

4.10 HYDROLOGY AND WATER QUALITY

This section of the Draft Environmental Report ("Draft EIR"; "DEIR") describes the existing surface water and groundwater features within the City of Ione General Plan Planning Area (Planning Area). This section also addresses potential issues resulting from the General Plan update and its other project components associated with storm drainage and flooding, stormwater quality, groundwater quality (as impacted by stormwater), and exposure of structures to flood hazards. Information provided in this section is based on interpretations of regulations, available data, available reports and other information, information obtained from City of Ione (City) staff and other governmental agencies, and field reconnaissance performed by Storm Water Consulting, Inc. in 2009. Section 4.13, Public Services and Utilities, of this DEIR discusses environmental impacts related to water supplies and the provision of water to city residents and businesses.

4.10.1 ENVIRONMENTAL SETTING

CLIMATE AND RAINFALL

The City of Ione has an average annual precipitation of about 22 inches. Because of the area's low elevations, mild winters and relatively dry and warm summers characterize the local climate. Most of the annual precipitation is received and falls as rain as a result of storms in the winter months. Snowfall events are very rare and limited in their depth and duration.

For the Planning Area, the following generalizations may be made:

- Average maximum temperature is approximately 91.5 degrees F (July), per records taken from the Ione gauging site (#044283);
- Average minimum temperature is approximately 37.2 degrees F (January), per records taken from the Ione gauging site (#044283);
- Average annual precipitation is approximately 22.0 inches, per records taken from the Ione gauging site (#044283);
- The 100-year 24-hour return period depth of precipitation is estimated to be about 5.5 inches, per NOAA Atlas 2, Volume XI, and is estimated to be about 4.32 inches, per Rainfall Depth Duration Frequency data for Ione Station No. B00 4283. Return period is defined as the average time frame in which a storm of a given magnitude will occur. Values differ, in part, because the Ione Station data is from a single gauging site and the NOAA Atlas is a compilation of isopluvials (lines of equal precipitation depths) developed from multiple gauging sites that provide informational coverage for a much larger area.

TOPOGRAPHY

The City of Ione is located in Amador County (County), within and near the base of the west slope of the Sierra Nevada. The Planning Area consists of gently sloping lands varying in elevation from approximately 800 feet at Church Bell Mountain east of the City of Ione to about 170 feet where Dry Creek exits the southwest portion of the Planning Area. Existing creeks (such as Sutter Creek and Dry Creek) have gradients ranging from roughly 0.4 percent to 1.0 percent in upslope segments, decreasing to roughly 0.3 percent in downstream segments. Elevation within the center of the downtown area for the City of Ione is at about 300 feet. **Figure 4.10-1** depicts the topography of the Planning Area.

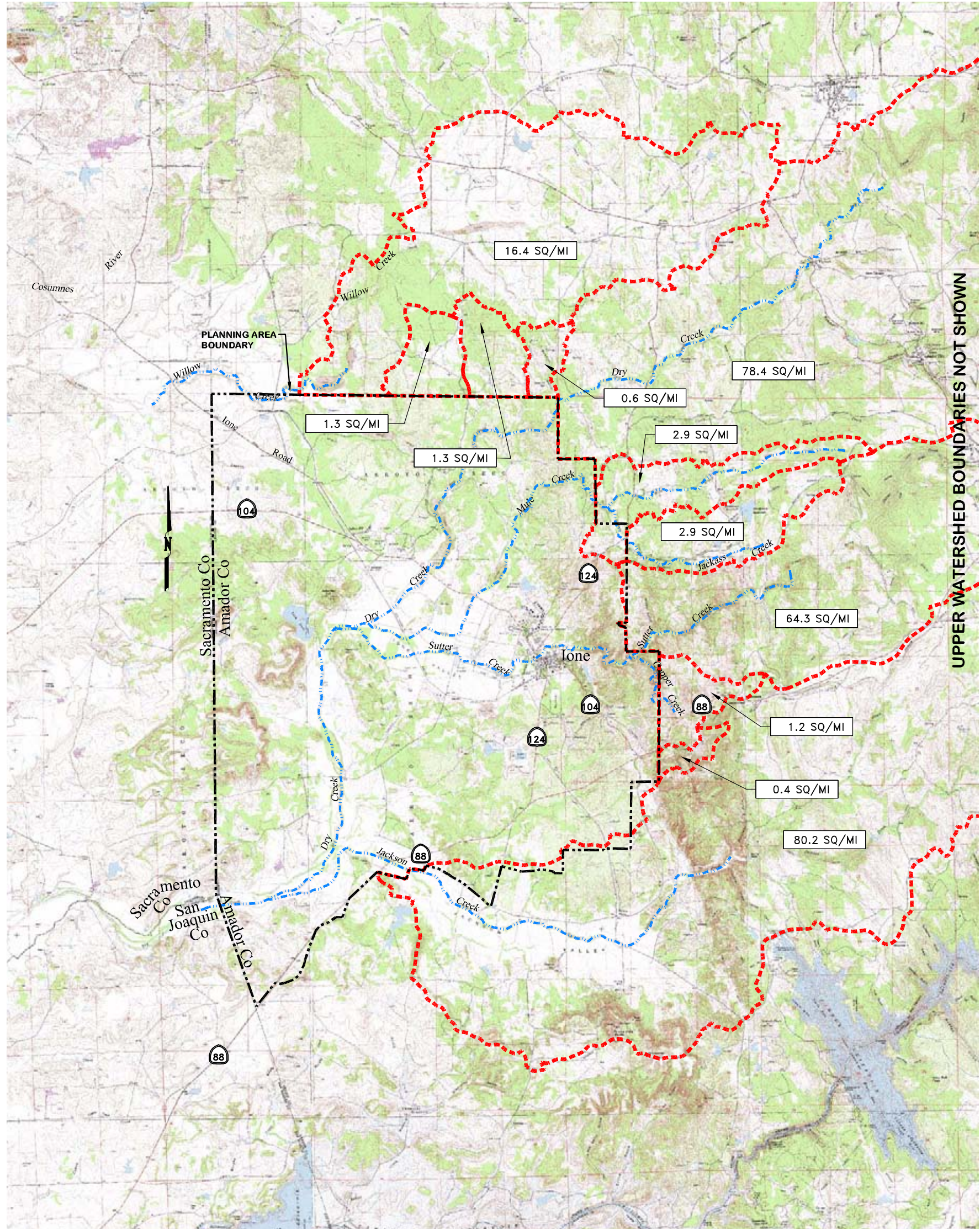
4.10 HYDROLOGY AND WATER QUALITY

SOILS

The U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS), uses hydrologic soil groups to group soils according to their runoff potential. According to the Soil Survey for Amador County prepared by the NRCS, soils that are present within the Planning Area include all four NRCS Hydrologic Soil Group designations (Hydrologic Soil Groups A, B, C, and D). The following criteria are used to determine placement in hydrologic soil groups:

- Group A:* *Low runoff potential* soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well-drained sands or gravels. These soils have a high rate of water transmission.
- Group B:* Soils having *moderate infiltration* rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well to well-drained sandy-loam with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.
- Group C:* Soils having a *low infiltration* rate when thoroughly wetted and consisting chiefly of silt-loam soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.
- Group D:* *High runoff potential* soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a slow rate of water transmission.

The substantial majority of soils in the Planning Area are classified by the NRCS as belonging to Hydrologic Soil Group D and they retain a characteristically high runoff potential. The valley floors along the major creek corridors include historically transported and deposited sediments that are classified as Soil Group B. Small traces of Soil Group A are also present within the major creek corridors. Soil Group C soils are scattered from north to south, primarily along the western boundary of the Planning Area. Hydrologic Soil Groups within the Planning Area are represented on **Figure 4.10-2**.

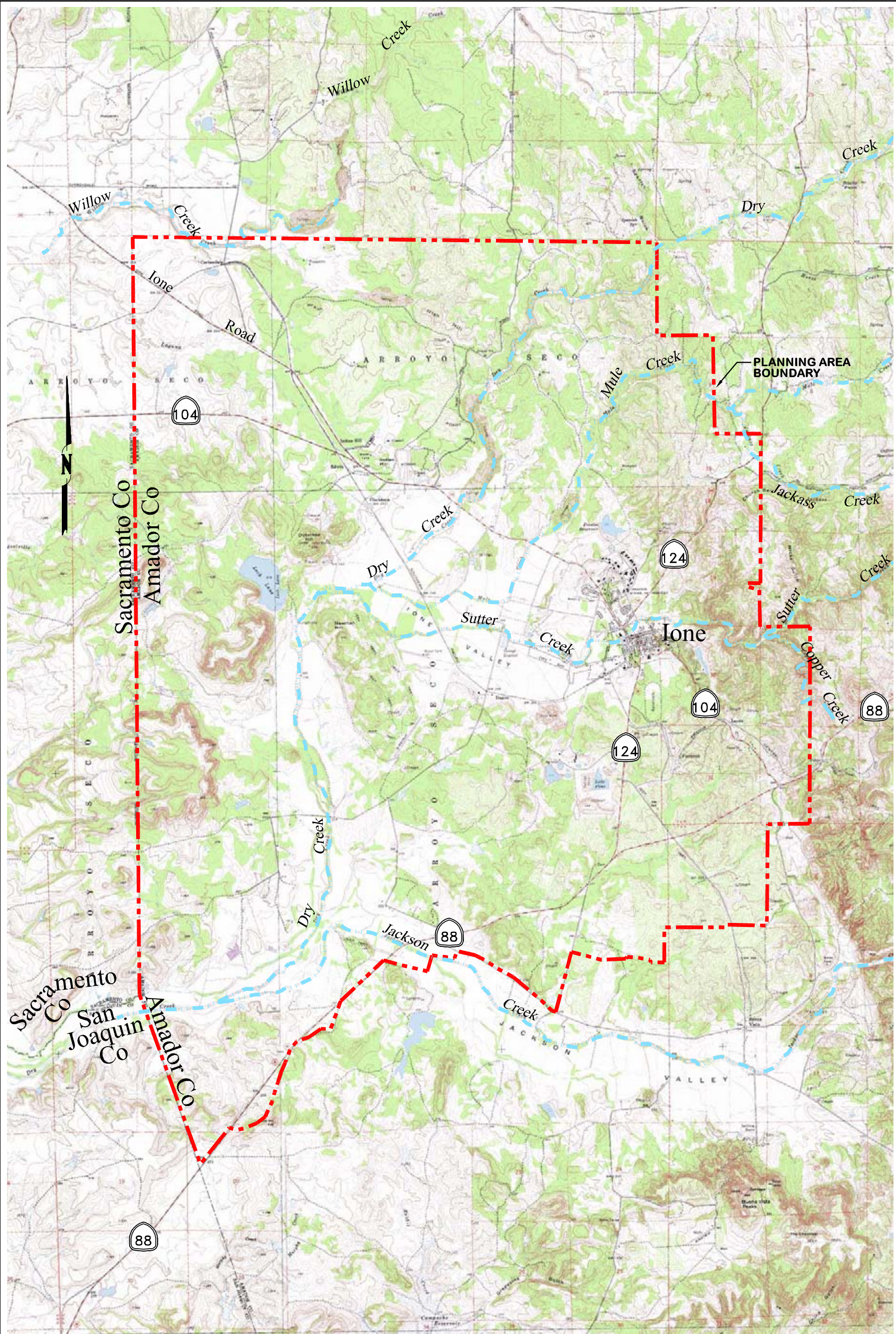


Source: Storm Water Consulting, 2009



City of Ione
Planning Department

Figure 4.10-1
Creeks and Watersheds in the Planning Area



Source: Storm Water Consulting, 2009



City of Ione
Planning Department

Figure 4.10-2
Topography of the Planning Area

SURFACE WATER RESOURCES

The Planning Area resides within foothill areas located near the base of the west slope of the Sierra Nevada range (west slope). The area is traversed by several creeks whose contributing watersheds extend varying distances upstream to the east and north within higher elevations along the west slope. These creeks include the following:

- **Dry Creek**, extending southwesterly through the majority of the Planning Area and exiting the Planning Area (and Amador County) at the Sacramento/San Joaquin county line;
- **Sutter Creek**, extending westerly through the central portion of the Planning Area and through existing urbanized areas within the city, discharging to Dry Creek in the west central portion of the Planning Area;
- **Mule Creek**, extending south-southwesterly through the northeast quadrant of the Planning Area and joining Dry Creek just north of Sutter Creek's confluence with Dry Creek;
- **Jackass Creek**, cutting through a small northeasterly portion of the Planning Area and joining Mule Creek just upstream of the Planning Area;
- **Copper Creek**, cutting through a small easterly portion of the Planning Area and joining Sutter Creek upstream of the city;
- **Willow Creek**, passing through a small area within the northwest portion of the Planning Area;
- **Jackson Creek**, entering the southern portion of the Planning Area and discharging to Dry Creek.

With the exception of Willow Creek, all of the above creeks passing through the Planning Area drain to Dry Creek. Willow Creek drains to Laguna Creek, whose headwaters originate in the northwest quadrant of the Planning Area.

The largest of the upstream watersheds draining to the Planning Area are the watersheds associated with Dry Creek (78.4 square miles), Sutter Creek (64.3 square miles), and Jackson Creek (80.2 square miles) measured upstream from their points of entrance to the Planning Area.

Mule Creek has a relatively small watershed (2.9 square miles) and is located between Sutter Creek and Dry Creek. Jackass Creek is a tributary of Mule Creek and also has a watershed area of approximately 2.9 square miles. Upstream of the Planning Area, flow from Jackass Creek is impounded by the Henderson Reservoir and then by the Goffinet Reservoir which are located approximately 1½ miles to the east of the Planning Area boundary.

Willow Creek has a watershed area of approximately 16.4 square miles and flows along the northwest corner of the Planning Area. Willow Creek enters the Planning Area along the northern boundary and flows within the Planning Area for a very short distance, of about 3,000 feet.

There are also several small, unnamed watersheds contributing runoff to the Planning Area along the northern and eastern boundaries. Their watershed areas range in size from 0.4 to 1.3

4.10 HYDROLOGY AND WATER QUALITY

square miles. The unnamed watersheds along the northern boundary drain to Willow Creek, and the unnamed watersheds along the eastern boundary ultimately drain to Dry Creek.

The creeks and the nearby portions of their upstream watersheds are shown on **Figure 4.10-3**.

Downstream of the Planning Area, Dry Creek joins the Mokelumne River about 23 miles downstream to the west of the Amador county line. About 18 miles further downstream of the confluence with Dry Creek, the Mokelumne River joins the San Joaquin River which discharges to the eastern portions of the Sacramento-San Joaquin Delta about 20 miles farther downstream.

Willow Creek joins Laguna Creek about 1 mile west of the Amador county line. Laguna Creek extends downstream through rural Sacramento County and through the City of Elk Grove and joins the Cosumnes River about 23 miles downstream of the Willow Creek confluence. The Cosumnes River joins the Mokelumne River about 4 miles farther downstream.

Other relevant hydrologic features within the Planning Area include the Preston Reservoir, CSP Mule Creek Reservoir, lone Canal Reservoir, several other minor water impoundments, and bridge and culvert crossings of creeks at highways and selected local streets.

The existing Planning Area land uses include urban development associated with the City of lone, the Castle Oaks Golf Club, the Preston Youth Correctional Facility, Mule Creek State Prison, agricultural livestock and grazing in low-lying areas adjacent to creeks, quarry mining areas, and natural areas.

DAMS

There are seven dams within and upstream of the Planning Area listed by the State of California Department of Water Resources, Division of Safety of Dams (DSOD) as dams falling within their jurisdiction. **Table 4.10-1** below is a listing of these dams along with pertinent official information from DSOD.

TABLE 4.10-1
DAMS WITHIN AND UPSTREAM OF THE PLANNING AREA
UNDER THE JURISDICTION OF THE STATE OF CALIFORNIA

Name of Dam	Stream	Owner	Capacity (acre-feet)	Reservoir Area (acres)	Type of Structure
CSP Mule Creek	Offstream from Mule Creek	State Department of Corrections	535 af	24	Earthen
Goffinet	Jackass Creek	Dave Maiyero	197 af	17	Earthen
Henderson	Jackass Creek	Amador Regional Sanitation Authority	500 af	31	Earthen
lone Canal	lone Canal	Amador Water Agency	24 af	2	Earthen
Jackson Creek	Jackson Creek	Jackson Valley Irrigation District	22,000 af	385	Earth and Rock
Preston	Mule Creek Tributary	Amador Regional Sanitation Authority	268 af	17	Earthen
Preston Forebay	Offstream	Amador Regional Sanitation Authority	30 af	2	Earthen

Source: DSOD, 2009

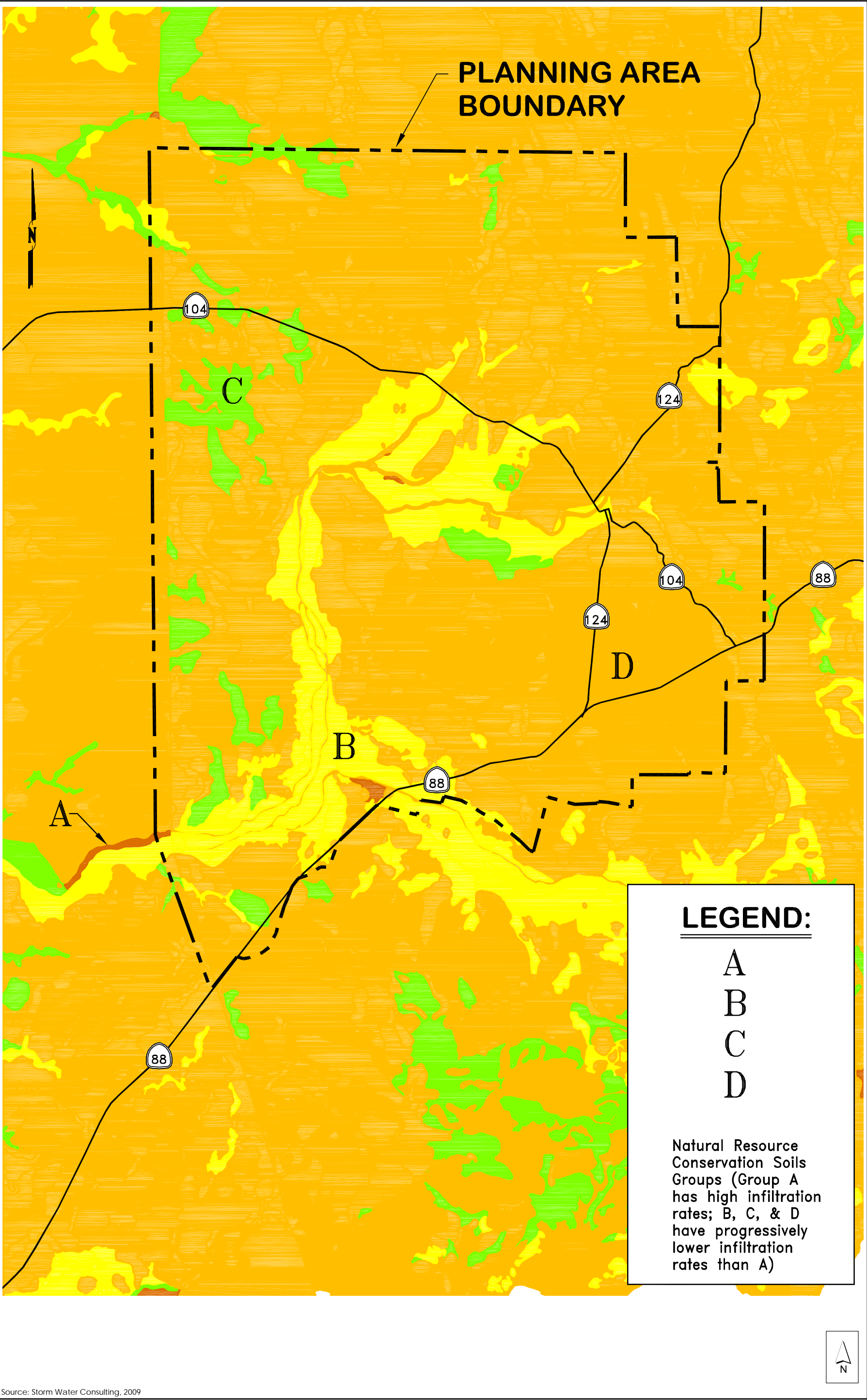


Figure 4.10-3
Hydrologic Soil Groups within the Planning Area

As shown on **Table 4.10-1**, the jurisdictional dams are generally not impounding major bodies of water, with the exception of the Jackson Creek dam which flows at 22,000 acre per feet (af) capacity. The Jackson Creek dam is located about 6 miles upstream to the east of the Planning Area. The segment of Jackson Creek and downstream Dry Creek passing through the Planning Area extend through General Agriculture and Open Space land uses according to the General Plan update and in the unlikely event of a dam failure, the extent of potential damages through these areas would be somewhat limited.

DSOD retains the power, authority, and responsibility for supervising the construction, enlargement, alteration, repair, maintenance, operation, and removal of dams and reservoirs under jurisdiction of the State of California. DSOD inspects dams under state jurisdiction on a periodic basis. All of the jurisdictional dams listed on **Table 4.10-1** have been inspected by DSOD within the past 18 months. The most recent inspection reports all concluded that the “dam, reservoir, and the appurtenances are judged satisfactory for continued use,” though varying degrees of maintenance were also requested for most of them. In determining whether or not a dam or reservoir constitutes a danger to life or property, DSOD takes into consideration the possibility that the dam or reservoir might be endangered by seepage, earth movement, or other conditions which exist or which might occur in any area in the vicinity of the dam or reservoir. Whenever DSOD deems that any such condition endangers a dam or reservoir, DSOD orders the owner to take such action as DSOD determines to be necessary to remove the resultant danger to life and property. The probability of dam failure for the jurisdictional dams within and upstream of the Planning Area is considered to be very remote and not reasonably foreseeable in the analysis of the impacts pertinent to the Planning Area.

SURFACE WATER QUALITY

Under section 303(d) of the Clean Water Act (CWA), states are required to develop lists of impaired waters. These are waters that are too polluted or otherwise degraded to meet the water quality standards set by the state. The law requires the state to establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDLs) for these waters. A Total Maximum Daily Load is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards (USEPA, 2009). As shown on **Table 4.10-2**, below, the Regional Water Quality Control Board, Central Valley Region has included the following waters downstream of the Planning Area on their 2006 Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments requiring TMDLs.

4.10 HYDROLOGY AND WATER QUALITY

TABLE 4.10-2
CWA LISTED SECTION 303(D) WATER QUALITY LIMITED SEGMENTS DOWNSTREAM OF PLANNING AREA

Waterbody	Pollutant/Stressor	Potential Sources	Proposed TMDL Completion
Mokelumne River, Lower	Copper	Resource Extraction	2020
	Zinc	Resource Extraction	2020
San Joaquin River (Stanislaus River to Delta Boundary)	DDT	Agriculture	2011
	Group A Pesticides	Agriculture	2011
	Mercury	Resource Extraction	2020
	Toxaphene	Source Unknown	2019
	Unknown Toxicity	Agriculture	2019
Delta Waterways (eastern portion)	Chlorpyrifos	Agriculture, Urban Runoff/Storm Sewers	2006
	DDT	Agriculture	2011
	Diazinon	Agriculture, Urban Runoff/Storm Sewers	2006
	Exotic Species	Source Unknown	2019
	Group A Pesticides	Agriculture	2011
	Mercury	Resource Extraction	2006
	Unknown Toxicity	Source Unknown	2019

Source: SWRCB, 2007

Dry Creek discharges to the listed segment of the Mokelumne River about 23 miles downstream to the west of the Planning Area. The Mokelumne River drains to the listed segment of the San Joaquin River that drains to the eastern portion listed segment of the Delta Waterways. Willow Creek and the applicable headwaters for Laguna Creek within the northwest quadrant of the Planning Area discharge to the listed segment of the Cosumnes River about 24 miles downstream of the Planning Area.

Section 303(d) of the federal CWA requires states to identify the waters of the state that do not meet the CWA's national goal of "fishable, swimmable" and to develop "total maximum daily loads" for such waters, with oversight by the United States Environmental Protection Agency (USEPA). A TMDL is a quantifiable assessment of potential water quality issues, contributing sources, and load reductions or control actions needed to restore or protect bodies of water.

GROUNDWATER

Groundwater data obtained for the Planning Area is somewhat limited. According to a report entitled Custom Soil Resource Report for Amador Area, California, Triangle Area prepared by the U.S. Department of Agriculture, Natural Resource Conservation Service, soils listings all contained a reference that groundwater depths were "more than 80 inches." The triangle area referenced is the area south of the City of Lone bounded by State Routes (SR) 104, 124, and 88. There is no well data available within the Planning Area from the State of California Department of Water Resources (DWR). However, data is available for several wells downslope to the west within a range of about 3 miles of the Planning Area. Data for these wells indicated that groundwater

depths were less than 10 feet along larger creek valleys and greater than 100 feet in upland areas.

FLOOD HAZARD AREAS

Sutter Creek flows through the southern part of the city and is the major source of flooding within the City of Ione. Sutter Creek has a drainage area of approximately 68 square miles at State Route (SR) 104, and a drainage area of 64 square miles at the eastern Planning Area boundary. Sutter Creek was studied by detailed methods in the Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) for the City of Ione dated June 6, 2000. According to the FIS, prior flood events have produced depths of up to 4 feet in the downtown area. Major flooding along Sutter Creek has occurred in 1980, 1995, and 1997. Most of the flooding along Sutter Creek occurs due to inadequate channel capacity and the existence of topographically low-lying areas adjacent to the creek. Special Flood Hazard Areas (SFHAs) along Sutter Creek within the city limits are designated as Zones AE, AH, and X according to FEMA Flood Insurance Rate Maps (FIRMs).

A large area on the south side of Sutter Creek (referred to as the Sutter Creek Left Overflow Area) was also studied by detailed methods in the FIS and its SFHA is depicted as Zone AH on available FIRMs. This overflow area originates at a bend in Sutter Creek at roughly Arroyo Seco Street in the east downtown area where the 100-year discharge will overtop the banks of the creek and cause a portion of the discharge to spill to the south and west away from Sutter Creek.

Mule Creek, Dry Creek, and Jackson Creek were studied by approximate methods in the FEMA FIS and their SFHAs are represented by Zone A on available FIRMs.

The SFHAs designated within the Planning Area are defined by FEMA as follows:

Zone A – The flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base (100-year) flood elevations (BFEs) or depths are shown within this zone.

Zone AE – The flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot BFEs derived from detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH – The flood insurance rate zone that corresponds to the areas of the 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X – The flood insurance rate zone that corresponds to areas within the 500-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No BFEs or depths are shown within this zone.

A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Communities must

4.10 HYDROLOGY AND WATER QUALITY

regulate development in these floodways to ensure that there are no increases in upstream flood elevations. There are no designated "floodways" within the Planning Area.

As mandated by the passage of Senate Bill (SB) 5 by the State in 2007, the State of California Department of Water Resources (DWR) has recently prepared and issued floodplain maps for all areas ultimately draining to the Sacramento-San Joaquin Valley (including Amador County). These maps are titled "Preliminary 100- and 200-year Floodplains Based Upon Best Available Data." The maps covering the Planning Area are identified as Pages D1 and E1 of the maps produced by DWR for Amador County and are provided as **Figure 4.10-4** and **Figure 4.10-5**. These maps depict the boundaries of the FEMA effective floodplain designations (100-year), plus additional 100-year floodplain areas not mapped by FEMA but based on other available floodplain data. These maps do not depict any 200-year floodplains within the Planning Area at present.

FLOODING

As part of the preparation of the FEMA FIS for the City of Ione, detailed hydrologic analyses of Sutter Creek were performed to estimate the 100-year peak discharges at selected locations. The peak 100-year discharge for Sutter Creek was determined by a rainfall-runoff model of the Sutter Creek watershed that was calibrated to agree with the 100-year discharge computed at a streamflow gauge located upstream of the City of Ione. The following table shows the summary of discharges for Sutter Creek depicted in the FIS for the City of Ione.

TABLE 4.10-3
SUMMARY OF DISCHARGES PUBLISHED BY FEMA

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs) 100-Year
Sutter Creek at Five Mile Road	71	14,100
Sutter Creek at State Route 104	68	13,900
Sutter Creek Overflow 230 feet upstream of Stockton Road	Data not available	6,620

Note: 1 CFS = cubic feet per second

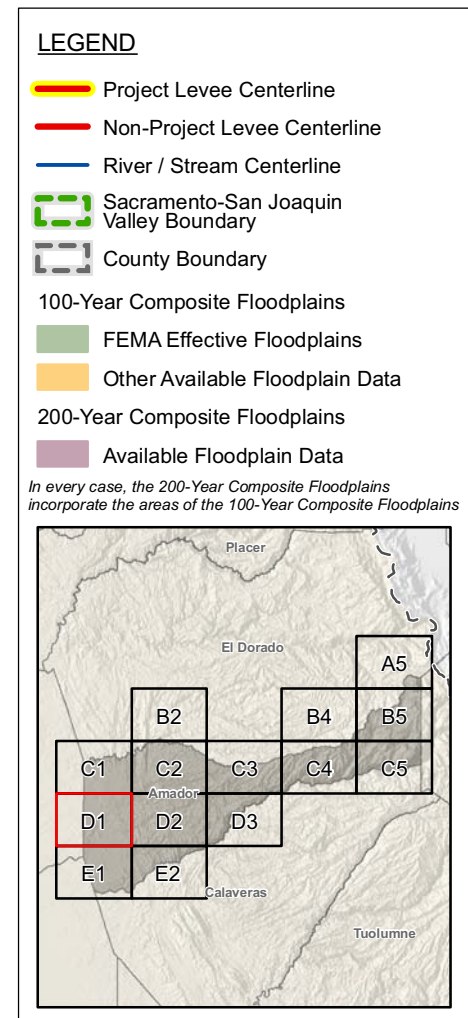
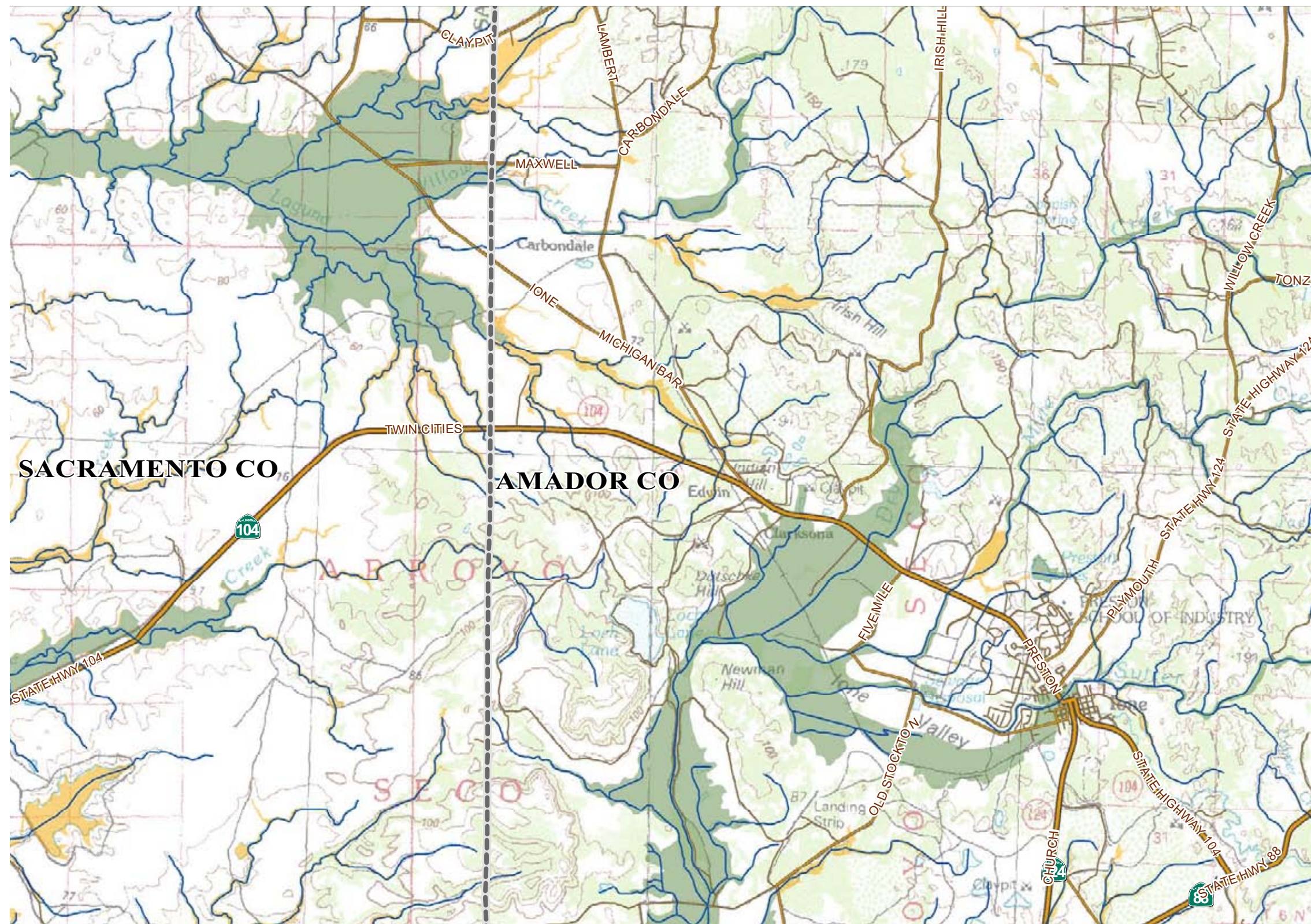
Source: FEMA, 2000d

EXISTING DRAINAGE PRACTICES

Under existing conditions, the primary means utilized for conveyance of storm runoff in the Planning Area is surface flow, with culvert crossings at selected streets and highways being utilized for cross drainage of channels, creeks, and ditches. The only area where underground storm drains are utilized is within the urbanized areas of the city.

During storms, runoff is conveyed in defined creeks and channels where they exist, or as sheet flow or surface drainage in streets and roadside ditches where defined creeks and channels do not exist.

At present, stormwater detention is only being utilized on a limited basis as a means of attenuating discharges to downstream receiving creeks channels in the urbanized areas of the city.

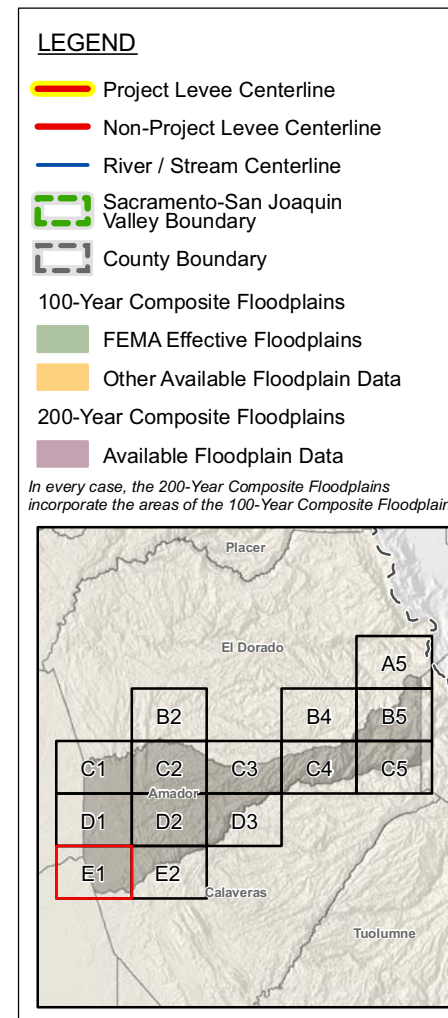
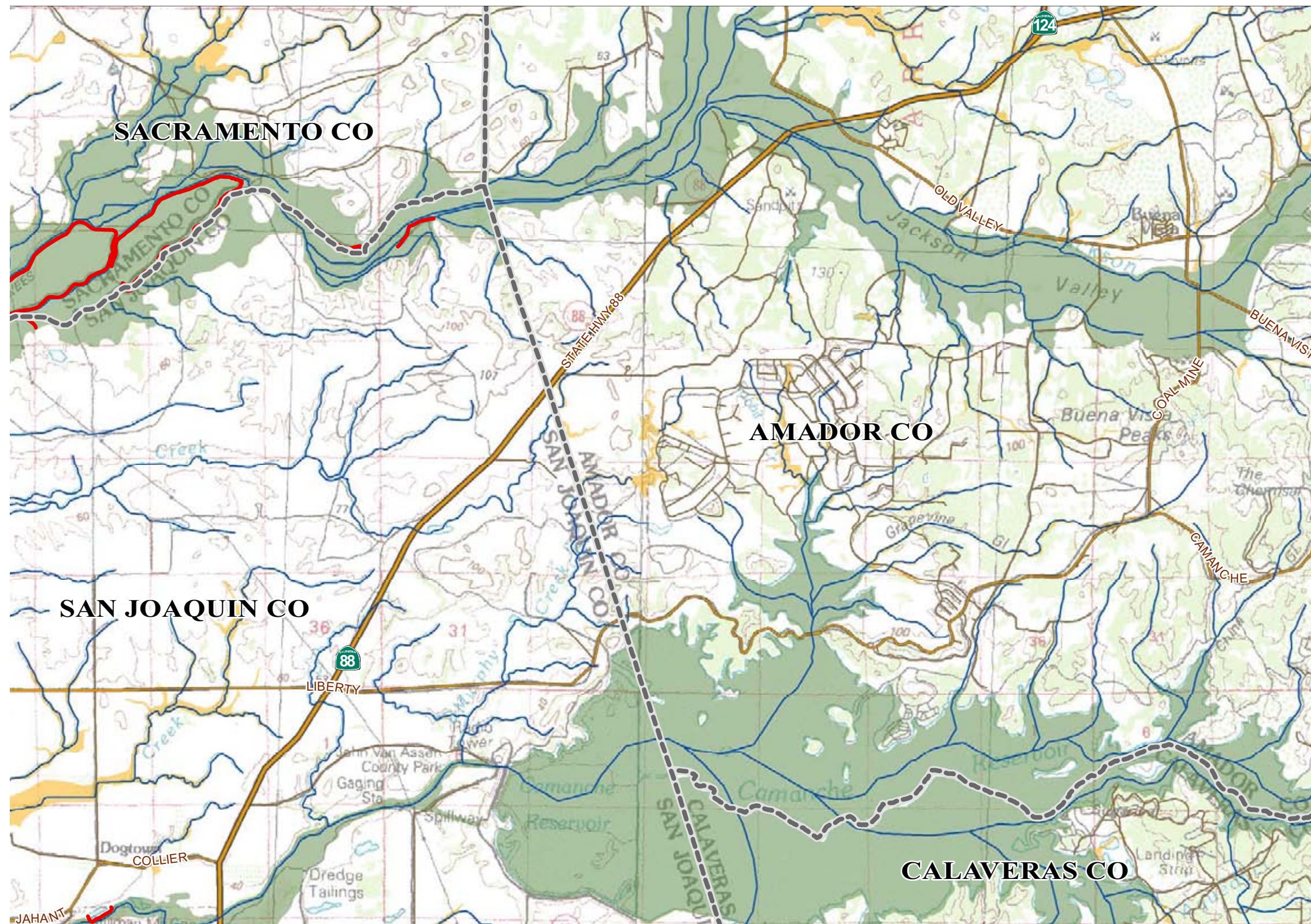


Source: California Dept of Water Resources; PBS&J, 2008



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Figure 4.10-4
Floodplain Map Page D1



Source: California Dept of Water Resources; PBS&J, 2008



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Planning Department

Figure 4.10-5
Floodplain Map Page E1

4.10.2 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 and 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.

Section 303(d) of the federal Clean Water Act requires that all states in the U.S. identify waterbodies that do not meet specified water quality standards and that do not support intended beneficial uses. Identified waters are placed on the Section 303(d) List of Impaired Waterbodies. Once placed on this list, states are required to develop a water quality control plan – called a Total Maximum Daily Load – for each waterbody and each associated pollutant/stressor.

4.10 HYDROLOGY AND WATER QUALITY

National Pollutant Discharge Elimination System

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) Permit Program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. It is the responsibility of the local water boards, which are discussed in more detail below, to preserve and enhance the quality of the state's waters through the development of water quality control plans and the issuance of waste discharge requirements (WDRs). WDRs for discharges to surface waters also serve as NPDES permits (SWRCB, 2009a). The NPDES program is discussed in more detail below.

Total Maximum Daily Loads

Under CWA Section 303(d) and California's Porter-Cologne Water Quality Control Act of 1969, the State of California is required to establish beneficial uses of state waters and to adopt water quality standards to protect those beneficial uses. Section 303(d) establishes the Total Maximum Daily Load process to assist in guiding the application of state water quality standards. This process also requires the states to identify waters whose water quality is "impaired" (affected by the presence of pollutants or contaminants) and to establish a TMDL or the maximum quantity of a particular contaminant that a waterbody can assimilate without experiencing adverse effects on the beneficial use identified. TMDLs serve as a regulatory mechanism to identify and implement additional controls on both point and nonpoint source discharges in waterbodies that are impaired from one or more pollutants and are not expected to be restored through normal point source controls. Within California, the Regional Water Quality Control Boards (RWQCB) generally prepare TMDLs for the impaired waterbodies under their jurisdiction. Implementation of the TMDL is accomplished through amendments.

Federal Emergency Management Agency

The City of Lone and Amador County are participants in the National Flood Insurance Program (NFIP), a federal program administered by 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 of a magnitude that has a 1 percent chance of occurring in any given year. It is also referred to as a 100-year return period flood, although such a flood may occur in any given year. The City and County are occasionally audited by the California Department of Water Resources to ensure the proper implementation of FEMA floodplain management regulations.

STATE

Porter-Cologne Water Quality Act

In 1969, the California Legislature enacted the Porter-Cologne Water Quality Control Act to preserve, enhance, and restore the quality of the state's water resources. The act established the State Water Resources Control Board and nine Regional Water Quality Control Boards as the principal state agencies with the responsibility for controlling water quality in California. Under the act, water quality policy is established, water quality standards are enforced for both surface water and groundwater, and the discharges of pollutants from point and nonpoint sources are regulated. The act authorizes the State Water Resources Control Board to establish water quality principles and guidelines for long-range resource planning including groundwater and surface water management programs and control and use of recycled water (U.S. Department of Energy, 2009).

State Water Resources Control Board

Created by the State Legislature in 1967, the five-member State Water Resources Control Board (SWRCB) allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the nine regional water quality control boards located in the major watersheds of the state. The joint authority of water allocation and water quality protection enables SWRCB to provide comprehensive protection for California's waters (SWRCB, 2009a).

SWRCB is responsible for implementing the Clean Water Act and issues NPDES permits to cities and counties through Regional Water Quality Control Boards. The Planning Area is located within a portion of the state that is regulated by the RWQCB's Central Valley Region. Under Phase I of the NPDES requirements, which started in 1990, the Regional Water Quality Control Boards have adopted NPDES stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving more than 250,000 people) municipalities. As part of Phase II, SWRCB adopted a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities, including non-traditional Small MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes. The MS4 permits require the discharger to develop and implement a Storm Water Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. The management programs specify what best management practices (BMPs) will be used to address certain program areas. The program areas include public education and outreach, illicit discharge detection and elimination, construction and post-construction, and good housekeeping for municipal operations (SWRCB, 2009a).

In addition, under Phase II requirements, dischargers in any location whose projects disturb one or more acres of soil, or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the statewide General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list best management practices the discharger will use to protect stormwater runoff and the placement of those BMPs (SWRCB, 2009b).

The City of Lone is not currently required to obtain a permit under Phase I or Phase II of the NPDES program pertaining to stormwater. Lone currently falls below the population threshold for being classified as a Phase I municipality (100,000 people) and below the population and growth thresholds for being considered a Phase II small municipality.

Though Lone is not currently listed as an NPDES Phase II program small municipality, the possibility exists that it will be given such a designation by the RWQCB in the future as the city's population continues to grow.

4.10 HYDROLOGY AND WATER QUALITY

Senate Bill 5

Senate Bill (SB) 5 became law in the State of California in October of 2007 and contains new regulations pertaining to floodplain management for portions of the state that drain to the Sacramento-San Joaquin Valley, including Amador County. SB 5 requires that the State develop and adopt a Central Valley Flood Protection Plan (Flood Protection Plan) by the year 2012. Though much of the emphasis of the Flood Protection Plan will be placed on areas protected by levees and subject to potentially disastrous flooding if there is a levee failure, it is also expected to eventually address conditions, flood protection, and floodplain management approaches to be applied to "upland" areas, including the Planning Area.

In addition, Senate Bill No. 5 establishes a requirement that "urban areas" and "urbanizing areas" begin applying a 200-year return period storm level of flood protection standard to new development no later than 36 months after the Flood Protection Plan is adopted by the State. "Urban area" is defined as a developed area in which there are 10,000 residents or more. "Urbanizing area" is defined as a developed area or an area outside a developed area that is planned or anticipated to have 10,000 residents or more within the next 10 years. The City would currently be classified as a "nonurbanized area" that falls just below the definition associated with an "urbanizing area." "Nonurbanized areas" are not required to establish the 200-year return period standard and may continue to apply the 100-year return period standard established by FEMA. Though Senate Bill No. 5 does not list the tributary streams, rivers, creeks and drains (flooding sources) eventually discharging to the Sacramento or San Joaquin Rivers that the regulations will be applied to, the State of California DWR has interpreted that the regulations will be applied to all such tributary flooding sources that have **Flood Hazard Areas (SFHA)** mapped for them by FEMA.

Surface Mining and Reclamation Act

The State of California Surface Mining and Reclamation Act (SMARA) regulates surface mining operations to assure that (a) adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses, (b) the production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment, and (c) residual hazards to public health and safety are eliminated. The act includes minimum acceptable practices for soil erosion control, water quality and watershed control, disposal of mine waste rock and overburden, erosion and drainage, resoiling and revegetation.

California Department of Transportation (Caltrans)

Caltrans owns, operates, and maintains segments of State Routes 88, 104, and 124 that extend through the Planning Area. As such, Caltrans retains jurisdiction over their highway drainage facilities. Caltrans generally requires that any potential increases of runoff associated with new development that are discharged to the highway drainage system be mitigated and that drainage routes downstream of their drainage facilities remain clear in the vicinity of the highway.

REGIONAL**Regional Water Quality Control Board, Central Valley Region**

The Central Valley RWQCB provides planning, monitoring, and enforcement techniques for surface and groundwater quality in the Central Valley region, including the Planning Area. A basin plan provides more specific information for specific waterways in the region, in terms of establishing monitoring techniques to control pollutant levels in the waterways. The RWQCB also monitors stormwater quality from construction activities through a NPDES permitting process. The RWQCB is responsible for establishing water quality standards and objectives that protect the beneficial uses of various waters. In the Planning Area, the RWQCB is responsible for protecting surface and groundwater from both point and nonpoint sources of pollution.

Central Valley Regional Water Quality Control Plan

The Central Valley Regional Water Quality Control Plan, also known as the Basin 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.

Mokelumne/Amador/Calaveras Integrated Regional Water Management Plan

The Integrated Regional Water Management Plan (IRWMP) reflects the Mokelumne, Amador, and Calaveras region's goals for ensuring a reliable water supply, reduction in flood-related impacts, and preservation of water quality and the environment. The IRWMP expanded on existing relationships and partnerships and, through adoption of a Memorandum of Understanding (MOU), formed the Mokelumne/Amador/Calaveras IRWM region. Signatories to the MOU include:

- Amador Water Agency
- East Bay Municipal Utility District
- Amador County
- City of Jackson
- Amador Regional Sanitation Authority
- City of Plymouth
- Calaveras County Water District
- City of Sutter Creek

Completed in 2006, the plan takes a regional approach to resource management and spans several watersheds. In this planning document, regional goals and objectives have been identified for water supply, flood protection, water quality, environmental protection and enhancement, and regional communication and cooperation.

LOCAL**Amador County General Plan**

The Amador County General Plan was originally adopted by the Board of Supervisors in 1973 and is currently undergoing an update. Numerous amendments to the General Plan have been adopted since 1973. The General Plan contains policies related to development of lands under

4.10 HYDROLOGY AND WATER QUALITY

County jurisdiction, which include all portions of the Planning Area outside the lone city limits. The Amador County General Plan does not contain any specific goals, policies, or implementation measures related to hydrology and the proposed project.

City of Lone Municipal Code – Floodplain Management

Title 18, Chapter 18.04 of the City of Lone Municipal Code is entitled Floodplain Management and establishes requirements and regulates development and other activities in areas of special flood hazard. It states that the purpose of the ordinance is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

- A. Protect human life and health;
- B. Minimize expenditure of public money for costly flood control projects;
- C. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- D. Minimize prolonged business interruptions;
- E. Minimize damage to public facilities and utilities such as water and gas mains; electric, telephone and sewer lines; and streets and bridges located in areas of special flood hazard;
- F. Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future blighted areas caused by flood damage;
- G. Ensure that potential buyers are notified that property is in an area of special flood hazard; and
- H. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

In order to accomplish its purposes, the ordinance includes regulations and provisions to:

- A. Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;
- B. Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- C. Control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters;
- D. Control filling, grading, dredging, and other development which may increase flood damage; and
- E. Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

The detailed requirements and restrictions contained in this ordinance apply to all areas of special flood hazard (100-year flood areas) designated on FEMA FIRMs within the jurisdiction of the City of Ione.

City of Ione Improvement Standards

Chapter 11 of the City of Ione's Improvement Standards contains the Storm Drainage Design Standards that are utilized by the City, and Chapter 15 includes the City's Standard Details for Storm Drainage Facilities. Generally, storm drainage facilities need to have a capacity to convey the 100-year storm without causing property damage. Underground storm drains, when utilized, are required to have a capacity to convey the 10-year storm discharge prior to surcharging into roadways and other surface conveyance features that are required to contain the 100-year storm discharge with no potential for property damage. Stormwater detention basins are only allowed on a limited basis but must accommodate a 100-year 24-hour design storm.

4.10.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

The following threshold standards are based on State CEQA Guidelines Appendix G. A significant impact to hydrology and water quality would occur if implementation of the proposed project would:

- 1) Violate any water quality standards or waste discharge requirements.
- 2) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. For example, the production of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted.
- 3) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- 4) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- 5) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff.
- 6) Otherwise substantially degrade water quality for both surface and groundwater.
- 7) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- 8) Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

4.10 HYDROLOGY AND WATER QUALITY

- 9) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- 10) Inundation by seiche, tsunami, or mudflow.
- 11) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Impacts associated with water supply are discussed in Section 4.12, Public Services and Utilities.

METHODOLOGY

The analysis in this section is based primarily on a hydrology analysis conducted by Storm Water Consulting, Inc (2009). The analysis also included a review of published information, reports, and plans regarding the regional and local hydrology, climate, topography, and geology of the Planning Area. These documents were obtained from local agencies, as well as Internet-based searches. Consulted information includes:

- Draft City of Ione General Plan Conservation/Open Space Section, January 2009.
- City of Ione Improvement Standards.
- City of Ione Municipal Code, Title 18, Chapter 18.04, Floodplain Management.
- Soil Survey Amador County, California, by U.S. Department of Agriculture, Natural Resource Conservation Service.
- Custom Soil Resource Report for Amador Area, California, Triangle Area, U.S. Department of Agriculture, Natural Resource Conservation Service.
- SWRCB General Order No. 99-08-DWQ pertaining to construction activities in the state, General Order No. 5-00-175 pertaining to dewatering and other low threat discharges to surface waters, and General Order No. 97-03-DWQ pertaining to stormwater discharges associated with industrial activities.
- FIRM panels covering the General Plan Planning Area and the FEMA Flood Insurance Studies for the City of Ione and Amador County (Unincorporated Areas), California.
- State of California, SWRCB Listing of Section 303(d) Water Quality Limited Segments requiring TMDLs.
- State of California Department of Water Resources preliminary 100- and 200-year floodplain maps.
- State of California Division of Safety of Dams listings of dams under the jurisdiction of the State of California, related regulations, and dam inspection reports.
- State of California Division of Planning and Local Assistance groundwater data.
- State of California Senate Bill 5.
- Mokelumne/Amador/Calaveras Integrated Regional Water Management Plan report.

- Western Regional Climate Center (WRCC) Monthly Climate Data.
- National Oceanic and Atmospheric Administration (NOAA) precipitation frequency data.
- Discussions with City staff.
- U.S. Geological Survey quadrangle maps.
- Aerial photographs.
- Field reconnaissance of the Planning Area.

The analysis takes into account the type of land uses existing and proposed within the Planning Area under the proposed update to the City's General Plan. It should be noted that this section does not discuss water supplies and the ability of the City to provide water to future development. The reader is referred to Section 4.13, Public Services and Utilities, of this Draft EIR for a discussion of water supply issues.

The City of Lone General Plan is intended to be a "self-mitigating" document, in that the General Plan policies are designed to mitigate or avoid impacts on the environment resulting from implementation of the proposed project. To that end, the relevant General Plan policies providing mitigation have been identified for each significant impact in this section. If the applicable General Plan policies were determined not to fully mitigate or avoid impacts, then additional mitigation measures have been provided. These additional mitigation measures have been written as policy statements that can be incorporated into the final General Plan. Each impact discussion includes a determination as to whether the impacts would be mitigated to a less than significant level or would remain significant and unavoidable after implementation of the updated General Plan policies.

PROJECT IMPACTS AND MITIGATION MEASURES

Stormwater Runoff and Surface Drainage

Impact 4.10.1 New development associated with implementation of the General Plan update and its associated project components would increase stormwater runoff rates and volumes when compared with existing conditions. This impact is considered **potentially significant**.

When land is in a natural or undeveloped condition (including agricultural lands), soils, mulch, vegetation, and plant roots absorb the majority of the rainwater. This absorption process is called infiltration or percolation. Much of the rainwater that falls on natural or undeveloped land slowly infiltrates into the soil and is stored either temporarily or permanently on the surface or in underground layers of soil. When the soil becomes completely saturated with water or the rate of rainfall exceeds the infiltration capacity of the soil, the rainwater begins to flow over the surface of the land to low lying areas, ditches, channels, streams, and rivers as stormwater runoff.

The infiltration and runoff process is altered when a site is developed with urban uses. Buildings, roads, and parking lots introduce asphalt, concrete, roofs, and other materials to the landscape. These materials are relatively impervious, which means that they absorb less rainwater. Grading associated with development also eliminates many of the low-lying areas that may have been providing a degree of surface storage, and underground storm drains provide for efficient

4.10 HYDROLOGY AND WATER QUALITY

conveyance of runoff to downstream locations of discharge. As impervious surfaces are added to the ground conditions and surface and underground drainage conveyance becomes more efficient and more concentrated, the natural infiltration and storage processes are reduced. As a result, the frequency, volume, and flow rate of stormwater runoff increases. The effect of these increases in runoff frequency, rates, and volumes will be more pronounced during storms of lower magnitude and higher frequency. This is due to reductions in initial abstraction (infiltration and surface storage) and time of concentration (travel times) that will be created by urban development. The increased frequency, volumes, and flow rates of stormwater runoff may result in increased downstream flooding and/or erosion/sedimentation processes if not properly mitigated.

General Plan Land Use Map

Areas Within Existing City Limits

The central portion of lands within the existing city limits of Lone is largely built out with retail and commercial businesses in the downtown core and residential uses surrounding the core. The areas that comprise the north/northwestern and south/southeastern lands within the city limits are still largely undeveloped. The proposed General Plan update allows for the intensification of retail, office, and residential uses in the downtown core area, as well as new residential and commercial development in the undeveloped areas within the existing city limits. New development within the city limits associated with implementation of land uses represented per the proposed General Plan Land Use Map could increase flow rates and volumes of runoff, and change drainage patterns by introducing streets, residential structures, commercial and industrial buildings, other buildings, parking areas, and other impervious surfaces and by providing improved facilities for drainage conveyance. In some instances, existing downstream storm drainage facilities in the city would have insufficient capacity to accept additional runoff. This situation could potentially lead to increases in localized flooding at some locations. Increased runoff, therefore, is a **potentially significant** impact.

Areas Outside of Existing City Limits

Lands within the Planning Area that are outside the existing city limits are largely undeveloped, with some agricultural land (primarily grazing lands) and three mining operations. The proposed General Plan update would primarily designate these areas as General Agriculture (AG), Open Space (OS), or Surface Mining (SM). Therefore, areas outside of the existing city limits would, to a significant extent, maintain current land uses. However, to the west of the of the city limits at the northern boundary, the proposed General Plan designates residential use and a small portion of heavy industrial land uses to the northwest. In addition, the Triangle Policy Area in the southeast is designated industrial, office, and commercial uses in addition to the existing mining operations. Development of these land uses would increase the amount of impervious surfaces in areas outside of the existing City limits, thus resulting in increased runoff. Therefore, implementation of the proposed General Plan Land Use Map outside the existing city following annexation has the potential to result in increases in localized flooding due to increased runoff. This is a **potentially significant** impact.

Sphere of Influence Amendment/Annexations

As part of the proposed project, the City plans to amend its Sphere of Influence (SOI) to include the site of the Castle Oaks Water Reclamation Plant (COWRP), the City Corporation Yard and adjacent land and to expand the Old Stockton Road and Industrial Park Special Planning Areas. In addition, the City is proposing to annex three areas currently located outside the city limits.

These areas are identified on Figure 3.0-6 in Section 3.0 and are referred to as (1) the Collins Road Annexation Area consisting of about 1 acre; (2) the Wastewater Treatment Plant Annexation Area consisting of about 9.7 acres; and (3) the State Property Annexation Area consisting of about 3.7 acres. The northwest parcel (Collins Road Annexation Area) will be rezoned C-3 Heavy Commercial, while the 3.7-acre parcel to the northeast (State Property Annexation Area), and the 9.7 acre Wastewater Treatment Plant Annexation Area will be rezoned PF Public Facilities.

Although the proposed SOI amendments and annexations are policy decisions that would not directly increase runoff and the potential for localized flooding, these actions would allow the future development of additional and/or expanded facilities associated with the City's WWTP, expanded SPAs, and the Collins Road and State Property annexations. The potential for future expansion of facilities to increase impervious surfaces and thus increase runoff volumes is a **potentially significant** impact.

Zoning Code Update

The proposed project also includes several updates to the City's Zoning Code. These updates involve the addition of new zoning districts, as well as amendments to development standards for several existing zoning districts as discussed in Section 3.0, Project Description, of this Draft EIR. The proposed Zoning Code updates are largely administrative and are intended to clarify the types of uses that are permitted under a particular land use designation. Therefore, the proposed Zoning Code updates would have **no impact** associated with increased runoff beyond those impacts addressed for the General Plan update.

West Lone Roadway Improvement Strategy

The proposed project includes the West Lone Roadway Improvement Strategy (WIRIS), which consists of both improvements to existing roadways and the construction of new roadway segments in order to create a bypass to provide traffic relief through downtown. Therefore, implementation of the proposed WIRIS would result in increased impervious surfaces in the Planning Area. In some instances, existing downstream storm drainage facilities would have insufficient capacity to accept additional runoff, which could potentially lead to increases in localized flooding at some locations. This impact is considered a **potentially significant** impact.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan incorporates the following policies and actions that provide mitigation to minimize the impacts of increased stormwater runoff.

Conservation and Open Space Element

Policy CO-2.2: The City shall require that drainage improvements discharging into areas of wetlands to be preserved are, to the maximum extent feasible, designed to mimic the undeveloped surface water flow conditions of the area in terms of seasonality, volume, flow velocity, and water quality.

Policy CO-2.3: Work with local, State, and federal agencies in order to determine when natural creek corridors can handle storm flows and when separate stormwater facilities should be constructed. Consultation will take into account issues including flow velocity, sediment load, and volume.

4.10 HYDROLOGY AND WATER QUALITY

- Policy CO-4.3: Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff.
- Action CO-4.3.1: Restrict hazardous materials storage in the 100-year floodplain to prevent surface water contamination.
- Action CO-4.3.2: Educate the community on laws governing the proper handling of hazardous materials, especially those laws that pertain to discharging materials into creeks.
- Action CO-4.3.3: Install appropriate signage to deter the discharge of hazardous materials into storm drains.
- Action CO-4.3.4: Future land uses 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.
- Policy CO-4.4: Minimize erosion into stream channels resulting from new development in urban areas, consistent with state law.
- Action CO-4.4.1: Require development projects to contain urban runoff control strategies and requirements that are consistent with Drainage Master Plans and the City's urban runoff management program.
- Action CO-4.4.2: 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 City.
- Action CO-4.4.3: Encourage new development to incorporate features such as grassy swales, multi-use retention or detention basins, and integrated drainage systems to enhance water quality.
- Action CO-4.4.4: Require the use of best management practices to protect receiving waters from the adverse effects of construction activities, sediment and urban runoff.
- Policy CO-4.6: The City shall 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 or any subsequent permit and support water quality improvement projects in order to maintain compliance with regional, state and federal water quality requirements.
- Policy CO-5.1: Ensure that the environmental effects of mining and reclamation on aquifers, streams, scenic views, and surrounding residential uses are prevented or minimized.
- Action CO-5.1.1: Regulate surface mining operations within the City limits as required by California's Surface Mining and Reclamation Act of 1975 (SMARA), Public Resources Code Section 2207 (relating to annual reporting requirements),

and State Mining and Geology Board regulations for surface mining and reclamation practice.

Implementation of the above policies and actions would reduce potential impacts, but impacts would remain significant without mitigation.

Mitigation Measures

MM 4.10.1a The Conservation and Open Space Element of the General Plan shall be revised to include the following policy:

The City shall not permit new development projects to result in new or increased flooding impacts on adjoining parcels in either upstream or downstream areas.

MM 4.10.1b The Conservation and Open Space Element of the General Plan shall be revised to include the following policy:

The City shall seek to minimize toxic runoff from such sources as homes, businesses, public facilities and recreation areas, and roadways. Examples of potential programs include:

- *The use of "bioswales" and similar features (such as infiltration trenches, filter trips, and vegetated buffers) to trap contaminants;*
- *Installation of grease/oil separators to keep these contaminants out of storm runoff;*
- *Regular street sweeping programs to prevent the buildup of oil, grease, and other contaminants and keep them from being swept into creeks and rivers;*
- *Minimizing pesticide use and promoting the use of natural pest controls;*
- *Encouraging the installation of "gray water" systems.*

MM 4.10.1c General Plan Policy CO-2.3 shall be revised as follows:

Applications for new development projects shall have been coordinated with local, state, and federal agencies in order to determine when natural creek corridors can handle projected storm flows and when separate stormwater facilities should be constructed. Applicants shall demonstrate that agency consultations have been undertaken that that projects will take into account issues including flow velocity, sediment load, and volume.

Implementation of the above General Plan update policies and actions, as well as mitigation measure **MM 4.10.1a**, would ensure that a drainage system that can accommodate and discharge anticipated runoff without exacerbating downstream flooding conditions would be in place for future development. Furthermore, LID techniques as discussed in mitigation measure **MM 4.10.1b** can be an effective approach to minimizing runoff events and peak flows of runoff. LID techniques have the capability of reducing the frequency of the more common runoff

4.10 HYDROLOGY AND WATER QUALITY

events to pre-development levels and include measures such as bioretention and rain gardens; vegetated swales, buffers and strips; roof leader disconnection; rain barrels and cisterns, permeable pavers, and impervious surface reduction and disconnection. In addition, mitigation measure **MM 4.10.1c** would include language in General Plan Policy CO-2.3 to ensure that development projects would consult with the appropriate agencies regarding stormwater facilities prior to project approval. Stormwater runoff and drainage impacts associated with implementation of the General Plan Land Use Map, SOI amendment/annexations, and WIRIS would be reduced to a **less than significant** level after implementation of mitigation measures **MM 4.10.1a**, **MM 4.10.1b**, and **MM 4.10.1c**.

Construction Impacts on Surface Water Quality

Impact 4.10.2 New development associated with implementation of the proposed project may result in adverse impacts to water quality from construction activities. This would be a **potentially significant** impact.

General Plan Land Use Map

Areas Within and Outside of Existing City Limits

As previously discussed, implementation of the proposed General Plan Land Use Map designates land for increased development both inside the city limits and outside of existing city limits after annexation. New development associated with the land uses proposed with the General Plan update will increase local runoff production, temporarily destabilize soils during the grading process, and introduce constituents into stormwater that are typically associated with construction projects. Development-related vegetation removal, excavation, grading, and other construction activities involving soil disturbance may impact water quality by increasing the potential for erosion and sedimentation. Soil disturbance associated with construction activities may cause accelerated soil erosion, which would increase the likelihood of sediments and other pollutants being transported by runoff into creeks and drainage channels, thereby degrading the water quality. This impact is considered **potentially significant**.

Sphere of Influence Amendment/Annexations

As part of the proposed project, the City plans to amend its SOI and annex parcels as discussed under **Impact 4.10.1**. Although the proposed SOI amendments and annexations are policy decisions that would not directly result in adverse impacts to water quality from construction activities, these actions would allow the future development of additional and/or expanded facilities associated with the City's SOI amendments for the WWTP and Old Stockton Road and Industrial Park SPAs, and for the Collins Road and State Property annexations. Construction activities associated with future expansion or addition of facilities could result in surface water quality impacts. This is a **potentially significant** impact.

Zoning Code Update

The proposed project also includes several updates to the City's Zoning Code. These updates involve the addition of new zoning districts, as well as amendments to development standards for several existing zoning districts as discussed in Section 3.0, Project Description, of this Draft EIR. The proposed Zoning Code updates are largely administrative and are intended to clarify the types of uses that are permitted under a particular land use designation. These changes would not result in increased development or population in the Planning Area. Therefore, the proposed

Zoning Code updates would have **no impact** associated with construction impacts to surface water quality beyond those impacts addressed for the General Plan Update.

West Lone Roadway Improvement Strategy

The proposed project includes the West Lone Roadway Improvement Strategy (WIRIS), which consists of both improvements to existing roadways and the construction of new roadway segments in order to create a bypass to provide traffic relief through downtown. Soil disturbance associated with roadway construction activities may cause accelerated soil erosion, which would increase the likelihood of sediments and other pollutants being transported by runoff into creeks and drainage channels, thereby degrading the water quality. This impact is considered **potentially significant**.

As previously discussed, the statewide Construction General Permit (CGP) applies to construction activities that disturb one acre or more and requires the preparation and implementation of a Storm Water Pollution Prevention Plan that identifies best management practices to minimize pollutants from discharging from the construction site to the maximum extent practicable.

The BMPs that must be implemented can be categorized into two major categories: (1) erosion and sediment control BMPs and (2) non-stormwater management and materials management BMPs. Erosion and sediment control BMPs fall into four main subcategories:

- Erosion controls;
- Sediment controls;
- Wind erosion controls; and
- Tracking controls.

Erosion controls include practices to stabilize soil, to protect the soil in its existing location, and to prevent soil particles from migrating. Examples of erosion control BMPs are preserving existing vegetation, mulching, and hydroseeding. Sediment controls are practices to collect soil particles after they have migrated but before the sediment leaves the site. Examples of sediment control BMPs are street sweeping, fiber rolls, silt fencing, gravel bags, sand bags, storm drain inlet protection, sediment traps, and detention basins. Wind erosion controls prevent soil particles from leaving the site in the air. Examples of wind erosion control BMPs include applying water or other dust suppressants to exposed soils on the site. Tracking controls prevent sediment from being tracked off-site via vehicles leaving the site to the extent practicable. A stabilized construction entrance not only limits the access points to the construction site but also functions to partially remove sediment from vehicles prior to leaving the site.

Non-stormwater management and material management controls would reduce pollutants (non-sediment-related) from leaving the construction site. The CGP prohibits the discharge of materials other than stormwater and authorized non-stormwater discharges (such as irrigation and pipe flushing and testing). Non-stormwater BMPs tend to be management practices with the purpose of preventing stormwater from coming into contact with potential pollutants. Examples of non-stormwater BMPs include preventing illicit discharges and implementing good practices for vehicle and equipment maintenance, cleaning, and fueling operations, such as using drip pans under vehicles. Waste and materials management BMPs include implementing practices and procedures to prevent pollution from materials used on construction sites. Examples of materials management BMPs include:

4.10 HYDROLOGY AND WATER QUALITY

- Good housekeeping activities such as storing of materials, covered and elevated off the ground, in a central location.
- Securely locating portable toilets away from the storm drainage system and performing routine maintenance.
- Providing a central location for concrete washout and performing routine maintenance.
- Providing several dumpsters and trash receptacles throughout the construction site for litter/floatable management.
- Covering and/or containing stockpiled materials and overall good housekeeping on the site.

Prior to construction on any site exceeding one acre in size, a SWPPP must be developed and submitted to the City that identifies the specific BMPs to be implemented and maintained on the site. A Notice of Intent must also be filed with the RWQCB. The CGP also requires that construction sites be inspected before and after storm events and every 24 hours during extended storm events. The purpose of the inspections is to identify maintenance requirements for the BMPs and to determine the effectiveness of the BMPs that are being implemented. The SWPPP is a "living document" and as such can be modified as construction activities progress.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan update incorporates the following policies and actions that provide mitigation to minimize the impacts of construction activities on surface water quality.

Conservation and Open Space Element

Policy CO-4.4:	Minimize erosion into stream channels resulting from new development in urban areas, consistent with state law.
Action CO-4.4.1:	Require development projects to contain urban runoff control strategies and requirements that are consistent with Drainage Master Plans and the City's urban runoff management program.
Action CO-4.4.2:	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 City.
Action CO-4.4.3:	Encourage new development to incorporate features such as grassy swales, multi-use retention or detention basins, and integrated drainage systems to enhance water quality.
Action CO-4.4.4:	Require the use of best management practices to protect receiving waters from the adverse effects of construction activities, sediment and urban runoff.
Policy CO-4.6:	The City shall 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 or any subsequent permit and support water quality improvement projects in order to maintain compliance with regional, state and federal water quality requirements.

Implementation of the above policies and actions would reduce potential impacts, but impacts would remain significant without mitigation.

Mitigation Measures

MM 4.10.2 General Plan Action Item CO-4.4.4 shall be revised as follows:

New development projects shall be required to incorporate ~~Require the use of best management practices (BMPs) in order to protect receiving waters from the adverse effects of construction activities, sediment and urban runoff. BMPs shall be developed and incorporated in the project prior to approval by the City.~~

Implementation of the above General Plan policies and actions, as well as the Construction General Permit (CGP) requirements (or the requirements of applicable subsequent orders and permits issued by the SWRCB), would minimize the amount of sediments and other contaminants generated by construction activities that enter surface waters. Mitigation measure **MM 4.10.2** would revise General Plan Action Item CO-4.4.4 to ensure that development projects would incorporate BMPs prior to project approval. General Plan policies and actions, along with mitigation measure **MM 4.10.2** and CGP requirements, would reduce construction impacts on surface water quality resulting from implementation of the General Plan Land Use Map, SOI amendment/annexations, and WIRIS to a **less than significant** level.

Groundwater Quality

Impact 4.10.3 Installation of storm drainage facilities serving future development per the proposed General Plan update and its associated project components could affect the water quality of underlying aquifers. Also, surface runoff discharged to downstream creeks from new development may contain pollutants that may infiltrate to shallow underlying groundwater. This impact is considered to be **potentially significant**.

The majority of the Planning Area consists of NRCS Soil Group D soils that are clayey soils that have a low rate of water transmission. These soils are predominantly located in upland portions of the Planning Area. Groundwater is expected to be several feet or more below the ground surface in these areas. Generally, pollutants associated with urban runoff do not infiltrate past the first few inches or feet of finely grained soils, as they become attached to the soil particles as water infiltrates into the soil.

Lower-lying portions of the Planning Area adjacent to major creeks consist of NRCS Soil Group A and Soil Group B soils and are sandy soils that have high and moderate rates of water transmission. Pollutants associated with urban runoff are still unlikely to infiltrate past the first few feet of soils; however, groundwater may be present within a few feet of the ground surface.

As a part of mitigating for increases in runoff and mitigating for potential introduction of pollutants to surface water associated with new development, projects may be required to incorporate detention facilities, retention facilities, LID measures, or other measures into the

4.10 HYDROLOGY AND WATER QUALITY

project design in order to comply with mitigation measure MM 4.10.1 and proposed General Plan update policies discussed under Impact 4.10.1 above. While these measures will serve to mitigate the potential discharge of pollutants to downstream creeks, they may also serve to encourage infiltration of stormwater containing pollutants at the location of their installation. If such a facility is proposed to be located in a low-lying area having high percolation rates and a shallow depth to groundwater, the possibility of degrading the local groundwater quality in the vicinity of the facility would be a **potentially significant** impact.

General Plan Land Use Map

Areas Within and Outside of Existing City Limits

As previously discussed, implementation of the proposed General Plan Land Use Map designates land for increased development inside the existing city limits and potentially, following annexation, to areas currently outside of existing city limits. New development associated with the land uses proposed with the General Plan Update could result in the installation of storm drainage facilities that could affect the water quality of underlying aquifers as discussed above. This is a **potentially significant** impact.

Sphere of Influence Amendment/Annexations

As part of the proposed project, the City plans to amend its Sphere of Influence (SOI) to include the site of the Castle Oaks Water Reclamation Plant (COWRP), the City Corporation Yard and adjacent land and to expand the Old Stockton Road and Industrial Park Special Planning Areas. In addition, the City is proposing to annex three areas currently located outside the city limits. These areas are identified on Figure 3.0-6 in Section 3.0 and are referred to as (1) the Collins Road Annexation Area consisting of about 1 acre; (2) the Wastewater Treatment Plant Annexation Area consisting of about 9.7 acres; and (3) the State Property Annexation Area consisting of about 3.7 acres. The northwest parcel (Collins Road Annexation Area) will be rezoned C-3 Heavy Commercial, while the 3.7-acre parcel to the northeast (State Property Annexation Area), and the 9.7 acre Wastewater Treatment Plant Annexation Area will be rezoned PF Public Facilities.

Although the proposed SOI amendments and annexations are policy decisions that would not directly result in the installation of drainage features, these actions would allow the future development of additional and/or expanded facilities associated with the City's WWTP, expanded SPAs, and the Collins Road and State Property annexations. The extent of future development and associated drainage features on the annexed parcels is not currently known. Therefore, impacts are considered **potentially significant**.

Zoning Code Update

The proposed project also includes several updates to the City's Zoning Code. These updates involve the addition of new zoning districts, as well as amendments to development standards for several existing zoning districts as discussed in Section 3.0, Project Description, of this Draft EIR. The proposed Zoning Code updates are largely administrative and are intended to clarify the types of uses that are permitted under a particular land use designation. These changes would not result in increased development or population in the Planning Area. Therefore, the proposed Zoning Code updates would have **no impact** associated with the installation of drainage features that could impact groundwater quality, beyond those discussed for the General Plan Update.

West Ione Roadway Improvement Strategy

The proposed project includes the West Ione Roadway Improvement Strategy (WIRIS), which consists of both improvements to existing roadways and the construction of new roadway segments in order to create a bypass to provide traffic relief through downtown. Therefore, implementation of the proposed WIRIS would result in increased impervious surfaces in the Planning Area. Pollutants contained in surface runoff from the increased impervious surfaces could be discharged to downstream creeks and in turn infiltrate into shallow groundwater. This impact is considered a **potentially significant** impact.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan update incorporates the following policies and actions that provide mitigation to minimize the impacts of new development on groundwater quality.

Conservation and Open Space Element

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| Policy CO-2.2: | The City shall require that drainage improvements discharging into areas of wetlands to be preserved are, to the maximum extent feasible, designed to mimic the undeveloped surface water flow conditions of the area in terms of seasonality, volume, flow velocity, and water quality. |
| Policy CO-2.3: | Work with local, State, and federal agencies in order to determine when natural creek corridors can handle storm flows and when separate stormwater facilities should be constructed. Consultation will take into account issues including flow velocity, sediment load, and volume. |
| Policy CO-4.3: | Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff. |
| Action CO-4.3.1: | Restrict hazardous materials storage in the 100-year floodplain to prevent surface water contamination. |
| Action CO-4.3.2: | Educate the community on laws governing the proper handling of hazardous materials, especially those laws that pertain to discharging materials into creeks. |
| Action CO-4.3.3: | Install appropriate signage to deter the discharge of hazardous materials into storm drains. |
| Action CO-4.3.4: | Future land uses 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. |
| Policy CO-4.4: | Minimize erosion into stream channels resulting from new development in urban areas, consistent with state law. |
| Action CO-4.4.1: | Require development projects to contain urban runoff control strategies and requirements that are consistent with Drainage Master Plans and the City's urban runoff management program. |

4.10 HYDROLOGY AND WATER QUALITY

- Action CO-4.4.2: 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 City.
- Action CO-4.4.3: Encourage new development to incorporate features such as grassy swales, multi-use retention or detention basins, and integrated drainage systems to enhance water quality.
- Action CO-4.4.4: Require the use of best management practices to protect receiving waters from the adverse effects of construction activities, sediment and urban runoff.
- Policy CO-4.6: The City shall 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 or any subsequent permit and support water quality improvement projects in order to maintain compliance with regional, state and federal water quality requirements.
- Policy CO-5.1: Ensure that the environmental effects of mining and reclamation on aquifers, streams, scenic views, and surrounding residential uses are prevented or minimized.
- Action CO-5.1.1: Regulate surface mining operations within the City limits as required by California's Surface Mining and Reclamation Act of 1975 (SMARA), Public Resources Code Section 2207 (relating to annual reporting requirements), and State Mining and Geology Board regulations for surface mining and reclamation practice.

Implementation of the above policies and actions would reduce potential impacts, but impacts would remain significant without mitigation.

Mitigation Measures

MM 4.10.3 The Conservation and Open Space Element of the General Plan shall be revised to include the following policy:

As a part of mitigating for increases in runoff and mitigating for potential introduction of pollutants to surface water associated with new development, projects may be required to incorporate detention facilities, retention facilities, LID measures, or other measures into the project design. If such a facility is proposed to be located in a low-lying area having high percolation rates and a shallow depth to groundwater, measures (such as an impermeable liner or facility relocation) that will mitigate this impact shall be incorporated into the design of said facilities when warranted. The potential for introducing pollutants carried in stormwater to the groundwater shall be addressed via technical and soils investigations prepared by a California Registered Professional Engineer and submitted (along with remedial solutions) to the City for review and approval.

In addition, mitigation measure **MM 4.10.2**, under Impact 4.10.2 above, would revise General Plan Action Item CO-4.4.4 to ensure that development projects would incorporate BMPs prior to project approval.

Implementation of proposed General Plan policies, along with mitigation measure **MM 4.10.3**, would establish policies by which new development would be required to mitigate their impacts on stormwater quality that may percolate to groundwater along existing downstream creeks and incorporate design features that will prevent development-related pollutants from percolating to groundwater at project detention, retention, LID, or similar facilities. Therefore, groundwater quality impacts after mitigation would be reduced to levels that are **less than significant**.

Exposure to Flood Hazards

Impact 4.10.4 Implementation of the proposed project could expose structures and facilities to flood hazards and potential damage. This is considered a **potentially significant** impact.

As previously discussed, the Planning Area is traversed by several creeks for which 100-year floodplains have been mapped by FEMA or the State of California DWR. Some of the 100-year floodplain area mapping within the Planning Area has only been based on approximate method technical evaluations and does not include detailed information such as base flood (100-year) elevations. In these areas, the possibility of exposing structures and facilities to flood hazards and potential damage as a part of new development is considered to be a **potentially significant** impact.

General Plan Land Use Map

Areas Within and Outside of Existing City Limits

As previously discussed, implementation of the proposed General Plan Land Use Map designates land for increased development inside the existing city limits and potentially, following annexation, to areas currently outside of existing city limits. New and/or intensified development associated with the land uses proposed with the General Plan Update could increase exposure of structures and facilities to flood hazards and potential damage. This is a **potentially significant** impact.

Sphere of Influence Amendment/Annexations

Although the City's proposed SOI amendments and annexations are policy decisions that would not directly increase exposure to flooding, these actions would allow the future development of additional and/or expanded facilities associated with the expanded SPAs, expansions to the City's WWTP and the Collins Road and State Property annexations. This is a **potentially significant** impact.

Zoning Code Update

Updates to the City's Zoning Code would not result in increased development or population in the Planning Area. Therefore, the proposed Zoning Code updates would have **no impact** associated with exposure to flooding beyond those impacts addressed for the General Plan Update.

4.10 HYDROLOGY AND WATER QUALITY

West Lone Roadway Improvement Strategy

The proposed project includes the West Lone Roadway Improvement Strategy (WIRIS), which consists of both improvements to existing roadways and the construction of new roadway segments in order to create a bypass to provide traffic relief through downtown. Therefore, implementation of the proposed WIRIS would result in infrastructure being placed in areas prone to flooding. This impact is considered a **potentially significant** impact.

Although new development within or adjacent to flood hazard areas is governed by the City's Floodplain Management Ordinance and its Improvement Standards, mitigation is required to ensure that new development is subject to hydrologic and hydraulic analysis that would more accurately determine base flood elevations and floodplain limits in the area proposed for development.

Proposed General Plan Policies and Action Items that Provide Mitigation

The proposed General Plan update incorporates the following policies and actions that provide mitigation to minimize the exposure of structures and facilities to flood hazards and potential damage.

Conservation and Open Space Element

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| Policy CO-2.1: | Coordinate with relevant State and local agencies, property owners, and local interest groups to restore, enhance, and preserve creeks in and around the City of Lone. Public and private projects shall be required to avoid impacts to wetlands if feasible. If avoidance is not feasible, projects shall achieve no net loss of wetlands, consistent with State and federal regulations. |
| Action CO-2.1.1: | Restrict or modify as part of the project approval and environmental review process proposed development in areas that contain wetlands, as defined by U.S. Army Corps of Engineers approved delineations as necessary to ensure the continued health and survival of special-status species and sensitive areas. |
| Action CO-2.1.2: | Require setbacks and buffers for all development within areas containing wetlands or for development which will occur adjacent to wetlands or waterways. |
| Action CO-2.1.3: | Coordinate with non-profit groups, educational institutions, and other agencies as available to provide environmental education programs that inform the public about the City's creeks, wetlands and other special habitat areas. |

Implementation of the above policies and actions would reduce potential impacts, but impacts would remain significant without mitigation.

Mitigation Measures

- MM 4.10.4a** The Conservation and Open Space Element of the General Plan shall be revised to include the following policy:

Development shall adhere to regulations set forth in the City's Floodplain Management Ordinance. When development is proposed to occur near an area where only approximate 100-year floodplain mapping exists, a hydrologic and hydraulic analysis shall be performed to more accurately determine base flood elevations and floodplain limits, or at least verify that the project will not be impacted by the nearby flooding source. The hydrologic and hydraulic analysis shall be prepared by a California Registered Professional Engineer and submitted to the City for review and approval.

Implementation of mitigation measure **MM 4.10.4** and proposed General Plan policies would establish policies for development adjacent to creeks and provide additional floodplain information where needed to aid in the effectiveness of administering the City's Floodplain Management Ordinance. Therefore, exposure to flood hazards after mitigation would be reduced to levels that are **less than significant**.

4.10.4 CUMULATIVE IMPACTS AND MITIGATION MEASURES

CUMULATIVE SETTING

The land use policies in the proposed City of Lone General Plan update would provide direction for growth within the city limits, while the Amador County General Plan policies provides direction for growth outside the city limits, but within the Planning Area boundaries (until land areas are annexed into the City). Thus, the cumulative hydrology and water quality analysis relates to potential issues associated with storm drainage and flooding, stormwater quality, groundwater quality (as impacted by stormwater), and exposure of structures to flood hazards. Storm drainage is an issue that is confined primarily to development in a specific area or within a specific community. The cities of Jackson, Sutter Creek, Amador City, and Plymouth are nearby cities to the City of Lone, but local storm drainage systems are not linked to City of Lone facilities or each other's facilities. However, the cities of Jackson, Sutter Creek, Amador City, and Plymouth are linked to the City of Lone by the creeks that pass through them as they are upstream of the Planning Area and drain to Willow Creek, Dry Creek, Sutter Creek, Jackson Creek, and their tributaries. The overall watershed area for the combined creeks entering the Planning Area is about 250 square miles and contains these upstream cities which account for urban development within only a small percentage of the overall watershed area. The overall watershed for the combined creeks is a predominantly rural/natural watershed area on the west slope of the Sierra Nevada range. For this Draft EIR, the cumulative setting for hydrology and water quality impacts includes the entirety of the watershed. The cumulative setting includes all existing, proposed, approved, and planned projects in the City of Lone General Plan Planning Area and surrounding portions of unincorporated Amador County as well as full buildout of the City of Lone General Plan Planning Area as proposed in the General Plan update (occurring after year 2030). Development in the region identified in Section 4.0 would change the intensity of land uses in the region. In particular, this cumulative development scenario would provide additional housing, employment, shopping, and recreational opportunities.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Stormwater/Flooding Impacts

Impact 4.10.5 Future development allowed by the proposed project, along with all planned, proposed, recently approved, and reasonably foreseeable development in the cumulative setting, may result in cumulative impacts on

4.10 HYDROLOGY AND WATER QUALITY

stormwater runoff and surface drainage, stormwater quality, groundwater quality, and exposure to flood hazards. The project's contribution to this impact is considered **less than cumulatively considerable**.

New development in conformance with the General Plan update and its other project components, as well as with all planned, proposed, recently approved, and reasonably foreseeable development in the cumulative setting, has the potential to adversely impact the quantity and quality of stormwater, groundwater quality, and exposure to flood hazards in the absence of appropriate mitigation, as described under Impacts 4.10.1 through 4.10.4. As discussed under these impacts, the General Plan update policies and appropriate additional measures (as identified under discussions for Impacts 4.10.1 through 4.10.4) would mitigate identified stormwater impacts associated with new development within the Planning Area. The upstream watersheds draining to creeks passing through the Planning Area are likely to only include a small amount of continued future urbanization within the context of the overall combined watershed area of about 250 square miles. The cities upstream of the Planning Area are also governed by the same regulations that apply to the City of Lone.

Implementation of the proposed General Plan policies and additional mitigation measures referenced for the Planning Area would reduce the project's contribution to cumulative impacts. In addition, the limited concentration of future development that is possible within the 250 square mile watershed would not be likely to result in significant cumulative impacts, particularly in the context of the stormwater and flooding regulations that would apply to all areas in the watershed. Therefore, cumulative impacts are considered to be **less than cumulatively considerable**.

Mitigation Measures

None required.

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