

## 4.9 HYDROLOGY AND WATER QUALITY

This chapter describes the regulatory framework and existing conditions within the Parkway Plan Area and potential impacts related to hydrology and water quality that could result with the adoption and implementation of the proposed Plan.

### 4.9.1 ENVIRONMENTAL SETTING

#### 4.9.1.1 REGULATORY FRAMEWORK

##### Federal Regulations

###### *Clean Water Act*

The Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), is the primary statute governing water quality. The CWA establishes the basic structure for regulating the discharges of pollutants into the waters of the United States and gives the US Environmental Protection Agency (EPA) the authority to implement pollution control programs. The statute's goal is to regulate all discharges into the nation's waters and to restore, maintain, and preserve the integrity of those waters. The CWA sets water quality standards for all contaminants in surface waters and mandates permits for wastewater and stormwater discharges. The CWA also requires States to establish site-specific water quality standards for navigable bodies of water and regulates other activities that affect water quality, such as the dredging and filling of wetlands. The following CWA sections assist in ensuring water quality for the waters of the US:

- Clean Water Act Section 303(d) requires the creation of a list of impaired water bodies by States, territories, and authorized tribes; evaluation of lawful activities that may impact impaired water bodies, and preparation of plans to improve the quality of these water bodies. CWA Section 303(d) also establishes Total Maximum Daily Loads (TMDLs), which is the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards.
- Clean Water Act Section 401 (40 CFR 131 Section 401) 33 USC 1251 et seq.
- Clean Water Act Section 404 authorizes the US Army Corps of Engineers to require permits that will discharge dredge or fill materials into waters in the US, including wetlands.
- National Flood Insurance Program is a federal program created by Congress to mitigate future flood losses nationwide through community-enforced building and zoning ordinances, and to provide access to affordable, federally-backed flood insurance protection.

In California, the EPA has designated the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) with the authority to identify beneficial uses and adopt applicable water quality objectives.

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### *National Pollutant Discharge Elimination System*

The National Pollutant Discharge Elimination System (NPDES) permit program was established by the CWA to regulate municipal and industrial discharges to surface waters of the United States, including those from municipal separate storm sewer systems (MS4s). Under the NPDES Program, all facilities which discharge pollutants from any point source into waters of the U.S. are required to obtain an NPDES permit. Point source discharges include discharges from publicly owned treatment works (POTWs), discharges from industrial facilities, and discharges associated with urban runoff, such as stormwater. The NPDES permit programs in California are administered by the SWRCB and the nine RWQCBs.

### State Laws and Regulations

#### *California Fish and Game Code*

Sections 1600 through 1616 of the California Fish and Game Code regulate alterations in and around streambeds within California. Recognizing the importance of fish and wildlife sources to the food supply, these sections prevent entities from substantially diverting or obstructing natural flows of rivers, streams, lakes, and/or channels within California unless certain criteria are met, which requires notifying the California Department of Fish and Wildlife (CDFW), providing a detailed description of the proposed project, and any other information requested by the CDFW to be able to make determination as to whether or not the activity would substantially divert or obstruct natural flows.<sup>1</sup>

#### *State Water Resources Control Board*

In California, the SWRCB has broad authority over water quality control issues for the State. The SWRCB is responsible for developing Statewide water quality policy and exercises the powers delegated to the State by the federal government under the CWA. Other State agencies with jurisdiction over water quality regulation in California include the California Department of Health Services (DHS) (for drinking water regulations), the California Department of Pesticide Regulation, the CDFW, and the Office of Environmental Health and Hazard Assessment.

Regional authority for planning, permitting, and enforcement is delegated to the nine RWQCBs. The regional boards are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. The Plan Area is within the jurisdiction of the Central Valley RWQCB (Region 5).

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

The Porter-Cologne Water Quality Act (Water Code sections 13000 et seq.) is the basic water quality control law for California. Under this Act, the SWRCB has ultimate control over State water rights and water quality policy. The State is divided into nine regions related to water quality and quantity characteristics. The SWRCB, through its

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<sup>1</sup> Legislative Counsel of the State of California,  
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3784>, accessed April 21, 2017.

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nine RWQCBs carries out the regulation, protection, and administration of water quality in each region. Each regional board is required to adopt a Water Quality Control Plan or Basin Plan that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water quality conditions and problems.

### *California Department of Water Resources*

The Department of Water Resources (DWR) is responsible for managing and protecting California's water supply and quality through working with other agencies to protect, restore, and enhance the natural and human environments.

### *Central Valley Flood Protection Board*

The Central Valley Flood Protection Board (CVFPB) is a regulatory agency that serves as a liaison between the State of California, its residents, property owners, Central Valley agencies, and the U.S. government, with the goal of providing flood protection to the Central Valley, while also considering environmental and habitat concerns. The CVFPB works with the DWR and the US Army Corps of Engineers to reduce the risk of catastrophic flooding in the Central Valley, and has a jurisdictional authority throughout the drainage basin of the Central Valley and for 1.7 million acres within 14 counties that make up the Sacramento-San Joaquin Drainage District.

### *State Land Act of 1938*

The State Land Act of 1938 established the California State Lands Commission (CSLC), which has three members consisting of the Lieutenant Governor, State Controller, and the Director of Finance of California. The CSLC's purpose is to provide stewardship of the lands, waterways, and resources entrusted to its care through economic development, protection, preservation, and restoration.<sup>2</sup>

### *Health and Safety Code, Division 104, Part 12 Drinking Water*

Division 104, Part 12, Drinking Water, of the Health and Safety Code regulates drinking water in the State, establishes department and local responsibilities, and enforcement and compliance laws. Included under Part 12 is the California Safe Drinking Water Act, which regulates treatment and supply of the State's drinking water supply.

### *California Code of Regulations*

- 2 CCR 2000 et seq. applies to the leasing of all lands under the CSLC's jurisdiction for all surface uses except the exploration for or extraction of natural resources, including minerals, oil, and gas.
- 17 CCR Division 1 regulates public health, including water quality, through the Department of Health Services.
- 22 CCR Division 4 regulates environmental health related to water treatment, and compliance for the implementation of the CEQA.

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<sup>2</sup> California State Lands Commission, <http://www.slc.ca.gov/About/About.html> accessed April 21, 2017.

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### *California Building Code*

The state of California provided a minimum standard for building design through the 2010 California Building Code (CBC), which is located in Part 2 of Title 24 of the California Code of Regulations (CCR). The 2010 CBC is based on the 1997 Uniform Building Code, but has been modified for California conditions. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. Commercial and residential buildings are plan-checked by local City and County building officials for compliance with the CBC.

### **Parkway Master Plan Policies**

The San Joaquin River Conservancy (Conservancy) will implement its mission and the Parkway Master Plan in a manner consistent with its adopted Parkway Master Plan goals, objectives, policies, design guidelines, and best management practices (BMPs) to the extent practicable.

### **Local Regulations and Policies**

The Conservancy is the lead agency responsible for preparing, approving, and implementing the proposed Parkway Master Plan. The Conservancy may assist other government agencies and nonprofit organizations in implementing elements of the proposed Plan. The Conservancy's authorities and jurisdiction are described in Chapter 3, Project Description. Local land use policies relevant to water resources and Parkway development and implementation are discussed in this section.

### *Madera County General Plan*

The Madera County Plan,<sup>3</sup> sets forth the following goals and policies related to hydrology and water quality (Table 4.9-1).

### *Madera County Municipal Code*

The County of Madera's following ordinances seek to protect and regulate the County's water supply and quality:

- Ordinance 663 Title 18 Chapter 18.67 Development Standards
- Ordinance 663 Title 14 Chapter IV Chapter 14.60 Floodplain Ordinance
- Ordinance 663 Title 18 Zoning Ordinance
- Ordinance 663 Title 14 Chapter I Chapter 14.08 Building Code
- Ordinance 663 Title 14 Chapter I Chapter 14.20 Plumbing Code
- Ordinance 663 Title 14 Chapter I Chapter 14.24 Electrical Code
- Ordinance 663 Title 14 Chapter II Chapter 14.35 Fire Code
- Ordinance 663 Title 13 Chapter I Chapter 13.52 Well Ordinance
- Ordinance 663 Title 13 Chapter I Drinking Water

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<sup>3</sup>Madera County General Policy Document, adopted October 24, 1995, <http://www.madera-county.com/index.php/county-forms/category/46-general-plan-document-materials>, accessed April 21, 2017.

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**TABLE 4.9-1 MADERA COUNTY GENERAL PLAN POLICIES RELEVANT TO HYDROLOGY AND WATER QUALITY**

<b>Policy / Goal Number</b>	<b>Policy / Goal</b>
Policy 3.D.4	The County shall require that the development, operation, and maintenance of on-site disposal systems complies with the requirements and standards of the County Department of Environmental Health.
Policy 3.E.6	Future drainage system discharges shall comply with applicable State and federal pollutant discharge requirements.
Policy 3.E.7	The County shall encourage the use of natural stormwater drainage systems to preserve and enhance natural features.
Policy 4.A.3	The County shall support and participate in the development of the San Joaquin River Parkway.
Policy 5.C.2	The County shall minimize sedimentation and erosion through control of grading, cutting of trees, removal of vegetation, placement of roads and bridges, and use of off-road vehicles. The County shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian habitat.
Policy 5.C.3	The County shall require new development of facilities near rivers, creeks, reservoirs, or substantial aquifer recharge areas to mitigate any potential impacts of release of pollutants in flood waters, flowing river, stream, creek, or reservoir waters.
Policy 5.C.4	The County shall require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities, and shall encourage the urban storm drainage systems and agricultural activities to use BMPs.
Policy 5.C.5.	The County shall approve only wastewater disposal facilities that will not contaminate groundwater or surface water.
Policy 5.C.8	The County shall support the policies of the San Joaquin River Parkway Plan to protect the San Joaquin River as an aquatic habitat and water source.
Policy 5.D.3	Development should be designed in such a manner that pollutants and siltation will not significantly adversely affect the value or function of wetlands.
Policy 5.D.6	The County shall require new private or public developments to preserve and enhance existing native riparian habitat unless public safety concerns require removal of habitat for flood control or other public purposes. In cases where new private or public development results in modification or destruction of riparian habitat for purposes of flood control, the developers shall be responsible for creating new riparian habitats within or near the project area at a ratio of three acres of new habitat for every acre destroyed.
Policy 5.D.7	The County shall support the management of wetland and riparian plant communities for passive recreation, groundwater recharge, nutrient catchment, and wildlife habitats. Such communities shall be restored, where possible.
Policy 5.F.7	The County shall require that development on hillsides be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion.
Policy 5.H.I	The County shall support the preservation and enhancement of natural land forms, natural vegetation, and natural resources as open space. To the extent feasible, the County shall permanently protect open space areas of natural resource value, including wetlands preserves, riparian corridors, woodlands, and floodplains.

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**TABLE 4.9-1 MADERA COUNTY GENERAL PLAN POLICIES RELEVANT TO HYDROLOGY AND WATER QUALITY**

<b>Policy / Goal Number</b>	<b>Policy / Goal</b>
Policy 5.H.2	The County shall require that new development be designed and constructed to preserve the following types of areas and features as open space to the maximum extent feasible: <ul style="list-style-type: none"> <li>▪ High erosion hazard areas;</li> <li>▪ Scenic and trail corridors;</li> <li>▪ Streams and streamside vegetation;</li> <li>▪ Wetlands;</li> <li>▪ Other significant stands of vegetation;</li> <li>▪ Wildlife corridors; and</li> <li>▪ Any areas of special ecological significance.</li> </ul>
Policy 6.A.2	In landslide hazard areas, the County shall prohibit avoidable alteration of land in a manner that could increase the hazard, including concentration of water through drainage, irrigation, or septic systems; removal of vegetative cover; and steepening of slopes and undermining the bases of slopes. Areas of known landslides should be designated for open space uses.
Policy 6.B.3	The County shall restrict uses in designated floodways to those that are tolerant of occasional flooding and do not restrict or alter flow of flood waters. Such uses may include agriculture, outdoor recreation, mineral extraction, and natural resource areas.
Policy 6.B.4	The County shall require that all development within areas subject to 100-year floods be designed and constructed in a manner that will not cause floodwaters to be diverted onto adjacent property or increase flood hazards to other areas.
Policy 6.B.5	The County shall require flood control structures, facilities, and improvements to be designed to conserve resources, incorporate and preserve scenic values, and to incorporate opportunities for recreation, where appropriate.
Policy 6.B.6	The County shall require that flood management programs avoid alteration of waterways and adjacent areas, whenever possible.
Policy 6.E.3	The County shall coordinate emergency preparedness, response, recovery, and mitigation activities with special districts, service agencies, volunteer organizations, cities within the County, surrounding cities and counties, and State and federal agencies.

Source: Madera County General Plan, October 24, 1995.

*Fresno County General Plan*

The Fresno County Plan, sets forth the following goals and policies related to hydrology and water quality (Table 4.9-2).

**TABLE 4.9-2 FRESNO COUNTY GENERAL PLAN POLICIES RELEVANT TO HYDROLOGY AND WATER QUALITY**

<b>Policy/Goal Number</b>	<b>Policy/Goal</b>
Policy HS-C.4	The County shall encourage the performance of appropriate investigations to determine the 100-year water surface elevations for the San Joaquin River, taking into account recent storm events and existing channel conditions, to identify the potential extent and risk of flooding. New development, including public infrastructure projects, shall not be allowed along the river until the risk of flooding at the site has been determined and

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**TABLE 4.9-2 FRESNO COUNTY GENERAL PLAN POLICIES RELEVANT TO HYDROLOGY AND WATER QUALITY**

Policy/Goal Number	Policy/Goal
	appropriate flood risk reduction measures identified.
Policy HS-C.6	The County shall promote flood control measures that maintain natural conditions within the 100-year floodplain of rivers and streams and, to the extent possible, combine flood control, recreation, water quality, and open space functions. Existing irrigation canals shall be used to the extent possible to remove excess stormwater. Retention recharge basins should be located to best utilize natural drainage patterns.
Policy HS-C.7	The County shall continue to participate in the Federal Flood Insurance Program by ensuring compliance with applicable requirements.
Policy HS-C.8	During the building permit review process, the County shall ensure project compliance with applicable FEMA standards pertaining to residential and non-residential development in the floodplain, floodway, or floodway fringe.
Policy HS-C.9	The County shall prohibit the construction of essential facilities in the 100-year floodplain, unless it can be demonstrated that the facility can be safely operated and accessed during flood events.
Policy HS-C.10	The County shall require that all placement of structures and/or flood proofing be done in a manner that will not cause floodwaters to be diverted onto adjacent property, increase flood hazards to other property, or otherwise adversely affect other property.
Policy HS-C.11	The County shall encourage open space uses in all flood hazard areas. Land Conservation contracts and open space/ scenic easements should be made available to property owners.
Policy HS-C.12	The County shall consider dam failure inundation maps of all reservoirs in making land use and related decisions.
Policy HS-C.13	The County shall continue public awareness programs to inform the general public and potentially affected property owners of flood hazards and potential dam failure inundation.

Source: Fresno County General Plan, October 2000.

*Fresno County Municipal Code*

The following ordinances in the County of Fresno Municipal regulate and protect the County’s water supply and quality:

- Ordinance 13-013 Title 15 Chapter 15.60 Article IV Development Standards
- Ordinance 13-013 Title 15 Chapter 15.48 Floodplain Ordinance
- Ordinance 13-013 Title 17 Zoning Ordinance
- Ordinance 13-013 Title 15 Chapter 15.08 Building Code
- Ordinance 13-013 Title 15 Chapter 15.20 Plumbing Code
- Ordinance 13-013 Title 15 Chapter 15.16 Electrical Code
- Ordinance 13-013 Title 15 Chapter 15.10 Fire Code
- Ordinance 13-013 Title 14 Chapter 14.04 Well Ordinance
- Ordinance 13-013 Title 14 Chapter 14.11 Drinking Water

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*City of Fresno General Plan*

The City of Fresno General Plan, sets forth the following goals and policies related to hydrology and water quality (Table 4.9-3).

**TABLE 4.9-3 CITY OF FRESNO GENERAL PLAN POLICIES RELEVANT TO HYDROLOGY AND WATER QUALITY**

<b>Policy/Objective Number</b>	<b>Policy/Objective</b>
Policy POSS-6-b	<p>Support efforts to identify and mitigate cumulative adverse effects on aquatic life from stormwater discharge to the San Joaquin River.</p> <ul style="list-style-type: none"> <li>▪ Avoid discharge of runoff from urban uses to the San Joaquin River or other riparian corridors.</li> <li>▪ Approve development on sites having drainage (directly or indirectly) to the San Joaquin River or other riparian areas only upon a finding that adequate measures for preventing pollution of natural bodies of water from their runoff will be implemented.</li> <li>▪ Periodically monitor water quality and sediments near drainage outfalls to riparian areas. Institute remedial measures promptly if unacceptable levels of contaminant(s) occur.</li> </ul>
Policy PU-5-b	<p>Non-Regional Treatment. Discourage, and when determined appropriate, oppose the use of private wastewater (septic) disposal systems, community wastewater disposal systems, or other nonregional sewage treatment and disposal systems within or adjacent to the Metropolitan Area if these types of wastewater treatment facilities would cause discharges that could result in groundwater degradation..</p>
Objective NS-3	<p>Minimize the risks to property, life, and the environment due to flooding and stormwater runoff hazards.</p>
Policy NS-3-f	<p>Flooding Emergency Response Plans. Work with responsible agencies to update emergency dam failure inundation plans, evacuation plans and other emergency response plans for designated flood-prone areas, including the San Joaquin riverbottom.</p>
Policy NS-3-m	<p>Flood Risk Public Awareness. Continue public awareness programs to inform the general public and potentially affected property owners of flood hazards and potential dam failure inundation. Remind households and businesses located in flood-prone areas of opportunities to purchase flood insurance.</p>
Policy RC-6-e	<p>Protect Aquifer. Oppose urban development in unincorporated areas that are not served by a wastewater treatment/management system capable of preventing the buildup of compounds that would degrade the aquifer.</p>
Policy RC-6-f	<p>Regulate Sewage Disposal Facilities. Oppose development of new sewage disposal facilities either within the Planning Area or upgradient (north and east) of the Planning Area, unless the treatment facilities produce effluent that t:</p> <ul style="list-style-type: none"> <li>▪ Will not degrade the aquifer in the long term;</li> <li>▪ Will not introduce contaminants into surface water that would negatively affect its potential economic use for drinking water;</li> <li>▪ Will not deleteriously affect downstream agricultural and urban uses; and</li> <li>▪ Will not degrade sensitive riparian habitat.</li> </ul>
Policy RC-6-g	<p>Protect Recharge Areas. Continue to protect areas of beneficial natural groundwater recharge by preventing uses that can contaminate soil or groundwater.</p>

Source: City of Fresno General Plan, December 2014.

### *City of Fresno Municipal Code*

The City of Fresno Municipal Code includes the following ordinances aimed at protecting and regulating the City's water supply and quality:

- Ordinance 2013-15 Municipal Code Chapter 12 Article 2 Development Standards
- Ordinance 2013-15 Municipal Code Chapter 11 Article 6 Floodplain Ordinance
- Ordinance 2013-15 Municipal Code Chapter 12 Zoning Ordinance
- Ordinance 2013-15 Municipal Code Chapter 11 Article 1 Section 11-101 Building Code
- Ordinance 2013-15 Municipal Code Chapter 11 Article 1 Section 11-107 Plumbing Code
- Ordinance 2013-15 Municipal Code Chapter 11 Article 1 Section 11-104 Electrical Code
- Ordinance 2013-15 Municipal Code Chapter 10 Article 5 Fire Code
- Ordinance 2013-15 Municipal Code Chapter 6 Article 4 Well Ordinance

#### **4.9.1.2 EXISTING SETTING**

The proposed Plan would consist of a long, linear conservation and public use enhancement throughout the Plan Area, from Friant Dam on the east to the State Route 99 (SR 99) bridge on the west. The hydrologic setting in the Plan Area is dominated by the San Joaquin River and its floodplain, Friant Dam and Millerton Lake Reservoir, and Cottonwood Creek and Little Dry Creek, the primary tributaries that drain into the river below Friant Dam. The San Joaquin River, to the extent of it being within the Plan Area, is incised between 30 and 50 feet into the valley floor through centuries of head cutting and erosive action of the river. As a result, there is a prominent bluff line parallel to the river that widens and narrows as the erosive effects of the river and the soil conditions have dictated.

Friant Dam, which forms Millerton Lake, was constructed between the years of 1939 and 1942. It provides irrigation water for the eastern side of the central and southern San Joaquin Valley and for Kern County. It also provides flood protection for the floodplain below the dam. The dam is normally operated by the U.S. Department of the Interior's Bureau of Reclamation (Bureau), but comes under the direction of the U.S. Army Corps of Engineers during flood operations. Standard operating conditions reserve 170,000 acre feet of storage at the beginning of each flood season, normally in October, for flood control purposes.

The San Joaquin River winds its way from Friant Dam to the SR 99 bridge between the two bluffs in a well-defined channel that can vary during high flows. The river supports a riparian corridor directly adjacent to the river. Other uses in the Plan Area include single- and multi-family residential, a CDFW fish hatchery, two highway bridges, gravel mining operations, farming operations, golf courses, parks, an outdoor education center, and private and public access points to the river. Private access includes camping and picnicking. Existing public uses in the Parkway include Scout Island Outdoor Education Center, Camp Pashayan, Sycamore Island, Jensen River Ranch, Coke Hallowell River Center, Lost Lake Park, and Friant Cove.

The area below the bluffs is within the river's floodplain. Parts of the area have been designated as a 100-year return period floodplain, a 500-year return period floodplain, and as a designated floodway by the Federal Emergency Management Agency (FEMA) Flood Insurance Program. The Central Valley Flood Protection Board (CVFPB) has also delineated a floodway for this reach of the river. The two floodways are not collinear. The CSLC

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asserts jurisdiction for the land between the ordinary high water and ordinary low water marks. The reach of the river also falls within the jurisdiction of the County of Fresno, the County of Madera, and the City of Fresno. The center of the river is the boundary line between the two counties, with Madera County lying north of the river and Fresno County, which includes the City of Fresno, lying south of the river.

The San Joaquin River receives runoff from the lands below the bluff and above the bluff. The Fresno Metropolitan Flood Control District has nine permitted discharges to the river that convey urban runoff to the river. These discharges are not part of the proposed Plan and would not be utilized under the Plan. Lands below the bluff drain to the river through natural drainage patterns.

Most of the existing homes, golf courses, gravel mining operations, farms, and private and public access in the Plan Area have domestic water wells for water supply, and septic systems or self-contained vault toilet restrooms for wastewater disposal. Farming operations adjacent to the river extract water from the river through their riparian or allocated water rights. Friant, a census-designated place within Fresno County, obtains water from Millerton Lake provided by Waterworks District 18. The San Joaquin Fish Hatchery obtains hatchery water from the river.

### 4.9.2 STANDARDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, the proposed Plan would result in significant adverse impacts if it 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 (e.g., the production rate 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 that would result in substantial erosion, siltation, or flooding on or off site.
4. 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.
5. Otherwise substantially degrade water quality.
6. Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary Map, Flood Insurance Rate Map, or other flood hazard delineation map; or place structures that would impede or redirect flood flows within a 100-year flood hazard area.
7. 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.
8. Inundation by seiche, tsunami, or mudflow.

### 4.9.3 IMPACT DISCUSSION

This section analyzes potential impacts resulting from adoption and implementation of the proposed Plan.

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**HYDRO-1                      The proposed Plan would not violate any water quality standards or waste discharge requirements.**

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Implementation of the proposed Plan could have the potential to introduce sources of pollution into the river either directly or through runoff, thereby resulting in violations of water quality standards. Restrooms, camping, and concessionaire activities would generate wastewater discharges that have the potential to violate waste discharge requirements.

Sources of pollution include the following:

- Vehicle fluids: oils, hydraulic fluids, coolant, brake fluid, and fuels
- Trash
- Landscaping materials, fertilizers, pesticides, and herbicides
- Animal waste products
- Food and drink wastes
- Spills of liquids or solids
- Construction materials: cement, concrete, paint, asphalts, pavement, etc.
- Erosion
- Human and animal waste

These sources of pollution could be the result of the construction of planned recreational facilities or the public uses themselves. These sources of pollution generated during construction and the general use of the facilities will be managed to reduce the significant impacts that these sources of pollution could have on the water quality standards or waste discharge requirements. The management of these sources of pollution will occur through the implementation of BMPs identified in the proposed Plan and enforcement of existing applicable regulatory mechanisms and policies of federal, State, and local agencies.

Construction activities associated with the development of facilities, under the proposed Plan would be subject to State of California grading and flood plain regulations, building, plumbing, and electrical codes. Enforcement of these codes and ordinances would ensure that erosion is properly controlled and that constructed features are safe and flood proofed.

Construction activities that would disturb more than one acre are required to obtain a National Pollutant Discharge Elimination System (NPDES) Construction General Permit to manage the discharge of stormwater from a construction site. The Construction General Permit requires development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). Among other mandated items that are included in a SWPPP are features and measures designed to eliminate contact of rainfall and stormwater runoff with sources of pollution that occur on construction sites, including soil erosion as a result of unstabilized soils coming in contact with water and wind. These features and measures are known as stormwater BMPs. Common BMPs to limit pollution in stormwater

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runoff from construction sites include maintaining or creating drainages to convey and direct surface runoff away from bare areas and installing physical barriers, such as berms, silt fencing, waddles, straw bales, and gabions. The required preparation and implementation of the Construction General Permit, including the SWPPP and BMPs, including the BMPs WATER-1 through WATER-6 of the proposed Plan, would reduce project construction impacts on water quality to less-than-significant levels. Therefore, construction impacts associated with water quality standards and waste discharge requirements would be *less than significant*.

Construction projects that would disturb greater than one acre in the Parkway would be held to the requirements of the General Construction Permit, prepare a stormwater management plan, and implement BMPs to control pollution in stormwater runoff through contract documents. Projects smaller than an acre would be required to implement the BMPs in the proposed Plan; therefore, construction impacts for projects associated with water quality standards and waste discharge requirements would be *less than significant*.

Operations and maintenance activities for structures, trails, landscaping, and use areas could result in sources of pollution coming into contact with rainfall, runoff, and operational and flood control flows in the river. These sources of pollution would consist of trash, vehicle fluids, spills, landscaping materials, construction materials, and erosion. Post-construction, runoff from new improvements shall be drained and treated in on-site swales in accordance with policy WATER.11. Implementing BMPs identified in the proposed Plan to prevent sources of pollution from coming into contact with rainfall, runoff or river flows would be part of operations and maintenance of the Parkway. BMPs include soil stabilization after disturbance; implementation of trash management BMPs; inspection of maintenance vehicles for leaks and implementing repairs to stop leaks; spill cleanup as necessary; securing landscape materials from contact with wind erosion, rainfall, and runoff erosion; and removal of potentially polluting materials from floodplain areas when releases from Millerton Lake exceed 8,000 cubic feet per second. In addition, operations and maintenance activities would be subject to the State of California Water Code and the Clean Water Act administered by the Central Valley Regional Water Quality Control Board. These laws and their implementing regulations require that no uses result in impairment of beneficial uses of the SJR. Adherence to these laws and regulations, implementation of BMPs, and use of trained supervisors would result in impacts due to operations and maintenance activities associated with water quality standards and waste discharge requirements that would be *less than significant*.

Uses, such as concessionaire stands and buildings, day use by the public, picnicking, hiking, equestrian riding, boating, swimming, and camping can result in sources of pollution coming into contact with rainfall, runoff, and operational and flood control flows in the river. These sources would consist mainly of solid waste, animal waste, food and drink waste, spills, and vehicle fluids. Solid waste would be collected and contained in bins with closing lids that would be kept closed to contain solid waste and to keep rainwater from coming into contact with trash. Solid waste bins would be emptied on a regular basis by maintenance and operations personnel or by licensed trash haulers contracted to empty the bins. Spills would be cleaned up using standard cleaning materials and the waste would be deposited in trash bins for removal from the site. Liquids from spills would be placed in sealed containers and deposited in trash bins as well. Food and drink waste would be deposited in trash bins. Solid waste bins would be removed from the floodplain during flood events. Use of solid waste bins with closing lids, regular pickup of solid waste by licensed haulers, and implementation of spill cleanup procedures would result in impacts to water quality standards and waste discharge requirements associated with solid waste and spills that are *less than significant*.

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Vehicle parking areas would be periodically inspected for leaks. Offending vehicles would be removed from the area when possible and leaked fluid would be cleaned up using appropriate absorbent materials. Absorbent materials would be placed in sealed containers and disposed of as hazardous waste. Inspection of parking areas and implementation of spill cleanup procedures would result in impacts to water quality standards and waste discharge requirements associated with vehicle leaks and spills that would be *less than significant*.

Animal waste would consist of horse manure on equestrian trails and dog wastes where leashed dogs are allowed. It is not expected to be a significant source of pollution. Trails would be inspected to determine the levels of manure accumulation and degradation. Unusually high levels of accumulation, such as at horse corrals or staging areas would be removed by supervised volunteers and deposited in sealed containers or in compost areas that are outside of the floodplain. Pet waste disposal bags would be provided where dogs are allowed. These maintenance practices would result in impacts to water quality standards and waste discharge requirements associated with animal waste that would be *less than significant*.

Campgrounds are sources of trash and food waste, which could become sources of pollution. Campgrounds would be equipped with trash bins with lids in centralized areas for campers to use for the disposal of trash. Campgrounds would be inspected at regular intervals for trash accumulation by the campground hosts. Organics, which may be food waste, make up approximately 13 percent of the waste from a campground. Campers would be instructed to place food waste in sealed plastic bags and deposit the bags in trash bins. Trash bin areas would be inspected to make sure that the lids are normally down, for loose trash, and for leaks by the campground hosts. Leaks would be cleaned up with appropriate absorbent material, which would be placed in sealed bags and deposited in the trash bin. Routine inspection and clean up at trash bin locations would result in impacts to water quality standards and waste discharge requirements associated with trash collection and storage that are *less than significant*.

Restrooms are sources of trash and human waste, which could become sources of pollution. Restrooms would, in most cases, be vault toilets with hard walls, roofs, and locking doors situated in concrete vaults that are lined to protect the concrete from sulfide attack. The concrete vaults would be pumped out and properly disposed at required intervals to keep the waste contained in the vault to manageable levels. Restrooms would be placed outside of the floodplain or flood-proofed by elevating the buildings above the base flood elevation and protecting the soil surrounding the vaults from erosion due to the velocity of the floodwater. The restrooms would be maintained on a regular basis by operations and maintenance personnel or by contracted personnel. The maintenance will include removal of trash, cleaning of the building, and checking on the waste level to determine the need to have it removed. Restrooms would be constructed to meet State building and plumbing code standards and Central Valley Regional Water Quality Control Board regulations.

Furthermore, several policies under the proposed Plan would ensure that implementation of the proposed Plan would not violate applicable water quality standards or waste discharge requirements. Those policies include:

## HYDROLOGY AND WATER QUALITY

### Vision and Goals

**Goal:**

- **FG.8:** Develop rules, regulations outreach, and management practices to protect public health, safety and protect natural resources.

### Habitat Conservation and Management

**Policies:**

HABITAT.2 Conserve the San Joaquin River as aquatic habitat. Collaborate with wildlife agencies to enhance and protect fisheries in the river and in ponds in the Parkway.

HABITAT.15 Design restoration projects based on site-specific studies of soils, water availability, slopes, hydrology, and other environmental conditions.

HABITAT.38 Implement a low-impact wildlife-friendly landscape maintenance program, and minimize the use of pesticides and herbicides, where possible.

### Floodplain and Water Resource Management

**Goal:**

- Protect the River's water quality through appropriate management of stormwater runoff in the Parkway.

**Policies:**

WATER.9 Minimize impervious surfaces to allow natural percolation and limit runoff.

WATER.10 Incorporate construction best management practices for stormwater quality management, including soil erosion and sedimentation controls and spill prevention and control, into construction specifications and permits.

WATER.11 Incorporate drainage swales and other appropriate post-construction best management practices into the design of Parkway improvements to manage stormwater runoff.

WATER.12 Properly maintain stormwater quality management post-construction controls.

Adherence to building codes and regulations, policies and BMPs of the proposed Plan, and standard maintenance activities would result in *less-than-significant* impacts on water quality standards and waste discharge requirements applicable within the Plan Area.

**HYDROLOGY AND WATER QUALITY**

**Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:**

- Federal Clean Water Act
- State of California Water Code
- City and County grading and drainage ordinances
- City and County building, plumbing, and electrical codes
- City and County Site Plan Review process

**Significance Without Mitigation:** Less than significant.

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**HYDRO-2**            **The proposed Plan would not 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.**

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Uses that could have an impact on groundwater supplies are those that would result in consumptive use of water. These uses would include well water for domestic water for camping, picnic areas, and interpretive/visitor centers, and well water for landscape irrigation water for the Bluff Pointe Golf Center. Consumptive uses from camping, picnicking, and for interpretive/visitor centers would be insignificant, less than 0.02 acre feet per 1,000 visitors per day. The 25-acre Bluff Pointe Golf Center consumes an estimated average of approximately 0.1 acre foot per day in landscape irrigation water during the seven months of the irrigation season, which is similar to the per-acre usage of standard residential uses. The uses occur directly adjacent to the San Joaquin River, which recharges the groundwater aquifer. The combination of the low use of water and the direct recharge available from the river would result in *less-than-significant* impacts on regional groundwater supplies associated with planned uses.

The proposed Plan would result in impervious surfaces, such as roads, parking lots, and building roofs. These impervious surfaces would reduce the overall land available to infiltrate groundwater during rainfall events. These surfaces would, in most cases, drain onto permeable surfaces, such as roadside swales or undeveloped areas, where the runoff can infiltrate into the groundwater. Where larger impervious areas cannot be directly drained into field areas or drainage swales, they would be drained into pipeline systems that discharge into earthen retention basins that would provide infiltration of runoff into the groundwater aquifer. Planned facilities would not reduce the ability of the San Joaquin River to function as a groundwater recharge feature, with the implementation of policy WATER.9 relating to Floodplain and Water Resources Management, along with implementation of the BMPs WATER-1 through WATER-6 of the proposed Plan, which would minimize impervious surfaces to allow natural percolation and limit runoff. The directing of stormwater to pervious areas, where runoff can infiltrate into the groundwater table, and the continued ability of the San Joaquin River to perform its recharge function, would result in *less-than-significant* impacts on groundwater recharge associated with planned or envisioned uses.

**Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:**

- Federal Clean Water Act
- State of California Water Code
- City and County grading and drainage ordinances

**Significance Without Mitigation:** Less than significant.

## HYDROLOGY AND WATER QUALITY

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**HYDRO-3**            **The proposed Plan would not 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, siltation, or flooding on- or off-site.**

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Uses that could substantially alter the existing drainage pattern of the Plan Area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion, siltation, or flooding on or off site are parking areas, restrooms, concessionaire buildings, interpretive/visitor center, the Bluff Pointe Golf Center, and conservation education buildings. Primarily, these uses would alter existing local drainage patterns during grading of the sites to construct the facility or through displacement of floodwater by the constructed facility. Hiking and equestrian trails would alter drainage patterns by intercepting sheet flow and possibly concentrating it before it is directed off of the trail. Setbacks and buffers in accordance with the proposed Plan will ensure that the river and creek courses are not altered by future Parkway projects. All of the other uses may require minor grading at the project site, but the limited nature of the grading would not redirect drainage.

Grading plans are required for the movement of dirt to develop projects. Grading plans must be prepared by a licensed civil engineer in the State of California who is trained in developing grading plans that do not block drainage or cause flooding. For State projects, the Office of the State Architect must review and approve grading plans. For other projects, the plans are reviewed by the City and Counties for conformance with the grading ordinances before a plan is approved. The engineer of record must review the grading and certify that it complies with the approved plan. Adherence to the grading requirements would result in *less-than-significant* impacts resulting from the altering of existing drainage patterns of the site or area, including through the alteration of a stream or river course, in a manner that would result in substantial erosion, siltation, or flooding on- or off-site in associated with planned or envisioned uses.

Trails would be paved, or constructed with materials such as decomposed granite or native soil. They would be constructed on relatively flat terrain and on hillsides. Trails would be constructed in accordance with the design guidelines in the proposed Plan for Parkway public access and recreation improvements, California State Parks design guidelines and trail classification system, and the project operator's design guidelines, as applicable, as indicated by policy ACCESS.28 under the Public Access and Recreation section of the proposed Plan.

Trails would be inspected on a regular basis to ensure that erosion would be properly controlled by the trail construction and maintenance techniques. Erosion problems would be corrected by trail maintenance staff, as well as crews composed of volunteer organizations working under direct supervision of a person trained in trail construction and maintenance.

Several policies under the proposed Plan would also minimize, to the extent feasible, construction activities and/or facilities that would result in erosion, siltation, or flooding. Such policies would include:

### Floodplain and Water Resource Management

#### Goal:

- Protect the river's water quality through appropriate management of stormwater runoff in the Parkway.

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## HYDROLOGY AND WATER QUALITY

### Policies:

- WATER.3 Ensure Parkway facilities do not increase riverbank erosion. Design and manage Parkway facilities and improvements in recognition of natural fluvial processes including erosion and meanders. Remediate riverbank erosion as necessary to protect buildings and infrastructure.
- WATER.9 Minimize impervious surfaces to allow natural percolation and limit runoff.
- WATER.10 Incorporate construction best management practices for stormwater quality management, including soil erosion and sedimentation controls and spill prevention and control, into construction specifications and permits.
- WATER.11 Incorporate drainage swales and other appropriate post-construction best management practices into the design of Parkway improvements to manage stormwater runoff.
- WATER.12 Properly maintain stormwater quality management post-construction controls.

Adherence to recognized trail design standards, periodic trail inspections, BMPs WATER-1 through WATER-6 of the proposed Plan, and proper maintenance of trails, along with policies of the proposed Plan, would result in *less-than-significant* impacts from the altering of existing drainage pattern of the site or area, including through the alteration of a stream or river course, in a manner that would result in substantial erosion, siltation, or flooding on or off site in areas associated with planned or envisioned uses.

### Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:

- California State Parks Design Guidelines

**Significance Without Mitigation:** Less than significant.

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**HYDRO-4** The proposed Plan would not 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.

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Uses that could result in runoff quantities that would necessitate a storm drainage system include paved parking lots, campgrounds, and interpretive/visitor centers. All other uses would not generate sufficient runoff to require storm drainage collection or disposal facilities. The Plan Area is not served by a municipal stormwater system; each future project would provide for its own drainage and runoff water quality management on-site in accordance with the policies and BMPs of the proposed plan.

Existing parking and campgrounds have sufficient storm drainage facilities to accommodate runoff collection and disposal for the existing development. To meet the drainage needs of planned future Parkway facilities, new construction or expansion of existing storm drain collection and disposal facilities would be required to meet State design standards. State requirements and City and County grading ordinances require that new construction or expansion of existing facilities have adequate drainage collection, treatment, and disposal that meet the design requirements of the State. Grading plans are reviewed and approved by City and County staff to ensure adherence

## HYDROLOGY AND WATER QUALITY

to the grading ordinances and design standards. Professional engineers are required to prepare grading plans, including the design of the storm drainage collection, treatment, and disposal systems. Finally, the design professional is required to certify that planned storm drainage collection, treatment, and disposal systems are constructed in accordance with the construction plans, once construction is completed. Adherence to the grading requirements, plan reviews and checks, and certification of the installed facilities would result in impacts to existing or planned stormwater drainage systems that would be *less than significant*.

Additional or new sources of pollution resulting from the planned uses include the following:

- Vehicle fluids: oils, hydraulic fluids, coolant, brake fluid, and fuels
- Trash
- Landscaping materials, fertilizers, pesticides, and herbicides
- Animal waste products
- Food and drink wastes
- Spills of liquids or solids
- Construction materials: cement, concrete, paint, asphalts, pavement, etc.
- Erosion
- Human and animal waste

These sources of pollution could be the result of the construction of the planned facilities or of the public uses themselves. These sources of pollution generated during construction, and during the general use of the facilities, would be managed to reduce the potential impacts to levels that would be considered *less than significant*. The management of these sources of pollution would occur through the implementation of the BMPs WATER-1 through WATER-6 of the proposed Plan, and enforcement of existing regulatory mechanisms and policies of federal, State, and local agencies.

As discussed in detail in the HYDRO-1 impact discussion in this chapter, construction activities, operations, and maintenance of facilities within the Plan Area, as a result of implementation of the proposed Plan, would be subject to all applicable State and federal laws regulating stormwater runoff and water quality. Additionally, several policies under the proposed Plan would further minimize and/or reduce water runoff related to the construction, operations, and/or maintenance within the Plan Area, such as:

### Vision and Goals

**Goal:**

- **FG.8:** Develop rules, regulations outreach, and management practices to protect public health, safety and protect natural resources.

### Floodplain and Water Resource Management

**Goal:**

- Protect the River's water quality through appropriate management of stormwater runoff in the Parkway.

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## HYDROLOGY AND WATER QUALITY

### Policies:

- WATER.9 Minimize impervious surfaces to allow natural percolation and limit runoff.
- WATER.10 Incorporate construction best management practices for stormwater quality management, including soil erosion and sedimentation controls and spill prevention and control, into construction specifications and permits.
- WATER.11 Incorporate drainage swales and other appropriate post-construction best management practices into the design of Parkway improvements to manage stormwater runoff.
- WATER.12 Properly maintain stormwater quality management post-construction controls.

### Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:

- Federal Clean Water Act
- State of California Water Code

**Significance Without Mitigation:** Less than significant.

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### HYDRO-5 The proposed Plan would not otherwise substantially degrade water quality.

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Implementation of the proposed Plan could result in the degradation of water quality through the introduction of sediments, nutrients, and other sources of pollution into the San Joaquin River or into the groundwater from sources such as vehicles, solid waste, landscaping materials, food and drink waste, and other liquid or solid spills.

Construction activities, operations, and maintenance of facilities under implementation of the proposed Plan could also introduce sources of pollution, such as animal waste, vehicle fluids, waste typical of campsites and campgrounds, and restrooms, as further discussed in detail in the HYDRO-1 impact analysis in this chapter; however, several policies under the proposed Plan would reduce impacts that could degrade water quality, such as:

## Floodplain and Water Resource Management

### Goal:

- Protect the River's water quality through appropriate management of stormwater runoff in the Parkway.

### Policies:

- WATER.4 Design and site Parkway structures and amenities to ensure that such features do not obstruct flood flows, do not create a public safety hazard, or result in a substantial increase in off-site flows or water surface elevations. For permanent above-grade structures the minimum level of design flood protection shall be the adopted 100-year flood event, or as regulated by State and federal agencies. Design, place, and fasten picnic tables, litter containers, interpretive displays, and vault toilets to allow flows through or around them and minimize their becoming dislodged during flood

## HYDROLOGY AND WATER QUALITY

events. Fences shall be sized, placed, and securely anchored to minimize the potential to create obstructions during high flows.

WATER.7 Install vault toilets and septic systems only in areas where community wastewater treatment is not available and feasible; design, install, and operate such systems in accordance with all applicable State and local laws and regulations.

WATER.8 Avoid, minimize, and ensure pollution prevention and compliance in the use of herbicides.

WATER.9 Minimize impervious surfaces to allow natural percolation and limit runoff.

WATER.10 Incorporate construction best management practices for stormwater quality management, including soil erosion and sedimentation controls and spill prevention and control, into construction specifications and permits.

WATER.11 Incorporate drainage swales and other appropriate post-construction best management practices into the design of Parkway improvements to manage stormwater runoff.

WATER.12 Properly maintain stormwater quality management post-construction controls.

Compliance with the above policies and the BMPs WATER-1 through WATER-6 of the proposed Plan, along with applicable local, State, and federal regulations, would result in *less-than-significant* impacts with regards to the potential of degradation of water quality, as a result of implementation of the proposed Plan.

### **Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:**

- Federal Clean Water Act
- State of California Water Code

**Significance Without Mitigation:** Less than significant.

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**HYDRO-6**            **The proposed Plan would result in a less-than-significant impact with respect to the placement of housing or structures, which would impede or redirect flood flows within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary Map, or Flood Insurance Rate Map, or other flood hazard delineation map.**

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FEMA has mapped the floodplain and designated floodway for the 100-year flood event in the San Joaquin River. The floodplain and floodway are delineated on the FEMA Flood Insurance Rate Map for the San Joaquin River. The CVFPB has also mapped the regulatory floodway for the San Joaquin River. The FEMA-designated floodway and the CVFPG regulated floodway are not collinear.

Parkway development, while partially occurring within the FEMA floodplain and, in some cases, within the FEMA designated floodway or the CVFPB regulated floodway of the San Joaquin River, would not place trails or structures within the floodplain and floodway that would impede or redirect flood flows. Where possible, new above-ground structures, such as vault toilet restrooms and entrance stations, would be located or elevated above

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**HYDROLOGY AND WATER QUALITY**

the 100-year floodplain and outside the designated floodways. New improvements and structures within the regulated floodplain would be required to be reviewed by the Office of the State Architect or the City or County Floodplain Administrator and approved prior to construction. The review by the floodplain managers ensures that proposed improvements within the floodplain do not have significant impacts on the floodplain or upstream or downstream flooding. Planned projects that could place structures, including trails, within the FEMA floodplain or regulated floodways include, but are not limited to, Lost Lake Park, Ball Ranch, Owl Hollow, Gibson, River West Madera, River West Fresno, Sycamore Island, Scout Island, Milburn Unit, Bluff Pointe Golf Center, Riverbottom Park, Schneider, and Camp Pashayan.

Development with a FEMA floodplain is discouraged, but not prohibited, as long as the structure is constructed to meet federal regulations, State regulations, and local floodplain ordinances. Non-habitable structures may be flood-proofed by anchoring the structure against buoyancy and the force of the floodwater, providing flood equalization openings, and water proofing all building materials and equipment below the base flood elevation. Non-structure improvements, such as picnic tables, trash bins, seating areas, boat docks, observation platforms, and bridges must be anchored to counteract buoyancy and the force of the water against the improvement. Both structures and non-structures must be protected from erosion and impacts from floating debris. Structures within the floodplain may not displace floodwater, which requires that a floodplain analysis be conducted to demonstrate that the structure or any fill used to elevate the structure does not displace floodwater. Displacement is usually mitigated by removing enough dirt or other pre-existing condition in the vicinity of the structure to compensate for the volume of the structure or fill.

Development within a FEMA-designated floodway is prohibited unless a floodplain modeling study shows that the development causes no change in the floodway water surface profile.

Development with the CVFPB regulatory floodway is roughly equivalent to development within a FEMA floodplain. The process requires that the applicant obtain an encroachment permit from the CVFPB. The permit application package includes a location map of the proposed project, construction plans, and an encroachment permit application form. The application package would be reviewed by a CVFPB staff member, who would issue an encroachment permit containing the conditions of approval for the proposed project. As such, development review would ensure that impacts to the floodway would be *less than significant*.

The impacts to the floodplain resulting from existing structures have already been included in the floodplain maps for the San Joaquin River, or by the permit processes discussed above. Additionally, the following policies under the proposed Plan would ensure that flood flows are not obstructed:

## **Floodplain and Water Resource Management**

### **Goals:**

- Develop the Parkway in a manner that will not interfere with the River's floodwater conveyance capacity.
- Protect the River's water quality through appropriate management of stormwater runoff in the Parkway.

## HYDROLOGY AND WATER QUALITY

### Policies:

- WATER.1 Design Parkway bridge crossings to minimize impacts on the natural environment, be pleasing aesthetically, meet safety requirements for cyclists and other users, and to withstand and pass flood flows, as determined by regulatory agencies.
- WATER.2 Do not construct levees (elevated flood protection structures) in the Parkway.
- WATER.4 Design and site Parkway structures and amenities to ensure that such features do not obstruct flood flows, do not create a public safety hazard, or result in a substantial increase in off-site flows or water surface elevations. For permanent above-grade structures the minimum level of design flood protection shall be the adopted 100-year flood event, or as regulated by State and federal agencies. a. Design, place, and fasten picnic tables, litter containers, interpretive displays, and vault toilets to allow flows through or around them and minimize their becoming dislodged during flood events. b. Fences shall be sized, placed, and securely anchored to minimize the potential to create obstructions during high flows.
- WATER.7 Install vault toilets and septic systems only in areas where community wastewater treatment is not available and feasible; design, install, and operate such systems in accordance with all applicable State and local laws and regulations.
- WATER.10 Incorporate construction best management practices for stormwater quality management, including soil erosion and sedimentation controls and spill prevention and control, into construction specifications and permits.
- WATER.11 Incorporate drainage swales and other appropriate post-construction best management practices into the design of Parkway improvements to manage stormwater runoff.
- WATER.12 Properly maintain stormwater quality management post-construction controls.

Avoidance where possible and adherence to federal and State regulations would result in impacts from trails or structures that would impede or redirect flood flows within the San Joaquin River floodplain that are *less than significant*.

### Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:

- Federal Floodplain Regulations
- State of California Floodplain Regulations

**Significance Without Mitigation:** Less than significant.

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HYDRO-7 The proposed Plan would 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.

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## HYDROLOGY AND WATER QUALITY

The Plan Area is directly below Friant Dam and Millerton Reservoir. The dam was constructed by the U.S. Bureau of Reclamation (Bureau) in 1942 to enhance the irrigation water supplies for the eastern half of the central and southern San Joaquin Valley and Kern County. Millerton Reservoir has a storage capacity of 520,500 acre feet of storage at the normal water surface elevation. The maximum storage volume is 611,500 acre feet at spillway capacity. The dam and lake also provide flood protection for the river's floodplain below the dam and approximately 170,000 acre feet of storage are reserved each year during flood season to provide that protection. The watershed of the San Joaquin River has an estimated average runoff volume of 1,790,000 acre feet.

Friant Dam is a concrete gravity dam. The typical failure mode for concrete dams is overtopping failure or structural failure of the dam due to excessive water pressure or a seismic event.

The San Joaquin River watershed upstream of Friant Dam is highly developed with respect to the utilization of water resources. Many hydroelectric dams are located on the San Joaquin River. The majority of these dams are operated by the Southern California Edison Company (SCE); however, Pacific Gas & Electric Company (PG&E) operates dams on the river, as well. As a consequence, the river's watershed upstream of the dam is highly regulated and monitored by both SCE and PG&E, as well as by the Bureau as part of their operation of Friant Dam. This network of water users from the watershed provides a highly coordinated early warning system for developing conditions in the watershed that could contribute to excessive river flows, potentially overtopping Friant Dam.

The Bureau also conducts periodic seepage and settlement checks on the dam to ensure that the dam is not subject to failure due to excessive water pressure or loss of foundation integrity.

Seismic damage to the dam has a low probability of occurring. There are no known active faults in the direct vicinity of the dam. Horizontal seismic accelerations at the dam are predicted to be 0.13 g for the 2,500-year return period and 0.17 g for the 5,000-year return period.<sup>4</sup>

Potential failure of Friant Dam would not be a sudden rupture of the dam, but rather due to overtopping, which is a comparatively drawn-out event that can be predicted days in advance. The early prediction is possible because of the time it takes for the runoff from the watershed to reach the dam, the number of dams and monitoring points upstream of Friant Dam, the over 70 years of experience with the watershed, and the flood storage capacity in Millerton Lake. In the event of a flood emergency within the Plan Area, notification would be provided via local news media outlets, internet, and/or social networks. The notification would warn users to evacuate the floodplain. Finally, County offices of emergency services would activate emergency procedures to evacuate the floodplain.

The Department of Homeland Security has decided that maximum inundation levels and times from dam failure to the maximum inundation levels are restricted information and cannot be made public. Therefore, it is not possible to present the depths of inundation and the time to peak inundation that would occur if Friant Dam were to fail. However, given the amount of water involved and past experience from flood events on the river, it is probable that maximum inundation levels due to dam failure would be much greater than those mapped for the

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<sup>4</sup> Bureau of Reclamation Mid-Pacific Region and California Department of Water Resources, Upper San Joaquin River Basin Storage Investigation, Friant Dam Enlargement, 2003.

## HYDROLOGY AND WATER QUALITY

100-year event and would threaten life, and flood wave velocities and force would be significant. Significant damage to structures is highly probable and unavoidable in the event of the failure of the dam as structures are not portable and cannot be moved out of the dam failure inundation area.

Several policies and goals within the proposed Plan also seek to enhance and improve the safety for visitors of the Parkway. Such policies include:

### Vision and Goals

#### Goal:

- **FG.8:** Develop rules, regulations outreach, and management practices to protect public health, safety and protect natural resources.

### Floodplain and Water Resource Management

#### Policies:

WATER.5 Collaborate with emergency planning and response agencies to develop and implement an emergency flood warning alert and evacuation procedures for Parkway visitors.

### Operations, Management, and Implementation

#### Policies:

OPER.15 Coordinate in the development and implementation of a public safety operational plan for the Parkway with all affected State and local law enforcement agencies that addresses, but is not limited to, emergency response planning, coordination with public safety and response agencies, park closures due to high flows and other hazards.

#### Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:

- N/A

**Significance Without Mitigation:** Significant and unavoidable.

Loss of life in the Parkway can be limited because of the lead times available, through the ability of the SJRC to restrict access to the use areas, and through the County offices of emergency services to notify and evacuate the public prior to the pending failure. The potential impact of the proposed Project on loss of life due to dam failure would be *less than significant*.

The proposed Project includes a number of small structures, such as vault toilet restrooms and entrance stations, and a number of larger structures, such as visitor centers and bridges assumed to be located within the dam failure inundation area. Development of structures within the river's floodplain could adversely increase structure loss or damage due to dam failure, and impacts would be significant and unavoidable.

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## HYDROLOGY AND WATER QUALITY

**Impact HYDRO-7:** The proposed Plan would 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

**Mitigation Measure HYDRO-7:** The proposed Project would result in significant and unavoidable risk of exposing structures to significant risk of loss involving flooding as a result of the failure of Friant Dam.

**Significance With Mitigation:** Significant and unavoidable.

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### HYDRO-8                      The proposed Project would result in less than significant adverse effects related to inundation by seiche, tsunami, or mudflow.

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Seiche is the oscillation of an enclosed water body, such as a lake or bay, that results from strong winds acting on the lake or bay. Seiche action can dramatically change the elevation of a water surface and cause flooding of areas adjacent to the lake or bay shore.

Tsunami is defined by the National Oceanic and Atmospheric Administration as a giant wave caused by an earthquake or volcanic eruptions under the ocean. Tsunami waves are highly destructive to coastal areas in the tsunami's path.

Mudflows are large flows of rock, dirt, and suspended sediments mobilized by flowing water. Mudflows can develop quickly on saturated hillsides and can cause severe damage to structures and even loss of life.

The Plan Area is located in or near the river bottom of the San Joaquin River. Planned future projects would not be subject to tsunami, as the area is too far from the ocean, and they would not be subject to seiche as the river is not an enclosed water body and does not have sufficient width to allow the wind to develop a significant oscillation of the river surface.

Any future project under the proposed Plan which could be at or near the top or toe of the bluffs of the river, could be vulnerable to mudflows originating on the bluffs. Mudslides occur through the mobilization of saturated soils on steep hillsides. Generally the source of water is prolonged rainfall. However, for the river bluffs in some locations, the greater risk could be from high flows in the river eroding or undercutting the bluff face to create a slide.

Setbacks of improvements from the top-of-slope of the bluffs are required for stability and safety. Sites at risk of instability would be avoided. Reports prepared by professional engineers and/or geologists for specific future projects would evaluate the condition of the associated project site(s), and would determine whether it can be made stable and, if so, how. As a result, impacts from mudflows would be less than significant.

#### **Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:**

- California Building Code (Part 2 CCR)
- City and County Grading Ordinances
- City and County General Plan Policies

## HYDROLOGY AND WATER QUALITY

**Significance Without Mitigation:** Less than significant.

### 4.9.4 CUMULATIVE IMPACTS

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HYDRO-9	The proposed Plan, in combination with past, present, and reasonably foreseeable development, would result in less than significant cumulative impacts with respect to hydrology and water quality.
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The proposed Project would not result in cumulative impacts in water quality that exceed those discussed in HYDRO-5, or result in cumulative impacts on hydrology greater than those discussed in HYDRO-6 and HYDRO-7. The SJRMP is a long-term document that considers the full range of realistic and/or feasible uses and support facilities that can be expected for development of the Parkway. The lands owned by the SJRC are, by their nature, held in trust to conserve and provide for responsible public access to the lands. Even if other future projects contributed cumulatively to water quality and hydrology impacts, the Parkway contribution to these impacts would be minor. Additionally, this EIR was drafted using a programmatic approach, and does not reflect specific projects that could occur as a result of implementation of the proposed Plan. As such, subsequent projects under the proposed Plan would be subject to further CEQA review for a specific project.

**Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:**

- Federal Clean Water Act
- State of California Water Code
- City and County grading and drainage ordinances
- City and County building, plumbing, and electrical codes
- City and County Site Plan Review process

**Significance Without Mitigation:** Less than significant.