3.10 HYDROLOGY AND WATER QUALITY

This section assesses potential water quality impacts and impacts from flooding, stormwater runoff, and dam inundation of projected development under the General Plan Update.

Comments received during public review of the Draft EIR relating to hydrology and water quality raised concerns regarding the frequency and intensity of high runoff events and possible exacerbation of those events with increases in impervious surfaces from new development; issues associated with reservoir and water supply during sustained drought periods; issues related to sources of water pollution for Section 303(d)-listed waterbodies; and issues related to dam failure. These concerns are addressed below, as appropriate.

3.10.1 Environmental Setting

WATERSHED AND WATER RESOURCES

Surface Water Resources

Tuolumne County crosses seven watersheds. There are two main watersheds within the County: the Upper Stanislaus River Watershed and the Upper Tuolumne River Watershed. Because of the high elevation of many of these watersheds, much of the precipitation is in the form of snowfall (Tuolumne County 2018).

The Stanislaus River is an approximately 65-mile-long waterway that flows from the Sierra Nevada to the San Joaquin River in the eastern part of the Central Valley and is one of the largest tributaries of the San Joaquin River. The Stanislaus River Watershed covers an area of approximately 904 square miles. The river originates as North, Middle, and South Forks in Stanislaus National Forest in the Sierra Nevada. The confluence of the North and Middle Forks northeast of New Melones Lake forms the Stanislaus River proper. The South Fork joins the river within New Melones Lake. The North Fork forms the northwestern boundary of the County.

The Tuolumne River watershed drains an area of approximately 1,533 square miles. Its headwaters originate in the high Sierra at the eastern edge of Tuolumne Meadows in Yosemite National Park, and continue through the park to Hetch Hetchy Valley, where the main branch is dammed by the 95-year-old O'Shaugnessy Dam, forming the Hetch Hetchy Reservoir. At the O'Shaughnessy Dam, approximately 33 percent of the river's flow is diverted to the San Francisco Bay Area, where it provides drinking water for nearly 2.5 million people.

These watersheds and the network of water features in the County are illustrated on Exhibit 3.10-1.

Groundwater Resources

The California Department of Water Resources publishes Bulletin 118, which provides a detailed description of traditional groundwater basins in California. Such basins are characterized by loose, unconsolidated sediments or porous, permeable bedrock conditions. No such basin is identified in Tuolumne County in Bulletin 118 (Tuolumne Utilities District 2016).

The County stretches from the foothills to the higher elevations of the Sierra Nevada, where the subsurface material consists primarily of impervious granitic and greenstone bedrock, which generally produces a low or unpredictable groundwater yield. The general hydrogeology of Tuolumne County is typical of granitic mountainous terrain, where groundwater is controlled by the weathering and structure of the bedrock. The occurrence and flow of groundwater is significantly different in fractured bedrock conditions than in unconsolidated sediments (e.g., porous sands and gravels). In this type of hydrogeologic environment, the

presence of groundwater and potential well capacities are dependent not only on geographic location and geology, but also on the number and size of fractures encountered where a well is drilled, the degree of connectivity between those fractures and other fractures, and the seasonal and annual recharge of the bedrock fracture network.

WATER QUALITY

Surface and ground water quality within the County is affected by both land uses within the watershed and the composition of subsurface geologic materials. Many of the surface water quality issues identified within the County can be linked to current or historical land use practices. Pollution can enter a water body from point sources (such as an industrial site) or from nonpoint sources over a broad area such as runoff from a city or agricultural area. The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Board (RWQCB) regulate water quality in surface and ground water bodies. The County is under the jurisdiction of the Central Valley RWQCB, which is responsible for implementation of state and federal water quality protection guidelines within Tuolumne County.

Current water quality conditions within the foothill region of the County are a result of historic land management activities. These conditions are primarily associated with the landscape alteration that has occurred within the last 150 years as a result of road construction, the development of local water supply infrastructure, mining and agricultural practices, and population growth. The Tuolumne County Water Quality Plan identifies residential and commercial on-site sewage disposal systems, leaking underground storage tanks (LUSTs), and unobstructed grazing practices as key sources of existing contamination. Chronic sources of soil erosion and enhanced sediment delivery to local waterways are also identified as a concern (Tuolumne County 2007).

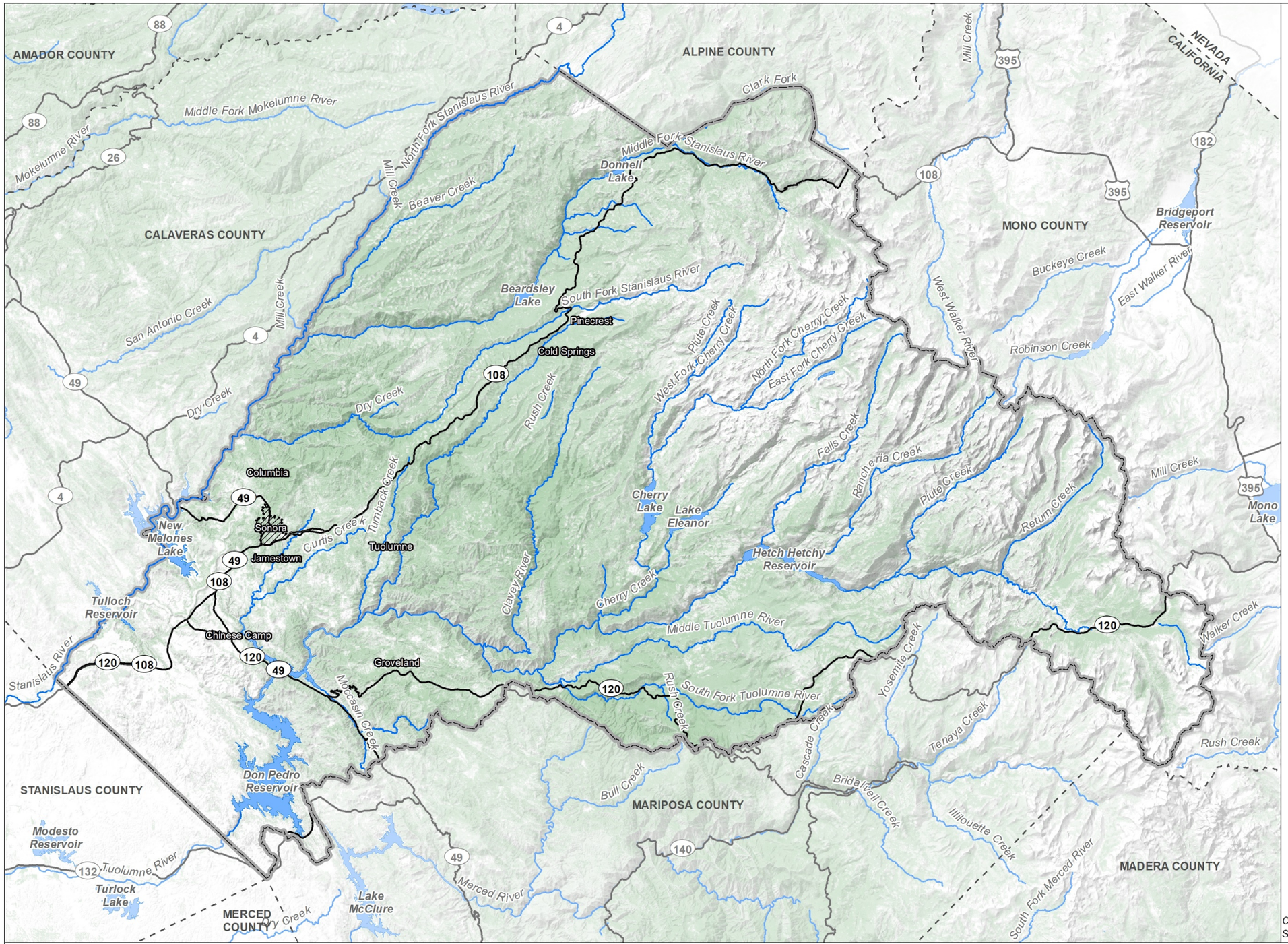
Surface Water Quality

Land use in Tuolumne County includes developed communities, agricultural, and public recreational uses. Stormwater flowing over developed and agricultural areas carries pollutants through natural drainage systems or man-made storm drain facilities to a body of surface water. Such discharges are referred to as “non-point” sources because the pollutants are generated from diffuse sources, entering stormwater on contact over a large area. These discharges are mostly unregulated and difficult or impossible to treat, resulting in untreated pollutants entering rivers and lakes. Pollution from agricultural areas may include fertilizers, herbicides, and pesticides. Pollutant sources in developed areas include parking lots, landscaped areas, and construction sites. Contaminants may include sediments, hydrocarbons, metals, pesticides, bacteria, and solid items, such as trash.

Surface water quality in the region is generally considered very good. For example, most of the water from the Tuolumne River is usable for human consumption with disinfection alone, although additional treatment is required by law (Tuolumne Utilities District 2013). However, there are several impaired water bodies based on environmental standards within the County. The SWRCB, in compliance with the Clean Water Act (CWA), Section 303(d), has identified nine impaired water bodies in Tuolumne County (see Table 3.10-1).

Lake Don Pedro and Hetch Hetchy Reservoir have been listed as Section 303(d) impaired for mercury based on collected fish tissue samples. Samples collected from non-native brown trout (*Salmo trutta*) in Hetch Hetchy Reservoir and largemouth bass (*Micropterus salmoides*) and common carp (*Cyprinus carpi*) in Lake Don Pedro were shown to exceed the Office of Environmental Health Hazard Assessment Screening Value of 0.3 milligram per kilogram for the protection of human health when consuming fish. However, there are no known environmental conditions (e.g., seasonality, land use practices, fire events, storms) that have been linked to the high levels of mercury detected in these fish species (SWRCB 2012).

Septic systems, livestock grazing, and water-based recreation activities have been associated with increased contamination of pathogens such as *E. coli*. There are three 303(d) listed waterbodies within the County for *E. coli* contamination: portions of Curtis Creek, Sullivan Creek, and Woods Creek (Tuolumne Utilities District 2013).



Legend

- Tuolumne County
- City of Sonora

0 3.5 7 Miles

Cal-Atlas Basemap
Source: Data downloaded from USGS in 2017

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Exhibit 3.10-1

Hydrology

ASCENT ENVIRONMENTAL

Table 3.10-1 Tuolumne County Water Bodies Listed as Impaired

Water Body	Impairment Constituent
Curtis Creek	*Escherichia coli* (E. coli)
Lake Don Pedro	Mercury
Hetch Hetchy Reservoir	Mercury
Sullivan Creek (from Phoenix Reservoir to Lake Don Pedro, Tuolumne County)	*Escherichia coli* (E. coli)
Tuolumne River, Lower (Don Pedro Reservoir to San Joaquin River)	Diazinon
Woods Creek	*Escherichia coli* (E. coli)
Tulloch Reservoir	Mercury
New Melones Reservoir	Mercury
Stanislaus River, Lower	Temperature, Water

Source: EPA 2015

Groundwater Quality

Groundwater quality throughout the County has generally been found to be good. Groundwater mostly contains naturally-occurring constituents such as iron and manganese (Tuolumne Utilities District 2016). Other sources of groundwater contamination are improperly placed and maintained septic systems, as well as LUSTs. Many septic systems were installed before the requirement of a soil investigation and health study to demonstrate long term feasibility of the septic system before its installation; thus, the areas of most concern are generally associated with older residences where septic systems were installed before the passing of these regulations. Septic system contamination leads to bacteriological contamination within groundwater wells that can become problematic for domestic use of local groundwater. The effects of LUSTs are evaluated in Section 3.9, "Hazards and Hazardous Materials."

FLOOD HAZARDS

Both the Tuolumne River and Stanislaus River are dammed in the lower elevations along much of the stream courses, and both are mostly contained within government or special district ownership. Thus, excluding a few tributaries, the larger rivers and the immediate environs are not in areas where private development can occur. Further, the rivers and streams reside within relatively steep canyons or valleys, where very little floodplain has been formed. Flooding occurs only occasionally in Tuolumne County, particularly during the winter and spring following heavy periods of rainfall when excessive runoff causes streams and tributaries from the Stanislaus River and Tuolumne River to overrun their banks (Tuolumne County 2018).

The primary indicator of potential flooding is the presence of a floodplain as defined by the Federal Emergency Management Agency (FEMA). A floodplain is defined by FEMA as the area of land adjacent to the watercourse that may be submerged by floodwater during a 100-year (1 percent annual chance occurrence) storm. These "special flood hazard areas" are defined on FEMA Flood Insurance Rate Maps (FIRMs). The County's most recent digital FIRMs, which came into effect on April 16, 2009, define the special flood hazard areas within the County (Exhibit 3.10-2).

DAM INUNDATION

There are 44 dams in Tuolumne County that range in size from those that retain large reservoirs dedicated to irrigation, water supply, and power generation, to small facilities used in water distribution and treatment systems or for recreation (Tuolumne County 2018). Large dams are mostly located along the Tuolumne and Stanislaus rivers. Exhibit 3.10-3 shows potential dam inundation areas in Tuolumne County.

3.10.2 Regulatory Setting

Development in Tuolumne County is subject to various local, state, and federal regulations and permits regarding water quality and the use of water resources.

FEDERAL

Clean Water Act

The U.S. Environmental Protection Agency (EPA) is the federal agency primarily responsible for water quality management. The CWA establishes the basic structure for regulating discharges of pollutants into "waters of the United States." The Act specifies a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. Some of these tools include:

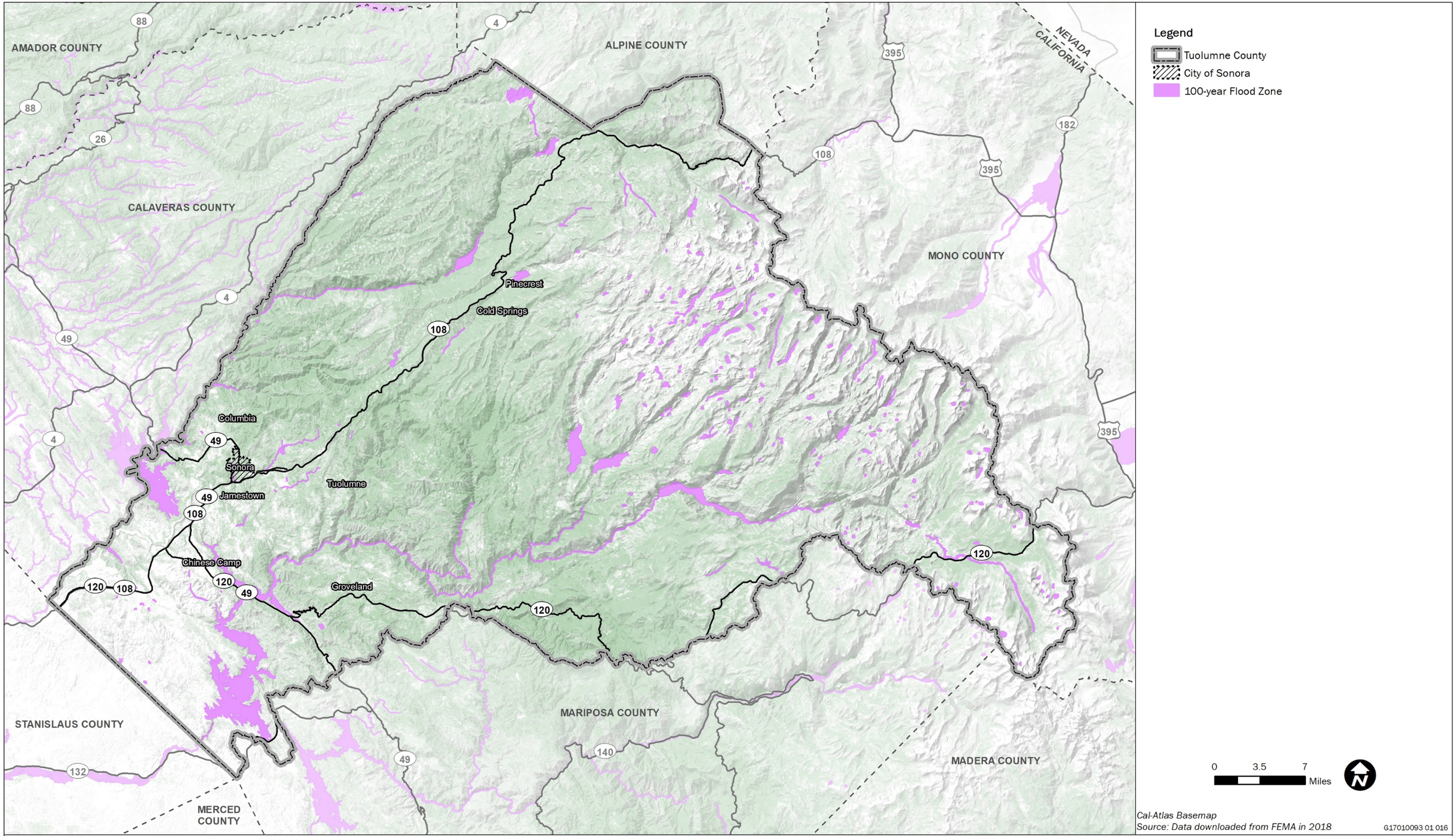
- Section 303(d) – Total Maximum Daily Loads (TMDLs)
- Section 401 – Water Quality Certification
- Section 402 – National Pollutant Discharge Elimination System (NPDES) Program
- Section 404 – Discharge of Dredged or Fill Material

In 2000, EPA established the California Toxics Rule, which sets water quality criteria for priority toxic pollutants and other provisions for water quality standards to be applied to inland surface waters, enclosed bays, and estuaries for all purposes and programs under the CWA.

Section 303(d) of the CWA requires identification and listing of water-quality limited or "impaired" water bodies where water quality standards or receiving water beneficial uses are not met. Once a water body is listed as "impaired," TMDLs must be established for the pollutants or flows causing the impairment. Once established, the TMDL allocates the loads among current and future pollutant sources to the water body. In general, where urban runoff is identified as a significant source of pollutants causing the impairments and is subject to load allocating, the implementation of and compliance with the TMDL requirements is administered through a combination of individual Industrial Stormwater Permits, the General Industrial and General Construction Stormwater Permits, and the County of Tuolumne's municipal stormwater NPDES program. EPA has delegated the responsibility for administration of portions of the CWA to state and regional agencies, including the State of California. Accordingly, the primary regulations resulting from the CWA (i.e., NPDES program) are discussed in the state and local regulation discussions that follow.

Section 401 requires every applicant for a federal permit or license for any activity that may result in a discharge to a water body to obtain a water quality certification that the proposed activity will comply with applicable water quality standards.

Section 402 regulates point-source discharges to surface waters through the NPDES program. In California, SWRCB oversees the NPDES program, which is administered by the RWQCBs. The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. The NPDES program covers municipalities, industrial activities, and construction activities. The NPDES program includes an industrial stormwater permitting component that covers ten categories of industrial activity that require authorization under an NPDES industrial stormwater permit for stormwater discharges. Construction activities, also administered by the SWRCB, are discussed below. Section 402(p) of the federal CWA, as amended by the Water Quality Act of 1987, requires NPDES permits for stormwater discharges from municipal separate storm sewer systems (MS4s), stormwater discharges associated with industrial activity (including construction activities), and designated stormwater discharges, which are considered significant contributors of pollutants to waters of the United States. On November 16, 1990, EPA published regulations (Code of Federal Regulations Title 40, Part 122) that prescribe permit application requirements for MS4s pursuant to CWA 402(p). On May 17, 1996, EPA published an Interpretive Policy Memorandum on



Cal-Atlas Basemap
Source: Data downloaded from FEMA in 2018

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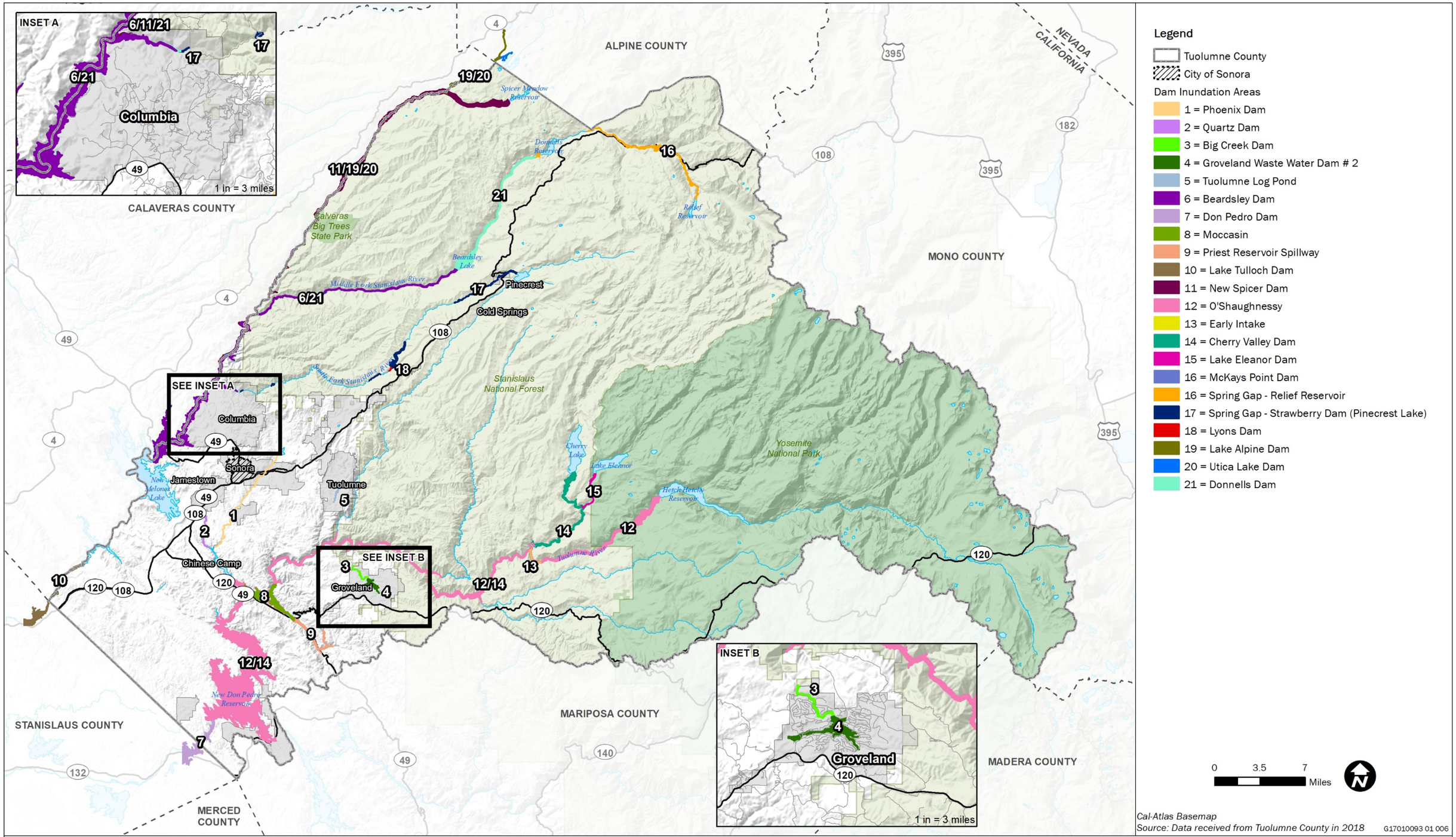
Exhibit 3.10-2

Flood Zones

ASCENT ENVIRONMENTAL



Legend

- Tuolumne County
- City of Sonora

Dam Inundation Areas

- 1 = Phoenix Dam
- 2 = Quartz Dam
- 3 = Big Creek Dam
- 4 = Groveland Waste Water Dam # 2
- 5 = Tuolumne Log Pond
- 6 = Beardsley Dam
- 7 = Don Pedro Dam
- 8 = Moccasin
- 9 = Priest Reservoir Spillway
- 10 = Lake Tulloch Dam
- 11 = New Spicer Dam
- 12 = O'Shaughnessy
- 13 = Early Intake
- 14 = Cherry Valley Dam
- 15 = Lake Eleanor Dam
- 16 = McKays Point Dam
- 16 = Spring Gap - Relief Reservoir
- 17 = Spring Gap - Strawberry Dam (Pinecrest Lake)
- 18 = Lyons Dam
- 19 = Lake Alpine Dam
- 20 = Utica Lake Dam
- 21 = Donnells Dam

Cal-Atlas Basemap
Source: Data received from Tuolumne County in 2018

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Exhibit 3.10-3

Dam Inundation Areas

ASCENT ENVIRONMENTAL

Reapplication Requirements for Municipal Separate Storm Sewer Systems, which provided guidance on permit application requirements for regulated MS4s. MS4 permits include requirements for post-construction control of stormwater runoff in what is known as Provision C.3. The goal of Provision C.3 is for the permittees to use their planning authorities to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows from new development and redevelopment projects. This goal is to be accomplished primarily through the implementation of low impact development techniques.

Section 404 establishes a permit program, administered by the U.S. Army Corps of Engineers, to regulate the discharge of dredged or fill materials into waters of the United States, including wetlands. Activities in waters of the United States that are regulated under this program include fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry. CWA Section 404 permits are issued by the U.S. Army Corps of Engineers. Section 404 is described in Section 3.4, "Biological Resources."

Regulated Floodplain

Floodplain Management Executive Order 11988 (May 24, 1977) directs all federal agencies to evaluate potential effects of any actions they may take in the floodplain and to avoid all adverse impacts associated with modifications to floodplains. It also directs federal agencies to avoid encroachment into the 100-year floodplain, whenever there is a practicable alternative, and to restore and preserve the natural and beneficial values served by the floodplains.

FEMA oversees floodplain management and runs the National Flood Insurance Program (NFIP) adopted under the National Flood Insurance Act of 1968. FEMA prepares FIRMs that delineate the regulatory floodplain to assist local governments with land use and floodplain management decisions to meet the requirements of the NFIP. In general, the NFIP mandates that new development is not to proceed within the 100-year regulatory floodplain, if the development is expected to increase flood elevation by one foot or more. Very limited development is allowed in designated 100-year floodways (i.e., flood flow channels and areas with sufficient directional flow velocity of 100-year floodwaters).

STATE

Porter-Cologne Water Quality Control Act

The State of California is authorized to administer federal law or state-enacted laws regulating water pollution within the state. The Porter-Cologne Water Quality Control Act (Water Code Sections 13000, *et seq*.) includes provisions to address requirements of the CWA. These provisions include NPDES permitting, dredge and fill programs, and civil and administrative penalties. The Porter-Cologne Act is broad in scope and addresses issues relating to the conservation, control, and utilization of the water resources of the state. Additionally, the Porter-Cologne Act states that the quality of all the waters of the state (including groundwater and surface water) must be protected for the use and enjoyment by the people of the state.

State Water Resources Control Board

The SWRCB and its nine RWQCBs are agencies within the umbrella structure of the California Environmental Protection Agency. The SWRCB has the principal responsibility for the development and implementation of California water quality policy and must develop programmatic water quality control procedures to be followed by the RWQCBs. The Central Valley RWCQB is the region that regulates water quality permitting in Tuolumne County.

Water Code Section 13050 defines "pollution," "contamination," and "nuisance." Briefly defined, pollution means an alteration of water quality such that it unreasonably affects the beneficial uses of water (which may be for drinking, agricultural supply, or industrial uses) or facilities which serve these beneficial uses. Contamination means an impairment of water quality to the degree that it creates a hazard to the public

health through poisoning or spread of disease. Nuisance is defined as anything that is injurious to health, is offensive to the senses, or is an obstruction to property use, and which affects a considerable number of people, and that occurs during, or as a result of, the treatment or disposal of wastes.

Under Section 13240 of the Porter-Cologne Act, each Regional Board must formulate and adopt water quality control plans, or Basin Plans, for all areas within the region. The Central Valley RWQCB has two Basin Plans: one for the Tulare Lake Basin and one for the Sacramento and San Joaquin River Basins. The San Joaquin River Basin includes the entire area drained by the San Joaquin River, including the Stanislaus and Tuolumne Rivers in Tuolumne County.

Beneficial Uses

The Basin Plan defines and designates the existing beneficial uses for surface and groundwater in the plan area. Beneficial uses for source waters above the Don Pedro Reservoir and proposed beneficial uses for sources waters above the New Melones Reservoir are identified in Table 3.10-2.

Table 3.10-2 Designated Beneficial Uses for Waterbodies in the Plan Area

Beneficial Use	Definition of Use
Surface Water – Source to Don Pedro Reservoir, source to New Melones Reservoir (proposed uses)	
Municipal and Domestic Supply	Community, military, or individual water supply, including drinking water supply.
Agricultural Supply	Farming, horticulture, or ranching activities, including irrigation, stock watering, and support of vegetation for range grazing.
Hydropower Generation	Uses of water for hydropower generation.
Contact Recreation	Recreational activities involving body contact with water where ingestion of water is reasonably possible. These include, for example, swimming, water-skiing, or fishing.
Noncontact Recreation	Recreational activities involving proximity to water, but not normally involving body contact with water. These uses include picnicking, sunbathing, hiking, beachcombing, camping, boating, and others.
Wildlife Habitat	Uses of waters that support wildlife habitat including preservation and enhancement of vegetation and prey species such as waterfowl.
Cold Freshwater Habitat	Uses of water that support cold water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
Warm Freshwater Habitat	Uses of water that support warm water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
Groundwater – All Groundwaters of the Central Valley Region	
Municipal and Domestic Supply	Community, military, or individual water supply, including drinking water supply.
Agriculture Supply	Farming, horticulture, or ranching activities, including irrigation, stock watering, and support of vegetation for range grazing.
Industrial Service Supply	Uses of water for industrial activities that do not depend primarily on water quality, including mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.
Industrial Process Supply	Uses of water for industrial activities that depend primarily on water quality.

Source: Central Valley RWQCB 2016

NPDES Permits

The SWRCB and RWQCBs, through powers granted by the federal CWA, require specific permits for a variety of activities that have potential to discharge pollutants to waters of the state and adversely affect water quality. To receive an NPDES permit, a Notice of Intent (NOI) to discharge must be submitted to the RWQCB and design and operational best management practices (BMPs) must be implemented to reduce the level of contaminated runoff. BMPs can include the development and implementation of regulatory measures (local authority of drainage facility design), various practices, including educational measures (workshops

informing public of what impacts result when household chemicals are dumped into storm drains), regulatory measures (local authority of drainage facility design), public policy measures (label storm drain inlets as to impacts of dumping on receiving waters), and structural measures (filter strips, grass swales, and retention basins). All NPDES permits also have inspection, monitoring, and reporting requirements.

General Permit for Storm Water Discharges Associated with Construction Activity

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

General Permit for Storm Water Discharges Associated with Industrial Activities

The General Permit for Storm Water Discharges Associated with Industrial Activities (Industrial General Permit) was adopted by SWQCB in April 2014 and went into effect in July 2015. The Industrial General Permit regulates stormwater discharges for specified categories of industries, which are identified by their Standard Industrial Classification Code. The permit requires that discharges comply with stringent requirements for the protection of receiving waters, including the elimination of unauthorized non-stormwater discharges, implementation of SWPPPs and BMPs, monitoring and reporting, and executing response actions when discharges exceed results. The County would be required to file NOIs for facilities that would be subject to the Industrial General Permit, as applicable.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically over-drafted basins, that will be 2040. For the remaining high and medium priority basins, 2042 is the deadline. As noted above, Tuolumne County does not have traditional groundwater basins. The 2018 SGMA Basin Prioritization Results do not include any basins in Tuolumne County (DWR 2018).

Dam Safety Regulations

The California Department of Water Resources, Division of Safety of Dams is charged with the inspection of all dams if the height is more than 6 feet and it impounds 50 acre-feet or more of water, or if the dam is 25 feet or higher and impounds more than 15 acre-feet of water. Federally owned dams are exempted.

LOCAL

Tuolumne County Ordinance Code

The Tuolumne County Groundwater Management Ordinance (Tuolumne County Ordinance Code (TCOC) Chapter 13.20) prohibits groundwater extraction within the County for use outside of County boundaries except by permit.

The Tuolumne County Grading Ordinance (TCOC Chapter 12.20) provides regulations for the construction and maintenance of excavations, site reclamation, drainage control, and stockpiling, as well as for protection of exposed soils surfaces, and cut and clearing of vegetation.

Chapters 13.08 and 13.04 of the TCOC are the basis for sewage disposal regulation. They specify requirements for prohibited acts, permitting, variances, violations, enforcement, and rules and regulations.

The Tuolumne County Flood Damage Prevention Ordinance (TCOC Chapter 15.24) aims to minimize public and private losses because of flood conditions within flood prone or flood related erosion areas. The ordinance applies to all areas of special flood hazards within Tuolumne County and includes standards of construction for all new construction, substantial improvements, and other proposed new development in all special flood hazard zones. The ordinance also includes regulations to:

- 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;
- require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters;
- control filling, grading, dredging, and other development which may increase flood damage; and
- prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

The Tuolumne County Code also includes requirements for landscaping (TCOC Chapter 15.28) that are intended to conserve water and protect water resources. Provisions for stormwater management, recycling and greywater use, and other site management provisions to control runoff and infiltration are detailed there.

Local Agency Management Plan for On-Site Wastewater Treatment Systems

The Tuolumne County Environmental Health Division has prepared a local agency management plan (LAMP) through which it regulates on-site wastewater treatment systems throughout the County. The LAMP is operated under the authority granted by the Central Valley RWQCB and allows individual dischargers to qualify for the state's conditional waiver. The TCOC was amended to satisfy the requirements of the LAMP.

Tuolumne-Stanislaus Integrated Regional Water Management Plan

The Tuolumne-Stanislaus Integrated Regional Water Management Plan, developed in 2013, intended to provide a framework to improve collective understanding and take high-priority actions to collaboratively address the many major water-related challenges/needs and conflicts encompassing the Upper Tuolumne River, Upper Stanislaus River and Upper Rock Creek-French Camp Slough watersheds traversing all of Tuolumne County, eastern Stanislaus County, and Calaveras County to Highway 4 and southwestern Alpine County. These issues include water quality, local water supply reliability, better integration of water and land use management, resource stewardship and ecosystem protection.

Tuolumne County Water Quality Plan

The 2007 Tuolumne County Water Quality Plan is a comprehensive program to address a wide array of water quality concerns in the County over a 20-year planning horizon. The Plan focuses on surface water quality and the factors affecting it, as well as mechanisms for maintaining and improving it. In particular, the Plan focuses on three principal non-point sources of water pollution: pathogens and nutrients; urban contaminants; and erosion and sedimentation. There are two primary objectives of the Plan:

- responding to existing and new state and federal regulations; and
- addressing existing and future water quality issues that are relevant to Tuolumne County waterways identified in the County Foothill Watershed Assessment.

The Water Quality Plan primarily functions as a roadmap for strategies that will improve water quality in the County by identifying specific programs and opportunities for water quality improvement that the County can implement. Conditions or mitigating measures, best management practices, and monitoring programs were developed as part of the Plan as a first step in addressing water quality.

Tuolumne County General Plan

The 1996 General Plan provides a framework for addressing issues related to water resources in the County. As the proposed project would update the 1996 General Plan, this document will be discussed in the context of the update within the impact analysis. The Water Resources Section of the Conservation and Open Space Element contains goals to conserve the quality and quantity of the County's water resources and conserve public water resource areas with high recreation value. Specific General Plan Update policies related to hydrology and water quality are identified below under Section 3.10.3, "Impact Analysis."

Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan

The Disaster Mitigation Act of 2000, Public Law 106-390, constitutes an effort by the federal government to reduce the rising costs of disasters and stresses the importance of mitigation planning and disaster preparedness before a disaster. To ensure compliance with the act, Tuolumne County has prepared a Multi-Jurisdictional Hazard Mitigation Plan in compliance with FEMA's Multi-Hazard Mitigation Planning Process. The plan outlines practical, meaningful, attainable, and cost-effective mitigation solutions to minimize each jurisdiction's vulnerability to identified hazards and reduce human and financial losses in the event of a disaster.

3.10.3 Impact Analysis

METHODS OF ANALYSIS

The General Plan Update is a policy document that would guide development and conservation of land throughout the County. Adoption of the General Plan Update would not result in any changes to existing conditions; however, the policies could allow for or encourage future activities that may result in exposure of people to flood hazards, modifications to local hydrological regimes, or produce new sources of water pollution. Impacts could result from the placement of new development within Tuolumne County's watersheds. Impacts are evaluated assuming full projected development under the General Plan Update within the 2040 planning horizon.

The evaluation of potential hydrological and water quality impacts is based on a review of documents pertaining to the plan area, including previous studies conducted for the County, previous EIRs, and published and unpublished hydrologic data and literature. The information obtained from these sources was reviewed and summarized to understand existing conditions and to identify potential environmental effects, based on the thresholds of significance. In determining the level of significance, the analysis assumes that projected development under the General Plan Update would comply with applicable federal, state, and local laws, regulations, and ordinances.

Thresholds of Significance

Assessment of impacts is based on review of County information regarding hydrology and water quality issues. In accordance with the State CEQA Guidelines, impacts would be considered significant if projected development under the General Plan Update would:

- violate any water quality standards or waste discharge requirements;
- 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;

- 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;
- 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;
- otherwise substantially degrade water quality;
- place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- 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 (e.g., the production rate of pre-existing local wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

Issues Not Discussed Further

Appendix G also includes the following significance threshold: result in inundation by seiche, tsunami, or mudflow. As an inland region separated from the Pacific Ocean by approximately 150 miles, Tuolumne County is at no risk from tsunamis. According to the most recent Alquist-Priolo Earthquake Fault Zoning Map, earthquake-induced seiches also do not pose a risk to Tuolumne County. Impacts from mass wasting events, including mudflow, are evaluated in Section 3.7, "Geology." There are no levees located within the County. Therefore, flooding as a result of a levee failure would not occur. These issues are not discussed further in this section.

General Plan Update Policies

The following policies and implementation programs from the General Plan Update are applicable to the evaluation of effects related to hydrology and water quality:

Water Supply Element

- **Policy 14.A.3:** Work with other agencies in developing joint water policies supporting healthy watershed management.
  - **Implementation Program 14.A.e**: Implement the Tuolumne County Water Action Plan: Developing a Plan for Our Future adopted by the Board of Supervisors on April 7, 2015, as it may be amended from time to time.
  - **Implementation Program 14.A.f**: Collaborate with the other agencies and water purveyors to develop a Comprehensive Water Resources Plan to manage and protect the County's water resources by developing and prioritizing a list of water resources projects and a monitoring program.
- **Policy 14.A.5:** Manage groundwater resources consistent with the requirements of the Sustainable Groundwater Management Act, in response to the probability that the State will extend regulations to the County of Tuolumne.
  - **Implementation Program 14.A.h**: Use of groundwater recharge to help stabilize and supplement groundwater levels and protect water supplies. Discourage incompatible development near

groundwater recharge stations, such as ponds, basins and tanks, that could affect the recharged groundwater levels.

- **Policy 14.A.6:** Encourage water purveyors to provide an adequate water supply to meet long term needs in a manner that is consistent with this General Plan and urban water management plans and that maintains water resources for water users while protecting the natural environment.

- **Policy 14.C.4:** Encourage the conservation of water resources in a systematic manner that is sensitive to the maintenance of water quality, natural capacities, ecological values, and consideration of the many water related needs of the County.

  - **Implementation Program 14.C.e**: Update the Tuolumne County Water Quality Plan, subject to receiving funding, to facilitate a consistent, fair and cost-effective approach to water resource mitigation and encourage and support the restoration of degraded riparian areas through public education programs demonstrating the value of healthy riparian habitats in protecting water quality and provide for permit streamlining while conserving important water resources.

- **Policy 14.C.5:** Develop and evaluate criteria to allow limited development to occur where harmful area-wide impacts to groundwater exist based on known hazard areas when feasible.

  - **Implementation Program 14.C.f**: Consider creating and maintaining soil maps that identify areas of high ground water, impervious soils, limestone or other hazards which, either by themselves or in combination, create potentially serious health conditions because of failing septic systems or which are inappropriate for on-site sewage treatment and disposal on an areawide basis. Continue to develop and evaluate criteria to allow development to occur in areas of high ground water, impervious soils, limestone or other hazards without degrading the water resources.

- **Policy 14.C.6:** Recognize that the decisions made by the County of Tuolumne concerning water resources influence water supply needs for all beneficial uses of water consistent with the California Water Code, including, but not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

  - **Implementation Program 14.C.g**: Continue to consult with local public water agencies to determine that water supplies and delivery systems can meet the demands of the anticipated new development and population growth of the County. In accordance with Section 65352.5 of the California Government Code, the General Plan Land Use Diagrams were formulated in consultation with the applicable urban water management plans from these agencies and any amendments to those diagrams shall be reviewed in consultation with the respective public water agency serving the parcel or parcels affected by the proposed amendment.

- **Policy 14.C.8:** Encourage water resources to be protected from pollution, conserved, and recycled whenever possible to provide for continued economic, community, and social growth.

  - **Implementation Program 14.C.h**: Continue to regulate the exportation of groundwater to preserve the County's limited groundwater reserves for use by its residents and businesses through the provision of Chapter 13.20 of the Tuolumne County Ordinance Code.

- **Policy 14.C.9:** Promote improved watershed health, improved water quality and water quantity yields of the watersheds in Tuolumne County.

  - **Implementation Program 14.C.i**: Promote the development of plans for watershed rehabilitation projects which provide for such watershed improvements as:

- A reduction in the presence of contaminants in drinking water by addressing the origins and treatment of the contaminants, including, to the maximum extent practicable, the specific activities that affect the drinking water supply of a community or communities.

- An increase in the quantity of water available from the watershed.

- The improvement, restoration, or enhancement of fisheries habitat, including riparian habitat, in and along streams and watercourses in the watershed. These projects may address factors which increase sedimentation in streams and watercourses in the watershed.

- The improvement of overall forest health, including the reduction of factors which may contribute to the severity of wildfires in the watershed.

- **Implementation Program 14.C.j**: Initiate or assist in the formulation of plans for watershed rehabilitation projects with the County serving as the coordinating agency for the various stakeholders in such a plan, such as property owners, water agencies, other public agencies, private industry, recreational facility providers and other interested groups and organizations. Provide technical assistance in the development of plans for watershed rehabilitation projects through such means as data sharing.

- **Implementation Program 14.C.k**: Cooperate and consult with Federal, State and local agencies, such as the Tuolumne County Water Agency, in promoting the stewardship of the watersheds within the County. Consult with these agencies to avoid duplication of effort and to maximize use of public resources in working towards a common goal of improving the watersheds within Tuolumne County which will, in turn, contribute to the State and Federal objective of providing long-term Bay-Delta recovery and protection.

- **Implementation Program 14.C.l**: Support the Tuolumne County Resource Conservation District in its efforts to improve watersheds within Tuolumne County, including stream water quality sampling, which can assist agencies where to direct their efforts.

- **Implementation Program 14.C.m**: Submit applications for grants which become available for funding for County initiated or sponsored watershed rehabilitation projects and support the efforts of other public agencies and water agencies, such as the Tuolumne County Water Agency, Tuolumne-Stanislaus Integrated Regional Water Management Authority and other entities in their efforts to seek funding for watershed improvement projects. This support may manifest itself in such ways as adopting a resolution of support or co-sponsoring an application for funding for a watershed project.

Natural Hazards Element

- **Policy 17.B.1:** Reduce the potential for future damages and economic losses that result from flood hazards by implementing the Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan.

- **Policy 17.B.2:** Reduce the potential for damage to property within the 100-year floodplains as designated on the Federal Emergency Management Agency, Flood Insurance Rate Maps and other areas prone to flooding due to rain or dam failure, through limitations on land use.

  - **Implementation Program 17.B.a**: Implement and enforce the Flood Damage Prevention Ordinance, Chapter 15.28 of the Tuolumne County Ordinance Code, as it pertains to designated “special flood hazard areas,” as identified on the Flood Insurance Rate Maps.

  - **Implementation Program 17.B.b**: Review and notify FEMA of errors or other information to correct or update FIRM maps.

- **Policy 17.B.3:** Solve flood control problems in areas where existing development has encroached into a floodplain.
  - **Implementation Program 17.B.c**: Encourage property owners with existing structures within areas subject to flooding, whether identified on the Flood Insurance Rate Maps or not, to conform to the requirements of the Flood Damage Prevention Ordinance.
  - **Implementation Program 17.B.d**: Based upon the Flood Insurance Rate Maps, provide notification to the owners of property within designated floodplains of the consequences of constructing within the floodplain.
  - **Implementation Program 17.B.e**: Encourage owners of land and improvements within floodplains not identified on the Federal Insurance Rate Maps (FIRM), to develop the property to meet the requirements of the Flood Damage Prevention Ordinance by implementing appropriate measures, such as:
    - Identify owners of land and improvements within floodplains not identified on FIRMs.
    - Develop and implement an outreach program to coordinate with these stakeholders.
    - Prepare and distribute to the owners informational literature describing the requirements of the Flood Damage Prevention Ordinance.
  - **Implementation Program 17.B.f**: Continue to provide flood hazard information to the public. Information available includes flood zones, requirements of the Flood Damage Prevention Ordinance, and how to floodproof existing structures through relocation, or "dry" or "wet" floodproofing.
- **Policy 17.B.4:** Projects proposed within areas identified on the dam failure inundation maps designated by the Office of Emergency Services and evacuation plans on file with the County Office of Emergency Services shall not be approved if a project presents a direct threat to human life or structures. Projects should be modified to ensure public safety.
- **Implementation Program 17.B.g**: Regularly update the Emergency Operations Plan for Tuolumne County, which addresses dam failures in the Flood Annex. In the event of a dam failure, the Emergency Operations Plan refers to the Emergency Action Plan of the owner agency of the dam. The County will notify and assist in evacuation along federally designated flood plains.
- **Policy 17.B.5:** Prohibit the construction of facilities essential for emergencies and large public assembly in the 100-year floodplain, unless the structure and access to the structure are free from flood inundation.
- **Policy 17.B.6:** Consult with local, regional, State and Federal agencies to achieve adequate flood protection. Cooperate with the Tuolumne Utilities District, surrounding jurisdictions, the City of Sonora, and other public, State and Federal agencies in planning and implementing regional flood control improvements.
- **Policy 17.C.1:** Minimize the risk from flood hazards through land use planning and the avoidance of incompatible structural development in floodplains.
  - **Implementation Program 17.C.a**: Utilize regulatory methods of flood control, such as designating identified floodplains and drainage easements as Open Space, where possible, rather than construction-related methods of flood control. Regulatory methods reduce the need for flood control projects, minimize losses in areas where flooding is inevitable, and attempt to notify those who own property in flood hazard areas of the risks and that they should assume responsibility for their actions.

- **Implementation Program 17.C.b**: Maintain stream carrying capacity by continuing to regulate new fill, grading, dredging, and other new development which may increase flood damage by increasing sedimentation in streams and watercourses, or by constricting water courses with structures for roads and driveways. Encourage owners of land and improvements within floodplains to maintain the stream carrying capacity by allowing thinning of dense vegetation, subject to approval of the Community Resources Agency.

- **Policy 17.C.2:** Continue to require evaluation of potential flood hazards prior to approval of development projects and require on-site mitigation to minimize off-site flows.

  - **Implementation Program 17.C.c**: Proponents of new development shall submit accurate topographic and flow characteristics information and depiction of the 100-year floodplain boundaries under fully-developed, unmitigated conditions.

  - **Implementation Program 17.C.d**: Review policies and available data concerning development in floodplains to ensure lives and property are not at risk from future flood conditions.

  - **Implementation Program 17.C.e**: Require new development to mitigate impacts on downstream drainages if new development results in increased peak flows because of project-generated stormwater runoff. Measures necessary to mitigate impacts will be attached to development entitlements issued by the County, which may include retention/detention facilities, permeable surfacing materials, greywater systems, and green roofs.

- **Policy 17.C.3:** Strive to maintain natural conditions within the 100-year floodplain of rivers and streams in order to maintain stream capacity except under the following circumstances:

  a. Where work is required to restore the stream's drainage characteristics and where such work is done in accordance with the Tuolumne County Water Quality Plan, County Flood Damage Prevention Ordinance, California Department of Fish and Wildlife regulations, and Clean Water Act provisions administered by the U.S. Army Corps of Engineers; or

  b. When facilities for the treatment of development generated runoff can be located in the floodplain provided that there is minimal destruction of riparian vegetation, and such work is done in accordance with the County Flood Damage Prevention Ordinance and California Department of Fish and Wildlife regulations.

  - **Implementation Program 17.C.f**: Maintain essential public facilities, such as culverts and drainage facilities along County maintained roads and eliminate logjams and other obstructions from bridges.

PROJECT IMPACTS

This section presents a programmatic-level analysis of potential impacts associated with hydrology and water quality from projected development under the General Plan Update. Evaluation of environmental impacts associated with the General Plan Update considers the development that would be facilitated by the General Plan Update, in accordance with goals, policies, and implementation programs, to accommodate projected growth in the County. It should be noted that the County's population is projected to grow by 0.6 percent annually over the planning horizon (2040). As discussed in detail in Chapter 2, "Project Description," and the introduction to Chapter 3, this is a relatively low amount of growth.

Impact 3.10-1: Impacts Related to Flooding

Some areas within the County adjacent to waterbodies are located within the 100-year flood zone. Existing federal, state, and local regulations address the hazards associated with locating development in these zones. In addition, some of the policies and implementation programs in the General Plan Update restrict development within flood zones and strive to reduce hazards to existing development. Impacts related to flooding would be **less than significant**.

Flooding as a result of storm events can cause widespread damage to affected areas, and endanger human safety. When development encroaches on floodplains, buildings and vehicles can be damaged or destroyed, while smaller objects can be buried in flood-deposited sediments. Floodwaters can break utility lines, interrupting services and potentially affecting health and safety. Floods may also create health and safety hazards and disruption of vital public services. The secondary effects of flooding include standing water, which can result in septic tank failure and water well contamination. Standing water can also damage roads, foundations, and electrical circuits. The extent of damage caused by any flood depends on the topography of the area flooded; depth, duration, and velocity of floodwaters; the extent of development in the floodplain; and the effectiveness of forecasting, warnings, and emergency operations. Encroachment onto floodplains, such as artificial fills and structures, reduces the capacity of the floodplain and increases the height of floodwater upstream of the obstructions.

The physical geography of the County affects and limits the flooding potential. The overall slope of the watersheds is relatively steep and the rivers and streams move run off away quickly and therefore very little flood plain has been formed. The Tuolumne and Stanislaus Rivers are dammed in the lower elevations and well controlled. In addition, these water courses are contained in government or special district ownership and private development is very limited and well regulated. In older communities, such as Jamestown, the overflowing of smaller creeks and waterways does occasionally occur; however, the damage is limited and is not typically life threatening. Therefore, although there is a moderate probability of localized flooding, the severity of effects due to flooding is low because only limited areas of identified communities are exposed (Tuolumne County 2007).

There are no areas designated as 100-year floodplain on the FEMA FIRMs within the Jamestown Community Plan area. As such, development that would occur in this area would not be exposed to 100-year flood events and associated hazards. There is a small waterbody within the Columbia Community Plan area south of Horseshoe Bend Road that is identified as within the 100-year floodplain. In addition, areas adjacent to the Upper Stanislaus River along the northwestern boundary of the Community Plan area are within the 100-year floodplain. Within the East Sonora Community Plan area, the Sonora, Curtis, and Sullivan Creeks run through the plan area. Areas within and around Sullivan and Curtis creeks are within the 100-year flood zone. In the Tuolumne Community Plan boundary, there is one area within the 100-year floodplain south of Tuolumne Road along Turnback Creek. Three perennial streams run through the Mountain Springs Community Plan Area including the Sullivan Creek, Flores Creek, and Curtis Creek. Areas along Sullivan Creek and Curtis Creek are located within the 100-year floodplain although the potential for flooding is limited because of the small size of these streams and the rugged relief of the area.

The County has planning and land use ordinances in place that outline development standards in areas that have the potential to be inundated by a 100-year flood. The County has adopted a Flood Damage Prevention Ordinance and has developed a Storm Drainage Master Plan to assist in long range plan efforts for the improvement of flood control efforts (Tuolumne County 2018). Development in the County located within an area of special flood hazard is subject to the provisions of the County's Flood Damage Prevention Ordinance (TCOC Chapter 15.24). These regulations identify construction standards, including anchoring requirements, flood-resistant materials standards, and floodproofing specifications, which development must meet if constructed within a floodplain, thereby minimizing flood damage and risk to human safety.

New development within the 100-year flood zone would also be subject to the County's policies as set forth in the Natural Hazards Element, which would protect people or property that are subject to flood risk through

implementation and enforcement of the Flood Damage Prevention Ordinance and evaluation of potential flood hazards within a site (Policies 17.B.2, 17.B.5 and 17.C.3 and Implementation Programs 17.B.a, 17.C.c and 17.C.d). For existing development in flood hazard areas that is not currently subject to the Flood Damage Prevention Ordinance, the General Plan Update provides policies that support compliance with the ordinance such as using information included identified in FIRMs and providing information related to floodproofing of structures (Policy 17.B.3 and Implementation Programs 17.B.c through 17.B.f). The General Plan Update would also promote the implementation of flood improvements, prohibit the construction of emergency facilities and large public assembly facilities in the 100-year floodplain, and support implementation of the Multi-Jurisdictional Hazard Mitigation Plan, which contains plans and programs to improve flood-prone areas (Policies 17.B.6 and 17.C.2 and Implementation Programs 17.C.a and 17.C.b).

Flooding can also be caused or exacerbated by alteration of existing drainage patterns caused by new development. Under the General Plan Update, new development would not substantially alter existing drainage patterns of the County, because most development is anticipated to occur in identified communities where the land is more defined by development, such as curbs, gutters, roadways and landscaping. In rural areas, typical development would not be sized such that major changes in topography would occur or major impervious surfaces would be added. Moreover, consistent with Implementation Program 17.C.e, any larger-scale development would be required to minimize potential for downstream flooding by providing appropriate features, which may include retention/detention facilities, permeable surfacing materials, greywater systems, and green roofs. The above-discussed regulations and programs aimed at flood hazard reduction are protective of life and property such that flooding hazards are generally addressed through the planning and development process. The General Plan Update includes policies and implementation measures that would be consistent with existing regulations and support enhanced safety in flood-prone areas. New development would not substantially alter the existing drainage patterns. Therefore, impacts related to flooding caused by storm events would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.10-2: Risk of Dam Inundation

Portions of the County are located within an identified dam inundation zone; therefore, within the County, there is potential to expose people and structures to associated dam inundation hazards. However, dam safety monitoring and maintenance programs exist for dams of notable size and capacity, and the General Plan Update would not facilitate development in dam inundation areas. Therefore, impacts related to dam inundation would be **less than significant**.

There are 44 dams in Tuolumne County that range in size from those that retain large reservoirs dedicated to irrigation, water supply, and power generation, to small facilities used in water distribution and treatment systems or for recreation. Exhibit 3.10-2 shows potential dam inundation areas in Tuolumne County. Potential causes of dam failure include seismic failure, overtopping of dam capacity (usually because of unexpectedly heavy rainfall in a watershed), spillway blockage, failure of the dam foundation because of poor maintenance, and failure because of piping and seepage from internal cracks in the dam structure. Impacts related to dam inundation are generally confined to larger-sized dams, such as those located along the Tuolumne and Stanislaus Rivers.

The 2018 Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan includes a vulnerability assessment for dam failure (Tuolumne County 2018:54-58). There are a few dams within the County that are situated such that they have the capability of causing damage to downstream structures. These include the O'Shaugnessy Dam, which impounds the Hetch Hetchy Reservoir, and the Moccasin and Priest Dams. Man-made structures downstream of these facilities would be subject to exceptional flood conditions in the event of their failure. Multiple bridges and culverts on County roads and state highways lie within these dam inundation zones and would likely be severely damaged should a dam fail above the road. No known hazardous materials sites have been identified within any of the mapped dam inundation areas.

Dam safety requires a comprehensive and long-term process of site maintenance, continuous inspection and monitoring, and implementation of periodic site improvements. The California Department of Water Resources, Division of Dam Safety is charged with the inspection of all dams greater than 6 feet in height with impoundments of 50 acre-feet of water or more and all dams greater than 25 feet in height that impound more than 15 acres of water. The state dam safety program includes an annual inspection program to ensure dams are safe and performing as intended, and includes an assessment of seismic, hydrologic, and static parameters. If reviews indicate any areas of concern, further studies are completed to fully understand the potential area of weakness and corrective actions are taken. For very large dams, daily visual inspections are also completed.

The General Plan Update would encourage growth within identified communities. Some of the identified communities overlap with a dam inundation area, as shown on Exhibit 3.10-3, and development could occur in these or other areas susceptible to inundation. Portions of the Beardsley, New Spicer, and Donnells Dam inundation areas overlap with and are adjacent to the Columbia Community Plan area. Similarly, the Big Creek and Groveland Wastewater Dam have the potential to impact portions of the community of Groveland. Projected development under the General Plan could occur in some of these populated areas. However, Policy 17.B.4 requires the review of new development within dam inundation areas and requires appropriate action to be taken, including development restriction, if it presents a direct threat to human life or structures. The General Plan Update also contains Implementation Program 17.B.g related to disaster planning for potential dam failure. Implementation Program 17.B.g requires the County to regularly update the Emergency Operations Plan, which address dam failures in the Flood Annex.

Because dam safety programs mean that the likelihood of dam failure is very low, and because the General Plan Update includes policies and implementation programs to review proposals within high-risk areas, the potential for flooding because of dam failure would be minimal, resulting in a **less-than-significant** impact.

Mitigation Measures

No mitigation is required

Impact 3.10-3: Impacts to Water Quality Associated with Stormwater and Point Source Contamination

Projected development under the General Plan Update could generate new sources of surface water and groundwater pollution, including both point and non-point sources. Point sources would include industrial or commercial facilities, while non-point sources would include new impervious or otherwise disturbed surfaces capable of generating an increase in stormwater runoff. Compliance with existing regulations and implementation of General Plan Update policies would result in **less-than-significant** impacts.

The following discussion addresses potential water quality effects related to stormwater runoff and point source contamination. The evaluation corresponds to the above-stated thresholds regarding violation of water quality standards, contribution of polluted runoff, and other degradation of water quality. Effects on the capacity of existing or planned stormwater drainage systems are evaluated in Section 3.17, "Utilities and Service Systems." Pollution can enter surface and groundwater from point sources (e.g., an industrial site or faulty septic system) or from nonpoint sources over a broad area (e.g., runoff from agriculture or the impervious areas of a community, or due to construction activities). Each of these potential sources is discussed below.

The Water Supply Element includes policies and implementation programs that would reduce potential impacts related to water quality, including adhering to and updating the Tuolumne County Water Quality Plan (Implementation Program 14.C.e) and restoring watershed function and health (Policy 14.C.9 and Implementation Programs 14.C.i through 14.C.l).

Point Sources

As discussed above, residential and commercial on-site sewage disposal systems and LUSTs are key contributors to existing groundwater quality impairment in the County (Tuolumne County 2007). However, projected development under the General Plan Update would be subject to current (and any future) regulations that have been developed to address the conditions that lead to release of contaminants. Underground storage tanks are subject to SWRCB's regulations related to design, permitting, operation, and proper abandonment. Before installation of septic systems, operators must now conduct a soil investigation and health study to demonstrate long term feasibility of the septic system.

The Industrial General Permit covers, as the name suggests, industrial facilities such as landfills, mines, and hazardous waste sites. It requires that these covered facilities comply with stringent requirements for the protection of receiving waters, including the elimination of unauthorized non-stormwater discharges, implementation of SWPPPs and BMPs, monitoring and reporting, and executing response actions when discharges exceed results. Minimum BMPs have been established for all facilities, which include provisions for good housekeeping, preventative maintenance, spill and leak prevention, materials handling, specific erosion and sediment controls (such as erosion stabilization, run-on diversions, and sediment basins), and detailed record keeping. Operators are also expected to maintain an employee training program and comply with training requirements for facility staff.

Discharge of pollutants from any point source is prohibited unless the discharge is in compliance with an NPDES permit issued by the appropriate RWQCB. Therefore, with compliance with existing federal and state regulations, as enforced through NPDES permit requirements, new point sources generated by projected development under the General Plan Update would not result in water quality degradation or affect beneficial uses.

Stormwater Runoff

Water quality impacts from potential future projects are directly related to specific site drainage patterns and stormwater runoff. Projected development under the General Plan Update would increase development intensity in portions of the County, thereby increasing the amount of impervious surface area within the watershed. New impervious surfaces would alter the peak discharge and timing of surface runoff into drainages, which could result in water quality degradation. As rainwater passes over land, contaminants and sediment become suspended within the flow. Stormwater runoff from landscaped areas, roadways and parking lots can entrain various pollutants associated with motor vehicles, including petroleum compounds, heavy metals, asbestos, and rubber, as well as fertilizers and pesticides from landscaped areas. Oil and grease from urban runoff contain hydrocarbons that are toxic to aquatic organisms, some at low concentrations. Heavy metals such as lead, cadmium, and copper are the most common metals found in urban stormwater runoff. These metals can also be toxic to aquatic organisms and have the potential to contaminate drinking water supplies. With no prior treatment of stormwater runoff, any pollutant residues would be entrained in stormwater runoff and directly enter natural watercourses.

The TCOC Chapter 15.28 details landscaping requirements for certain types of commercial, industrial, and multiple-use residential developments. These requirements are aimed chiefly at water conservation, but also provide benefit to stormwater runoff conditions by diverting run-on to sites to protect from erosion and increasing site infiltration. These provisions include retaining existing site vegetation, maintaining soil conditions that promote water retention and reduce water loss from evaporation, and implementing stormwater management practices that minimize runoff and increase water retention and infiltration. By limiting contact water on developed sites and promoting infiltration, opportunities for direct discharge of contaminated stormwater to receiving waterbodies is limited.

As discussed above, SWQCB has identified nine water bodies that are classified as impaired under Section 303(d) of the CWA. Where TMDLs have been established, compliance with the standards (which is required through the NPDES permitting process) would substantially address the potential to contribute to existing pollution. As described in further detail below, adherence to the SWPPP would reduce the potential for soil erosion and sedimentation of stormwater runoff during construction. As such, projects associated with forecasted land use development would not be expected to contribute to violations of water quality standards.

For projects or facilities that require that hydrocarbons be present on-site in substantial quantities, facility operators and/or contractors must have an up-to-date Spill Prevention and Countermeasure Control plan that they follow to ensure containment of fuels and lubricants and the procedures to follow in the event of a release.

Considering the types and density of land uses identified in the Land Use Diagram and the requirements of local and state regulations, additional runoff from new impervious surfaces is unlikely to cause substantial degradation of surface water quality for surface waterbodies located downstream of development.

Construction Runoff

Construction activities could also result in the pollution of natural watercourses or groundwater. The types of pollutant discharges that could occur as a result of construction include accidental spillage of fuel and lubricants, discharge of excess concrete, and an increase in sediment runoff.

While the threat of stormwater contamination from development can pose a serious risk to receiving waterbodies, as described above, there are multiple layers of regulatory protections that developers and operators must abide by. These include compliance with the statewide General Construction Permit, including preparation of a SWPPP, compliance with the General Industrial Permit, preparation of a Spill Prevention and Countermeasure Control plan under the CWA, as appropriate, compliance with the County code, and adherence to the policies and implementation programs of the General Plan Update.

For development within the County that would disturb 1 or more acre of land, the developer or contractor would be required to obtain coverage under the General Construction Permit before construction. To comply with the General Construction Permit, a SWPPP would be prepared detailing measures to control soil erosion and waste discharges from project construction areas. The SWPPP would identify the grading and erosion-control BMPs and specifications necessary to minimize or avoid water-quality impacts to the extent practicable. Standard erosion control measures (including management and structural controls) would be required to be implemented for all construction activities that expose soil. Fill and grading materials brought in from off-site would be clean, chemically inert, and handled with appropriate containment to prevent contamination of stormwater. Grading operations would be required to eliminate direct routes for conveying potentially contaminated runoff to waterways. Erosion control barriers such as silt fences and mulching material would be installed, as appropriate. The SWPPP would also contain specific measures for stabilizing soils at sites before the onset of the winter rainfall season. All contractors conducting construction-related work would be required to implement the SWPPP to control soil erosion and waste discharges. The general contractor(s) and/or subcontractor(s) conducting the work would be responsible for implementing all BMPs detailed in the SWPPP. Adherence to the SWPPP would reduce the potential for soil erosion and sedimentation of stormwater runoff during construction. Measures to prevent/minimize releases of sediment and contaminants into groundwater during excavations and methods of cleaning up releases would be detailed in SWPPP documents and may include: using temporary berms or dikes to isolate construction activities, using vacuum trucks to capture contaminant releases, and maintaining absorbent pads and other containment and clean up materials on-site to allow an immediate response to contaminant releases if they occur.

Sedimentation during grading operations would also be controlled by the provisions of the Tuolumne County Grading Ordinance, TCOC Chapter 12.20, which directs non-exempt developers to obtain a grading permit. Grading permits identify construction and maintenance actions for excavations, site reclamation, drainage control, stockpiling, actions for protection of exposed soils surfaces, and cutting and clearing of vegetation.

Potential erosion and sedimentation can also occur due to alterations to existing drainage patterns. NPDES Provision C.3 requirements include post-construction drainage control requirements that address the volume of offsite flows, which can be effective in reducing sedimentation effects on downstream receiving waters. Project proponents are required to plan, design, and develop sites to: (1) protect areas that provide important water quality benefits necessary to main riparian and aquatic biota, and/or are particularly susceptible to erosion and sediment loss; (2) limit increases of impervious areas; (3) limit land disturbance activities such as clearing and grading, and cut-and-fill to reduce erosion and sediment loss; (4) limit disturbance of natural drainage features and vegetation; and (5) reduce erosion and, to the extent

practicable, retain sediment on-site during and after construction. For some projects, NPDES permits and regulations include hydromodification requirements where project proponents must study the potential impacts of proposed channelization and channel modification and then develop and implement plans to protect against undesirable impacts, including erosion. Implementing agencies would also generally require project sponsors to commit to BMPs that would minimize or eliminate existing sources of polluted runoff during operation, such as those contained in the California Stormwater Quality Association's *California Stormwater Best Management Practice Handbook for New Development and Redevelopment*. The growth that could occur under the General Plan Update, both within and outside of the identified communities, would not result in substantially increased rates of stormwater runoff that could result in substantial erosion or siltation because of compliance with federal, state, and local regulations.

Conclusion

The above-described regulations would control or prevent the discharge of pollutants, including sediment, into local surface water drainages, and would provide protection of groundwater quality. In addition, the policies and implementation programs in the Water Supply Element provide general support of watershed health. As a result, projected development under the General Plan Update would not create or contribute runoff water which would provide substantial additional sources of polluted runoff, and impacts would be **less than significant**.

Mitigation Measures

No mitigation is required

Impact 3.10-4: Substantially Deplete Groundwater Supplies or Interfere Substantially with Groundwater Recharge

The General Plan Update would not substantially deplete groundwater supplies because TUD's pumping rate would not change and construction of new private wells would be limited, dispersed throughout the County, and subject to permits that require appropriate setback distances and other special requirements. Furthermore, existing regulations, General Plan Update policies, and land ownership would limit development of impervious surfaces in areas of potential recharge. Impacts would be **less than significant**.

As discussed above, Tuolumne County does not have traditional groundwater basins. Groundwater occurs in fractures in bedrock, and the presence of groundwater is dependent on the number and size of fractures encountered, the degree of connectivity between those fractures and other fractures, and recharge. Recharge is localized in areas such as ponds that feed into the bedrock fracture network because most of the County is impermeable bedrock.

As addressed further in Section 3.17, "Utilities and Service Systems," projected development under the General Plan Update would increase demand for water. TUD, which provides water either directly or indirectly (through sales to other water agencies) to most of the developed portions of Tuolumne County has projected that water supply will exceed demand through the 2040 planning horizon of the General Plan Update, even using a growth rate higher than the 0.6 percent rate utilized in this assessment. No effect on groundwater supply is anticipated to result from TUD's water delivery because the portion of the overall supply that would be derived from groundwater would be maintained at the 2015 level of 1,465 acre-feet annually (see Tables 3.17-1 and 3.17-2). The General Plan Update would not substantially deplete groundwater supplies because TUD's pumping rate would not change and construction of new private wells would be limited, dispersed throughout the County, and subject to permits that require appropriate setback distances and other special requirements in flood zones or groundwater deficient areas.

Groundwater resources would be managed in a manner consistent with the SGMA (General Plan Update Policy 14.A.5), which provides guidance for sustainable groundwater management, including best management practices. Further, proposed Implementation Program 14.A.h would discourage incompatible development near groundwater recharge stations that could affect the recharged groundwater levels. In

addition, projected development under the General Plan Update would mostly occur within identified communities, and approximately 77 percent of the County's total land area is under government ownership or management, including Yosemite National Park and Stanislaus National Forest; these areas are largely open space. The General Plan Update would not substantially deplete groundwater supplies because existing regulations, General Plan Update policies, and land ownership would limit development of impervious surfaces in areas of potential recharge.

Projected development under the General Plan Update would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge. Impacts would be **less than significant**.

Mitigation Measures

No mitigation is required

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