply Project* – This project is a proposal by SCWA to use remediated groundwater supplies obtained through the agreements between the

County, SCWA, Aerojet, and McDonnell Douglas Corporation for replacement water lost as a result of past groundwater contamination in the Sunrise corridor area. The remediated groundwater would replace lost groundwater supplies of Cal-Am or GSWC or would be used to serve new urban development on lands known as Aerojet lands in the northern portion of Zone 40 and for enhanced fishery flows along the Cosumnes River. This project currently is under environmental review and facilities included within this project are anticipated to be constructed by 2010.

Golden State Water Company

Golden State Water Company (GSWC) also serves a portion (generally the northeastern portion) of the Planning Area. All of GSWC's service area is within the City's Planning Area. GSWC owns and operates the Cordova System, a water treatment and conveyance system that serves GSWC's service area. GSWC relies on both surface and groundwater to meet water demands within its service area. GSWC is projecting buildout within its service area by 2020.

Current (2005) water demands in the Cordova System is estimated at 16,413 afy with future (year 2030) water demands projected at 20,829 afy. GSWC has identified sufficient water supplies to meet this projected 2030 demand. The Cordova System obtains its water supply from three sources: surface water, local groundwater, and replacement water under the settlement agreement with Aerojet. In general, GSWC's supply is expected to be 100% reliable through 2030. This reliability is a result of: a highly reliable surface water supply from the American River, implementation of the settlement agreement prescribing priority uses for SCWA replacement water supplies (see above), and historically reliable groundwater supply from the Central Basin (see **Appendix 4.9**).

Water Supply Sources

Table 4.9-3 summarizes existing and planned water supply sources for GSWC.

TABLE 4.9-3
CURRENT AND PLANNED WATER SUPPLIES FOR THE GSWC CORDOVA SYSTEM (AFY)

Source	Year					
	2005	2010	2015	2020	2025	2030
Surface water from American River[1]	5,000	5,000	5,000	5,000	5,000	5,000
SMUD Water Transfer[2]	5,000	0	0	0	0	0
Aerojet Replacement Water via Folsom South Canal[3]	0	5,000	5,000	5,000	5,000	5,000
GSWC Untreated Groundwater[4]	8,116	7,450	4,500	4,500	4,500	4,500
Aerojet Replacement Water through SCWA[5]	0	2,068	5,999	6,314	6,329	6,329
Recycled Water	0	0	0	0	0	0
Total	**18,116**	**19,518**	**20,499**	**20,814**	**20,829**	**20,829**

Notes:
afy = acre-feet per year; GSWC = Golden State Water Company; SCWA = Sacramento County Water Agency; SMUD = Sacramento Municipal Utility District

1 *GSWC American River rights.*
2 *Under this water transfer from SMUD, GSWC is entitled to divert up to 10,000 afy from the American River through July 29, 2007, and for additional years upon request. However, GSWC plans to use only 5,000 afy of this entitlement because of limited surface-water treatment capacity and its desire to maintain its groundwater rights through the Aerojet replacement-water operations.*
3 *Aerojet replacement-water obligation.*
4 *Based on GSWC's maximum annual extractions before 2005 and projected changes to groundwater supply through 2030.*
5 *SCWA would recapture, treat, and deliver groundwater to GSWC up to an additional 10,200 afy of groundwater discharged by Aerojet into the American River. Please note that GSWC is relying on a total of 11,329 afy of replacement supplies from SCWA. For amounts greater than 10,000 afy (i.e., 1,329 afy), GSWC and SCWA would need to negotiate the provision of these supplies on a yearly meet-and-confer basis.*

Source: EDAW, 2006

As noted in **Table 4.9-3**, these water supply sources consist of the following:

- **Surface Water**

    - Pre-1914 American River Water Rights – GSWC possesses a pre-1914 appropriative right to divert up to 10,000 afy from the American River via the Folsom South Canal at a maximum withdrawal rate of 20 cubic feet per second (cfs) or 13 million gallons per day (mgd). Appropriative surface water rights initiated prior to 1914 are not subject to the Water Commission Act and successor laws relating to water right permitting requirements, and thus do not require a permit from the State Water Resources Control Board. In 1994, GSWC entered into an "Agreement for Reallocation of Water under Co-Tenancy Agreement" with the City of Folsom to lease 5,000 afy of its water rights to the City of Folsom. The company preserved 5,000 afy of the remaining water right which is diverted from the Folsom South Canal for use within the Cordova System. During the last 20 years, GSWC has used as much as 4,784 afy of this entitlement.

- **Groundwater**

    - GSWC pumps groundwater for the Cordova System from 15 production wells located in the Central Basin. The Cordova System has a total normal-year capacity of 21,669 gpm (31,500 afy). In some areas of the basin, groundwater has been impaired by contaminants, including volatile organic compounds (VOCs), perchlorate, and N-nitrosodimethylamine (NDMA) from Aerojet's rocket propellant manufacturing and testing facility located immediately east of the Cordova System. Groundwater contamination forced GSWC to decommission some wells. However, decommissioning the wells has not lowered GSWC's overall system production capacity because non-contaminated groundwater wells have been modified to increase their rated capacity.

    - It has been predicted that by 2015 all but two of GSWC's wells would experience contamination levels that may cause their inactivation. The two remaining wells, Wells 17 and 23, are not expected to be affected by contamination until at least 2032. These wells have a combined production capacity of 3,100 gallons per minute (gpm).

    - Groundwater lost as a result of contamination would be replaced by Aerojet under its replacement water obligations. Approximately 5,000 afy of remediated groundwater would be discharged to the American River system. This water would be wheeled through, and withdrawn from, the Folsom South Canal: GSWC's current surface water point of diversion. Up to an additional 10,200 afy of remediated groundwater could be delivered to GSWC via SCWA's FRWP and Central WTP.

Table 4.9-4 presents the projected groundwater pumping volumes by the Cordova System. As a result of changes in groundwater quality, the groundwater supply for the Cordova System is expected to decrease between 2005 and 2015.

TABLE 4.9-4
GSWC'S PROJECTED GROUNDWATER PUMPING VOLUMES BY CORDOVA SYSTEM (AFY)

Basin Name	Year					
	2005	2010	2015	2020	2025	2030
Central Sacramento	8,116	7,450	4,500	4,500	4,500	4,500

Note: afy = acre-feet per year
Source: EDAW, 2006

Existing Water Supply Infrastructure

The Cordova System's distribution facilities have been designed with several interconnections to neighboring water purveyors for emergency purposes. GSWC maintains three 6-inch interconnections with the Cal-Am's distribution system on the west side of the Cordova System, and a 12-inch interconnection with the City of Folsom's distribution system at the eastern edge of the Cordova System. In addition, the Cordova System has five water storage reservoirs with a total capacity of 9.5 million gallons; one additional reservoir with additional 5.0 million gallons of storage capacity is scheduled to be online in spring 2006. Water treatment occurs at the Coloma Water Treatment Plant (WTP) and the Pyrites WTP.

California-American Water Company (Cal-Am)

Cal-Am is a privately owned water purveyor that provides urban water supply to portions of Rancho Cordova located near Sunrise Boulevard and Douglas Road. Cal-Am purchases wholesale water from SCWA. Cal-Am's Northern Division consists of nine distinct water systems forming one operational entity that is the largest private water operation in Sacramento County with a total of about 43,100 connections serving an estimated 170,500 people. The 9 systems are not all contiguous, but are surrounded by numerous other utilities. The 9 systems that comprise the Northern Division include: Antelope, Arden, Lincoln Oaks, Parkway, Suburban/Rosemont, Sunrise, West Placer, Isleton and Walnut Grove. The Sunrise system is also known as Security Park; however, it is referred to as Sunrise in the Cal-Am's Urban Water Management Plan (UWMP). Suburban/Rosemont and Sunrise are the two Cal-Am systems that provide water to a portion of the Planning Area.

Current (2005) water demands in that part of the Planning Area served by Cal-Am is estimated at 14,334 afy with future (year 2025) water demands projected at 14,477 afy. Cal-Am has identified sufficient water supplies to meet this projected water demand of 14,477 afy by year 2025. Cal-Am operates more than 100 groundwater wells in the Northern Division (inside and outside the Central Basin) for a total theoretical capacity of approximately 100,000 afy. It should be noted that while Cal-Am's system could pump up to 100,000 afy of groundwater, it is highly unlikely that Cal-Am would undertake such an aggressive groundwater pumping scenario in the Central Basin because of its commitments to adhere to the negotiated sustainable yield of the Central Basin (i.e., 273,000 afy), in the Water Forum Agreement (described below). Further, this pumping capacity is for Cal-Am's Northern Division, of which some service areas are located outside the Central Basin. While all Cal-Am service areas, except for Isleton and Walnut Grove, have interties with other neighboring water purveyors; it is unknown what amount of Cal-Am's groundwater pumping capacity is available to exclusively serve the Sunrise and Suburban/Rosemont service area within the Planning Area. Nonetheless, the presence of intertie connections between service areas at a minimum indicates that sufficient emergency groundwater reserves are available within its system. Further, groundwater currently pumped to serve the Northern Division and projected future pumping amounts are considered to have a high reliability of being delivered because Cal-Am has historically pumped a reliable supply of groundwater from its system. Cal-Am would tailor the Northern Division's water supply mix during dry and very dry years in cooperation with the Sacramento Groundwater Authority and the Central Sacramento Groundwater Forum determinations as to how much surface water would be available under conjunctive use programs in any given year. Cal-Am projects that they would be able to use as much as 23,300 af of imported surface water supplies during normal years. In a very dry year, or the third year of a multiple dry year scenario, Cal-Am projects 100% of the Division's total water supply would be groundwater.

Similar to the other water purveyors that rely on groundwater from the Central Basin, Cal-Am's groundwater wells within the Sunrise and Suburban/Rosemont service area could at some future point become impaired by the local contamination problem associated with past operations at Aerojet. Cal-Am has however has not entered into an agreement with SCWA for replacement water supplies. However, it is SCWA's intention to enter into an agreement for replacement water supplies with Cal-Am; and as a result, SCWA has planned for approximately 5,000 afy of replacement water supplies allocated to Cal-Am (see above). Although Cal-Am has not relied upon replacement water supplies to meet future demands in its UWMP, water supplies potentially lost from groundwater contamination (up to 5,000 afy) and replaced by SCWA are considered to have a high reliability of being delivered.

Water Supply Sources

Table 4.9-5 summarizes both projected water demands and sources of water supply for Cal-Am.

TABLE 4.9-5
SUMMARY OF CURRENT AND PROJECTED WATER DEMAND AND SOURCES OF WATER SUPPLY (AFY) FOR CAL-AM

Year	2005	2010	2015	2020	2025
Projected Demand	**47,620**	**50,510**	**52,500**	**54,380**	**56,190**
Projected Supply by Source					
Cal-Am Groundwater	43,600	33,650	34,180	33,550	33,910
Wholesale Surface Water Supply Purchases:					
Placer County Water Agency (West Placer Service Area)	140	1,360	2,720	4,080	5,440
SCWA (Parkway)	2,420	3,500	3,500	4,000	4,000
Citrus Heights Water District (Lincoln Oaks Intertie with SSWD)	20	9,000	9,000	9,500	9,500
City of Sacramento (Arden Intertie)	1,440	3,000	3,100	3,250	3,340
Transfers and Exchanges	(See "Wholesale Purchases" above. Transfers and exchanges of water occur pursuant to conjunctive-use agreements.)				
Total Water Supply	**47,620**	**50,510**	**52,500**	**54,380**	**56,190**
Sunrise Service Area Demands	48	48	48	48	48
Suburban/Rosemont Service Area Demands	14,286	14,322	14,358	14,394	14,429
Total Cal-Am Water Demands within City planning area[1]	**14,334**	**14,370**	**14,406**	**14,442**	**14,477**

Notes:
afy = acre-feet per year; Cal-Am = California-American Water Company; SCWA = Sacramento County Water Agency; SSWD= Sacramento Suburban Water District
[1] *Estimated demands for City's Planning Area based on projected population growth and percentage of water use for service areas within planning area compared to the total Northern Division service area.*
Source: EDAW, 2006

Sunrise Service Area

Citizens Utilities (a private water utility provider which was later purchased by Cal-Am) purchased the Sunrise service area (also known as Security Park) from McDonnell Douglas in the early 1980s. It consists of approximately 2.8 square miles of land located immediately north of Douglas Road and east of Sunrise Boulevard, approximately 1.5 miles east of Mather Airport. Presently, this area is mostly undeveloped, serving approximately 20 commercial customers. The system includes five groundwater wells, only one of which is in regular use, with other wells available as needed for backup. The Sunrise Service area accounts for less than 0.1% of the Northern Division's production and sales.

Suburban Service Area

The Suburban service area consists of two systems, the Suburban system and the Rosemont system. These systems lie adjacent to each other and span the north and south sides of U.S. Highway 50 about 9 miles east of downtown Sacramento. This service area (i.e., Suburban /Rosemont) is located entirely within the City's planning area, south of the American River, and north of Mather Airport and includes portions of the developed (i.e., urban) areas of Rancho Cordova. There are approximately 17,000 customers in the Suburban/Rosemont area, which are served via 8 groundwater wells for the Rosemont subarea and 20 wells within the Suburban subarea. In all, the Suburban service area accounts for approximately 30% of the Northern Division's production.

Omochumne-Hartnell Water District

Omochumne-Hartnell Water District (OHWD) is a primarily agricultural water district. While OHWD does not own any water rights, it owns and operates surface water and groundwater distribution facilities for landowners in its service area. Land use within OHWD's service area is primarily in agriculture. Landowners divert water from the Cosumnes River using flashboards to create diversion dams, which allows flood irrigation for agricultural fields adjacent to the Cosumnes River. Landowners that are not located adjacent to the Cosumnes River have groundwater wells that are pumped for irrigation.

4.9.2 REGULATORY FRAMEWORK

FEDERAL

Clean Water Act

The Clean Water Act (CWA) regulates the water quality of all discharges into waters of the United States including wetlands, perennial and intermittent stream channels. Section 401, Title 33, Section 1341 of the CWA sets forth water quality certification requirements for "any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters." Section 404, Title 33, Section 1344 of the CWA in part authorizes the U.S. Army Corps of Engineers to:

- Set requirements and standards pertaining to such discharges: subparagraph (e);
- Issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites": subparagraph (a);
- Specify the disposal sites for such permits: subparagraph (b);
- Deny or restrict the use of specified disposal sites if "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies and fishery areas": subparagraph (c);
- Specify type of and conditions for non-prohibited discharges: subparagraph (f);
- Provide for individual State or interstate compact administration of general permit programs: subparagraphs (g), (h), and (j);

- Withdraw approval of such State or interstate permit programs: subparagraph (i);
- Ensure public availability of permits and permit applications: subparagraph (o);
- Exempt certain Federal or State projects from regulation under this Section: subparagraph (r); and,
- Determine conditions and penalties for violation of permit conditions or limitations: subparagraph (s).
- Section 401 certification is required prior to final issuance of Section 404 permits from the U.S. Army Corps of Engineers.

National Pollutant Discharge Elimination System Permit Program (NPDES)

NPDES was established under the Clean Water Act to address municipal and industrial discharges to surface waters. This includes regulations for point-source discharges (e.g., wastewater treatment plant effluent discharges) and non-point discharges associated with stormwater. In general, NPDES permit provisions consist of discharge restrictions and limitations (including numeric and narrative) intended to protect beneficial uses of the receiving water as well as maintenance of public health and safety.

Phase 1 of NPDES permitting program for municipal discharges of stormwater for urban areas where the population exceeded 1000,000, industrial activity stormwater discharges and general construction activity discharges (disturbance of 5 acres or greater) was established in 1990. Phase 2 of NDPES (2003) addresses municipal discharges of urban areas of less than 100,000 in population as well as for construction activities that disturb 1 acre or greater.

Federal Emergency Management Agency (FEMA)

Sacramento County is a participant in the National Flood Insurance Program (NFIP), a Federal program administered by the Federal Emergency Management Agency (FEMA). Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of once in 100 years although such a flood may occur in any given year. The County is occasionally audited by the DWR to insure the proper implementation of FEMA floodplain management regulations.

STATE

Senate Bill (SB) 610 and Assembly Bill (AB) 901

During the 2001 regular session of the State Legislature, SB 610 and AB 910 – Water Supply Planning, were signed and became effective January 1, 2002. SB 610 amends Public Resources Code section 21151.9, requiring any EIR, negative declaration, or mitigated negative declaration for a qualifying project to include consultation with affected water supply agencies (current law applied only to NOPs). SB 610 also amends the following: Water Code 10656 and 10657 to restrict state funding for agencies that fail to submit their urban water management plan to the Department of Water Resources; and Water Code section 10910 to describe the water supply assessment that must be undertaken for projects referred under PRC Section

21151.9, including an analysis of groundwater supplies. Water agencies would be given 90 days from the start of consultation in which to provide a water supply assessment to the CEQA lead agency; Water Code section 10910 would also specify the circumstances under which a project for which a water supply assessment was once prepared would be required to obtain another assessment. AB 910 amends Water Code section 10631, expanding the contents of the urban water management plans to include further information on future water supply projects and programs and groundwater supplies.

Senate Bill (SB) 221

SB 221 adds Government Code section 66455.3, requiring that the local water agency be sent a copy of any proposed residential subdivision of more than 500 dwelling units within 5 days of the subdivision application being accepted as complete for processing by the city or county. It adds Government Code section 66473.7, establishing detailed requirements for establishing whether a "sufficient water supply" exists to support any proposed residential subdivisions of more than 500 dwellings, including any such subdivision involving a development agreement. When approving a qualifying subdivision tentative map, the city or county must include a condition requiring a sufficient water supply to be available. Proof of availability must be requested of and provided by the applicable public water system. If there is no public water system, the city or county must undertake the analysis described in section 66473.7. The analysis must include consideration of effects on other users of water and groundwater.

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Act governs the coordination and control of water quality in the state, and includes provisions relating to non-point source pollution. The California Coastal Commission, pursuant to the coastal act, specified duties regarding the federally approved California Coastal Management Program. This law requires that the State Water Resources Control Board, along with the California Coastal Commission, regional boards, and other appropriate state agencies and advisory groups, prepare a detailed program to implement the state's non-point source management plan on or before February 1, 2001. The law also requires that the state board, in consultation with the Commission and other agencies, submit copies of prescribed state and regional board reports containing information related to non-point source pollution, on or before August 1 of each year.

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) is responsible for the establishment and implementation of statewide water quality policy and delegates some of this responsibility to the nine regional water quality control boards in the state. SWRCB has established the state's nondegradation policy as well as the State Implementation Policy of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries.

Regional Water Quality Control Board, Central Valley Region

The RWQCB Central Valley Region provides planning, monitoring, and enforcement techniques for surface and groundwater quality in the Central Valley region. A basin plan provides more specific information for specific waterways within the region, in terms of establishing monitoring techniques to control pollutant levels within the waterways. The RWQCB also monitors storm water quality from construction activities through a National Pollutant Discharge Elimination System (NPDES) permitting process.

Central Valley Regional Water Quality Control Plan (Basin Plan)

The Central Valley Regional Water Quality Control Plan covers all the drainage basin areas for the Sacramento and San Joaquin rivers, extending approximately 400 miles from the California-Oregon border to the headwaters of the San Joaquin River. This plan describes the beneficial uses to be protected in these waterways, water quality objectives to protect those uses, and implementation measures to make sure those objectives are achieved.

National Pollutant Discharge Elimination System (NPDES)

The City of Rancho Cordova, along with the cities of Citrus Heights, Folsom, and Galt, and the County of Sacramento, operate under a National Pollutant Discharge Elimination System (NPDES) renewed in December 2002 to discharge urban runoff from Municipal Separate Storm Sewer Systems (MS4s) in their municipal jurisdictions (NPDES No. CAS082597). The permit requires that the City impose water quality and watershed protection measures for all development projects. The intent of the waste discharge requirements in the NPDES Permit is to attain water quality standards and protection of beneficial uses consistent with the Basin Plan. The NPDES permit prohibits discharges from causing violations of applicable water quality standards or result in conditions that create a nuisance or water quality impairment in receiving waters.

A key component of the NPDES permit is the implementation of the Stormwater Quality Improvement Plan (SQIP) for the City, which consists of six Minimum Control elements (public education and outreach, public involvement and participation, detection and elimination of illicit discharges, construction stormwater control, postconstruction stormwater control for new development and redevelopment, and pollution prevention/good housekeeping for municipal operations). The City has identified a range of Best Management Practices (BMPs) and measurable goals to address the stormwater discharges in the City. As part of the SQIP, there are several regulations/procedures in place that implement the SQIP that include the Grading and Erosion Control Ordinance (Chapter 16.44 of the existing County Code) and construction standards. A key component of this compliance is implementation of the SQIP new development element that requires stormwater quality treatment and/or BMPs in project design for both construction and operation. Postconstruction stormwater quality controls for new development require use of control measures set forth in the Guidance Manual for On-Site Stormwater Quality Control Measures (City of Sacramento and County of Sacramento, 2000). This includes use of regional water quality control features (e.g., detention basins) for large developments (over 100 acres), use of treatment-control measures (swales, filter strips, media filters and infiltration), house-keeping practices (e.g., spill prevention, proper storage measures and clean-up procedures).

LOCAL

Sacramento County General Plan

The County of Sacramento General Plan was adopted by the County Board of Supervisors in December 1993 and is currently undergoing an update. The County General Plan policies and implementation measures apply to development within the Rancho Cordova General Plan Planning Area that are outside of the City limits, until such time that areas are annexed into the City of Rancho Cordova. The Conservation Element, Open Space Element, and the Safety Element within the County General Plan include policies and implementation measures relevant to the surface and groundwater resources as well as water quality protection and flooding issues within Sacramento County. Key policies include urban runoff control and water quality (policies CO-9 through CO-13), water supply considerations (policies CO-17 through CO-20 and CO-26),

groundwater protection (policies CO-25, CO-27, CO-28 and CO-29) and drainage/flooding (policies CO-103 and CO-104).

Sacramento Area Flood Control Agency

The Sacramento Area Flood Control Agency (SAFCA) was formed in 1989 by the California Legislature to coordinate regional flood control. SAFCA is a joint powers agency, combining the efforts of the City of Sacramento, the counties of Sacramento and Sutter, the American River Flood Control District, and Reclamation District 1000. The main goal of the agency was to provide for 200-year flood protection levels.

Water Forum Agreement

Initiated in 1993, the Water Forum process brought together a diverse group of stakeholders that included business and agricultural leaders, citizens' groups, environmentalists, water managers, and local governments to evaluate available water resources and the future water needs of the Sacramento metropolitan area. These stakeholders identified two coequal objectives to guide the development of the Water Forum Agreement (WFA):

- Provide a reliable and safe water supply for the region's economic health and planned development through the year 2030.

- Preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River.

After a 6-year consensus-based stakeholder process, the WFA was completed. The WFA prescribes a regional conjunctive-use water program for the lower American River and the connected groundwater basin. The Water Forum also completed an environmental impact report (EIR) for the Water Forum Proposal. This document was certified by the two lead agencies (the City of Sacramento and the County) in December 1999. Please note that the WFA was formerly named the Water Forum Proposal. At the time that the City and County of Sacramento adopted the project and they and other stakeholders adopted their purveyor specific agreements (PSAs), the name was changed to the WFA because it was an agreed-to proposal by all stakeholders.

The WFA includes PSAs that define the benefits each water purveyor will receive as a stakeholder and the actions each must take to receive these benefits. PSAs for the County of Sacramento/SCWA, the City of Sacramento, and Sacramento Municipal Utility District (SMUD) also describe commitments by these entities to address issues related to wheeling and wholesaling of surface water, CVP water transfers, and dry-year water supply in SCWA Zone 40.

The Water Forum process initiated a coordinated effort for regional water supply planning within the Sacramento region. Because of limited water supplies, the sensitive ecological values of the lower American River, and existing groundwater contamination within the Sacramento groundwater basins, purveyors and stakeholders came together and agreed to resolve longstanding conflicts through an interest-based negotiation process that led to formulation of the seven elements of the WFA and individual PSAs for each purveyor. In addition, all signatories to the WFA became members of the Water Forum successor effort, which is responsible for overseeing, monitoring, and reporting on the implementation of the WFA.

The WFA is a long-term water supply plan that addresses water supplies and demands to 2030 for existing (as of January 2000) purveyors and agencies. The WFA did not address water supplies beyond 2030 and did not account for new incorporations for the cities of Elk Grove and Rancho

Cordova. Rather, the WFA analysis was based on existing land use plans that were available at the time it was prepared (i.e., the *County of Sacramento General Plan* [1994] and other relevant agency general plans). Since the WFA was adopted in 2000, the cities of Elk Grove and Rancho Cordova have incorporated and pursued development and implementation of long-term land use plans. For demands that exceed those accounted for and evaluated in the WFA and EIR, the City may need to consult with regional water purveyors and stakeholders to the WFA (e.g., environmental and business interests) to determine how its proposed water demands fit within the overall regional water supply planning context.

SCWA Zone 40 Water Supply Master Plan

In response to the requirements of the WFA, SCWA has undertaken a comprehensive water supply planning process through its Zone 40 Water Supply Master Plan (WSMP) to identify available water supplies, the land area that could be served by these supplies, and necessary infrastructure to deliver water to a subarea within Zone 40 known as the 2030 Study Area. The 2030 Study Area encompasses approximately 46,600 acres (including portions of the cities of Elk Grove and Rancho Cordova) where development of industrial, commercial, office, and residential land uses is expected to occur and where demand for water is expected to be concentrated during the planning horizon of the WSMP (i.e., 2030).

As a signatory to the WFA, SCWA would ensure that water conservation and demand management—necessary steps to achieve WFA objectives—are integrated into future growth and water planning activities in its service area. SCWA identified a total acreage of land that could be served by existing and projected future water supplies and achieve the objectives of the WFA.

The Zone 40 WSMP provides a flexible plan of water management options that can be implemented and modified if conditions that affect the availability and feasibility of water supply sources change in the future. The goal of the Zone 40 WSMP is to define a conjunctive-use program of groundwater, surface water, remediated water, and recycled water supplies and a financing program for the construction of a new surface-water diversion structure, surface-water treatment plant, water conveyance pipelines, and groundwater extraction, treatment, and distribution facilities. The Zone 40 WSMP evaluates several options for facilities to deliver surface water and groundwater to development within Zone 40, as well as the financing mechanisms to provide water to the 2030 Study Area.

Urban Water Management Plans for Municipal Water Purveyors

The following 2005 UWMPs have been adopted by municipal water purveyors within the Planning Area:

- SCWA Zone 41 Urban Water Management Plan
- GSWC Cordova System Urban Water Management Plan
- California American Water Company Northern Division Urban Water Management Plan

SCWA Groundwater Management Plan

SCWA prepared a Groundwater Management Plan (GMP) for Zone 40. While GMPs are typically prepared for entire groundwater basins (in this case the Central Groundwater Basin), SCWA's GMP addresses only the boundaries of Zone 40, which encompasses most but not all of the Central Sacramento County Groundwater Basin (Central Basin). The decision to limit the extent of this GMP to Zone 40 was intentional because deliberations and discussion are currently under

way between interested stakeholders regarding future governance and management of a "groundwater authority" for the Central Basin. The Zone 40 GMP is intended to be a document that can grow into, and perhaps be superseded by, the GMP that would be needed for the entire Central Basin.

The purpose of the GMP is to maintain a sustainable, high-quality groundwater resource for the users of the groundwater basin underlying Zone 40. Development of the Central Basin GMP would be through the governance structure currently under negotiations by the Central Sacramento County Groundwater Forum (CSCGF) (discussed below).

Central Sacramento County Groundwater Forum

Acting on behalf of the Water Forum successor effort, Department of Water Resources (DWR) initiated the CSCGF by signing a Memorandum of Understanding with the Sacramento City-County Office of Metropolitan Water Planning (funded by SCWA and the City of Sacramento) to support discussions among stakeholders representing all segments of the community with an interest in developing a groundwater management structure and ultimately a GMP for the Central Basin. Stakeholders are organized into six interest groups: agriculture, agriculture/residential, business, environmental/community organizations, local governments/public agencies, and water purveyors. Each interest group is represented by five individuals who participate in the collaborative process known as the CSCGF.

The CSCGF is developing a GMP, which is currently in draft form and being reviewed by local stakeholder groups. It is anticipated that the new GMP would be adopted within the next 6 months (by August 2006). This plan would supersede the Zone 40 GMP described above.

Grading and Erosion Control Ordinance

As discussed above, the City of Rancho Cordova adopted the existing Sacramento County General Plan to guide development in the city. The City also adopted the Sacramento County Department of Water Resources (DWR) Grading and Erosion Control Ordinance (Chapter 16.44 of the existing County code), which establishes administrative procedures, minimum standard of review, and implementation and enforcement procedures for controlling erosion, sedimentation and other pollutant runoff from new development projects. The ordinance also addresses grading, filling, land excavation, construction activities and drainage as they relate to a particular project. The ordinance applies to any development project resulting in the excavation of 350 cubic yards of soil or more. The ordinance also ensures compliance with the City's National Pollutant Discharge Elimination System (NPDES) Permit, which is issued by the California Regional Water Quality Control Board (CRWQCB). The City of Rancho Cordova is co-permittee on a NPDES Permit along with Sacramento County and the cities of Sacramento, Folsom, Galt, and Citrus Heights, and Elk Grove. The ordinance requires a separate permit for work on each site unless sites are contiguous, have the same ownership, and are included in the approved plan. The ordinance sets forth performance standards and a permit can be denied, based on the following findings:

a) The applicant has failed to provide sufficient or adequate plans, information or other data necessary to allow determinations respecting compliance with the provisions of Chapter 16.44 or Sacramento County Specifications;

b) The environmental review has not been completed, or other provisions of this code or of state law pertaining to environmental review have not been satisfied, or the activity will have significant adverse environmental impacts, which cannot be

substantially mitigated. Where the activity will have significant adverse impacts, the Administrator may approve the permit in accordance with Chapter 16.44, Title 20, and CEQA (1970).

c) The proposed activity will violate provisions of Chapter 16.44, Sacramento County Specifications, or state or federal laws, and such violation cannot be resolved by the imposition of conditions pursuant to Section 16.44.170.

d) The proposed activity will adversely affect surrounding properties and public rights-of-way, the water quality of watercourses, and existing drainage (SCC 102 Section 3, 1995; SCC Section 2, 1993)

4.9.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

A hydrologic or water quality impact of the proposed City of Rancho Cordova General Plan would be considered significant if it would result in any of the following actions based on the following criteria (based on Appendix G of the CEQA Guidelines):

- A violation of any water quality standard or waste discharge requirement;
- A substantial depletion of groundwater supplies or substantial interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Result in the need for new systems or a substantial expansion or alteration to the local or regional water supplies that would result in a physical impact to the environment;
- Result in insufficient water supplies available to serve the project from existing entitlements and resources;
- A substantial alteration of 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, siltation, and/or environmental harm on- or off –site;
- A substantial increase in the rate or amount of surface runoff during construction and after construction in a manner that would result in flooding on- or off –site;
- Discharge of storm water from material storage areas, vehicle or equipment refueling stations, vehicle or equipment maintenance areas (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas;
- Discharge of storm water that would impair the beneficial uses of the receiving waters or areas that provide water quality benefit;
- Discharge of storm water that would cause significant harm to the biological integrity of the waterways and water bodies;

- A contribution of runoff water exceeding the capacity of existing or planned storm water drainage systems;
- A substantial additional source of polluted runoff;
- Any other action that substantially degrades water quality;
- Placement of 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;
- Placement of structures within a 100-year flood hazard area that would impede or redirect flood flows;
- Exposure of people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of a failure of a levee or dam.

METHODOLOGY

The hydrology and water quality analysis is based on a review of published information, reports, and plans regarding regional hydrology, climate, geology, water supply, water quality, and regulations. Relevant documents include: the City of Rancho Cordova Water Supply Evaluation for the Rancho Cordova General Plan (see **Appendix 4.9**); Rio del Oro Development Project Groundwater Impact Evaluation Technical Memorandum; SB 610 Water Supply Assessment (WSA) for the proposed Rio del Oro Specific Plan Project (2005); the Sacramento County Water Agency (SCWA) Zone 40 Water Supply Master Plan, Draft Environmental Impact Report, Technical Appendices, and Final Environmental Impact Report; the Water Forum Agreement (2000); the Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region; the Sacramento County General Plan Update Environmental Impact Report (1993); the Sacramento County Storm Water Quality Improvement Plan (2003); the Local Floodplain Management Plan for the County of Sacramento (2001); and applicable City and Sacramento County ordinances.

Information was also obtained from private and governmental agencies as well as Internet web sites. The analysis takes into account the anticipated buildout density and type of land uses proposed, as well as proposed and anticipated development throughout the Rancho Cordova Planning Area. The reader is referred to Section 3.0 (Project Description) regarding buildout projections for the City and Planning Area.

PROJECT IMPACTS AND MITIGATION MEASURES

Surface Water Quality Impacts

Impact 4.9.1 Implementation of the proposed General Plan could result in the discharge of polluted runoff, discharge that could cause harm to the biological integrity of waterways, adversely impact water quality standards, or otherwise substantially degrade surface water quality. This is considered a **potentially significant** impact.

Implementation of the proposed General Plan would consist of new development that includes construction, residential, commercial, recreation, and landscaping practices that could potentially impact water quality. Approximately 18,142 acres within the City and 47,074 acres of the entire the Planning Area (including the City) are anticipated to be disturbed and altered with urban levels of development at buildout under this General Plan.

Direct and indirect surface water quality impacts could occur from the following general land use activities:

- *Construction* – Grading and vegetation removal activities would result in the exposure of raw soil materials to the natural elements (wind, rain, etc.). During precipitation events, soil erosion can impact the surface runoff by increasing the amount of silt and debris carried by runoff. In addition, refueling and parking of construction equipment and other vehicles onsite during construction may result in spills of oil, grease, or related pollutants that may discharge into Planning Area drainages. Improper handling, storage, or disposal of fuels and hazardous materials or improper cleaning of machinery close to area waterways could cause water quality degradation.

- *Residential* – Residential activities often involve the conventional maintenance of yards, i.e. using fertilizers, herbicides, pesticides, fungicides, and other chemicals in and around the home that can enter storm water runoff. In addition, motor vehicle operation and maintenance introduces oil, anti-freeze, and other petroleum-based products, heavy metals such as copper from brake linings, and surfactants from cleaners and waxes into residential runoff. Uncontrolled pet and animal waste from yards, trails, and stream corridors can enter storm water runoff or flow directly into stream channels.

- *Commercial* – Commercial businesses often provide conventional maintenance of landscaped areas and use fertilizers, herbicides, pesticides, and other chemicals, which can enter into storm water runoff. Motor vehicle operation and maintenance also contributes oil, anti-freeze, and other petroleum-based products, heavy metals such as copper from brake linings, and surfactants into storm water runoff. Auto mechanic shops, farm and hardware supply stores, salvage yards, dry cleaners, graphic and photographic processing shops, recycling businesses, mining and aggregate operations, as well as other commercial and industrial businesses can potentially contribute concentrated quantities of hazardous substances directly or indirectly into storm water runoff, as well as groundwater, if not properly maintained and monitored.

- *Recreation* – Parks and golf courses often practice conventional landscaping methods and maintain recreation areas using fertilizers, herbicides, pesticides, and algaecides, which can enter into storm water runoff or flow directly into stream channels (currently there are two existing golf courses in the City of Rancho Cordova).

- *Infrastructure* – In addition to the above mentioned operational surface water quality pollutants from urban land use conditions, construction and operation of roadways and drainage improvements (e.g., culverts, discharge points and alteration of natural drainage flow conditions) can alter normal and storm drainage flows in waterways that could alter natural erosion and siltation conditions that would impact water quality in areas of total dissolved solids, turbidity, dissolved oxygen and other associated water quality parameters.

All total, runoff from urban development typically contains oils, grease, fuel, antifreeze, byproducts of combustion (such as lead, cadmium, nickel, and other metals), as well as nutrients from fertilizers and animal waste, sediment, pesticides, herbicides, and other pollutants. Also, sizable quantities of animal waste from pets (e.g., dogs, cats, and horses) contribute bacterial pollutants into surface and source waters. Precipitation during the early portion of the wet season displaces these pollutants into the storm water 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. The first flush of heavy metals and hydrocarbons typically occur during the first five inches of seasonal rainfall.

The amount and type of runoff generated by development within the Planning Area would be greater than that under existing conditions due to increases in impervious surfaces. There would be a corresponding increase in urban runoff pollutants and "first flush" roadway contaminants such as heavy metals, oil, grease, as well as an increase in nutrients (i.e., nitrates and phosphates), and pesticides and herbicides from landscaped areas. These constituents could result in water quality impacts to onsite and offsite drainage flows and to downstream area waterways, including the American, Consumnes, and Sacramento Rivers and local waterways and result in violations of applicable federal, state and regional water quality standards (e.g., Basin, state's nondegradation policy and State Implementation Policy of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries).

As described in further detail in Section 4.10, Biological Resources, surface waters provide for a variety of functions for plants and animals, including a water source, habitat, foraging, cover, and migration and movement corridors. Adverse impacts to surface waters in regards to changes to natural flow conditions and water quality can cause detrimental harm to the organisms that rely upon these waters, and to the biological integrity as a whole. The reader is referred to Section 4.10 for further discussion of these biological resource impacts.

As previous noted, the City of Rancho Cordova, along with the cities of Citrus Heights, Folsom, and Galt, and the County of Sacramento, operate under a NPDES permit for municipal discharges to surface waters (NPDES No. CAS082597). The permit requires that the City impose water quality and watershed protection measures for all development projects. The intent of the waste discharge requirements in the NPDES Permit is to attain water quality standards and protection of beneficial uses consistent with the Basin Plan. The NPDES permit prohibits discharges from causing violations of applicable water quality standards or result in conditions that create a nuisance or water quality impairment in receiving waters. A key component of the NPDES permit is the implementation of the Stormwater Quality Improvement Plan (SQIP) for the City, which consists of six Minimum Control elements (public education and outreach, public involvement and participation, detection and elimination of illicit discharges, construction stormwater control, postconstruction stormwater control for new development and redevelopment, and pollution prevention/good housekeeping for municipal operations). The City has identified a range of Best Management Practices (BMPs) and measurable goals to address the stormwater discharges in the City. As part of the SQIP, there are several regulations/procedures in place that implement the SQIP that include the Grading and Erosion Control Ordinance (Chapter 16.44 of the existing County Code) and construction standards. A key component of this compliance is implementation of the SQIP new development element that requires stormwater quality treatment and/or BMPs in project design for both construction and operation. Postconstruction stormwater quality controls for new development require use of control measures set forth in the Guidance Manual for On-Site Stormwater Quality Control Measures (City of Sacramento and County of Sacramento, 2000). This includes use of regional water quality control features (e.g., detention basins) for large developments (over 100 acres), use of treatment-control measures (swales, filter strips, media filters and infiltration), house-keeping practices (e.g., spill prevention, proper storage measures and clean-up procedures).

Proposed General Plan Policies and Action Items That Provide Mitigation

The following proposed General Plan policies and action items would assist in reducing surface water quality impacts of development under the proposed General Plan Natural Resources Element. However, this impact would still be considered significant.

Policy NR.3.1 *Coordinate with groups such as the Sacramento Urban Creeks Council to restore, enhance, and preserve creeks in Rancho Cordova.*

Policy NR.3.2 *Create or retain the natural topographic relief and meandering alignment of natural creek corridors in the construction of new channels and the modification of existing channels, and discourage the placement of concrete within creeks and channels.*

Action NR.3.2.1 *Develop guidelines for channel creation or modification that will ensure channel meander, naturalized side slope, and varied channel bottom elevation are considered in design.*

Action NR.3.2.2 *Adopt and implement improvement standards for soft bottom channels.*

Policy NR.3.3 *Encourage the creation of secondary flood control channels where the existing channel supports extensive riparian vegetation.*

Action NR.3.3.1 *Work with affected local, state and federal agencies to determine if natural creek corridors can and should accommodate storm flows or if separate storm water conveyance structures are necessary.*

Policy NR.3.4 *Encourage projects that contain wetland preserves or creeks, or are located adjacent to wetland preserves or creeks, to be designed for maximum visibility and, as appropriate, access.*

Action NR.3.4.1 *Establish performance standards for natural resource preserves that accomplish the following:*

- *Provide sufficient width for a mowed firebreak (where necessary), adjacent passive recreation uses, and access for channel maintenance and flood control.*
- *Offer sufficient width in and/or adjacent to preserves to allow for existing and created wildlife habitat, species sensitive to human disturbance, vegetative filtration for water quality, corridor for wildlife habitat linkage, protection from runoff, and other impacts of urban uses adjacent to the corridor.*
- *Allow for sufficient width adjacent to natural resource preserves to allow for trails and greenbelts.*
- *Do not place water quality treatment structures designed to meet pollutant discharge requirements within mitigation preserves.*

Action NR.3.4.2 *Establish standards that allow public access in the floodplain and buffers along creek corridors and preserves. Mitigation measures shall be incorporated into environmental documents and conditions of approval that require open-view fencing adjacent to preserves.*

Action NR.3.4.3 *Establish standards and/or guidelines for development adjoining wetland preserves or creeks to maximize visibility by designing the land plan with public streets on at least one side of the corridor or preserve with vertical curbs, gutters, footpath(s), street lighting, and post and cable barriers to prevent unauthorized vehicular entry into creek corridors and preserves.*

Policy NR.5.3 *Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff.*

Action NR.5.3.1 *Restrict hazardous materials storage in the 100-year floodplain to prevent surface water contamination.*

Action NR.5.3.2 *Educate the community on laws governing the proper handling of hazardous materials, especially those laws which pertain to discharging materials into creeks.*

Action NR.5.3.3 *Install appropriate signage to deter the discharge of hazardous materials into storm drains.*

Policy NR.5.4 *Prevent contamination of the groundwater table and surface water, and remedy existing contamination to the extent practicable.*

Action NR.5.4.1 *Provide information on pollution prevention, disposal of hazardous waste and chemicals, liability and clean-up on the City's website and in educational materials and brochures.*

Action NR.5.4.2 *Require clean-up of contaminated ground and surface water by current and/or past owners or polluters.*

Action NR.5.4.3 *Encourage pollutant cleansing companies to use the latest technologies available in order to expedite the cleansing process and do the least harm to the environment.*

Policy NR.5.5 *Minimize erosion to stream channels resulting from new development in urban areas.*

Action NR.5.5.1 *Require community and specific plans to contain urban runoff control strategies and requirements that are consistent with Master Drainage Plans and the City's urban runoff management program.*

Action NR.5.5.2 *Require development within newly urbanizing areas to incorporate runoff control measures into their site design or to participate in an area-wide runoff control management effort consistent with standards developed by the Public Works Department.*

Action NR.5.5.3 *Encourage new development to incorporate features such as grassy swales, multi-use retention or detention basins, and integrated drainage systems to enhance water quality. Work with the Cordova Recreation and Park District to establish standards for integrating retention/detention basins into park sites and create examples of desirable and innovative natural drainage features.*

Action NR.5.5.4 *Establish and require the use of best management practices to protect receiving waters from the adverse effects of construction activities, sediment and urban runoff.*

Mitigation Measures

MM 4.9.1a The following shall be added as a new policy under Goal NR.5:

Continue to cooperate and participate with the County, other cities and the Regional Water Quality Control Board regarding compliance with the joint National Pollutant Discharge Elimination System Permit (NPDES No. CAS082597) or any subsequent permit and support water quality improvement projects in order to maintain compliance with regional, state and federal water quality requirements.

MM 4.9.1b The following mitigation measure shall be added as an action item under Policy NR.5.3:

Future land uses that are anticipated to utilize hazardous materials or waste shall be required to provide adequate containment facilities to ensure that surface water and groundwater resources are protected from accidental releases. This shall include double-containment, levees to contain spills, and monitoring wells for underground storage tanks, as required by local, state and federal standards.

Implementation of the above General Plan policies and action items, mitigation measures **MM 4.9.1a and b**, and continued implementation of the provisions of the City's NPDES permit would ensure that City stormwater would attain water quality standards and protect beneficial uses consistent with applicable water quality requirements. Thus, this impact would be reduced to **less than significant**.

Groundwater Quality Impacts

Impact 4.9.2 Implementation of the proposed General Plan could result in the degradation of groundwater quality resulting from future land uses. This is considered a **potentially significant** impact.

As discussed above in **Impact 4.9.1**, development of the Planning Area under the proposed General Plan could generate runoff containing oils, grease, fuel, antifreeze, byproducts of combustion (such as lead, cadmium, nickel, and other metals), household pollutants, nutrients (i.e., fertilizers), and other chemicals from landscaped areas. These pollutants could potentially contaminate groundwater conditions (if not properly treated with water quality controls). However, as noted under **Impact 4.9.1**, the City's NPDES permit requires the provision of water quality control measures that would treat stormwater drainage. Several technical studies have been conducted regarding water quality control feature impacts on groundwater (e.g., City of Fresno Nationwide Urban Runoff Project and California Storm Water Best Management Practices Handbook prepared by the Stormwater Quality Task Force). Theses studies have identified that water quality control features such as infiltration basins have been successful in controlling water quality and avoiding groundwater quality impacts (metals and organic compounds associated with stormwater are typically lost within the first few feet of the soil of the basins).

New commercial and industrial uses could utilize hazardous materials and waste that could be accidentally released and contaminate groundwater. As noted in Section 4.4 (Hazards and Human Health), portions of the Planning Area's underlying groundwater has been contaminated by previous industrial activities. Alterations of ground surface conditions (the introduction of impervious surfaces) could impact current groundwater remediation efforts (see **Figure 4.4-1** regarding groundwater contamination plume location). However, the Rio del Oro Development Project Groundwater Impact Evaluation Technical Memorandum (WRIME, 2005) determined that the alteration of land conditions in the Rio del Oro Planning Area would not substantially impact groundwater levels in the area.

In addition, areas with Rural Residential designations along the boundaries of the Planning Area may utilize individual septic systems that could also contribute to groundwater quality impacts. The City of Rancho Cordova has adopted Sacramento County's approval process for private septic systems. The process includes fee payment, permit submittal, soil testing, design standards, and guidelines for establishing a septic system in relation to wells, property lines, swimming pools, and other locations around the property.

Proposed General Plan Policies and Action Items That Provide Mitigation

The following policies and action items address groundwater issues. However, this impact would still be considered significant.

Policy NR.5.3 *Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff.*

Policy NR.5.4 *Prevent contamination of the groundwater table and surface water, and remedy existing contamination to the extent practicable.*

Action NR.5.4.1 *Provide information on pollution prevention, disposal of hazardous waste and chemicals, liability and clean-up on the City's website and in educational materials and brochures.*

Action NR.5.4.2 *Require clean-up of contaminated ground and surface water by current and/or past owners or polluters.*

Action NR.5.4.3 *Encourage pollutant cleansing companies to use the latest technologies available in order to expedite the cleansing process and do the least harm to the environment.*

Mitigation Measures

MM 4.9.2 The following shall be added as a new policy under Goal NR.5:

The City shall require groundwater impact evaluations be conducted for the Grant Line West, Westborough, Aerojet, Glenborough, Mather and Jackson Planning Areas to determine whether urbanization of these areas would adversely impact groundwater remediation activities associated with Mather and Aerojet prior to the approval of large-scale development. Should an adverse impact be determined, a mitigation program shall be developed in consultation with applicable local, state and federal agencies to ensure remediation activities are not impacted. This may include the provision of land areas for groundwater remediation facilities, installation/extension of necessary infrastructure or other appropriate measures.

Implementation of the above General Plan policies and action items, the above mitigation measure and mitigation measures **MM 4.9.1a and b**, and continued implementation of the provisions of the City's NPDES permit would ensure that groundwater quality would not be negatively impacted. Thus, this impact would be reduced to **less than significant**.

Flooding Impacts

Impact 4.9.3 Implementation of the proposed General Plan would increase impervious surfaces and alter drainage conditions and storm water runoff rates throughout the Planning Area, which could result in potential flooding impacts. However, the General Plan contains adequate General Plan policies and action items that address drainage and flooding issues. This is considered a **less than significant** impact.

Urban development often includes the addition of impervious surfaces, including roads, parking lots, driveways, and conventional roof tops, such that precipitation does not have the opportunity to saturate the ground and enter the groundwater table. As a result, precipitation runs off as storm water via sidewalks, roadways, and gutters. Surface waters provide a physical conveyance of surface water flows and channels for the handling of large storm water events. Large storms can produce extreme flows that cause bank cutting and sedimentation of ephemeral drainages, streams, lakes, and reservoirs. In addition, flooding can cause problems to area roadways and homes. This could result in new flooding issues (e.g., enlargement of floodplain areas along waterways) as well as the exacerbation of existing flooding issues (e.g., existing flooding along Sunrise Boulevard south of White Rock Road).

The northern portion of the City and Planning Area (along US 50 and north) are located within the 500-year floodplain predictions by FEMA and the U.S. Army Corps of Engineers or as a result of complete failure of Folsom Dam. Failure of either the Cordova Meadows Levee or the Sunriver Levee along the American River could potentially result in the inundation of properties within the northern portion of the Planning Area. However, such an event has an extremely low probability of occurring and is not considered to be a reasonably foreseeable event. Currently, there are planning efforts by the U.S. Army Corps of Engineers to improve the flood capacity of Folsom Reservoir and there have been improvements made to security at Folsom Dam to minimize the treat of an intentional act of sabotage.

Proposed General Plan Policies and Action Items That Provide Mitigation

The following General Plan policies and action items address drainage and flooding. As noted in the policies and action items below, the proposed General Plan would ensure that development does not occur within the 100-year floodplain and would prohibit new projects from increasing existing flooding impacts or creating new flood impacts.

Policy S.2.1 *Ensure that flood control facilities do not alter or reduce flows in the Cosumnes or American Rivers.*

Action S.2.1.1 *Support the construction of flood control projects when clear dangers to life and property exist.*

Action S.2.1.2 *Participate in the National Flood Insurance Program by updating the floodplain management ordinance as necessary to help reduce future flood damage. Participation in the National Flood Insurance Program makes federally backed flood insurance available to homeowners, renters, and businesses owners in Rancho Cordova.*

Action S.2.1.3 *Participate with the City of Sacramento, the Army Corps of Engineers, and other Federal, State, and local governments and agencies to develop*

policies to finance, construct, and plan flood improvements to eliminate flooding in the City.

Policy S.2.2 *Manage the risk of flooding by discouraging new development located in an area that is likely to flood.*

Action S.2.2.1 *Disapprove new projects that would result in new or increased flooding impacts on adjoining parcels or upstream and downstream areas.*

Action S.2.2.2 *Use appropriate land use designations as the primary flood prevention measure. Prioritize the construction of new flood control projects only when land use controls are not sufficient to reduce hazards to life and property to acceptable levels.*

Action S.2.2.3 *Preclude development within the 100-year floodplain, as determined by the most recent floodplain mapping available from the Federal Emergency Management Agency (FEMA) or other acceptable source.*

Action S.2.2.4 *On flood-prone parcels, locate development on portions of the site that are not subject to flooding, consistent with other policies of this General Plan.*

Action S.2.2.5 *Require every residential lot to have buildable area sufficient to accommodate a residence and associated structures outside the 100-year floodplain. Discourage the use of fill to create buildable area within the 100-year floodplain, except in extreme circumstances consistent with all other applicable policies and regulations, and after review to determine potential impacts on wildlife, habitat, and flooding on other parcels.*

Action S.2.2.6 *Require vehicular access to the buildable area of all parcels to be at or above the ten-year floodplain elevation.*

Action S.2.2.7 *Preclude the creation of lots whose access will be inundated by flows resulting from a ten-year or greater storm event. Bridges or similar structures may be used to provide access over creeks or inundated areas, subject to applicable local, state, and federal regulations.*

Action S.2.2.8 *Discourage additional crossings of natural creeks in order to reduce potential flooding and access problems, except as needed to provide roadway and trail connections and preserve natural resource areas.*

Action S.2.2.9 *Prohibit new and modified bridge structures that will cause an increase of more than one foot in water surface elevations of the 100-year floodplain, unless analysis clearly indicates that the physical and/or economic use of upstream property will not be adversely affected.*

Policy S.1.13 *Discourage the creation of new parcels when the presence of easements, floodplain, marsh, or riparian habitat, and/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 control, drainage, or wetland maintenance.*

Policy S.2.3 *Ensure that adequate drainage exists for both existing and new development.*

Action S.2.3.1 *Require all new urban development projects to either incorporate runoff control measures to minimize peak flows of runoff or otherwise implement Comprehensive Drainage Plans.*

Action S.2.3.2 *Maintain drainage facilities in order to ensure their proper operation during storms.*

Action S.2.3.3 *Prepare a Comprehensive Drainage Plan for all streams and their tributaries prior to any development within the 100-year floodplain.*

The above proposed General Plan policies and action items would ensure that development does not occur within the 100-year floodplain and would prohibit new projects from increasing existing flooding impacts or creating new flood impacts. Thus, this impact would be **less than significant**.

Mitigation Measures

None required.

Increased Water Supply Demand Impacts

Impact 4.9.4 Implementation of the proposed General Plan would increase demand for water supply and require increased groundwater production and the use of surface water supplies. This additional water supply demand would result in significant effects on the physical environment. This is considered a **significant** impact.

The analysis provided in this impact is based on the Water Supply Evaluation for the City of Rancho Cordova General Plan, which is provided in **Appendix 4.9**. **Table 4.9-6** provides an estimate of water supply demands for the City and Planning Area at buildout of the proposed General Plan, while **Table 4.9-7** compares this demand with current and planned water sources available from the Planning Area water service providers.

TABLE 4.9-6
LAND USE AND WATER DEMANDS AT BUILDOUT OF THE CITY OF RANCHO CORDOVA GENERAL PLAN

Land Use 1	Total Area (Acres)			Unit Water Demand Factor 2	Water Demand (afy)		
	Corporate City Limits	Unincorporated City	Total Acreage Within Planning Area		Corporate City Limits	Unincorporated City	Total Planning Area Water Demands
Public/Quasi-Public	1,138	3,854	4,992	1.04	1,184	4,008	5,192
Parks and Open Space	2,392	1,810	4,202	3.46	8,276	6,263	14,539
Natural Resources	1,864	9,251	11,115	0.00	0	0	0
Rural Residential	0	1,135	1,135	1.33	0	1,510	1,510
Estate Residential	630	3,949	4,579	1.33	838	5,252	6,090

Land Use 1	Total Area (Acres)			Unit Water Demand Factor 2	Water Demand (afy)		
	Corporate City Limits	Unincorporated City	Total Acreage Within Planning Area		Corporate City Limits	Unincorporated City	Total Planning Area Water Demands
Low Density Residential	6,156	10,780	16,936	2.89	17,791	31,154	48,945
Medium Density Residential	3,423	266	3,689	3.70	12,665	984	13,649
High Density Residential	450	249	699	4.12	1,854	1,026	2,880
Residential Mixed Use	62	60	122	2.51	156	151	307
Office Mixed Use	1,788	1,118	2,906	2.75	4,917	3,075	7,992
Commercial Mixed Use	439	352	791	2.75	1,207	968	2,175
Village Center	222	225	447	2.51	557	565	1,122
Local Town Center	68	77	145	2.51	171	193	364
Regional Town Center	112	174	286	2.51	281	437	718
Transit Oriented Town Center	77	154	231	2.51	193	387	580
Light Industrial	961	2,940	3,901	2.71	2,604	7,967	10,571
Heavy Industrial	224	918	1,142	2.71	607	2,488	3,095
Surface Mining [3]	0	871	871	0.00	0	0	0
Developed Land Use	20,006	38,183	58,189		53,301	66,428	119,729
Water System Losses (7.5%)					3,998	4,982	8,980
Total Land and Water Use	**20,006**	**38,183**	**58,189**		**57,299**	**71,410**	**128,709**

Notes:

1 Land use designations and total acreage provided by Rancho Cordova correspond to the General Plan land use map.

2 Unit water demand factors based on Zone 40 WSMP (SCWA 2005a) for land use categories similar to City of Rancho Cordova land use categories. Demand factors reflect 25.6% level of water demand management consistent with the WFA.

3 Aggregate mining typically has a minimal water demand for wash-down and dust control.

Source: EDAW, 2006

TABLE 4.9-7
SUMMARY OF WATER SUPPLY AND DEMAND FOR WATER PURVEYORS IN THE CITY OF RANCHO CORDOVA GENERAL PLAN PLANNING AREA

	Year	2010	2015	2020	2025	2030
SCWA Zone 40	**Supply[1]**					
	Surface Water	13,060	44,143	48,772	68,700	69,567
	Groundwater	34,125	28,837	40,470	31,324	39,097
	Recycled Water	4,400	4,400	4,400	4,400	4,400
	Total Supply	**51,585**	**77,380**	**93,642**	**104,424**	**113,064**
	Total Demands[1]	**51,585**	**77,380**	**93,642**	**104,424**	**113,064**

	Year	2010	2015	2020	2025	2030
	Surplus/Deficit	**0**	**0**	**0**	**0**	**0**
Supply Allocated for SCWA Zone 40 North Service Area (NSA)—Within City's Planning Area (see Water Supply Evaluation for the City of Rancho Cordova General Plan)	***Supply***					***37,314[2]***
GSWC (all of GSWC's service area is within City's planning area)	Supply[3]					
	Surface Water	15,000	15,000	15,000	15,000	15,000
	Groundwater	9,518	10,499	10,814	10,829	10,829
	Total Supply	**24,518**	**25,499**	**25,814**	**25,829**	**25,829**
	Demands[2]	**19,518**	**20,499**	**20,814**	**20,829**	**20,829**
	Surplus/Deficit	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**
Cal-Am	Supply[3]					
	Groundwater	43,600	33,650	34,180	33,550	33,910
	Wholesale Purchases	4,020	16,860	18,320	20,830	22,280
	Total Supply	**47,620**	**50,510**	**52,500**	**54,380**	**56,190**
	Demands[4]	**47,620**	**50,510**	**52,500**	**54,380**	**56,190**
	Surplus/Deficit	**0**	**0**	**0**	**0**	**0**
Supply Allocated for Cal-Am's Service Area within the City's Planning Area	***Supply***					***14,477***
City of Rancho Cordova General Plan Planning Area	Total Supply Available to City Planning Area from Purveyors					**77,620[5]**
	Projected Demands					
	Corporate City Limits (2030)a					57,299
	Non-City Area					71,410
	Total Demands					**128,709**
	Surplus/(Deficit)					**(51,089)**

Notes:

1. *Data from SCWA Zone 41 UWMP, Table 5-1 and 5-2. Because SCWA would implement a conjunctive use water supply program, water supplies would never exceed projected demands because groundwater would be pumped and surface water would be used to meet, not exceed water demands. Supply and demand based on normal year type. (SWCA 2005b)*
2. *This supply is part of Zone 40's 2030 water supplies of 113,064 afy (SCWA 2005a).*
3. *Data from GSWC UWMP Table 3-1 and 4-9. Supply exceeds demand because GSWC does not plan to use 5,000 afy of its SMUD Water Transfer entitlement due to limited surface water treatment capacity and its desire to maintain its groundwater rights through the Aerojet Replacement Water operations. (GSWC 2005)*
4. *Data from Cal-Am UWMP. (Cal-Am 2006)*
5. *Sum of SCWA (37,314 afy), GSWC (25,829 afy), and Cal-Am's (14,477 afy) water supplies identified for the City's planning area.*

Source: EDAW, 2006

As noted in **Table 4.9-7**, adequate water supplies would likely be available to serve buildout of the City within its current corporate limits. Beyond buildout of its corporate limits, new development projects would be served by SCWA (no other purveyors are located outside the City's corporate limits) on a first-come, first-served basis. While total supplies available (i.e., 77,620 afy) are greater than the City's corporate limit demands (i.e., 57,299 afy), indicating that additional growth beyond its corporate limits may be accommodated, the exact amount of water and corresponding land areas that could be served are currently unknown because SCWA would need to consider requests for service in the context of all water demands throughout the Zone 40 service area. The City may be able to pursue additional growth beyond

its corporate limits; however, the City would need to coordinate with SCWA to determine the total demands that could be met by existing and projected future water supplies. Future urbanization of the Planning Area would also increase impervious surfaces near areas determined to have groundwater recharge capability (e.g., near the Cosumnes River).

If water supplies are not available to meet buildout water demands, the City would either need to stop approving new growth within its jurisdiction, or collaborate with regional water purveyors to investigate potential future water supply options in the context of the regional water supply planning environment. Investigation of future water supply options would likely require involvement from local water purveyors (GSWC, Cal-Am, and SCWA at a minimum, and other neighboring purveyors as appropriate), the Water Forum successor effort, and environmental groups. Because of the long-term and sometimes contentious nature of future water supply planning, the feasibility of implementing new water supply options beyond those described in the WFA are unknown. The following section provides a brief summary of potential new water supply options the City could pursue (in collaboration with local agencies) to develop supplies to meet its planning area buildout water demands.

Additional Future Water Supply Options

To support the level of growth proposed by Rancho Cordova, additional water supplies would need to be acquired and/or the City would need to make efforts to substantially reduce its overall demand for potable water. There are a number of options in which water purveyors for the region could secure additional water supplies to accommodate the additional growth planned by the City. These options presented are considered very preliminary in nature. A combination of one or more of the potential options described below may allow the City to proceed with growth and development beyond its corporate limits.

Water Transfers and Exchanges With Nearby Purveyors

The water purveyors in the Planning Area (SCWA, GSWC, Cal-Am) could enter into agreements with nearby cities and agencies to secure new or surplus water supplies. Cities and agencies who purchase water from SCWA or have jurisdictional boundaries that overlap Zone 40's boundaries would be a likely choice for developing such an agreement because the ability to develop distribution system interties. The interties would allow the easy transfer and exchange of water supplies between neighboring water purveyors without the need to construct substantial new conveyance infrastructure. The potential feasibility of water purveyors located near Rancho Cordova providing new water supplies to the City are discussed below.

City of Folsom

GSWC has entered into an agreement with the City of Folsom to transfer 5,000 afy to the City of Folsom pursuant to its agreement for replacement water supplies with Aerojet. Within the agreement there is the option for the City of Folsom to transfer the 5,000 afy to the SCWA for its use within its conjunctive use water supply system. However, based in indications from the City of Folsom, the City does not anticipate the transfer of these supplies to SCWA would be likely.

Placer County Water Agency

Placer County Water Agency was contacted to determine whether they had any available water supplies that could be exchanged or transferred to SCWA. Staff at Placer County Water Agency indicated that based on their Integrated Water Resources Plan, which is currently under preparation and was not available for review at the time the Water Supply Evaluation was

prepared, Placer County Water Agency would only have enough water supplies to meet its projected buildout water demands. No additional water supplies would be available from Placer County Water Agency for transfer or exchange agreements (EDAW, 2006).

Sacramento Suburban Water District

GSWC currently has an intertie with Sacramento Suburban Water District (SSWD)'s water distribution system. As of the date of the Water Supply Evaluation, no reply has been received from SSWD regarding the potential availability of water transfer or exchange opportunities. The potential may exist for the acquisition of additional supplies to meet City demands; however, the City would need to coordinate with GSWC and SSWD to determine the feasibility of those supplies. If supplies are available, no substantial new infrastructure would need to be constructed because an intertie connection between these two agencies is already available. Additional distribution and treatment facilities may be required to convey the water from GSWC existing distribution to new growth areas to deliver these supplies to SCWA for distribution in the new growth areas.

Natomas Central Mutual Water Company

Natomas Central Mutual Water Company (Natomas Mutual) primarily provides irrigation water to its shareholders for agriculture purposes. Natomas Mutual has historically provided water to more than 33,200 acres of land north and west of the city limits of Sacramento and its service area is bordered on the west by the Sacramento River and stretches into Sutter County to the north. Natomas Mutual has water rights for 120,000 afy of water from the Bureau of Reclamation and diverts this water from the Sacramento River.

In March 2004, Natomas Mutual authorized its staff and consultants to finalize an operating agreement with GSWC to provide water and wastewater services to municipal and industrial users in the Natomas Basin via a separate conveyance system (EDAW, 2006). The partnership allows Natomas Mutual to serve all development within its service area, while preserving habitat, encouraging conservation, and maximizing the value of its shareholders' historic water rights. Just as important, the partnership with GSWC makes certain that the water Natomas draws from the Sacramento River, American River and from groundwater wells stays in northern California. As land is being converted from agricultural (predominantly rice) to residential land uses in Natomas Mutual's service area, the total water demands in the service area has decreased (rice farming is a water intensive use). This has resulted in a potential surplus in Natomas Mutual's available water supplies.

Natomas Mutual has indicated that through the partnership with GSWC; they are looking for opportunities to market (e.g., sell, transfer) their surplus water supply (EDAW, 2006), although information regarding the specific amount of available water supplies is not available. The sale or transfer of water from Natomas Mutual to purveyors within the Planning Area would require approval by the State Water Resources Control Board, Division of Water Rights and the preparation of necessary environmental documentation. Further, additional conveyance and treatment facilities would likely be required to deliver water from Natomas Mutual's service area to the Planning Area.

Improved Groundwater Sustainability

Groundwater use (i.e., by all groundwater users) in the Central Basin is restricted to the WFA, negotiated, long-term sustainable yield of 273,000 afy. The Central Sacramento County Groundwater Forum (CSCGF) is currently preparing a GMP that addresses ways to maintain

groundwater sustainability (EDAW, 2006). The CSCGF identified two primary activities that would result in an improved ability to sustain the viability of the groundwater resources for the Central Basin.

- Continue to investigate conjunctive use opportunities within the Central Basin area. SCWA and other groundwater users within the Central Basin will coordinate all recharge efforts.

- Continue to investigate opportunities for development of direct recharge facilities (e.g., well injection facilities) in addition to in-lieu recharge facilities (e.g., constructed recharge basins, discharge to riverbeds or streambeds).

The City could collaborate with SCWA and the CSCGF to investigate recharge and water banking opportunities available within the Central Basin. Through these investigations and implementation of a recharge program it could be determined that new supplies would be available to accommodate new growth within the region and these supplies could partially meet the City's projected water demands. The feasibility of implementing such a recharge program is currently under investigation by the CSCGF and would likely require the construction of additional facilities (e.g., groundwater injection wells, discharge structures, and new groundwater extraction wells if additional supplies are available).

Through investigation of the feasibility of large-scale groundwater recharge opportunities there may also be the potential opportunity to investigate and study the sensitivity of the negotiated, sustainable yield of the Central Basin. The City could coordinate with the Water Forum successor effort, CSCGF, and other groundwater appropriators to scientifically and comprehensively evaluate whether the Central Basin could support a higher yield what still maintaining the objectives of the WFA. Although dependant on the results of the investigation, it may be possible to pump additional groundwater from the Central Basin, which would facilitate new growth and development. A portion of these supplies could serve new growth within the City.

Expand Use of Recycled Water

Sacramento Regional County Sanitation District (SRCSD) is responsible for the collection, treatment, disposal and reuse (recycled water) of wastewater throughout most of the urbanized areas of Sacramento County, including the majority of service areas retailed water by SCWA.

Through an agreement between SCWA and SRCSD, the SRCSD has successfully implemented a 5 mgd (5,600 afy) water recycling program. This program provides recycled water for SRCSD on-site uses and for large commercial irrigation customers within Zone 40 (e.g., commercial, industrial, right-of-way landscaping, schools, and parks). Recycled water is a desirable source of water for outdoor landscape irrigation and other non-potable uses because of its high reliability and its independence of hydrologic conditions in any given year. By increasing the use of recycled water SRCSD may be able to reduce the amount of treated wastewater discharged to the river which may become a more cost effective solution for the SRCSD's 1.1 million ratepayers as wastewater regulations require ever higher treatment standards (and costs) for discharged effluent. SRCSD's boundary covers the Zone 40 region in the Planning Area. It is expected that the SRCSD's boundary will be expanded further to cover the areas in the Planning Area that are currently undeveloped as development plans are approved.

The most commonly used recycled water is defined as wastewater that has been treated to tertiary standards that meet Title 22 of the California Code of Regulations. Recycled water treated to this level can be used for all outdoor irrigation demands in a community, including;

parks, schools, street medians, residential front and backyard landscaping, public open space, as well as industrial uses such as cooling water. In addition, recycled water is commonly used for environmental purposes such as wetlands and habitat restoration.

The Water Recycling Program on the Sacramento Regional Water Treatment Plant site was designed and constructed to be readily expandable to 10 mgd (11,200 afy) in accordance with SRCSD's Master Reclamation Permit (WDR #97- 146). A planned Water Recycling Facility plant expansion from 5 mgd to 10 mgd could serve new areas of planned and expected growth and public open space and golf course areas within the City of Sacramento. SRCSD will work in partnership with SCWA to serve these Zone 40 areas. The expanded water recycling facility and new water recycling service areas will be called Phase II of the SRCSD Water Recycling Program. Phase II construction will be timed with the need for the higher capacity and is currently expected to be in service by 2008- 2010.

To plan for water recycling projects beyond 2010, SRCSD is developing a Water Recycling Master Plan (WRMP) that would plan for water recycling through 2030. The overall project objective is to increase water recycling usage in the Sacramento region during peak irrigation months to a 30 mgd (33,600 afy) to 40 mgd (44,800 afy) level. Water recycling on this scale will allow SRCSD to better manage its effluent discharged to the Sacramento River and could help Sacramento Area water purveyors improve their water supply availability and reliability in terms of irrigation and industrial water supply. The WRMP effort will include significant outreach to stakeholders that could be associated with SRCSD's future water recycling plans. Stakeholders to be contacted during the WRMP are expected to include, among others; Sacramento Area water purveyors and users, land use planning authorities, land development leaders, and environmental interests. The WRMP will culminate in the development of a SRCSD Water Recycling Master Plan document that is expected to contain numerous water recycling project alternatives that will be evaluated for future SRCSD implementation.

One option being explored as part of the WRMP is the use of recycled water for agriculture that would supplement groundwater supplies. The reduction in groundwater use by agricultural users may "free up" groundwater supplies elsewhere in the same groundwater basin. This WRMP document is expected to be completed in mid-2006.

SCWA has indicated that the use of recycled water for non-potable purposes could reduce potable water demands by as much as 10% to 50% depending on the level of reuse that is prescribed. Using recycled water for public areas such as medians and park strips would reduce potable water demands by approximately 10-15%, while using recycled water for public area and residential outdoor areas (e.g. residential landscaping) could reduce overall potable water demands by as much as 50%.

Environmental Effects Associated With Water Supply Provision

The provision of expanded water service to the City under the proposed General Plan would require the expansion and development of new water infrastructure facilities (e.g., water supply conveyance pipelines, pump stations, water tanks, and treatment facilities) that could result physical effects to the environment. The provision of such facilities within the Planning Area has been programmatically considered in the technical analysis provided in this Draft EIR associated with urbanization of the Planning Area.

In addition, environmental review has been completed for several large SCWA water supply projects identified below. As discussed above, build-out under the General Plan will utilize

projected water supplies from these SCWA projects. Therefore, development under the proposed General Plan would indirectly contribute to these significant environmental effects.

Water Forum Agreement

An EIR was certified on this project and identified the following significant and unavoidable impacts:

- Water quality impacts to the Sacramento River and Delta.
- Impacts to Folsom Reservoir warmwater fisheries
- Impacts to Fall-run Chinook salmon
- Flow and temperature impacts to splittail
- Decreases in deliveries to State Water Project (SWP) customers
- Decreases in deliveries to Central Valley Project (CVP) customers
- Reduced rafting and boating opportunities on the Lower American River
- Reduced Folsom Reservoir boating opportunities
- Reduced availability of Folsom Reservoir swimming beaches
- Land use and growth-inducement impacts water service area
- Cultural resource impacts in Folsom Reservoir from varying water levels

Zone 40 Water Supply Master Plan

An EIR was certified on this project and identified the following significant and unavoidable impacts:

- Direct visual impacts associated with operation of new facilities
- Potential short-term air quality impacts associated with construction of new facilities
- Potential long-term stationary-source noise impacts from operation of new facilities
- Potential short-term construction impacts and long-term operational impacts on special-status plants and wildlife
- Potential short-term construction impacts and long-term operational impacts on sensitive habitats
- Potential loss of habitat from development of facilities that would otherwise be included in the proposed South Sacramento Habitat Conservation Plan if facilities are developed outside of the Zone 40 WSMP 2030 Study Area

North Vineyard Well Field

- An EIR was prepared for this facility as part of the Sunrise Douglas Community Plan and the Sun Ridge Specific Plan. No direct significant and unavoidable impacts to groundwater conditions were identified for this facility.

In addition to these documented significant physical effects to the environment, Table 4.9-8 summarizes additional environmental impacts that could occur from planned and other future new water supply options that could be pursued to serve the Planning Area:

TABLE 4.9-8
TYPES OF POTENTIAL ENVIRONMENTAL IMPACTS THAT COULD BE CAUSED BY NEW WATER SUPPLY PROJECTS, WATER RIGHTS TRANSFERS, AND RELATED INFRASTRUCTURE

Types of Potentially Affected Resources	Related and Potential Impacts
Surface Water Hydrology	Changes in the magnitude and timing of flows in affected streams; changes in the level of affected reservoirs and lakes. Potential cumulative effects on the hydrology of Folsom Reservoir, South Fork American River, Middle Fork American River, and possibly other locations including the Cosumnes River, and Alder and Weber Creeks.
Geology and Soils	Increase in erosion and sedimentation from construction activities; change in sediment transport in streams; geologic hazards could cause problems for new facilities and their operators if they are not sited carefully.
Water Quality	Changes in stream and reservoir/lake temperature, dissolved oxygen, turbidity, total suspended solids, and other water quality parameters of concern during construction and operation of new facilities.
Fishery Resources including Special-status Species	Change in the amount and quality of fishery habitat in affect streams and reservoirs/lakes, and potential fish entrainment at possible diversion sites in lakes and streams.
Wetlands and Riparian Habitat	Changes in the amount or functions and values of various types of wetlands from the construction of new facilities, or in riparian areas from changes in the operation of reservoir/lakes and changes in streamflows. Riparian habitat could be affected by hydrology changes or new construction and is especially important habitat for wildlife and botanical species.
Botanical Resources including Special-status Species	Disturbance to rare plants and their habitat and other types of vegetation from construction activities or changes in hydrology along streams and at reservoirs and lakes.
Wildlife Resources including Special-status Species	Changes in the amount and quality of affected wildlife habitat near affected reservoir/lakes, and streams and where appurtenant facilities would be located.
Recreation	Changes in the quantity or quality of recreation opportunities, including fishing, boating, hiking, and whitewater rafting affected reservoirs/lakes and in affected streams; some impacts could also occur during construction and operation of new conveyance, treatment, storage, and pumping facilities.
Visual Resources	Changes in reservoir/lake levels, and streamflows and the addition of new project facilities could affect the visual environment. New pipelines, pumping stations, or transmission lines near or in residential areas or highly visited areas would cause negative impacts.
Agriculture	Some irrigated land or grazing land could be taken out of production where project conveyance facilities need to be located and to accommodate growth. The availability of surface water supplies for agricultural uses could increase.
Cultural Resources	Historic, prehistoric, and ethnographic resources could be affected by hydrology changes or

Types of Potentially Affected Resources	Related and Potential Impacts
	the construction and maintenance of new facilities.
Compatibility with Existing Land Uses and Other Policies and Plans	Some new project facilities may not be compatible with surrounding land uses, or may be inconsistent with related federal, state, tribal, and local plans and policies (including those of the U.S. Forest Service, USFWS, and California Department of Fish and Game).
Mineral Resources	New project facilities could interfere with the extraction of minerals at known or yet-to-be-discovered mineral sites.
Public Utilities	The routing and sitting of new project facilities could interfere with the operation or maintenance of existing or planned public utilities, including communication and energy infrastructure.
Socioeconomic Resources	Customers of the water purveyors and other would enjoy the socioeconomic benefits associated with a more reliable water supply and related economic growth. Water rates would likely increase to help pay for new facilities. Facility construction would cause short-term and beneficial employment and income impacts. Energy or mineral impacts would also cause related socioeconomic effects.
Air Quality and Noise	Air emissions from construction equipment and traffic and loud noises could occur during the construction phase of new projects. New pumping stations would likely cause adverse noise impacts for nearby residents and recreationists.
Transportation	Local roads would experience traffic increases during construction.
Public Health and Safety	Construction activities could create some safety hazards.
Growth-inducing Effects	New system infrastructure and water supply projects would likely cause growth-inducing impacts.

Source: EDAW 2006

Proposed General Plan Policies and Action Items That Provide Mitigation

The following proposed General Plan policies and action items would assist in reducing water supply impacts of General Plan growth. However, this impact would still be considered significant.

Policy NR.4.2 Improve overall landscaping quality and sustainability in all areas visible to the public.

Action NR.4.2.2 - Create development guidelines that address landscaping standards and that require appropriate tree species and densities in buffer areas. The guidelines should also ensure that medians will include native plantings and trees, and will be wide enough to support the long-term viability of the plantings.

Action NR.4.2.3 - Provide leaflets and planting guides that promote the use of drought-tolerant native vegetation in home landscaping.

Policy NR.5.1 *Promote water conservation within existing and future urban uses.*

Action NR.5.1.1 *Install water-conserving landscaping and irrigation on City-owned and operated facilities.*

Action NR.5.1.2 *Require development project approvals to include a finding that all feasible and cost-effective options for conservation and water reuse are incorporated into project design.*

Action NR.5.1.3 *Establish a program that requires per capita water consumption to be reduced by at least 20 percent by 2030. The program shall include the following measures:*

- *Restrict water usage through metering or establishing designated watering days for the City's residences and businesses.*
- *Promote water conservation efforts through education.*
- *Implement standards that require low-flow appliances and fixtures in all new development.*
- *Work with water providers and water conservation agencies to create an incentive program that encourages retrofitting existing development with low-flow water fixtures.*
- *Require new development to utilize state-of-the-art irrigation systems that reduce water consumption (e.g., drip irrigation, gray-water systems).*
- *Encourage drought-tolerant vegetation and use water-efficient irrigation systems in landscaped public areas.*

Policy NR.5.2 *Encourage the use of treated wastewater to irrigate parks, golf courses, and landscaping.*

Action NR.5.2.1 *Establish a Large-Scale Recycled Water Program and Citywide Recycled Water Distribution System Ordinance.*

Action NR.5.2.2 *Coordinate with the City's water purveyors to establish a connected "purple pipe" system throughout the City's new development areas that uses recycled water.*

Policy ISF.2.1 *Ensure the development of public infrastructure that meet the long-term needs of residents and ensure infrastructure is available at the time such facilities are needed.*

Action ISF.2.1.1 *Except when prohibited by state law, require sufficient capacity in all public facilities to maintain desired service levels and avoid capacity shortages, traffic congestion, or other negative effects on safety and quality of life.*

Action ISF.2.1.2 *Adopt a phasing plan for the development of public facilities in a logical manner that encourages the orderly development of roadways, water and sewer, and other public facilities.*

Action ISF.2.1.3 *Withhold public financing or assistance from projects that do not comply with the planned phasing of public facilities, and approve interim facilities only in special circumstances.*

Policy ISF.2.2 *Coordinate with independent public service providers, including schools, parks and recreation, utility, transit, and other service districts, in developing service and financial planning strategies.*

Action ISF.2.2.1 *Establish a Technical Review Committee for continued coordination with outside service agencies, including water and sewer providers, the Cordova Recreation and Park District, and the school districts, during the review of plans and development projects.*

Policy ISF.2.3 *Ensure that adequate funding is available for all infrastructure and public facilities, and make certain that the cost of improvements is equitably distributed.*

Action ISF.2.3.1 *Require secure financing for all components of the transportation system through the use of special taxes, assessment districts, developer dedications, or other appropriate mechanisms. Financing should be sufficient to complete required major public facilities at their full planned capacities in a single phase. Major facilities include roadways of collector size or larger; all wells, water transmission lines, treatment facilities, and storage tanks needed to serve the project; and all sewer trunk and interceptor lines and treatment plants or treatment plant capacity.*

Action ISF.2.3.2 *Require new development to fund its fair share portion of its impacts to all public infrastructure and facilities.*

Action ISF.2.3.3 *Include sufficient funding in fee programs and/or other finance mechanisms to cover the costs of each of the following roadway items:*

- *Design, engineering, environmental compliance, and construction of roadway lanes, traffic signals, and bridges.*
- *Right of way acquisition, design, engineering, environmental compliance, and construction costs.*
- *Drainage and other facilities related to new roadway construction.*
- *Installation of landscaped medians, sidewalks, and streetscaping where appropriate.*

Policy ISF.2.4 *Ensure that water supply and delivery systems are available in time to meet the demand created by new development, or are guaranteed to be built by bonds or sureties.*

Action ISF.2.4.1 *Require all development projects, excluding subdivisions, to adhere to the following provisions:*

- *An assured water supply and delivery system shall be available at the time of project approval. The water agency providing service to the project may provide several alternative methods of supply and/or delivery, provided that each is capable individually of providing water to the project.*

- *All required water infrastructure for the project shall be in place at the time of project approval, or shall be assured through the use of bonds or other sureties to the City's satisfaction. Water infrastructure may be phased to coincide with the phased development of large-scale projects.*

Action ISF.2.4.2 *Require all subdivision developments to adhere to the following provisions, to the extent permitted by state law:*

- *Proposed water supply and delivery systems shall be identified at the time of tentative map approval to the satisfaction of the City. The water agency providing service to the project may provide several alternative methods of supply and/or delivery, provided that each is capable individually of providing water to the project.*

- *The agency providing water service to the subdivision shall demonstrate prior to the approval of the Final Map that sufficient capacity shall be available to accommodate the subdivision plus existing development, and other approved projects in the same service area, and other projects which have received commitments for water service.*

- *Offsite and onsite water infrastructure sufficient to provide adequate water to the subdivision shall be in place prior to the approval of the Final Map or their financing shall be assured to the satisfaction of the City, consistent with the requirements of the Subdivision Map Act.*

- *Offsite and onsite water distribution systems required to serve the subdivision shall be in place and contain water at sufficient quantity and pressure prior to the issuance of any building permits. Model homes may be exempted from this policy as determined appropriate by the City, and subject to approval by the City.*

Policy ISF.2.7 *Minimize visual impacts and physical impediments of utility infrastructure and equipment.*

Action ISF.2.7.1 *Coordinate with utility agencies to underground, strategically place, and screen equipment to the maximum extent feasible.*

Policy LU.2.5 *Phase growth based on market forces, infrastructure financing capacity, and the timing of the design, approval, and construction of transportation facilities and other infrastructure.*

Action LU.2.5.1 *Require market studies, financing plans, phasing plans, and other associated studies as needed as part of all new major development applications in order to evaluate the need for these projects, their*

compliance with established City policy, and the impact of the development on the City and service providers.

Mitigation Measures

The following mitigation measures would involve changes to the following action items:

MM 4.9.4 Modify the text of Action Item ISF.2.4.1 and ISF.2.4.2 as follows:

Action ISF.2.4.1 The following shall be required for all development projects, excluding subdivisions:

- *An assured water supply and delivery system shall be available at the time of project approval. The water agency providing service to the project may provide several alternative methods of supply and/or delivery, provided that each is capable individually of providing water to the project. However, assurance of water supply shall identify that the water agency has legal entitlement to the water source and that the water source has long term reliability (at least 20 years) under normal, dry and multiple dry years.*

- *All required water infrastructure for the project shall be in place at the time of project approval, or shall be assured through the use of bonds or other sureties to the City's satisfaction. Water infrastructure may be phased to coincide with the phased development of large-scale projects.*

Action ISF.2.4.2 The following shall be required for all subdivisions to the extent permitted by state law:

- *Proposed water supply and delivery systems shall be identified at the time of tentative map approval to the satisfaction of the City. The water agency providing service to the project may provide several alternative methods of supply and/or delivery, provided that each is capable individually of providing water to the project.*

- *The agency providing water service to the subdivision shall demonstrate prior to the approval of the Final Map by the City that sufficient capacity shall be available to accommodate the subdivision plus existing development, and other approved projects in the same service area, and other projects which have received commitments for water service. This assurance of water supply shall identify that the water agency has legal entitlement to the water source and that the water source has long term reliability (at least 20 years) under normal, dry and multiple dry years.*

- *Offsite and onsite water infrastructure sufficient to provide adequate water to the subdivision shall be in place prior to the approval of the Final Map or their financing shall be assured to the*

satisfaction of the City, consistent with the requirements of the Subdivision Map Act.

- *Offsite and onsite water distribution systems required to serve the subdivision shall be in place and contain water at sufficient quantity and pressure prior to the issuance of any building permits. Model homes may be exempted from this policy as determined appropriate by the City, and subject to approval by the City.*

Implementation of the above proposed General Plan policies and action items and Mitigation Measure **MM 4.9.4** would ensure that the new development under the General Plan would not proceed without verification and determination that an adequate water supply exists. As noted above, it is speculative that additional water supply sources would be available to serve buildout of the entire Planning Area. In addition, the proposed General Plan would contribute to identified significant environmental impacts associated with planned water supply projects as well as potential future other water supply sources. Given these conditions, this impact is considered **significant and unavoidable**.

4.9.4 CUMULATIVE SETTING, IMPACTS AND MITIGATION MEASURES

CUMULATIVE SETTING

As previously described, the Plan Area is located within the 27,000 square mile Sacramento River watershed, which includes the Sacramento, American, and Cosumnes Rivers. The American River is located along the northern boundary of the Planning Area and the Consumnes River is located to the south of the Planning Area. More specifically, the Planning Area is part of the Morrison Creek Stream Group, which covers 192 square miles, and includes the waterways of Elder, Rancho Cordova, Florin, Gerber, Laguna (and tributaries), Morrison, Strawberry, Union House, and Whitehouse Creeks. The cumulative water supply analysis focuses on water demand projections in Sacramento County and more specifically, within the South American groundwater Sub-Basin (or Central Area) that underlies southern Sacramento County. Reducing and mitigating the cumulative water impacts from development within the Sacramento Valley groundwater basins was the premise behind the preparation of the Water Forum Agreement. The reader is referred to Section 4.0 regarding a description of development activities within the region that contribute to cumulative water resource impacts

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Water Quality Impacts

Impact 4.9.5 Implementation of the proposed General Plan and potential development of the Planning Area would include substantial grading, site preparation, and an increase in urbanized development. Increased development would contribute to cumulative water quality impacts and is considered **cumulatively considerable**.

As described under **Impact 4.9.1** and **4.9.2**, approximately 47,074 acres with Cordova Planning Area are anticipated to be substantially disturbed with urban levels of development under the implementation of the proposed General Plan. This would add to other potential development activities within Sacramento County and adjacent areas, as described in **Table 4.0-1**, depending on the timing and rate of development. Development of any of these areas will

result in cumulative water quality impacts, which include impacts on surface water and groundwater quality.

Proposed General Plan Policies and Action Items That Provide Mitigation

The following proposed General Plan policies and action items would assist in reducing surface water quality impacts of development under the proposed General Plan Natural Resources Element. However, this impact would still be considered cumulatively considerable.

Policy NR.3.1 *Coordinate with groups such as the Sacramento Urban Creeks Council to restore, enhance, and preserve creeks in Rancho Cordova.*

Policy NR.3.2 *Create or retain the natural topographic relief and meandering alignment of natural creek corridors in the construction of new channels and the modification of existing channels, and discourage the placement of concrete within creeks and channels.*

Action NR.3.2.1 *Develop guidelines for channel creation or modification that will ensure channel meander, naturalized side slope, and varied channel bottom elevation are considered in design.*

Action NR.3.2.2 *Adopt and implement improvement standards for soft bottom channels.*

Policy NR.3.3 *Encourage the creation of secondary flood control channels where the existing channel supports extensive riparian vegetation.*

Action NR.3.3.1 *Work with affected local, state and federal agencies to determine if natural creek corridors can and should accommodate storm flows or if separate storm water conveyance structures are necessary.*

Policy NR.3.4 *Encourage projects that contain wetland preserves or creeks, or are located adjacent to wetland preserves or creeks, to be designed for maximum visibility and, as appropriate, access.*

Action NR.3.4.1 *Establish performance standards for natural resource preserves that accomplish the following:*

- *Provide sufficient width for a mowed firebreak (where necessary), adjacent passive recreation uses, and access for channel maintenance and flood control.*
- *Offer sufficient width in and/or adjacent to preserves to allow for existing and created wildlife habitat, species sensitive to human disturbance, vegetative filtration for water quality, corridor for wildlife habitat linkage, protection from runoff, and other impacts of urban uses adjacent to the corridor.*
- *Allow for sufficient width adjacent to natural resource preserves to allow for trails and greenbelts.*
- *Do not place water quality treatment structures designed to meet pollutant discharge requirements within mitigation preserves.*

Action NR.3.4.2 *Establish standards that allow public access in the floodplain and buffers along creek corridors and preserves. Mitigation measures shall be incorporated into environmental documents and conditions of approval that require open-view fencing adjacent to preserves.*

Action NR.3.4.3 *Establish standards and/or guidelines for development adjoining wetland preserves or creeks to maximize visibility by designing the land plan with public streets on at least one side of the corridor or preserve with vertical curbs, gutters, footpath(s), street lighting, and post and cable barriers to prevent unauthorized vehicular entry into creek corridors and preserves.*

Policy NR.5.3 *Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff.*

Action NR.5.3.1 *Restrict hazardous materials storage in the 100-year floodplain to prevent surface water contamination.*

Action NR.5.3.2 *Educate the community on laws governing the proper handling of hazardous materials, especially those laws which pertain to discharging materials into creeks.*

Action NR.5.3.3 *Install appropriate signage to deter the discharge of hazardous materials into storm drains.*

Policy NR.5.4 *Prevent contamination of the groundwater table and surface water, and remedy existing contamination to the extent practicable.*

Action NR.5.4.1 *Provide information on pollution prevention, disposal of hazardous waste and chemicals, liability and clean-up on the City's website and in educational materials and brochures.*

Action NR.5.4.2 *Require clean-up of contaminated ground and surface water by current and/or past owners or polluters.*

Action NR.5.4.3 *Encourage pollutant cleansing companies to use the latest technologies available in order to expedite the cleansing process and do the least harm to the environment.*

Policy NR.5.5 *Minimize erosion to stream channels resulting from new development in urban areas.*

Action NR.5.5.1 *Require community and specific plans to contain urban runoff control strategies and requirements that are consistent with Master Drainage Plans and the City's urban runoff management program.*

Action NR.5.5.2 *Require development within newly urbanizing areas to incorporate runoff control measures into their site design or to participate in an area-wide runoff control management effort consistent with standards developed by the Public Works Department.*

Action NR.5.5.3 *Encourage new development to incorporate features such as grassy swales, multi-use retention or detention basins, and integrated drainage systems to enhance water quality. Work with the Cordova Recreation*

and Park District to establish standards for integrating retention/detention basins into park sites and create examples of desirable and innovative natural drainage features.

Action NR.5.5.4 *Establish and require the use of best management practices to protect receiving waters from the adverse effects of construction activities, sediment and urban runoff.*

Mitigation Measures

Implementation of the above General Plan policies and action items, mitigation measures **MM 4.9.1a and b** and **MM 4.9.2**, and continued implementation of the provisions of the City's NPDES permit would ensure that City stormwater would attain water quality standards and protect of beneficial uses consistent with applicable water quality requirements. Thus, the General Plan's contribution to cumulative water quality impacts would be reduced to **less than cumulatively considerable**.

Cumulative Flood Hazards

Impact 4.9.6 Implementation of the proposed General Plan would increase impervious surfaces and alter drainage conditions and rates in the Planning Area, which could contribute to cumulative flood conditions along the American River, Sacramento River, Cosumnes River, and local waterways. However, the General Plan contains adequate General Plan policies and action items that address drainage and flooding issues. This is considered a **less than cumulatively considerable** impact.

As described under Impact 4.9.3, urban development under the proposed General Plan would increase impervious surfaces in the Planning Area that would contribute (in combination with cumulative development in the watershed) to increases in flood conditions for area waterways. The project would also increase the regional population that could be exposed to flooding as a result of levee failure along the American River of failure of Folsom Dam. However, such an event has an extremely low probability of occurring and is not considered to be a reasonably foreseeable event. Currently, there are planning efforts by the U.S. Army Corps of Engineers to improve the flood capacity of Folsom Reservoir and there have been improvements made to security at Folsom Dam to minimize the treat of an intentional act of sabotage.

Proposed General Plan Policies and Action Items That Provide Mitigation

The following General Plan policies and action items address drainage and flooding. As noted in the policies and action items below, the proposed General Plan would ensure that development does not occur within the 100-year floodplain and would prohibit new projects from increasing existing flooding impacts or creating new flood impacts.

Policy S.2.1 *Ensure that flood control facilities do not alter or reduce flows in the Cosumnes or American Rivers.*

Action S.2.1.1 *Support the construction of flood control projects when clear dangers to life and property exist.*

Action S.2.1.2 *Participate in the National Flood Insurance Program by updating the floodplain management ordinance as necessary to help reduce future*

flood damage. Participation in the National Flood Insurance Program makes federally backed flood insurance available to homeowners, renters, and businesses owners in Rancho Cordova.

Action S.2.1.3 *Participate with the City of Sacramento, the Army Corps of Engineers, and other Federal, State, and local governments and agencies to develop policies to finance, construct, and plan flood improvements to eliminate flooding in the City.*

Policy S.2.2 *Manage the risk of flooding by discouraging new development located in an area that is likely to flood.*

Action S.2.2.1 *Disapprove new projects that would result in new or increased flooding impacts on adjoining parcels or upstream and downstream areas.*

Action S.2.2.2 *Use appropriate land use designations as the primary flood prevention measure. Prioritize the construction of new flood control projects only when land use controls are not sufficient to reduce hazards to life and property to acceptable levels.*

Action S.2.2.3 *Preclude development within the 100-year floodplain, as determined by the most recent floodplain mapping available from the Federal Emergency Management Agency (FEMA) or other acceptable source.*

Action S.2.2.4 *On flood-prone parcels, locate development on portions of the site that are not subject to flooding, consistent with other policies of this General Plan.*

Action S.2.2.5 *Require every residential lot to have buildable area sufficient to accommodate a residence and associated structures outside the 100-year floodplain. Discourage the use of fill to create buildable area within the 100-year floodplain, except in extreme circumstances consistent with all other applicable policies and regulations, and after review to determine potential impacts on wildlife, habitat, and flooding on other parcels.*

Action S.2.2.6 *Require vehicular access to the buildable area of all parcels to be at or above the ten-year floodplain elevation.*

Action S.2.2.7 *Preclude the creation of lots whose access will be inundated by flows resulting from a ten-year or greater storm event. Bridges or similar structures may be used to provide access over creeks or inundated areas, subject to applicable local, state, and federal regulations.*

Action S.2.2.8 *Discourage additional crossings of natural creeks in order to reduce potential flooding and access problems, except as needed to provide roadway and trail connections and preserve natural resource areas.*

Action S.2.2.9 *Prohibit new and modified bridge structures that will cause an increase of more than one foot in water surface elevations of the 100-year floodplain, unless analysis clearly indicates that the physical and/or economic use of upstream property will not be adversely affected.*

Policy S.1.13 *Discourage the creation of new parcels when the presence of easements, floodplain, marsh, or riparian habitat, and/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 control, drainage, or wetland maintenance.*

Policy S.2.3 *Ensure that adequate drainage exists for both existing and new development.*

Action S.2.3.1 *Require all new urban development projects to either incorporate runoff control measures to minimize peak flows of runoff or otherwise implement Comprehensive Drainage Plans.*

Action S.2.3.2 *Maintain drainage facilities in order to ensure their proper operation during storms.*

Action S.2.3.3 *Prepare a Comprehensive Drainage Plan for all streams and their tributaries prior to any development within the 100-year floodplain.*

Policy NR.5.5 *Minimize erosion to stream channels resulting from new development in urban areas.*

Action NR.5.5.3 *Encourage new development to incorporate features such as grassy swales, multi-use retention or detention basins, and integrated drainage systems to enhance water quality. Work with the Cordova Recreation and Park District to establish standards for integrating retention/detention basins into park sites and create examples of desirable and innovative natural drainage features.*

The above proposed General Plan policies and action items would ensure that development does not occur within the 100-year floodplain and would prohibit new projects from increasing existing flooding impacts or creating new flood impacts. Thus, these provisions would ensure that the proposed General Plan does not contribute to cumulative flood conditions. The General Plan's contribution to this impact is considered **less than cumulatively considerable**.

Mitigation Measures

None required.

Cumulative Water Supply Impacts

Impact 4.9.7 Implementation of the proposed General Plan would contribute to an increased demand for water supply requiring increased groundwater production and the use of surface water supplies that could result in significant environmental impacts. This is considered a **cumulatively considerable** impact.

As noted under **Impact 4.9.4**, there is currently not adequate existing and planned water supplies identified to serve full buildout of the proposed General Plan (51,089 afy shortfall). Future growth in the region (e.g., as identified in the Sacramento Area Council of Government's Region Blueprint process and City of Folsom Sphere of Influence) would further contribute to the need

for additional sources of water supply currently not planned for. This could result in further direct and indirect environmental effects associated with the development of new water supply sources.

Proposed General Plan Policies and Action Items That Provide Mitigation

The following proposed General Plan policies and action items would assist in reducing water supply impacts of General Plan growth. However, this impact would still be considered cumulatively considerable.

Policy NR.4.2 *Improve overall landscaping quality and sustainability in all areas visible to the public.*

Action NR.4.2.2 - Create development guidelines that address landscaping standards and that require appropriate tree species and densities in buffer areas. The guidelines should also ensure that medians will include native plantings and trees, and will be wide enough to support the long-term viability of the plantings.

Action NR.4.2.3 - Provide leaflets and planting guides that promote the use of drought-tolerant native vegetation in home landscaping.

Policy NR.5.1 *Promote water conservation within existing and future urban uses.*

Action NR.5.1.1 *Install water-conserving landscaping and irrigation on City-owned and operated facilities.*

Action NR.5.1.2 *Require development project approvals to include a finding that all feasible and cost-effective options for conservation and water reuse are incorporated into project design.*

Action NR.5.1.3 *Establish a program that requires per capita water consumption to be reduced by at least 20 percent by 2030. The program shall include the following measures:*

- *Restrict water usage through metering or establishing designated watering days for the City's residences and businesses.*
- *Promote water conservation efforts through education.*
- *Implement standards that require low-flow appliances and fixtures in all new development.*
- *Work with water providers and water conservation agencies to create an incentive program that encourages retrofitting existing development with low-flow water fixtures.*
- *Require new development to utilize state-of-the-art irrigation systems that reduce water consumption (e.g., drip irrigation, gray-water systems).*
- *Encourage drought-tolerant vegetation and use water-efficient irrigation systems in landscaped public areas.*

Policy NR.5.2 *Encourage the use of treated wastewater to irrigate parks, golf courses, and landscaping.*

Action NR.5.2.1 *Establish a Large-Scale Recycled Water Program and Citywide Recycled Water Distribution System Ordinance.*

Action NR.5.2.2 *Coordinate with the City's water purveyors to establish a connected "purple pipe" system throughout the City's new development areas that uses recycled water.*

Policy ISF.2.1 *Ensure the development of public infrastructure that meet the long-term needs of residents and ensure infrastructure is available at the time such facilities are needed.*

Action ISF.2.1.1 *Except when prohibited by state law, require sufficient capacity in all public facilities to maintain desired service levels and avoid capacity shortages, traffic congestion, or other negative effects on safety and quality of life.*

Action ISF.2.1.2 *Adopt a phasing plan for the development of public facilities in a logical manner that encourages the orderly development of roadways, water and sewer, and other public facilities.*

Action ISF.2.1.3 *Withhold public financing or assistance from projects that do not comply with the planned phasing of public facilities, and approve interim facilities only in special circumstances.*

Policy ISF.2.2 *Coordinate with independent public service providers, including schools, parks and recreation, utility, transit, and other service districts, in developing service and financial planning strategies.*

Action ISF.2.2.1 *Establish a Technical Review Committee for continued coordination with outside service agencies, including water and sewer providers, the Cordova Recreation and Park District, and the school districts, during the review of plans and development projects.*

Policy ISF.2.3 *Ensure that adequate funding is available for all infrastructure and public facilities, and make certain that the cost of improvements is equitably distributed.*

Action ISF.2.3.1 *Require secure financing for all components of the transportation system through the use of special taxes, assessment districts, developer dedications, or other appropriate mechanisms. Financing should be sufficient to complete required major public facilities at their full planned capacities in a single phase. Major facilities include roadways of collector size or larger; all wells, water transmission lines, treatment facilities, and storage tanks needed to serve the project; and all sewer trunk and interceptor lines and treatment plants or treatment plant capacity.*

Action ISF.2.3.2 *Require new development to fund its fair share portion of its impacts to all public infrastructure and facilities.*

Action ISF.2.3.3 *Include sufficient funding in fee programs and/or other finance mechanisms to cover the costs of each of the following roadway items:*

- *Design, engineering, environmental compliance, and construction of roadway lanes, traffic signals, and bridges.*
- *Right of way acquisition, design, engineering, environmental compliance, and construction costs.*
- *Drainage and other facilities related to new roadway construction.*
- *Installation of landscaped medians, sidewalks, and streetscaping where appropriate.*

Policy ISF.2.4 *Ensure that water supply and delivery systems are available in time to meet the demand created by new development, or are guaranteed to be built by bonds or sureties.*

Action ISF.2.4.1 *Require all development projects, excluding subdivisions, to adhere to the following provisions:*

- *An assured water supply and delivery system shall be available at the time of project approval. The water agency providing service to the project may provide several alternative methods of supply and/or delivery, provided that each is capable individually of providing water to the project.*
- *All required water infrastructure for the project shall be in place at the time of project approval, or shall be assured through the use of bonds or other sureties to the City's satisfaction. Water infrastructure may be phased to coincide with the phased development of large-scale projects.*

Action ISF.2.4.2 *Require all subdivision developments to adhere to the following provisions, to the extent permitted by state law:*

- *Proposed water supply and delivery systems shall be identified at the time of tentative map approval to the satisfaction of the City. The water agency providing service to the project may provide several alternative methods of supply and/or delivery, provided that each is capable individually of providing water to the project.*
- *The agency providing water service to the subdivision shall demonstrate prior to the approval of the Final Map that sufficient capacity shall be available to accommodate the subdivision plus existing development, and other approved projects in the same service area, and other projects which have received commitments for water service.*
- *Offsite and onsite water infrastructure sufficient to provide adequate water to the subdivision shall be in place prior to the approval of the Final Map or their financing shall be assured to the*

satisfaction of the City, consistent with the requirements of the Subdivision Map Act.

- *Offsite and onsite water distribution systems required to serve the subdivision shall be in place and contain water at sufficient quantity and pressure prior to the issuance of any building permits. Model homes may be exempted from this policy as determined appropriate by the City, and subject to approval by the City.*

Policy ISF.2.7 *Minimize visual impacts and physical impediments of utility infrastructure and equipment.*

Action ISF.2.7.1 *Coordinate with utility agencies to underground, strategically place, and screen equipment to the maximum extent feasible.*

Policy LU.2.5 *Phase growth based on market forces, infrastructure financing capacity, and the timing of the design, approval, and construction of transportation facilities and other infrastructure.*

Action LU.2.5.1 *Require market studies, financing plans, phasing plans, and other associated studies as needed as part of all new major development applications in order to evaluate the need for these projects, their compliance with established City policy, and the impact of the development on the City and service providers.*

Mitigation Measures

Implementation of the above proposed General Plan policies and action items and Mitigation Measure **MM 4.9.4** would ensure that the new development under the General Plan would not proceed without verification and determination that an adequate water supply exists. As noted above, it is speculative that additional water supply sources would be available to serve buildout of the entire Planning Area or development beyond. In addition, the proposed General Plan would contribute to identified significant environmental impacts associated with planned water supply projects as well as potential future other water supply sources. Given these conditions, this impact is considered **cumulatively considerable** and thus is **significant and unavoidable**.

REFERENCES

California Regional Water Quality Control Board, Central Valley Region. 2004. *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*. Sacramento, California.

California Regional Water Quality Control Board, Central Valley Region. 2002. *Waste Discharge Requirements for County of Sacramento and Cities of Citrus Heights, Rancho Cordova, Folsom, Galt and Sacramento.*

Sacramento County Water Agency, 2005. The SB610 Water Supply Assessment (WSA) for the Proposed Rio del Oro Specific Plan Project.

Consumnes River Task Force. http://www.cosumnesriver.org/

EDAW, 2006. *Water Supply Evaluation for the City of Rancho Cordova General Plan*. Prepared by EDAW. Rancho Cordova, California. 2006

Sacramento County, Public Works Agency, Department of Water Resources. 2001. *Local Floodplain Management Plan for the County of Sacramento*. Sacramento, CA.

Sacramento County Department of Environmental Assessment and Review. November 2001. *Sunrise Douglas Community/Sunridge Specific Plan Environmental Impact Report*. Sacramento, California.

Sacramento County Department of Water Resources Local Floodplain Management Plan 2001. http://www.msa.saccounty.net/waterresources/drainage/docs/LocalFPMgmtPlan.pdf

Sacramento County. 1993. *Sacramento County General Plan*. Sacramento, California.

Sacramento County. 1993. *The Sacramento County General Plan Update Environmental Impact Report*. Sacramento, California.

Sacramento County Water Agency. December 2002. *Zone 40 Water Supply Master Plan, Draft Environmental Impact Report, Technical Appendices, and Final Environmental Impact Report*. Sacramento, California.

Sacramento River Watershed Program. http://www.sacriver.org/

U.S. Geological Survey. 1995. *Groundwater Atlas of the United States: California and Nevada.*

RWQCB, 2004. *Total Maximum Daily Load (TMDL) Report for Diazinon and Chlorpyrifos Impaired Urban Creeks in Sacramento County*. September 2004.

County of Sacramento. *CEQA Findings of Fact and Statement of Overriding Considerations for the Sunrise Douglas Community Plan/Sunridge Specific Plan Project*. July 17, 2002.

County of Sacramento. *Sacramento City/County Drainage Manual*. December 1996.

City-County Office of Metropolitan Water Planning. *Water Forum Agreement Draft EIR.*