Section 3.9
Hydrology and Water Quality

3.9.1 Introduction

This section describes the geographic and regulatory setting for hydrology and water quality, discusses impacts that would result from the *2020 LA River Master Plan* and its elements, and determines the significance of impacts. Where needed, this section identifies mitigation measures that would reduce or avoid any significant impacts, when feasible.

The analysis in this section includes impact determinations under CEQA for the *2020 LA River Master Plan* that are applicable to all 18 jurisdictions in the study area, including the County and non-County jurisdictions (17 cities). Except for significant and unavoidable impacts, all identified significant environmental effects of the proposed *2020 LA River Master Plan* can be avoided or reduced to a less-than-significant level if the mitigation measures identified in this PEIR are implemented. These mitigation measures will be implemented for subsequent projects that are carried out by the County. Because some later activities under the *2020 LA River Master Plan* would not be carried out by the County, the County cannot enforce or guarantee that the mitigation measures would be incorporated. Therefore, where this PEIR concludes a less-than-significant impact for later activities carried out by the County, the impact would be significant and unavoidable when these activities are not carried out by the County.

3.9.2 Setting

3.9.2.1 Geographic

Regional Setting

Surface Waters

As shown on Figure 2-1, the LA River Watershed encompasses 834 square miles. Approximately 60 percent of the watershed is developed, with a variety of land uses within the watershed, and approximately 324 square miles of the watershed (roughly 40 percent) is covered by forest or open space. Headwaters of the LA River originate in the Santa Monica, Santa Susana, and San Gabriel Mountains (Los Angeles Regional Water Board 2018). Hydrologic inputs to the LA River include wet-weather runoff originating in the mountains and flatlands, and dry-weather inputs from incidental dry-weather urban runoff, groundwater upwelling in the soft-bottom reaches, and effluent discharge from the three water reclamation plants in the watershed (Geosyntec and Olin 2018). Tributary channels convey runoff to the main LA River channel, with flows regulated by large-volume flood management facilities in the mountains and foothills, such as Big Tujunga, Devil's Gate, Eaton Wash, Pacoima, and Santa Anita Dams, and dams in the flatlands, such as Hansen, Sepulveda, and Whittier Narrows. Spreading grounds, such as the Branford, Buena Vista, Dominguez Gap, Eaton Wash, Eaton Basin, Hansen, Lopez, Pacoima, Peck Basin, Rio Hondo, Santa Anita, Sawpit, and Tujunga Spreading

Grounds, are designed to infiltrate water diverted from the channels into the underlying groundwater aquifers.

Major tributaries to the LA River in the San Fernando Valley are Bell Creek, Browns Canyon Wash, Aliso Canyon Wash, Caballero Creek, Encino Creek, Pacoima Wash and Tujunga Wash (both drain portions of the Angeles National Forest in the San Gabriel Mountains), and Burbank Western Channel and Verdugo Wash (both drain the Verdugo Mountains). Most of the river is lined with concrete due to major flood events that occurred in the first half of the 20th century. However, there are sections of the river with a soft bottom, including in the San Fernando Valley at the Sepulveda Flood Control Basin and the section of the river running through the Glendale "Narrows." At the eastern end of the San Fernando Valley, the river orientation turns south around the Hollywood Hills at Griffith Park. The river in this stretch has concrete-lined or rip-rap sides. In the river's stretch from the Burbank Western outlet to about 2,000 feet upstream of the Arroyo Seco outlet, there is a high-water table with a rocky, unlined bottom, allowing natural springs to seep into the river (Los Angeles Regional Water Board 2018).

Continuing south toward Long Beach, the LA River is contained in a concrete-lined channel. Major tributaries in this stretch of the river are Arroyo Seco (which drains the western areas of the San Gabriel Valley, and portions of the Angeles National Forest and San Gabriel Mountains above them, and Highland Park), Rio Hondo (which drains the central areas of the San Gabriel Valley and the Angeles National Forest and San Gabriel Mountains above them), and Compton Creek. Most of the water in the Rio Hondo is used for groundwater recharge during low to moderate storms and dry-weather seasons. However, the Rio Hondo hydraulically connects the LA River to the San Gabriel River through the Whittier Narrows Reservoir. During larger flood events, flows from the San Gabriel River are often directed into the LA River (Los Angeles Regional Water Board 2018) by United States Army Corps of Engineers (USACE) operations.

At Long Beach, the LA River tidal estuary begins and contains approximately 3 miles of the lower LA River before joining the Queensway Bay. The channel in this reach has a soft bottom with concrete and/or rip-rap-lined sides. The LA River Watershed also includes a number of lakes such as Belvedere Park, Hollenbeck Park, Lincoln Park, and Echo Park Lakes as well as Lake Calabasas (Los Angeles Regional Water Board 2018).

In addition to the major tributaries listed above, storm drains directly outfall to the LA River. Most stormwater outfalls are relatively small (less than 4 to 5 feet in diameter) and are local municipal drains, California Department of Transportation (Caltrans) drains, or private drains, with a small portion of USACE and Los Angeles County Flood Control District (LACFCD) outfalls.

Groundwater

The project study area is within or overlaps three main groundwater basins: the West Coast Basin within the Coastal Plain of Los Angeles (West Coast Basin), Central Basin within the Coastal Plain of Los Angeles (Central Basin), and San Fernando Valley Basin. All are designated as very low-priority groundwater basins based on the Sustainable Groundwater Management Act (SGMA) basin prioritization (DWR 2019). Sources of water supply in Los Angeles County include groundwater.

The West Coast Basin covers 142 square miles. Recharge of the basin is mainly attributed to the injection of water at the West Coast Basin Barrier Project and Dominguez Gap Barrier Project, with limited underflow from the Central Basin through and over the Newport-Inglewood fault zone. Seawater intrusion occurs in some aquifers that are exposed to the ocean offshore, but is mainly

controlled by the operation of the West Coast Basin Barrier Project and Dominguez Gap Barrier Project by Public Works. Small amounts of groundwater recharge occur from infiltration of surface inflow from the LA and San Gabriel Rivers into the uppermost aquifers, as well as surface infiltration of irrigation and industrial waters, and other applied surface waters. Generally, key groundwater monitoring well levels in the in the West Coast Basin are stable, and trending upward (WRD 2020). Annual overdraft occurs regularly as groundwater extractions typically exceed natural groundwater replenishment. Water quality concerns are related to high total dissolved solids along the Pacific Ocean coast due to seawater intrusion. Several groundwater treatment facilities operate to reduce salinity of groundwater in the basin. To prevent seawater intrusion, a seawater barrier was constructed. A seawater barrier is a series of injection wells between the ocean and the groundwater aquifer. These wells inject water along the barrier to ensure that the water level near the ocean stays high enough to keep the seawater from seeping into the aquifer. To prevent seawater intrusion, purchased and predominantly recycled water has been used for the groundwater injection program (DWR 2004a, 2019). LACFCD owns, operates, and maintains the West Coast Basin Seawater Barrier and the Dominguez Gap Barrier (West Basin MWD 2020).

The Central Basin covers 277 square miles. The Central Basin is divided into forebay and pressure areas: the Los Angeles forebay, Montebello forebay, and Central Basin pressure area. Groundwater recharge includes infiltration of rainfall, runoff, and applied water, as well as the injection of water at the Alamitos Barrier Project. The Montebello forebay is the most important area of recharge in the basin and includes artificial recharge, while development restricts percolation into the Los Angeles forebay area. The groundwater table is declining. Saltwater intrusion is mainly controlled by the operation of the Alamitos Barrier Project by Public Works (DWR 2004b, 2019).

The San Fernando Valley Basin covers 226 square miles. Several geologic structures disturb the flow of groundwater through the basin. Recharge includes infiltration of rainfall and runoff, particularly in the eastern portion of the basin, as well as spreading of imported water and runoff in the Pacoima, Tujunga, Lopez, Branford, and Hansen Spreading Grounds. Previously, groundwater levels in the basin were relatively stable. However, during recent years groundwater levels have undergone a general decline due to decrease in natural recharge caused by increased urbanization and runoff leaving the basin, a decrease in stormwater infiltration and artificial recharge, and continued groundwater extractions. Groundwater quality is impaired with volatile organic compounds such as trichloroethylene, perchloroethylene, petroleum compounds, chloroform, nitrate, sulfate, and heavy metals. Trichloroethylene, perchloroethylene, and nitrate contamination occurs in the eastern part of the basin and elevated sulfate concentration occurs in the western part of the basin (DWR 2004c, 2019).

Water Quality

The *Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) specifies beneficial uses that apply to waterbodies with potential to be affected by the Project as shown in Table 3.9-1 (Los Angeles Regional Water Board 2014). The Clean Water Act (CWA) Section 303(d) List of Water Quality–Limited Segments Requiring Total Maximum Daily Loads (TMDLs) (303(d)-list) listed impairments for the LA River are shown in Table 3.9-2 and are based on the State Water Resources Control Board's (SWRCB) *2014/2016 California Integrated Report*. For purposes of this discussion, the 51 miles of the LA River are classified into six hydrological "reaches" by the SWRCB based on the location of tributary inputs to the mainstem of the LA River and to define where water quality impairments are within the LA River system.

Table 3.9-1. Beneficial Uses of Waterbodies with Potential to Be Affected by the Project

Waterbody	Designated Beneficial Uses
LA River Estuary (ends at Willow St.)	IND, NAV, COMM, EST, MAR, RARE, MIRG, SPWN, SHELL, WET, REC1, REC2
LA River Reach 1 (Estuary to Carson St.)	MUNp*, INDp, PROCp, GWR, WARM, MAR, WILD, RARE, MIGRp, SPWNp, SHELLp; REC1^{s}; REC2 ^{av}
LA River Reach 2 (Carson St. to Figueroa St.)	MUNp*, INDp, GWR, WARM, WILD^{p}, REC1^{s}, REC2 ^{av}
LA River Reach 3 (Figueroa St. to Riverside Dr.)	MUNp*, INDp, GWR, WARM, WILD, WET, REC1, REC2 ^{av}
LA River Reach 4 (Riverside Dr. to Sepulveda Dam)	MUNp*, INDp, GWR, WARM, WILD, WET, REC1, REC2 ^{av}
LA River Reach 5 (Sepulveda Dam to Balboa Blvd.)	MUNp*, INDp, GWR, WARM, WILD, WET, REC1, REC2 ^{av}
LA River Reach 6 (above Balboa Blvd.)	MUNp*, INDp, GWR, WARM, WILD, WET, REC1, REC2 ^{av}

Source: Los Angeles Regional Water Board 2014

Key:

COMM: Commercial and Sport Fishing
IND: Industrial Service Supply
MIGR: Migration of Aquatic Organisms
NAV: Navigation
SHELL: Shellfish Harvesting
WET: Wetland Habitat
WILD: Wildlife Habitat
EST: Estuarine Habitat
MIGR: Fish Migration
MAR: Marine Habitat
MUN: Municipal and Domestic Supply
RARE: Rare, Threatened, or Endangered Species
SPWN: Spawning, Reproduction, and/or Early Development
REC1: Water Contact Recreation
REC2: Non-contact Water Recreation

* Designated under SWRCB Resolution No. 88-63 and Resolution No. 89-03. Some designations may be considered for exemption at a later date.

p: Potential beneficial use

s: Access prohibited by Public Works

av: The High Flow Suspension applies to water contact recreational activities associated with the swimmable goal as expressed in the CWA and regulated under the REC-1 and REC-2 uses, and the associated bacteriological objectives. Water quality objectives set to protect other recreational uses associated with the fishable goal as expressed in the CWA and regulated under the REC-1 use and other REC-2 uses (e.g., uses involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (av) footnote appears.

Table 3.9-2. Water Quality Impairments within the Project Alignment

Waterbody	303(d) Listed Impairments	Source	USEPA TMDL Report Completion
LA River Estuary (Queensway Bay)	Chlordane	Unknown	03/23/2012
	DDT (sediment)	Unknown	03/23/2012
	PCBs (sediment)	Unknown	Est. 2019
	Toxicity	Unknown	Est. 2019
	Trash	Nonpoint Source, Surface Runoff, Urban Runoff/ Storm Sewers	07/24/2008
Los Angeles/Long Beach Inner Harbor	Benthic Community Effects		
	Benzo(a)pyrene (3,4-Benzopyrene -7-d)	Unknown	03/23/2012

Waterbody	303(d) Listed Impairments	Source	USEPA TMDL Report Completion
	Chrysene (C1-C4)	Unknown	03/23/2012
	Copper	Unknown	03/23/2012
	DDT	Unknown	03/23/2012
	PCBs	Unknown	03/23/2012
	Toxicity	Unknown	03/23/2012
	Zinc	Unknown	03/23/2012
LA River Reach 1 (Estuary to Carson St.)	Ammonia	Nonpoint Source, Point Source	03/18/2004
	Cadmium	Unknown	12/22/2005
	Dissolved Copper	Nonpoint Source, Point Source	12/22/2005
	Cyanide	Unknown	Est. 2019
	Indicator Bacteria	Unknown	03/23/2003
	Lead	Nonpoint Source, Point Source	12/22/2005
	Nutrients (Algae)	Nonpoint Source, Point Source	03/18/2004
	pH	Nonpoint Source, Point Source	01/01/2003
	Trash	Nonpoint Source, Surface Runoff, Urban Runoff/Storm Sewers	07/24/2008
	Dissolved Zinc	Nonpoint Source, Point Source	12/22/2005
LA River Reach 2 (Carson St. to Figueroa St.)	Ammonia	Nonpoint Source, Point Source	03/18/2004
	Copper	Unknown	12/22/2005
	Indicator Bacteria	Unknown	03/23/2012
	Lead	Nonpoint Source, Point Source	12/22/2005
	Nutrients (Algae)	Nonpoint Source, Point Source	03/18/2004
	Oil	Natural Sources	Est. 2019
	Trash	Nonpoint Source, Surface Runoff, Urban Runoff/Storm Sewers	07/24/2008
LA River Reach 3 (Figueroa St. to Riverside Dr.)	Ammonia	Nonpoint Source, Point Source	03/18/2004
	Copper	Unknown	10/29/2008
	Indicator Bacteria	Unknown	03/23/2012
	Nutrients (Algae)	Nonpoint Source, Point Source	03/18/2004
	Toxicity	Unknown	Est. 2027

Waterbody	303(d) Listed Impairments	Source	USEPA TMDL Report Completion
	Trash	Nonpoint Source, Surface Runoff, Urban Runoff/Storm Sewers	07/24/2008
LA River Reach 4 (Riverside Dr. to Sepulveda Dam)	Indicator Bacteria	Unknown	Est. 2019
	Nutrients (Algae)	Nonpoint Source, Point Source	03/18/2004
	Toxicity	Unknown	Est. 2027
	Trash	Nonpoint Source, Surface Runoff, Urban Runoff/Storm Sewers	07/24/2008
LA River Reach 5 (within Sepulveda Basin)	Ammonia	Unknown	03/18/2004
	Benthic Community Effects	Unknown	Est. 2025
	Copper	Unknown	12/22/2005
	Lead	Unknown	12/22/2005
	Nutrients (Algae)	Nonpoint Source, Point Source	03/18/2004
	Oil	Unknown	Est. 2019
	Toxicity	Unknown	Est. 2027
	Trash	Nonpoint Source, Surface Runoff, Urban Runoff/Storm Sewers	07/24/2008
LA River Reach 6 (Above Sepulveda Flood Control Basin)	Copper	Unknown	10/29/2008
	Indicator Bacteria	Unknown	03/23/2012
	Selenium	Unknown	12/22/2005
	Toxicity	Unknown	Est. 2027

Source: SWRCB 2018
Key:
Est. = estimated completion date
DDT = dichlorodiphenyltrichloroethane; PCBs = polychlorinated biphenyls

The LA River is subject to five TMDLs that collectively regulate discharges of 13 pollutants. Water quality modeling was conducted to prioritize areas with significant water quality concerns in the watershed. One Enhanced Watershed Management Program (EWMP), the Upper LA River Watershed EWMP, and two Watershed Management Programs (WMPs), the LA River Upper Reach 2 and Lower LA River WMPs, were developed under the 2012 Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit to facilitate watershed-wide implementation and strategies for TMDL compliance (Geosyntec et al. 2020a).

Segments of the LA River and its tributaries are included on the 303(d) list due to copper, cadmium, lead, zinc, and selenium. The LA River Metals TMDL became effective in 2008, and addresses reaches and tributaries of the LA River. Three wastewater treatment plants and the MS4 in the watershed have been identified in the TMDL as the primary source of metal pollutants. The TMDL allows permittees until 2028 to meet final allocations (SWRCB 2016).

Reaches of the LA River and its tributaries are also designated as impaired for nitrogen compounds (ammonia, nitrate, and nitrite) and related effects including algae, pH, odor, and scum. In 2003, the Los Angeles Regional Water Quality Control Board (Regional Water Board) adopted Resolution R03-009, amending the Basin Plan to include a TMDL for Nitrogen Compounds and Related Effects in the LA River. An amendment to the Basin Plan and the nutrient TMDL to incorporate site-specific ammonia objectives became effective in 2014. The Los Angeles Regional Water Board also amended the Basin Plan to incorporate a TMDL for Indicator Bacteria in the LA River Watershed and adopted Resolution No. R10-007. The LA River Bacteria TMDL was approved by the United States Environmental Protection Agency (USEPA) on March 23, 2012.

The LA River is designated as impaired for trash. Impaired waterbodies addressed by the Los Angeles Trash TMDL include the LA River, LA River Estuary, Tujunga Wash, Burbank Western Channel, Verdugo Wash, Arroyo Seco, Compton Creek, and Rio Hondo. Urban stormwater runoff through storm drains is the primary source of trash in the watershed. The LA River Trash TMDL was originally adopted by the Los Angeles Regional Water Board in September 2001 and approved by USEPA in August 2002 (SWRCB 2015). The Los Angeles Regional Water Board approved the revised TMDL for trash in the LA River Watershed in November 2015.

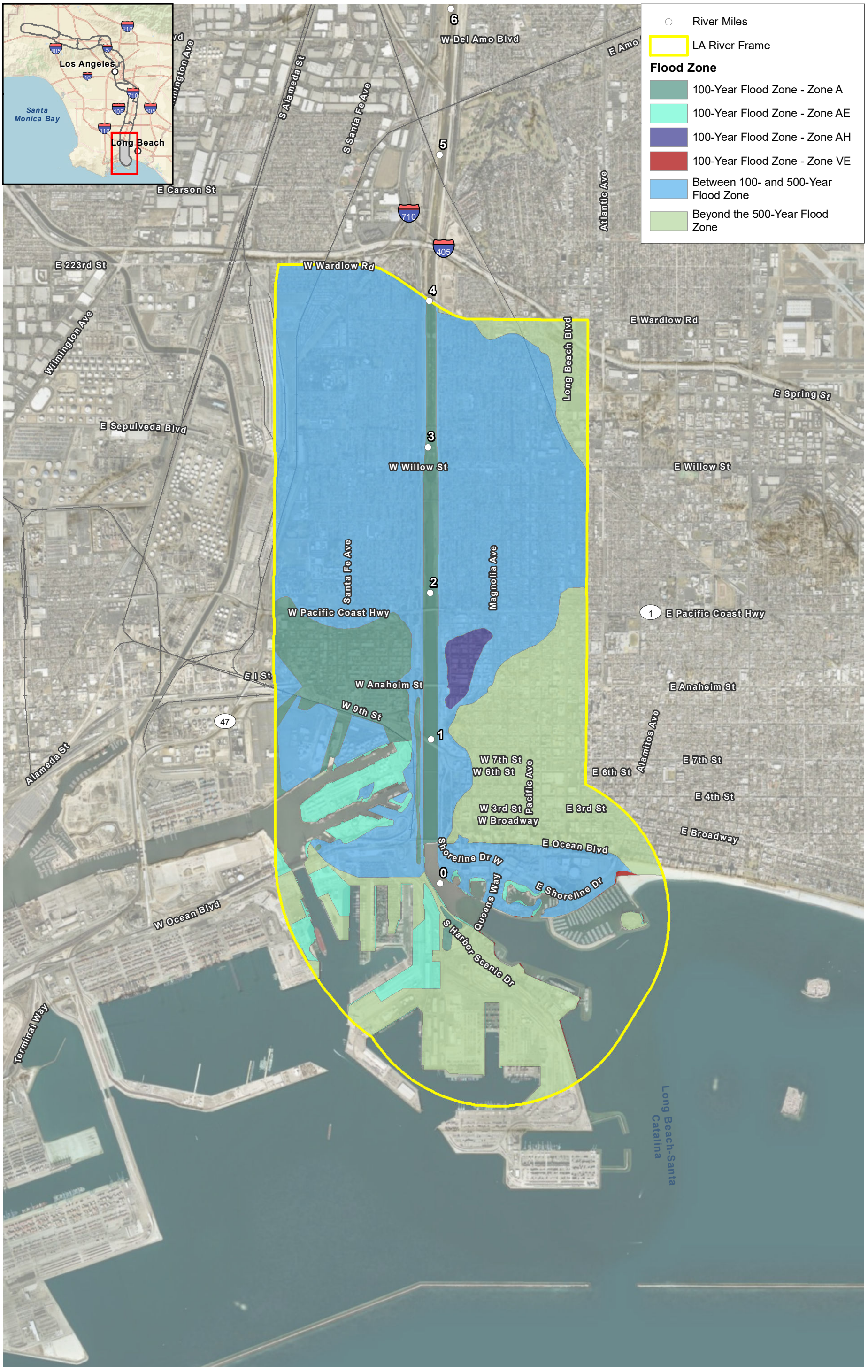
Flooding

Flooding has occurred within the LA River Watershed, even prior to extensive development. The steep mountains surrounding the LA River create a tendency for flash flooding. Following catastrophic flood events in the 1930s, development and expansion of flood management infrastructure was implemented, including channelizing 51 miles of the LA River. The width of the channel generally increases in the downstream direction to accommodate the increasing flow rates as runoff accumulates and/or as the channel slope decreases. The LA River drops almost 800 feet in elevation over its 51-mile course. To increase the channel capacity in the lower 12 miles of the river and following the 1980 flood event, channel improvements in the late 1990s to early 2000s on the lower LA River were implemented.

There are several flood management basins within the LA River Watershed, although together the Sepulveda and Hansen flood management dams contribute a substantial role, collectively providing more than 51,000 acre-feet of active flood management storage, and have critical roles in flood risk management for the river. The Sepulveda Basin is a large in-line flood management basin providing over 18,000 acre-feet of active flood storage used to reduce peak flows in the Upper LA River. The Hansen Flood Control Basin is 1 mile downstream from the confluence of Big Tujunga Creek and Little Tujunga Creek Wash. LACFCD operates multiple dams including Big Tujunga, Pacoima, and Devil's Gate Dams. Pacoima Dam and Big Tujunga Dam are approximately 4 miles north and 11 miles east of the Hansen Flood Control Basin, respectively. Devil's Gate Dam is operated for flood risk management and although it is dry most of the year, water captured in the Devil's Gate reservoir ultimately flows downstream into the LA River. Levees along the Glendale Narrows and the Lower LA River below the Rio Hondo confluence provide additional flood risk reduction. Although efforts are generally successful in managing flood risk, problematic reaches along the river remain and the potential for flood risks continues. Problematic reaches include the Glendale Narrows reach, with deficiencies worsened by the heavy vegetation that has established itself in the soft bottom of the channel, which inhibits flows and increases flood risks. Flooding is related to urbanization and the associated increase in impervious areas in the watershed. However, increased imperviousness is generally associated with increased runoff for smaller, frequent storm results, not the 1 percent storm event (100-year) (Geosyntec and Olin 2018; Geosyntec et al. 2020a, 2020b).

The 2-mile-wide project study area is predominantly outside of the Federal Emergency Management Agency (FEMA) 1 percent storm event (100-year) floodplain. However, the LA River channel and tributaries to the channel are within the FEMA special flood hazard area (SFHA) in the 1 percent storm event (100-year) floodplain. Areas adjacent to the channel are moderate flood hazard areas between the limits of the FEMA 100- and 500-year floodplain (Zone X [shaded]), areas protected from a 1 percent storm event (100-year) flood by levees,[1] or areas of minimal flood hazard beyond the 0.2 percent storm event (500-year) floodplain (Zone X [unshaded]), depending on variations in the surrounding topography, as shown on Figures 3.9-1 through Figure 3.9-9. Generally, the areas adjacent to the channel in the lower portion of river (Frame 1 through Frame 4, between river miles 0 and 16) within Zone X (shaded), are areas of moderate flood hazard. The floodplain terrain is predominantly flat with a 0.2 percent annual chance of a flood. The middle portion of the LA River is within FEMA Zone X (unshaded), areas of minimal flood hazard above the 0.2 percent storm event (500-year) flood level. Portions of areas adjacent to the channel in the Glendale Narrows reach (Frame 5 and Frame 6, between river miles 22 and 33) are within the FEMA 1 percent storm event (100-year) floodplain. Generally the upper portion of the river is beyond the 0.2 percent storm event (500-year) floodplain, although portions of the main river channel (Frame 7, between river miles 32 and 35) are within the FEMA 1 percent storm event (100-year) floodplain, and between river miles 42 and 50 (Frame 8 and Frame 9) the main river channel contains the 1 percent storm event (100-year) flood. In addition, areas near the coast are at risk of inundation due to tsunami and sea level rise. Table 3.9-3 includes descriptions of the various flood hazard zones established by FEMA and their associated flood hazards. A number of the flood hazard zones delineated by FEMA on flood insurance rate maps (FIRMs) are in the project area, as shown on Figures 3.9-1 through Figure 3.9-9 (FEMA 2017).

[1] The areas protected from a 1 percent storm event (100-year) flood by levees are in the cities of the coastal plain: Bell, Bell Gardens, Carson, Compton, Cudahy, Downey, Long Beach, Lynwood, Maywood, Paramount, Rancho Dominguez, and South Gate.

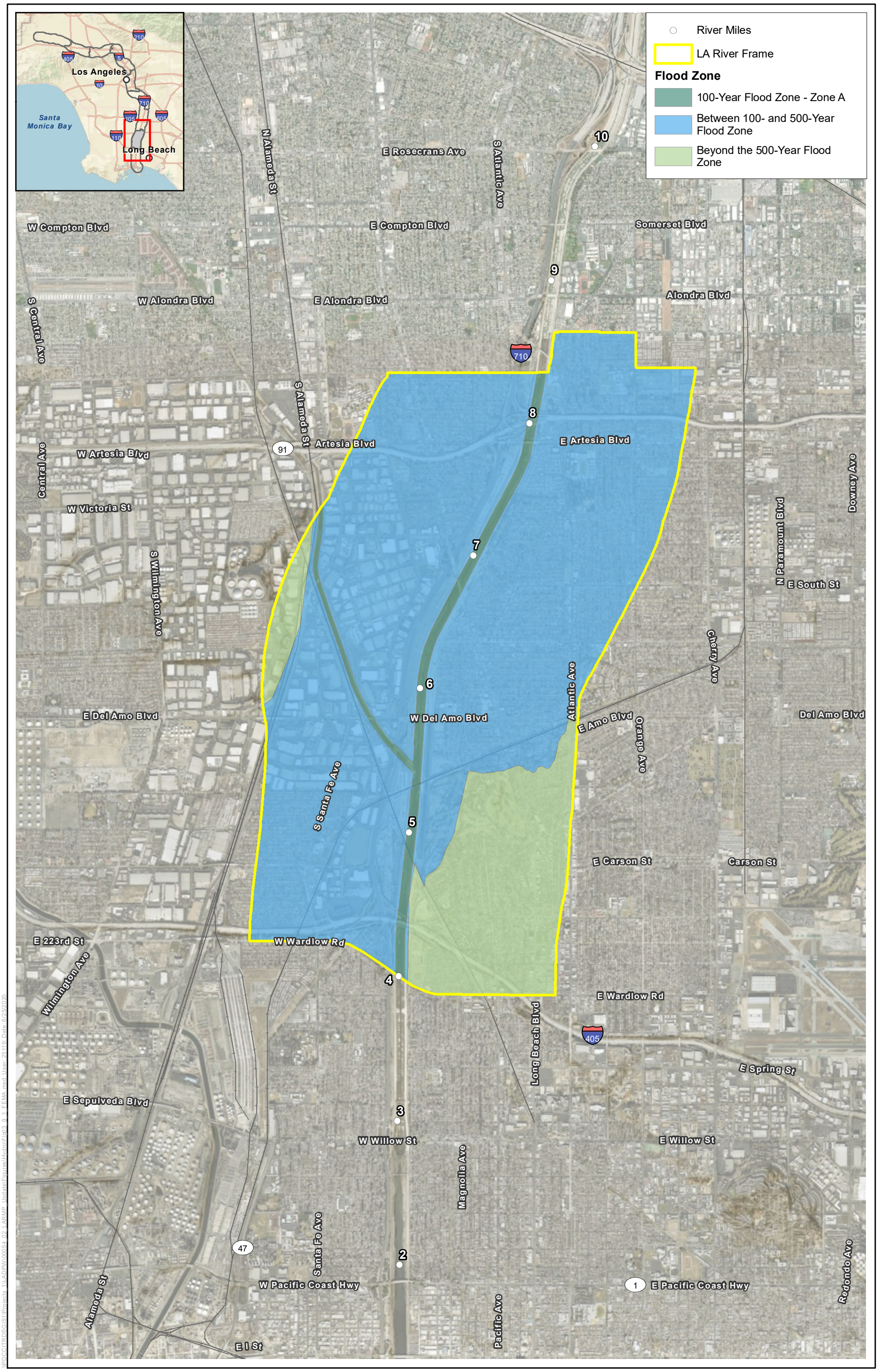


0 2,000 4,000 Feet
1:39,000

N

Source: FEMA; County of Los Angeles; ESRI

Figure 3.9-1: Frame 1 - Estuary
FEMA Flood Zones within the Project Area



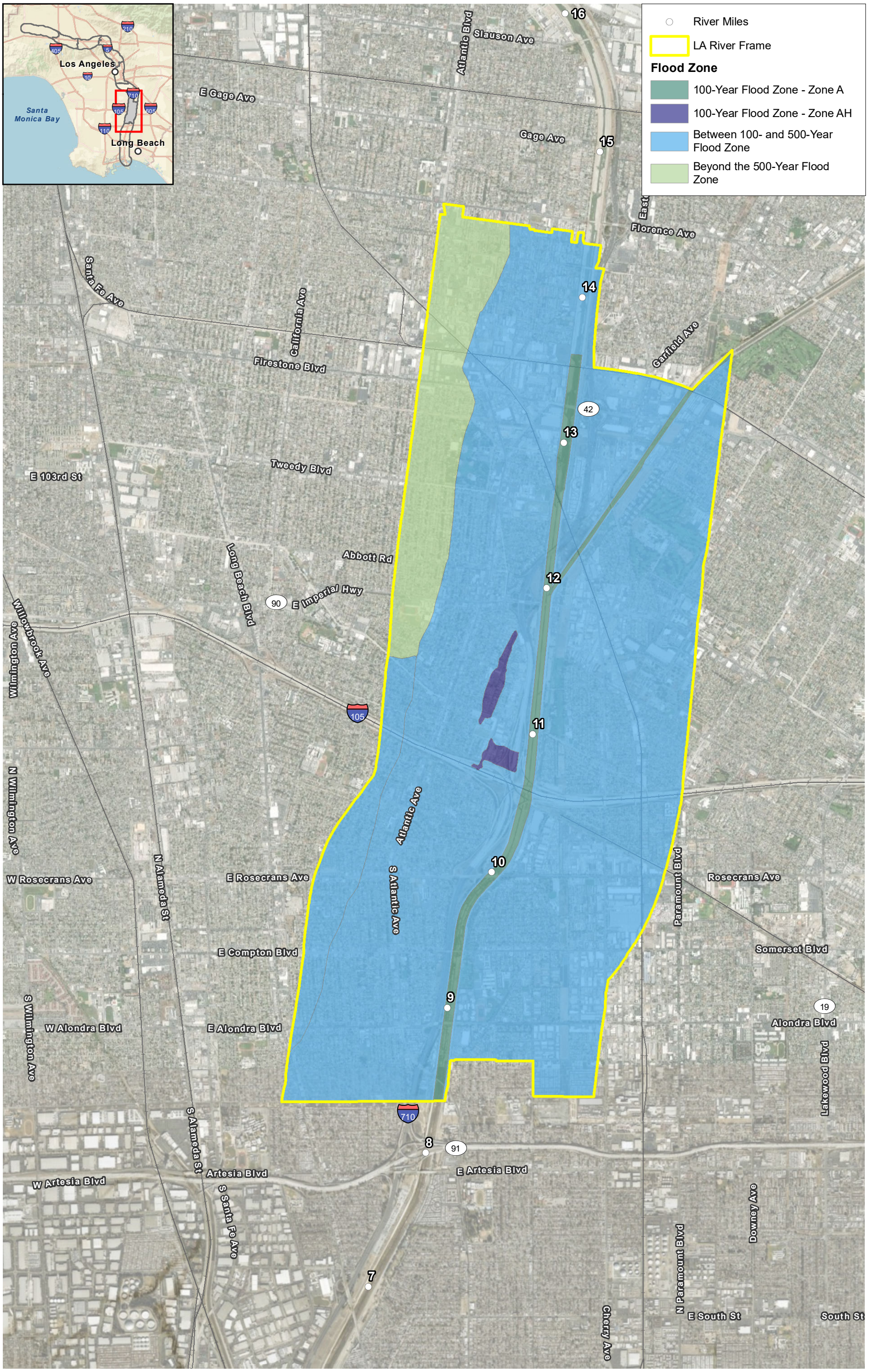
0 2,000 4,000 Feet

1:39,000

N

Source: FEMA; County of Los Angeles; ESRI

Figure 3.9-2: Frame 2 - South Plain
FEMA Flood Zones within the Project Area

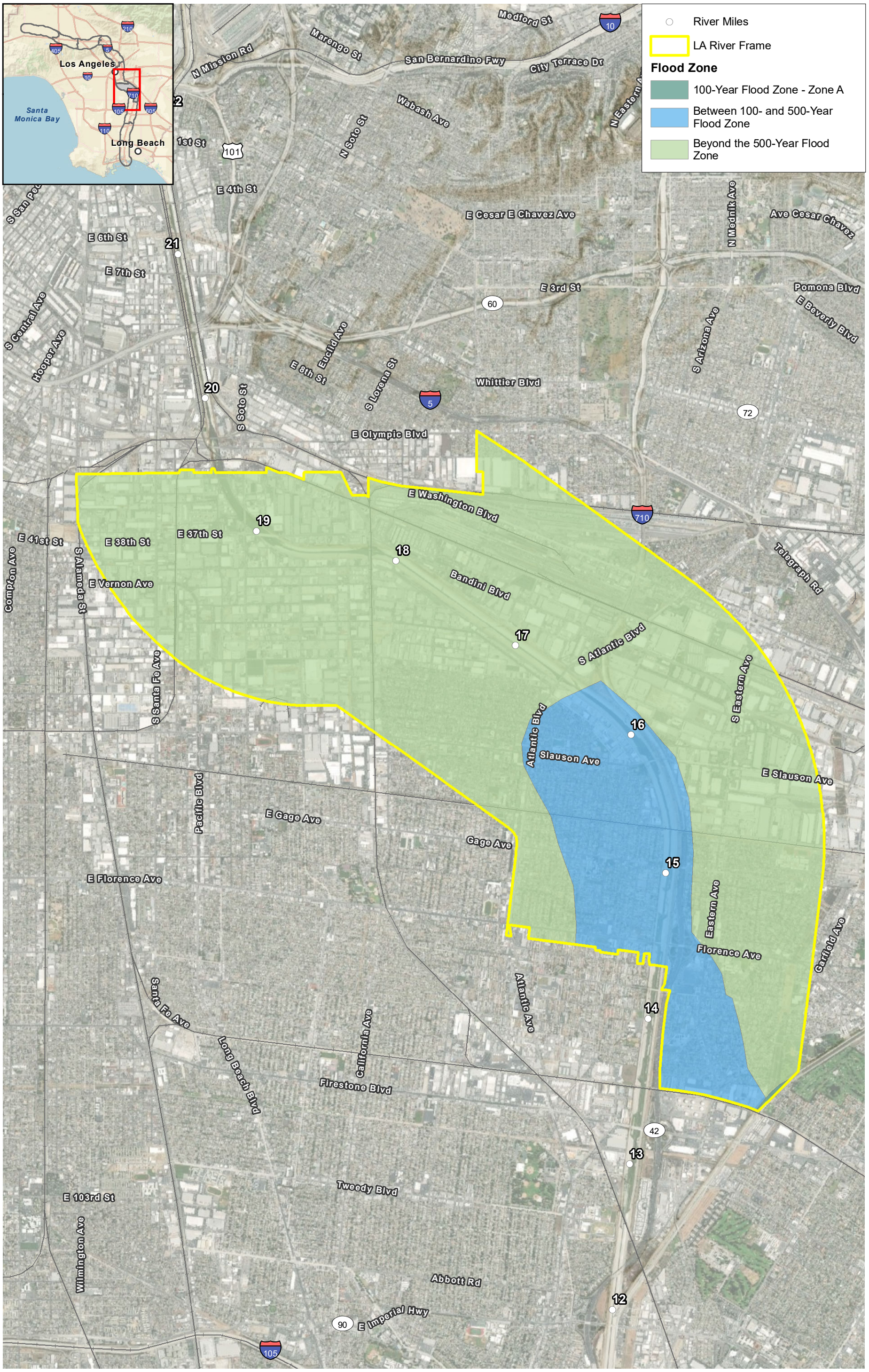


0 2,000 4,000 Feet
1:39,000

N

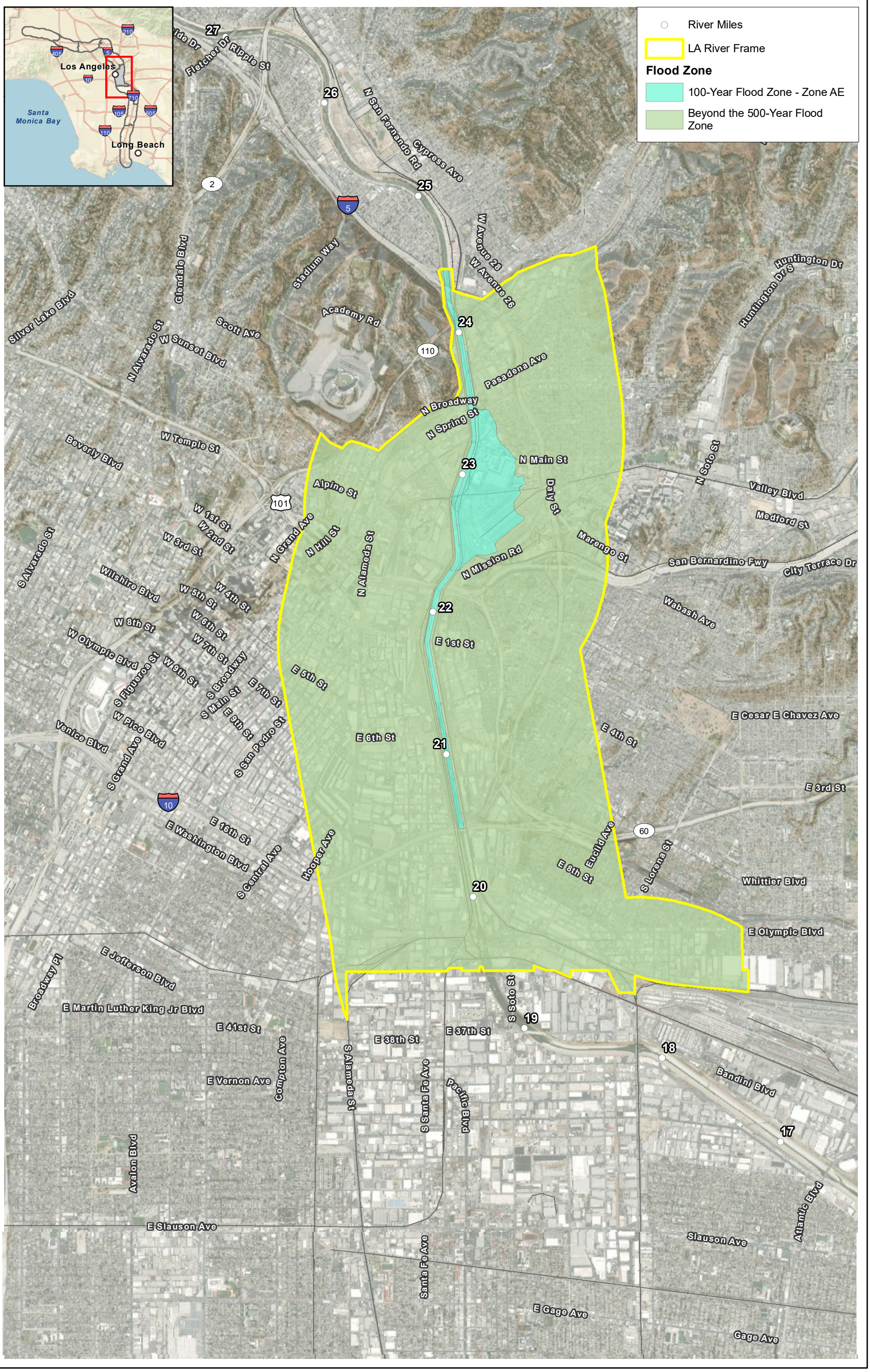
Source: FEMA; County of Los Angeles; ESRI

Figure 3.9-3: Frame 3 - Central Plain
FEMA Flood Zones within the Project Area



Source: FEMA; County of Los Angeles; ESRI

Figure 3.9-4: Frame 4 - North Plain
FEMA Flood Zones within the Project Area

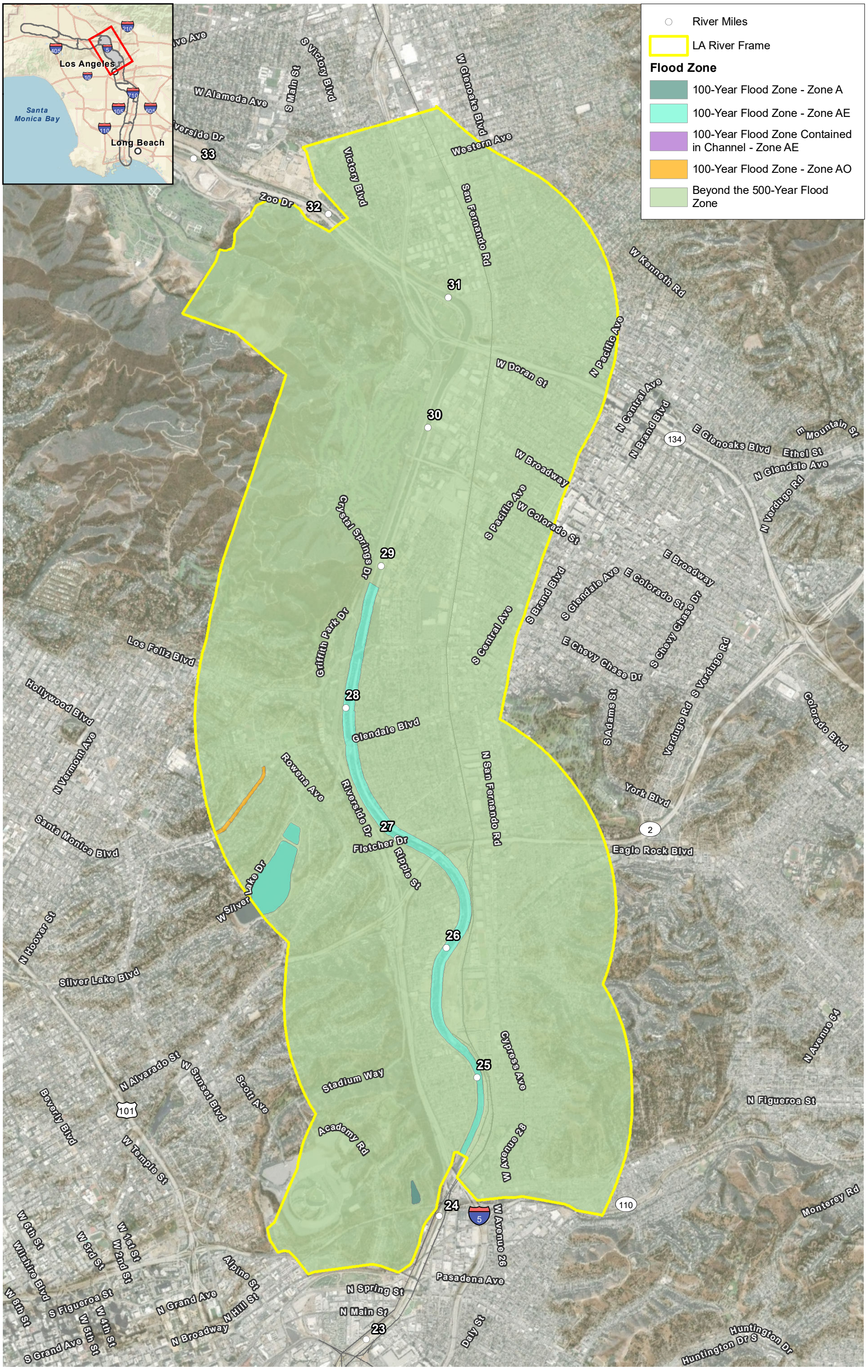


0 2,000 4,000 Feet
1:39,000

N

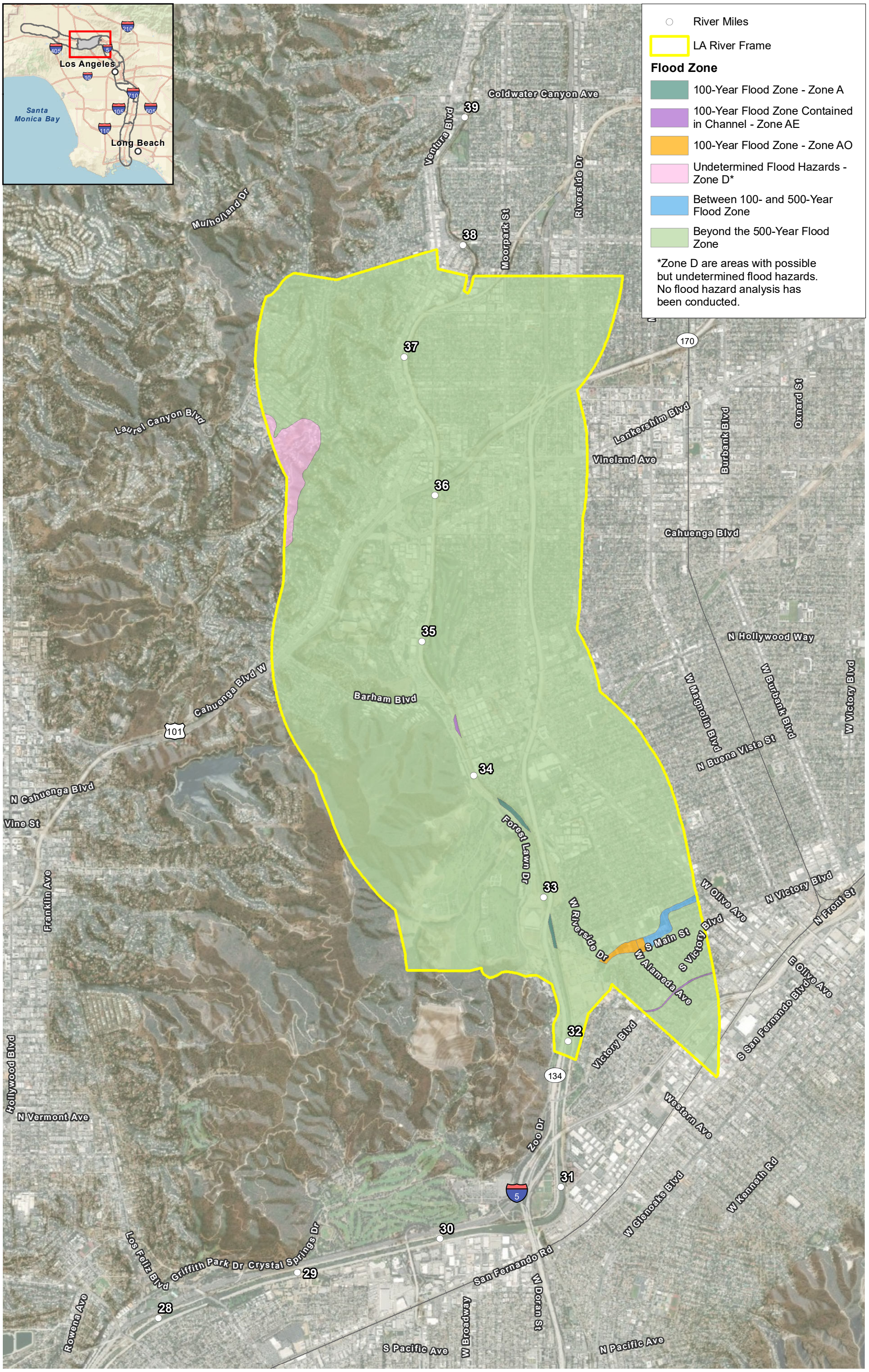
Source: FEMA; County of Los Angeles; ESRI

Figure 3.9-5: Frame 5 - Heights
FEMA Flood Zones within the Project Area



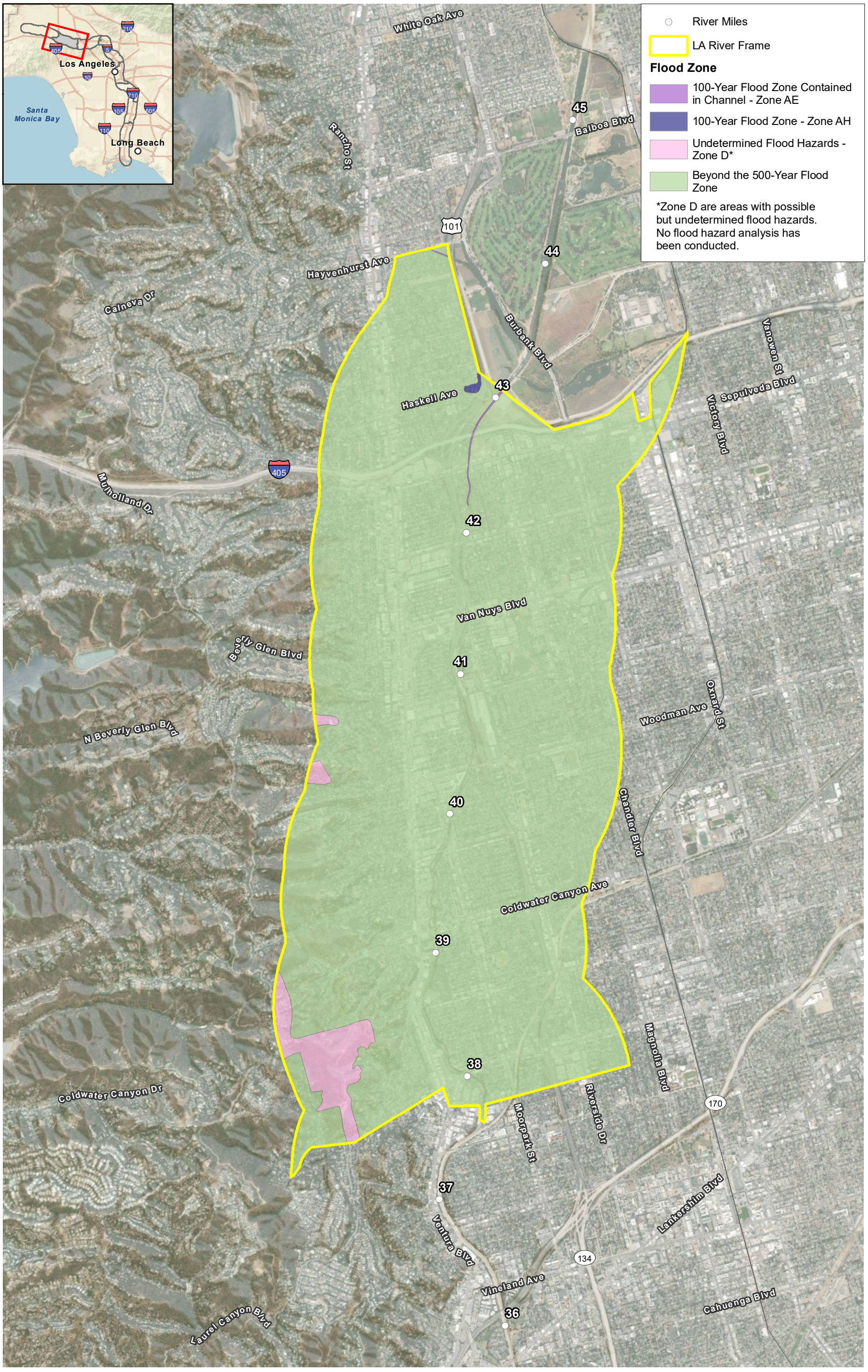
Source: FEMA; County of Los Angeles; ESRI

Figure 3.9-6: Frame 6 - Narrows
FEMA Flood Zones within the Project Area



Source: FEMA; County of Los Angeles; ESRI

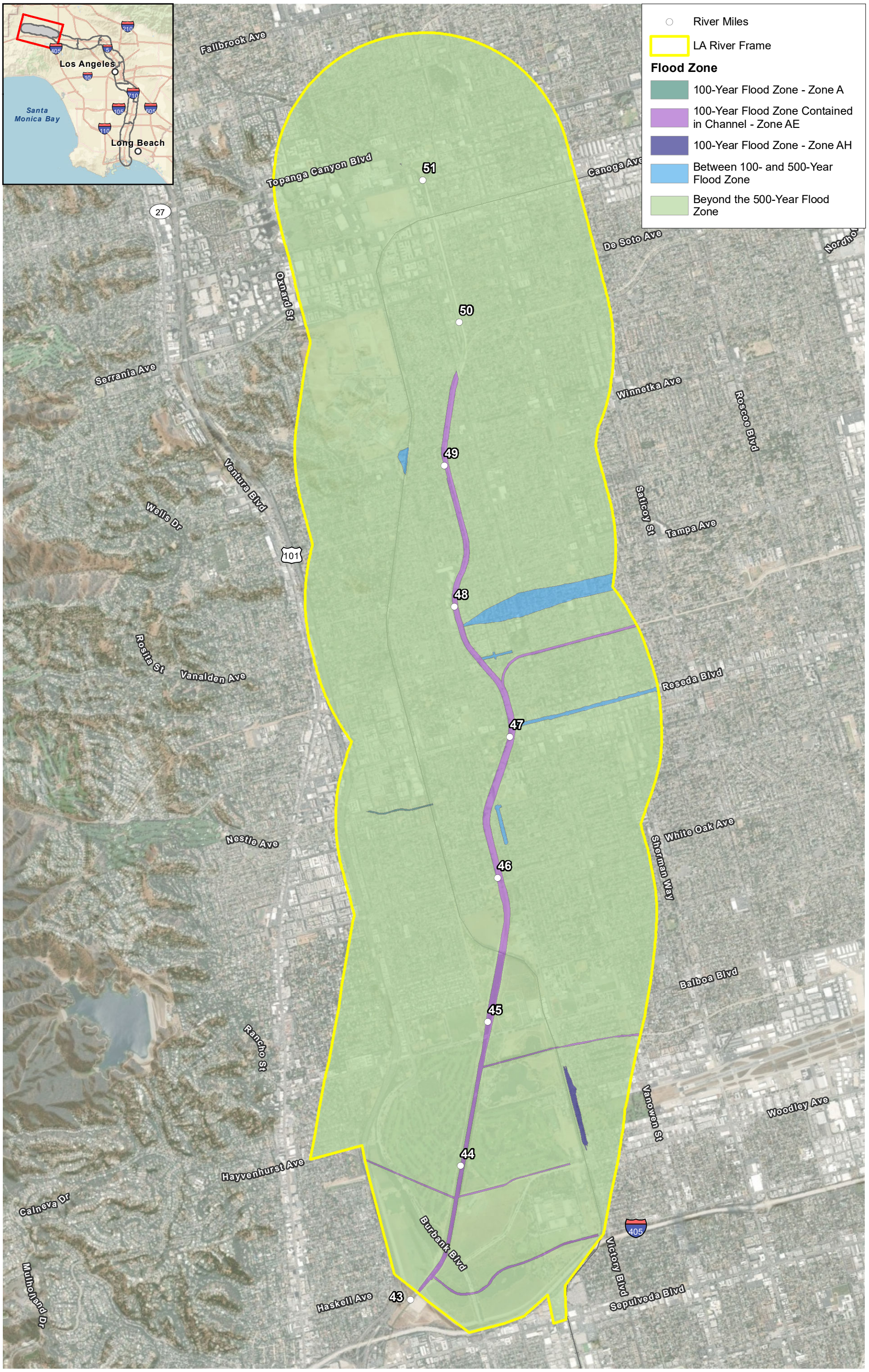
Figure 3.9-7: Frame 7 - East Valley
FEMA Flood Zones within the Project Area



0 2,000 4,000 Feet
1:39,000

Source: FEMA; County of Los Angeles; ESRI

Figure 3.9-8: Frame 8 - Mid Valley
FEMA Flood Zones within the Project Area



0 2,000 4,000 Feet
1:39,000

Source: FEMA; County of Los Angeles; ESRI

Figure 3.9-9: Frame 9 - West Valley
FEMA Flood Zones within the Project Area

Table 3.9-3. Federal Emergency Management Agency Flood Hazard Zones

Zone	Flood Hazard
High Risk Areas	
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
AO	River or stream flood hazard areas and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
VE	Areas along the coast with a 1% annual chance of flooding event with additional hazards due to storm-induced velocity wave action. Base flood elevations derived from detailed hydraulic analyses are shown.
Moderate- to Low-Risk Areas	
X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from the 100-year flood, or shallow flooding areas with average depths of less than 1 foot or drainage areas less than 1 square mile.
X (unshaded)	Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that do not warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.
Undetermined Risk Areas	
D	Areas with possible but undetermined flood risks. No analysis of flood hazards has been performed in these zones.

Project Study Area Setting

As described in Chapter 2, *Project Description,* the project study area is divided into series of nine distinct geographical sections, or planning frames, related to jurisdictional, hydraulic, and ecological zones. The setting for hydrology and water quality is based on sub-watershed boundaries; therefore, the frames are grouped into three areas, with some overlap between the frames.

Frames 1 through 3

Frames 1 through 3 include the following cities: Long Beach, Los Angeles, Carson, Compton, Downey, Lynwood, and Paramount, and unincorporated County areas. Frame 1 through Frame 3 (at the City of Lynwood) are within the Compton Creek-LA River sub-watershed within the larger LA River Watershed. The Compton Creek-LA River sub-watershed encompasses approximately 79 square miles. The channel within Frame 1 through Frame 3 includes concrete walls forming a trapezoidal channel and levees. The first 3 miles of the channel are a tidally influenced estuary with an earthen (soft) bottom, 585 feet wide across the top of the channel, and the remaining section is 400 feet

across with a concrete-lined channel. With the exception of the initial half river mile, a levee is present on both the west and east sides of the river. The confluence of Compton Creek with the LA River is at river mile 5.5.

The Project overlies portions of the West Coast Basin (Frame 1; river miles 0 through 5.5) and the Central Basin (Frame 2 through Frame 5; river miles 5.5 through 23.5), described above in Section 3.9.2.1, *Geographic*. The California Department of Water Resources previously designated the Central Basin as a high-priority basin based on SGMA basin prioritization. However, the entire Central Basin is currently operated, and has operated for decades, within its sustainable groundwater yield. The Water Replenishment District of Southern California submitted an Alternative Analysis for the Basin, which is currently designated as a very low-priority basin (DWR 2016). Eighty-three percent of the Central Basin was adjudicated, known as Management Area A (Frame 2 through Frame 5). The remainder of the basin is unadjudicated and is not currently pumped for water supply. It consists of two relatively small regions. The area to the north-northwest, which comprises 16 percent of the land area overlying the subbasin, is known as Management Area B (northern half of Frame 5). The final 1 percent, known as Management Area C, does not overlie the Project. Water supply from groundwater sources is greatest in the lowest reaches of the LA River, throughout Frame 1 and Frame 3 and most notably at the City of South Gate (Frame 3), with 80 to 100 percent of the community relying on groundwater supply. Groundwater recharge in the basins (within Frame 1 through Frame 3) is through natural and artificial recharge of foreign water through spreading and injection. However, need of imported water may increase groundwater pumping, leading to increased recharge demand. Based on geophysical properties that allow groundwater recharge through spreading or injection, Frame 1 through Frame 3 contain areas with the lowest potential for groundwater recharge (Geosyntec et al. 2020b).

Waterbodies on the 303(d) list of impaired waterbodies in Frame 1 through Frame 3 include LA River Estuary, Los Angeles/Long Beach Inner Harbor, LA River Reach 1, and LA River Reach 2 (see Table 3.9-2). Compton Creek is also on the 303(d) list for benthic community effects, copper, indicator bacteria, lead, pH, trash and zinc. Although the first 4 river miles have no lead TMDL targets, the northern portion of Frames 1 through 5 has the most stringent dry-weather lead TMDL targets in the river.

Due to the proximity to the coast, the lower 2 to 3 miles of the river are subject to flood risks from tsunami inundation and sea level rise. As shown on Figures 3.9-1 through 3.9-3 (Frames 1 through 3), the lower section of the LA River channel, as well as some areas outside the channel within 2 miles of the coast, are within the 1 percent storm event (100-year) flood zone. Remaining areas adjacent to the river are outside of the FEMA SFHA, within FEMA Zone X (unshaded), areas of minimal flood hazard above the 500-year flood level or protected from a 1 percent storm event (100-year) flood by levees. The flat terrain results in a large floodplain area, including water from the San Gabriel River to the east. The estimated level of flood risk to the areas along the LA River has been determined based on the probability that the channel capacity will be exceeded in a single year. Downstream of the Rio Hondo confluence, estimated level of flood risk is 0.75 percent (i.e., a 0.75 percent chance that the channel capacity will be exceeded in any given year) (Geosyntec et al. 2020a).

Frames 3 through 5

Frames 3 through 5 include the following cities: Cudahy, South Gate, Bell, Bell Gardens, Commerce, Huntington Park, Maywood, Vernon, and Los Angeles. Frames 3 through 5 are within the Chavez

Ravine-LA River sub-watershed within the larger LA River Watershed. The Chavez Ravine-LA River sub-watershed encompasses approximately 62 square miles. The confluence of Rio Hondo and Arroyo Seco with the LA River delineates the sub-watershed's southern and northern boundaries along the LA River, respectively. Between the Rio Hondo and Arroyo Seco, the channel is generally a concrete-lined trapezoidal channel, with the exception of a small rectangular section north of the City of Vernon. Between Rio Hondo and the rectangular (box) channel, the channel is between levees; however, no levees are present north of the rectangular channel in the City of Vernon. The channel width decreases from 415 feet (Frames 3 and 4) to 285 feet at the rectangular channel in the City of Vernon to 225 feet from the rectangular channel to Arroyo Seco, where a transitional channel between trapezoidal and rectangular is present (Geosyntec et al. 2020a).

Frames 3 through 5 are within a portion of the Central Basin, described above in Section 3.9.2.1, *Geographic*. As noted above, water supply from groundwater sources is greatest in the lowest reaches of the LA River, notably at the Cities of Vernon and Bell Gardens (Frame 4), with 80 to 100 percent and 40 to 60 percent of their water sourced from groundwater supply, respectively. Based on geophysical properties that allow groundwater recharge through spreading or injection, the southern portion of Frame 4 is least conducive to groundwater recharge. However, near the City of Vernon in Frame 4, surface areas are most conducive to groundwater recharge. Moving upstream, the area's groundwater recharge potential alternates between most, somewhat, and least conducive (Geosyntec et al. 2020b). As noted above, a portion of Frame 1 through 5 has the most stringent dry-weather lead TMDL targets in the river. Frames 3 through 5 include the LA River Reach 2, which is 303(d) listed as impaired (see Table 3.9-2).

The project areas within Frames 3 through 5 are predominantly outside of any FEMA SFHA (Figures 3.9-3 through 3.9-5).The project areas in Frame 3 and Frame 4 (to river mile 16.5) are areas of moderate flood hazard between the limits of the 1 percent storm event (100-year) and 500-year floods (FEMA Zone X [shaded]). The project areas in Frame 4 (north of river mile 16.5) and Frame 5 (to river mile 22.5) are areas of minimal flood hazards above the 500-year flood level (FEMA Zone X [unshaded]). South of Vernon, the LA River channel is bordered by levees, providing flood protection from a 1 percent storm event (100-year) flood. Small areas north of Interstate 105 and below Interstate 5 and Interstate 110 near downtown Los Angeles (river mile 23), including the river channel between river miles 20 and 29, are within the FEMA 1 percent storm event (100-year) floodplain. A concrete-lined transitional channel, with a concrete channel to the south and an earthen lined channel to the north, is below Interstate 5 and Interstate 110. Transitions between trapezoidal and rectangular cross-sections are designed to minimize hydraulic impacts using standard hydraulic design transitions. Between the Arroyo Seco (river mile 24) and Rio Hondo confluences (river mile 12), the estimated level of flood risk is mostly less than 1 percent, although just downstream from Arroyo Seco and in the City of Vernon (river mile 18) the estimated flood risk level is slightly greater than 2 percent (50-year flood) (Geosyntec et al. 2020a).

Frames 6 through 9

Frames 6 through 9 include the following cities: Los Angeles, Glendale, and Burbank, and unincorporated County areas. Frame 6 is within the Scholl Canyon-LA River sub-watershed and Frame 7 through 9 are within the Tujunga Wash-LA River sub-watershed. The Scholl Canyon-LA River and Tujunga Wash-LA River sub-watersheds encompass 25 square miles and 156 square miles, respectively, both within the larger LA River Watershed. The channel width decreases from 305 feet (river mile 25) to 55 feet (river mile 42), where the Sepulveda Dam (river mile 43) and the Sepulveda Basin (river miles 43 to 45), an earthen-bottom channel, are located. In this reach, the

channel varies from concrete- to earthen-lined and includes transition, trapezoidal, and rectangular channels. Upstream of the Sepulveda Basin, the basin decreases again from 200 feet (river mile 46) to 125 feet (river mile 51), within a concrete-lined trapezoidal channel. Tributaries to the LA River include Verdugo Wash (river mile 30), Burbank Western Channel (river mile 32), Tujunga Wash (river mile 37), and Aliso Canyon Wash (river mile 47).

Frames 6 through 9 are within the San Fernando Valley Basin, described above in Section 3.9.2.2, *Geographic*. Generally, up to 20 percent of water supplied within Frames 6 through 9 is from groundwater sources, with greater groundwater demands in Glendale (Frame 6; 20 to 40 percent) and north of Burbank (Frame 7; 40 to 60 percent). The areas around Glendale and Burbank (Frame 6 and Frame 7, respectively) are most conducive to groundwater recharge, with some alternating areas that are least conducive to recharge. Frame 8 and Frame 9 have moderate conditions favorable for groundwater recharge, with some areas with the least favorable groundwater recharge potential (Geosyntec et al. 2020b).

Frame 6 includes the LA River Reach 3, Frame 7 and Frame 8 include the LA River Reach 4, and Frame 9 includes the LA River Reach 5 and LA River Reach 6. Water in Frame 6 through Frame 9 has the highest levels of ammonia throughout the LA River. Frame 7 and Frame 8 have the most stringent dry-weather selenium TMDL targets in the river. Specific water quality impairments are provided in Table 3.9-2 for each LA River Reach.

The LA River channel up to river mile 29, and between river miles 42 and 49 as well as Silver Lake Reservoir, are within the 1 percent flood zone. As previously noted, the upper portion of the river is generally beyond the 0.2 percent storm event (500-year) floodplain, although portions of the main river channel (Frame 7, between river miles 32 and 35) are within the FEMA 1 percent storm event (100-year) floodplain. The FEMA 1 percent flood event (100-year) floodplain is expected in low-lying areas within the project area between river miles 44 and 50 and between river miles 32 and 38. Topography of the Elysian Valley confines the FEMA 1 percent storm event (100-year) floodplain along the Narrows (river mile 33 to 22) within a narrow corridor near the river.

From the Tujunga Wash confluence (river mile 38) to the Glendale Narrows (river mile 33), the estimated flood risk is generally the 2 percent storm event (50-year) or less. Heavy vegetation that has established itself in the soft bottom of the channel in the Narrows reach (river miles 33 to 22) exacerbates known capacity deficiencies. Despite the presence of levees along portions of this reach, the estimated level of flood risk is greater than the 2 percent event (50-year), with some regions having even higher flood risk levels. From Sepulveda Basin to the Tujunga Wash confluence, the channel generally has flood risk levels of 1 percent or less. However, a short segment upstream of the Tujunga confluence has an estimated flood risk level of 10 percent (10-year) or higher. This may be caused by additional inflows. In addition, the channel width is only 55 feet, compared with 200 feet in the soft-bottom reaches of the Sepulveda Control Basin, indicating the ability of Sepulveda Dam in reducing peak flows in the river. The channel upstream of Sepulveda Basin (river miles 51 to 46) mostly has flood risk levels between 2 percent and 1 percent, with a few locations having an estimated flood risk greater than 2 percent, likely due to local constrictions from bridges. The channel through the Glendale Narrows region (river miles 31 to 24) has a soft bottom, where upwelling groundwater limited the ability to fully concrete the channel. If not maintained, the soft-bottom reaches can become heavily vegetated, which results in decreased flood conveyance capacity (Geosyntec and Olin 2018).

3.9.2.2 Regulatory

This section identifies laws, regulations, and ordinances that are relevant to the impact analysis of hydrology and water quality in this PEIR.

Federal

Clean Water Act

The CWA is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It is based on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit. Permit review is the CWA's primary regulatory tool. The CWA requires states to adopt water quality standards for receiving waters. Water quality standards designate beneficial uses for receiving waters and include the criteria required to support such uses. Water quality criteria are either narrative statements related to the quality of the water that support a particular use or maximum concentration levels for pollutants. As part of the CWA, when monitoring data indicate that a concentration level for a pollutant has exceeded applicable water quality criteria, the receiving water is classified as impaired and placed on the 303(d) list. A TMDL is then developed for the pollutant(s) that caused the impairment. The purpose of the TMDL is to limit the pollutant loads discharged into the receiving water from all sources (i.e., stormwater runoff, wastewater, agriculture).

Section 401 of the CWA requires that an applicant pursuing a federal permit to conduct an activity that may result in a discharge of a pollutant to waters of the United States (U.S.) obtain a Water Quality Certification. A Water Quality Certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the U.S. Under the CWA, the Regional Water Board must issue or waive a Section 401 Water Quality Certification for a project to be permitted under CWA Section 404. The discharge of dredged or fill material into waters of the U.S is subject to permitting specified under Title IV (Permits and Licenses) of the CWA and, specifically, Section 404 (Discharges of Dredged or Fill Material) of the CWA. Section 404 of the CWA regulates the placement of fill materials into the waters of the U.S. Section 404 permits are administered by USACE. In addition, the 1972 amendments to the federal Water Pollution Control Act established the National Pollutant Discharge Elimination System (NPDES) permit program to control discharges of pollutants from point sources (Section 402).

River and Harbors Appropriation Act (Section 10)

Section 10 of the Rivers and Harbors Appropriation Act of 1899 prohibits work that affects the course, location, conditions, or capacity of navigable waters of the U.S. without a permit from USACE. *Navigable waters* under this act are "subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (Title 33 Code of Federal Regulations Section 3294). Section 10 of the Rivers and Harbors Appropriation Act requires permits for all structures (such as rip-rap) and activities (such as dredging or pile driving).

Rivers and Harbors Appropriation Act (Section 14)

Authorized in Section 14 of the River and Harbors Appropriation Act, Section 408 (33 U.S. Code 408) provides that the Secretary of the Army may, on recommendation of the Chief of Engineers, grant

permission for the alteration of a public work so long as that alteration is not injurious to the public interest and will not impair the usefulness of the work. Alterations or alter refers to any action by any entity other than USACE that builds upon, changes, improves, moves, occupies, or otherwise affects the usefulness, or the structural or ecological integrity, of a USACE project. Alterations also include actions approved as "encroachments" pursuant to 33 Code of Federal Regulations 208.10.

National Flood Insurance Program

In response to the increasing cost of disaster relief, Congress passed the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. FEMA administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations to limit development in floodplains. A FIRM is an official FEMA-prepared map of a community used to delineate both the SFHAs and the flood-risk premium zones applicable to the community. All of the cities along the LA River (except for Cudahy and Huntington Park) and unincorporated County areas are communities participating in the NFIP.

In exchange for providing community residents access to federally backed flood insurance and federal flood disaster assistance, building officials must regulate development in 1 percent storm event (100-year) floodplains in accordance with the NFIP's requirements for flood resiliency and changes to its FIRMs. The proponent of any project with the potential of increasing the Base Flood Elevation (BFE) in a 1 percent storm event (100-year) floodplain (a.k.a. SFHA) must apply for and receive from FEMA a Conditional Letter of Map Revision (CLOMR) prior to construction. The CLOMR application will require hydraulic analyses of the existing and proposed project conditions. Within 6 months of project construction completion, the proponent must apply to FEMA for a final Letter of Map Revision (LOMR). The LOMR application will also require hydraulic analyses. CLOMRs and LOMRs will have to be coordinated with the NFIP Administrator of the community in which the project is located. Structures will have to meet the NFIP's flood resiliency requirements such as elevation of buildings' floors and equipment, flood venting of buildings, anchoring, and breakaway fencing.

Federal Antidegradation Policy

The Federal Antidegradation Policy requires states to develop statewide antidegradation policies and identify methods for implementing them. Pursuant to the Code of Federal Regulations, state antidegradation policies and implementation methods must, at a minimum, protect and maintain (1) existing in-stream water uses; (2) existing water quality, where the quality of the waters exceeds levels necessary to support existing beneficial uses, unless the state finds that allowing lower water quality is necessary to accommodate economic and social development in the area; and (3) water quality in waters considered an outstanding national resource.

National Pollutant Discharge Elimination System

The NPDES was established per 1972 amendments to the Federal Water Pollution Control Act to control discharges of pollutants from point sources (Section 402). The 1987 amendments to the CWA created a section devoted to stormwater permitting (Section 402(p)), with individual states designated for administration and enforcement of the provisions of the CWA and the NPDES permit program. The California SWRCB issues both general and individual NPDES permits for water quality protection under this program. CWA Section 402 regulates the discharges to surface waters through

the NPDES program, administered by USEPA. USEPA has granted the State of California (SWRCB and Regional Water Boards) primacy in administering and enforcing the provisions of CWA and NPDES.

State

Porter–Cologne Water Quality Control Act of 1969

The Porter–Cologne Water Quality Control Act (Porter–Cologne) and related California Water Code sections established the SWRCB and divided the state into nine regional basins, each with a Regional Water Board. The SWRCB is the primary state agency with responsibility for protecting the quality of the state's surface water and groundwater.

Porter-Cologne authorizes the SWRCB to draft policies regarding water quality in accordance with CWA Section 303. In addition, Porter-Cologne authorizes the SWRCB to issue waste discharge requirements (WDRs) for projects that would discharge waste to state waters. Porter–Cologne requires the SWRCB or the Regional Water Board to adopt water quality control plans, otherwise referred to as basin plans, for the protection of water quality.

A basin plan must:

- Identify beneficial uses for the waterbodies to be protected.
- Establish water quality objectives for the reasonable protection of the beneficial uses.
- Establish an implementation program for achieving the water quality objectives.

Basin plans also provide the technical basis for determining WDRs, taking enforcement actions, and evaluating clean water grant proposals. Basin plans are updated and reviewed every 3 years (also known as the triennial review) in accordance with Article 3 of Porter–Cologne and CWA Section 303(c).

Lake and Streambed Alteration Program

The California Department of Fish and Wildlife regulates water resources under Sections 1600 et seq. of the California Fish and Game Code. The California Department of Fish and Wildlife has the authority to grant Streambed Alteration Agreements under Section 1602, which states:

> An entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

California Department of Fish and Wildlife jurisdiction includes ephemeral, intermittent, and perennial watercourses and extends to the top of the bank of a stream or lake if unvegetated, or to the limit of the adjacent riparian habitat contiguous to the watercourse if the stream or lake is vegetated.

Projects that require a Streambed Alteration Agreement may also require a permit from USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the Streambed Alteration Agreement may overlap.

California Coastal Act

The California Coastal Act, Article 4. Marine Environment, Section 30231, regulates biological productivity and water quality. Section 30221 states:

> The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

California Antidegradation Policy

The California Antidegradation Policy, otherwise known as the Statement of Policy with Respect to Maintaining High Quality Water in California, was adopted by the SWRCB in 1968. Unlike the Federal Antidegradation Policy, the California Antidegradation Policy applies to all waters of the State, not just surface waters. The policy states that whenever the existing quality of a waterbody is better than the quality established in individual basin plans, such high quality will be maintained and discharges to that waterbody will not unreasonably affect present or anticipated beneficial use of such water resource.

California Toxics Rule

In 2000, the California Environmental Protection Agency (CalEPA) promulgated the California Toxics Rule, which establishes water quality criteria for certain toxic substances to be applied to waters in the state. CalEPA promulgated this rule based on its determination that the numeric criteria are necessary in the state to protect human health and the environment. The California Toxics Rule establishes acute (i.e., short-term) and chronic (i.e., long-term) standards for bodies of water, such as inland surface waters and enclosed bays and estuaries that are designated statewide as having beneficial uses.

National Pollutant Discharge Elimination System

For compliance with the CWA within California, the SWRCB and Regional Water Boards are responsible for assessing water quality monitoring data for surface waters every 2 years to determine if they contain pollutants that exceed the levels established in water quality standards. The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the Regional Water Boards conduct planning, permitting, and enforcement activities. The proposed Project is within the jurisdiction of the Los Angeles Regional Water Board.

The SWRCB and Regional Water Boards implement, monitor, and enforce NPDES permitting requirements within their jurisdictions. In general, the NPDES Program controls water pollution by regulating point sources that discharge pollutants to municipalities' waters of the U.S. As with WDRs, the SWRCB and Regional Water Boards can issue individual NPDES permits to cover individual discharges or general permits (state or regional) to cover a category of discharges.

Waste Discharge Requirements – Discharge to Waters of the State

Dredged or fill discharges to waters deemed by USACE to be outside of federal jurisdiction may be subject to regulation under the SWRCB Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). These projects involve excavation or fill activities affecting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the State and projects involving dredging activities less than 50 cubic yards of non-jurisdictional waters of the State.

Water Quality Certifications and Wetlands Program

The 401 Water Quality Certification and Wetlands Program is protecting all waters of the U.S., but is responsible for wetlands, riparian areas, and headwaters, which are not systematically protected by other programs. This program encourages basin-level analysis and protection, because some functions of wetlands, riparian areas, and headwater streams are expressed at basin or landscape level. The Regional Water Board administers 401 Water Quality Certifications.

NPDES Construction General Permit

Pursuant to CWA Section 402(p), and as related to the goals of Porter–Cologne, the SWRCB has issued a statewide NPDES General Permit for Construction Activities (Construction General Permit) for Stormwater Discharges Associated with Construction Activity (Order No. 2009-009-DWQ, NPDES No. CAS000002, as amended by Order 2010-014-DWQ and 2012-06-DWQ), adopted September 2, 2009. Every construction project that disturbs 1 or more acres of land surface, construction activities that are less than 1 acre of land surface disturbance that are part of a larger common plan of development, or sale that disturbs more than 1 acre of land surface requires coverage under the Construction General Permit. Construction activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation, that result in soil disturbances of at least 1 acre of total land area. Projects that will disturb more than 1 acre of land during construction are required to file a Notice of Intent (NOI) with the SWRCB to be covered under the Construction General Permit for discharges of stormwater associated with construction activity. The project proponent must develop measures that are consistent with the Construction General Permit. Furthermore, a Stormwater Pollution Prevention Plan (SWPPP) must be developed and implemented for each site covered under the Construction General Permit. The SWPPP describes the best management practices (BMPs) the discharger will use to protect stormwater runoff and reduce potential impacts on surface water quality through the construction period.

The SWPPP must contain the following:

- A visual monitoring program
- A chemical monitoring program for nonvisible pollutants (to be implemented if a BMP failure occurs)
- A sediment monitoring plan if the site discharges directly to a waterbody on the 303(d) list for sediment

Construction activities that disturb 1 acre of land or more are required to obtain coverage under the Construction General Permit.

Caltrans NPDES MS4 Permit

Caltrans holds a General NPDES Permit that covers statewide Caltrans municipal stormwater discharges. To streamline the Caltrans NPDES permitting process, the SWRCB issued a state water permit on July 15, 1999, that regulated all discharges from Caltrans MS4s. The new Caltrans stormwater permit was re-issued and became effective July 1, 2013.

The SWRCB has identified Caltrans as an owner/operator of an MS4 pursuant to federal regulations. Caltrans holds a General NPDES Permit that covers primarily municipal stormwater discharges (as amended by 2014-0006-EXEC, 2014-0077-DWQ, 2015-0036-EXEC, and 2017-0026-EXEC [NPDES No. CAS000003] NPDES Statewide Storm Water Permit WDRs for Caltrans MS4 Permit, effective July 1, 2013). Caltrans MS4 Permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The SWRCB or the Regional Water Board issues NPDES permits for 5 years, and permit requirements remain active until a new permit is adopted. The permit regulates the following discharges:

- Stormwater discharges from all Caltrans-owned MS4s
- Stormwater discharges from Caltrans vehicle maintenance, equipment cleaning operations facilities, and any other non-industrial facilities with activities that have the potential of generating pollutants
- Certain categories of non-stormwater discharges. Caltrans shall check with the appropriate Regional Water Board to determine if a specific non-stormwater discharge requires coverage under a separate NPDES permit

This permit does not regulate discharges from Caltrans' construction activities, including dewatering effluent discharges from construction projects. Instead, Caltrans is required to obtain coverage by the Construction General Permit and develop a project SWPPP. Caltrans provides a SWPPP template, stormwater guidance documents, and other construction stormwater resources on the Caltrans Stormwater and Water Pollution Control webpage. Any discharges from a site occurring after completion of construction are fully subject to the requirements of this order.

Nonpoint Source Pollution Control

To control nonpoint source (NPS) pollution, SWRCB adopted the *Plan for California's Nonpoint Source Pollution Control Program* (NPS Program Plan). The SWRCB's *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program* explains how the NPS Program Plan would be implemented and enforced, fulfilling the requirements of California Water Code Section 13369 (a)(2)(B). The policy explains how Porter-Cologne mandates and authorities, delegated to the SWRCB and Regional Water Boards, will be used to implement and enforce the NPS Program Plan. The policy also provides a bridge between the NPS Program Plan and the SWRCB Water Quality Enforcement Policy.

2010 California Green Building Standards Code (CALGreen)

CALGreen is a statewide mandatory green building code all cities in California were required to adopt by January 1, 2011. CALGreen requires new standards in materials reuse, locally sourced materials, water/energy efficiency, and indoor air quality. To meet CALGreen requirements, the Los Angeles County Board of Supervisors adopted the Los Angeles County Green Building Standards Code (Title 31), which is designed to improve public health, safety, and general welfare by

enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact, or positive environmental impact, and encouraging sustainable construction practices in the following categories:

- Planning and design
- Energy efficiency
- Water efficiency and conservation
- Material conservation and resource efficiency
- Environmental air quality

Regional

Water Quality Control Plan, Los Angeles Region

Porter–Cologne authorizes the Regional Water Boards to adopt, review, and revise policies for all waters of the State (including surface water and groundwater) and directs them to develop regional basin plans. The relevant regional basin plan is the *Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*. Section 13170 of the California Water Code also authorizes the SWRCB to adopt basin plans on its own initiative. Regional Water Boards are required, by law, to develop, adopt, and implement a basin plan for the entire region. Water quality standards are set forth in the regional Basin Plan. According to Section 13050 of the California Water Code, basin plans consist of designation or establishment of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives for the waters within a specified area. Because beneficial uses, together with their corresponding water quality objectives, can be defined per federal regulations as water quality standards, the basin plans are regulatory references for meeting the state and federal requirements for water quality control.

Los Angeles County Municipal Stormwater NPDES Permit CWA Section 402 mandates permits for municipal stormwater discharges, which are regulated under the NPDES General Permit for MS4s. Phase I MS4 Permit regulations cover medium-sized municipalities (between 100,000 and 250,000 people) and large municipalities (more than 250,000 people).

On November 8, 2012, the Los Angeles Regional Water Board adopted Order No. R4-2012-175 (NPDES Permit No. CAS004001), Waste Discharge Requirements for MS4 Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4 (County MS4 Permit). The County MS4 Permit became effective December 28, 2012. Order No. R4-2012-175 is the fourth iteration of the stormwater permit for MS4s in Los Angeles County, which includes LACFCD, County, and 84 incorporated cities (including the City of Los Angeles) within the County watersheds, excluding the City of Long Beach. This permit requires runoff issues to be addressed during major phases of urban development (planning, construction, and operation) to reduce the discharge of pollutants from stormwater to the maximum extent practicable, effectively prohibit non-stormwater discharges, and protect the beneficial uses of receiving waters. The County MS4 Permit requires implementation of a Stormwater Quality Management Plan (SQMP), discussed below.

The County MS4 Permit includes TMDL provisions designed to ensure that Los Angeles County achieves waste load allocations and meets other requirements of TMDLs covering receiving waters affected by the County's MS4 discharges. The County MS4 Permit also contains provisions that allow the permit to be modified, revoked, reissued, or terminated under certain circumstances. For example, provisions may be incorporated as a result of future amendments to the Basin Plan, such as a new or revised water quality objective or the adoption or reconsideration of a TMDL, including program implementation.

The County MS4 Permit allows permittees the flexibility to develop Watershed Management Programs (WMPs) or Enhanced Watershed Programs (EWMPs) to implement the requirements of the permit on a watershed scale through customized strategies, control measures, and BMPs. An EWMP provides guidance for municipalities throughout Los Angeles County to simultaneously comply with federal and state water quality mandates; improve the quality of rivers, creeks, and beaches; and address current and future regional water supply challenges. EWMPs identify current and future multi-benefit projects that will capture, treat, and use or infiltrate as much stormwater as possible.

Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties

Discharges of treated or untreated groundwater generated from permanent or temporary dewatering operations or other applicable wastewater discharges not specifically covered in other general or individual NPDES permits are currently regulated under a regional general permit, General Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties (Order No. R4-2018-0125, NPDES No. CAG994004).

Construction dewatering wastes (except stormwater) are regulated as low-threat discharges to surface waters. An NOI and report of waste discharge must be submitted to the Los Angeles Regional Water Board to comply with this general permit. Based on the depth to groundwater, it is not anticipated that the proposed Project would require groundwater dewatering during construction or be subject to the requirements of this general permit. In the event that groundwater is encountered during construction, it would be covered under the NPDES Construction General Permit.

Stormwater Quality Management Plan

Implementation of an SQMP, as required by the County MS4 Permit, includes the use of BMPs to reduce the amount of pollutants in stormwater and dry-weather runoff. The SQMP is broken up into seven separate programs: Public Information and Participation, Industrial/Commercial Facilities, Development Planning, Development Construction, Public Agency Activities, Illicit Connection/Illicit Discharge, and Countywide Monitoring. SQMP programs have been established to create a comprehensive program that will ensure water quality protection for the future.

Los Angeles County Low Impact Development Standards Manual

Public Works prepared the Low Impact Development (LID) Standards Manual (Public Works 2014) to comply with the requirements of the 2012 MS4 Permit and supersede the County Standard Urban Stormwater Mitigation Plan. The LID Standards Manual provides guidance for the implementation of

stormwater quality control measures in new development and redevelopment projects in unincorporated County areas with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges. Unlike traditional stormwater management, which collects and conveys stormwater runoff through storm drains, pipes, or other conveyances to a centralized stormwater facility, LID uses site design and stormwater management to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall.

The LID standards (Chapter 12.84; Ord. 2013-0044 § 1, 2013: Ord. 2008- 0063 § 1) include mimicking undeveloped stormwater runoff rates and volumes in any storm event up to and including the Capital Flood; preventing pollutants of concern from leaving the development site in stormwater as the result of storms, up to and including a Water Quality Design Storm Event; and minimizing hydromodification impacts on natural drainage systems. Applicable projects include but are not limited to new development involving 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area; new restaurants with 5,000 square feet or more of surface area; redevelopment projects that result in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on a site that has been previously developed; or development of a previously undeveloped site.

Los Angeles County Hydrology Manual

The Los Angeles County Hydrology Manual establishes Public Works' hydrologic design procedures and serves as a reference and training guide. The hydrologic techniques in the manual apply to the design of local storm drains, retention and detention basins, pump stations, and major channel projects. The techniques also apply to storm drain deficiency and flood hazard evaluations. Low-flow hydrology methods related to water quality standards are also discussed. Standards provided in the manual govern all hydrology calculations done under Public Works' jurisdiction.

The Public Works Hydrology Manual requires that a storm drain conveyance system be designed for a 10-year storm event, and that the combined capacity of a storm drain and street flow system accommodate flow from a 25-year storm event. Areas with sump conditions are required to have a storm drain conveyance system capable of conveying flow from a 2 percent (50-year) storm event.

Los Angeles County Hydraulics Design Manual

LACFCD's Hydraulic Design Manual provides criteria for hydraulic design, design requirements for maintenance and access, and water surface calculations for closed conduits and open channels, as well as criteria for catch basins, levees, and other hydraulic infrastructure features within Los Angeles County.

Los Angeles County General Plan

The *Los Angeles County General Plan* (Los Angeles County 2015) identified goals and policies from the Conservation and Natural Resources and Safety Elements related to hydrology, water quality, groundwater, and flood hazards, which are described below.

Goal C/NR 5: Protected and useable local surface water resources.

- **Policy C/NR 5.1:** Support the LID philosophy, which seeks to plan and design public and private development with hydrologic sensitivity, including limits to straightening and channelizing natural flow paths, removal of vegetative cover, compaction of soils, and distribution of naturalistic BMPs at regional, neighborhood, and parcel-level scales.

- **Policy C/NR 5.2:** Require compliance by all County departments with adopted Municipal Separate Storm Sewer System (MS4), General Construction, and point source NPDES permits.
- **Policy C/NR 5.3:** Actively engage with stakeholders in the formulation and implementation of surface water preservation and restoration plans, including plans to improve impaired surface water bodies by retrofitting tributary watersheds with LID types of BMPs.
- **Policy C/NR 5.4:** Actively engage in implementing all approved Enhanced Watershed Management Programs/Watershed Management Programs and Coordinated Integrated Monitoring Programs/Integrated Monitoring Programs or other County-involved TMDL implementation and monitoring plans.
- **Policy C/NR 5.5:** Manage the placement and use of septic systems in order to protect nearby surface water bodies.
- **Policy C/NR 5.6**: Minimize point and non-point source water pollution.
- **Policy C/NR 5.7:** Actively support the design of new and retrofit of existing infrastructure to accommodate watershed protection goals, such as roadway, railway, bridge, and other—particularly—tributary street and greenway interface points with channelized waterways

Goal C/NR 6: Protected and usable local groundwater resources.

- **Policy C/NR 6.1:** Support the LID philosophy, which incorporates distributed, post-construction parcel-level stormwater infiltration as part of new development.
- **Policy C/NR 6.**2: Protect natural groundwater recharge areas and regional spreading grounds.
- **Policy C/NR 6.3:** Actively engage in stakeholder efforts to disperse rainwater and stormwater infiltration BMPs at regional, neighborhood, infrastructure, and parcel-level scales.
- **Policy C/NR 6.4:** Manage the placement and use of septic systems in order to protect high groundwater.
- **Policy C/NR 6.5:** Prevent stormwater infiltration where inappropriate and unsafe, such as in areas with high seasonal groundwater, on hazardous slopes, within 100 feet of drinking water wells, and in contaminated soils.

Goal C/NR 7: Protected and healthy watersheds.

- **Policy C/NR 7.1:** Support the LID philosophy, which mimics the natural hydrologic cycle using undeveloped conditions as a base, in public and private land use planning and development design.
- **Policy C/NR 7.2:** Support the preservation, restoration and strategic acquisition of available land for open space to preserve watershed uplands, natural streams, drainage paths, wetlands, and rivers, which are necessary for the healthy function of watersheds.
- **Policy C/NR 7.3:** Actively engage with stakeholders to incorporate the LID philosophy in the preparation and implementation of watershed and river master plans, ecosystem restoration projects, and other related natural resource conservation aims, and support the implementation of existing efforts, including Watershed Management Programs and Enhanced Watershed Management Programs.
- **Policy C/NR 7.4:** Promote the development of multi-use regional facilities for stormwater quality improvement, groundwater recharge, detention/attenuation, flood management, retaining non-stormwater runoff, and other compatible uses.

Goal S 2: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to flood and inundation hazards.

- **Policy S 2.1:** Discourage development in the County's Flood Hazard Zones.
- **Policy S 2.2:** Discourage development from locating downslope from aqueducts.
- **Policy S 2.3:** Consider climate change adaptation strategies in flood and inundation hazard planning.

- **Policy S 2.4:** Ensure that developments located within the County's Flood Hazard Zones are sited and designed to avoid isolation from essential services and facilities in the event of flooding.
- **Policy S 2.5:** Ensure that the mitigation of flood related property damage and loss limits impacts to biological and other resources.
- **Policy S 2.6:** Work cooperatively with public agencies with responsibility for flood protection, and with stakeholders in planning for flood and inundation hazards.
- **Policy S 2.7:** Locate essential public facilities, such as hospitals and fire stations, outside of Flood Hazard Zones, where feasible.

Los Angeles County Codes

Los Angeles County Codes include ordinances and practices that regulate hydrology, water quality, and groundwater:

- **Title 11:** Regulations and provisions related to health and safety including water and sewers, groundwater, impaired water bodies, and water wells
- **Title 20:** Regulations related to utilities including the regional clean water program, stormwater, and urban runoff
- **Title 26:** Building codes and regulations related to flood hazards, grading including stormwater control measures, drainage and terracing, slope planting and erosion control, NPDES compliance, and SWPPP requirements
- **Title 30:** Provide minimum standards to preserve the public safety, health, and welfare by regulating the design, construction, installation, quality of materials, use, occupancy, location, and maintenance of all buildings, structures, grading, and certain equipment.

City

Frame 1

City of Long Beach

City of Long Beach Municipal Stormwater NPDES Permit

The Los Angeles Regional Water Board adopted Order No. R4-2014-0024 (NPDES Permit No. CAS004003, as amended by R4-2014-0024-A01), Waste Discharge Requirements for MS4 Discharges from the City of Long Beach (Long Beach MS4 Permit), becoming effective March 28, 2014. The Long Beach MS4 Permit includes TMDL provisions designed to ensure that the City of Long Beach achieves waste load allocations and meets other requirements of TMDLs covering receiving waters affected by the City of Long Beach's MS4 discharges. Among the TMDL provisions in the Long Beach MS4 Permit are provisions relating to the LA River Watershed Trash TMDL, including applicable water quality-based effluent limitations for trash; measures to achieve compliance with the effluent limitations for trash; and monitoring and reporting requirements related to the effluent limitations for trash. On September 8, 2016, the Los Angeles Regional Water Board amended the Long Beach MS4 Permit to incorporate modifications consistent with the revised LA River Watershed Trash TMDL. The order expired March 28, 2019; however, a new order has not been adopted, so the City of Long Beach may continue to implement the requirements of this order until a new one is adopted.

Long Beach Stormwater Management Program

The objectives of the Long Beach Stormwater Management Program are to effectively prohibit non-stormwater discharges and to reduce the discharge of pollutants to the maximum extent practicable such that these discharges will not adversely affect the beneficial uses of receiving waters. The City of Long Beach's ultimate objective is to comply with the federal CWA and Porter-Cologne.

City of Long Beach General Plan

The *Long Beach General Plan Program* identified goals and policies from the Conservation, Open Space and Recreation, and Public Safety Elements related to hydrology, water quality, and flood hazards (City of Long Beach 1973, 1975, 2002).

Water Resource Management Goal 1: To assure adequate quantity and quality of water to meet the present and future domestic, agricultural and industrial needs of the City.

Water Resource Management Goal 2: To enforce existing ordinances and develop new ordinances and promote continuing research directed toward achieving the required stringent water quality standards which regulate wastewater effluent discharge to ocean waters, bays and estuaries, fresh waters and groundwater.

Water Resource Management Goal 3: To assure that the waters of San Pedro and Alamitos Bays and Colorado Lagoon are maintained at the highest quality feasible in order to enhance their recreational, and commercial utilization.

Water Resource Management Goal 4: To enforce existing controls and ordinances regulating waste discharge from vessels.

Open Space and Recreation Goal: Provide for and maintain sufficient open space for adequate protection of lives and property against natural and man-made safety hazards.

- **Policy:** Maintain open space buffers adequate to keep property and lives save from natural and man-made disasters within the City including unstable soil areas, known active fault zones, low-lying flood prone lands, airport flight paths, and areas of physical and noise contamination

Public Safety Development Goal 5: Use physical planning as a means of achieving greater degrees of protection from safety hazards.

Public Safety Development Goal 8. Encourage development that would be most in harmony with nature and thus less vulnerable to natural disasters.

City of Los Angeles

City of Los Angeles General Plan

The City of Los Angeles identified objectives and policies in the Conservation and Safety Elements related to water resources, water quality, and flood hazards (City of Los Angeles 1996, 2001).

Objective: protect the coastline and watershed from erosion and inappropriate sedimentation that may or has resulted from human actions.

- **Policy 1:** support legislation and efforts to secure and retain federal funding for Pacific coast beach protection and renourishment programs.
- **Policy 2:** continue to prevent or reduce erosion that will damage the watershed or beaches or will result in harmful sedimentation that might damage beaches or natural areas.

Objective: protect and enhance the diversity and sustainability of the natural ecologies of the Santa Monica and San Pedro bays, including the bay fishery populations.

- **Policy 1:** continue to reduce pollutant discharge into the bays from both natural and human sources.
- **Policy 2:** continue to support legislation and to seek funding and legislation intended for bay and coastal protection, enhancement and habitat restoration.
- **Policy 3:** continue to support and/or participate in programs to clean bay sediments and/or mitigate potentially harmful effects of contaminants in the sediments and waters of the bays.

Safety Goal 1: A city where potential injury, loss of life, property damage and disruption of the social and economic life of the City due to fire, water related hazard, seismic event, geologic conditions or release of hazardous materials disasters is minimized.

- **Safety Policy 1.1.1 Coordination:** Coordinate information gathering, program formulation and program implementation between City agencies, other jurisdictions and appropriate public and private entities to achieve the maximum mutual benefit with the greatest efficiency of funds and staff.
- **Safety Policy 1.1.4 Health/environmental protection**: Protect the public and workers from the release of hazardous materials and protect City water supplies and resources from contamination resulting from accidental release or intrusion resulting from a disaster event, including protection of the environment and public from potential health and safety hazards associated with program implementation.
- **Safety Policy 1.1.5 Risk reduction**: Reduce potential risk hazards due to natural disaster to the greatest extent feasible within the resources available, including provision of information and training.
- **Safety Policy 1.1.6 State and federal regulations:** Assure compliance with applicable state and federal planning and development regulations, e.g., Alquist-Priolo Earthquake Fault Zoning Act, State Mapping Act and Cobey-Alquist Flood Plain Management Act.

City of Los Angeles Stormwater Program

The Watershed Protection Division of the City of Los Angeles Department of Public Works, Bureau of Sanitation, is responsible for stormwater pollution control throughout the city in compliance with the County MS4 Permit. The Watershed Protection Division administers the City of Los Angeles's stormwater program, which has two major components: pollution abatement and flood management. The Watershed Protection Division publishes a two-part handbook that provides guidance to developers for compliance with the County MS4 Permit through the incorporation of water quality management into development planning. The City of Los Angeles's LID Best Management Practices Handbook, Part A: Construction Activities (3rd edition, September 2004) reiterates the policies contained within the Construction General Permit, provides specific minimum BMPs for all construction activities, and requires the preparation of a SWPPP and the filing of an NOI to comply with the Construction General Permit requirements with the Los Angeles Regional Water Board. The LID Best Management Practices Handbook provides guidance to developers to ensure the post-construction operation of newly developed and redeveloped facilities complies with the developing planning program regulations of the City of Los Angeles's stormwater program. The City of Los Angeles is working collaboratively to develop EWMPs related to the project area.

City of Los Angeles Manuals and Standards

Per the City of Los Angeles Special Order No. 007-1299 of December 3, 1999, the City of Los Angeles has adopted Public Works' Hydrology Manual as its basis of design for storm drainage facilities. Drainage and flood management structures and improvements within the City of Los Angeles are subject to review and approval by the City of Los Angeles Department of Public Works, Bureau of Engineering, and Department of Building and Safety. As required by the City of Los Angeles's

Department of Public Works, all public storm facilities must be designed in conformity with the standards set forth by Los Angeles County. The City of Los Angeles Department of Public Works reviews and approves storm drain plans prior to construction. Other City of Los Angeles manuals relevant to the Project include the Storm Drain Design Manual, Standards Plans, and Stormwater Pollution Abatement Handbooks and Publications.

Stormwater Ordinance Los Angeles Municipal Code 64.70

In 1998, the City of Los Angeles passed a stormwater ordinance (Los Angeles Municipal Code 64.70), which prohibits the entry of illicit discharges into the municipal storm drain system and gives the City of Los Angeles local legal authority to enforce the NPDES permit and take corrective actions with serious offenders. Any commercial, industrial, or construction business found discharging waste or wastewater into the storm drain system may be subject to legal penalties. In 2011, the City of Los Angeles passed an LID ordinance that amends Los Angeles Municipal Code 64.70 and requires development and redevelopment projects to mitigate runoff in a manner that captures rainwater at its source utilizing natural BMPs such as rain barrels, permeable pavement, storage tanks, and infiltration swales.

Frame 2

Unincorporated County Areas

Applicable regulations are described above.

City of Long Beach

Applicable regulations are described above.

City of Carson

City of Carson General Plan

The *Carson General Plan* identifies goals and policies in the Open Space and Conservation and Safety Elements related to water resources, drainage, and flood hazards (City of Carson 2004).

Goal OSC-2: Protection and conservation of Carson's water resources.

- **Policy OSC-2.1** Maintain and improve water quality.
- **Policy OSC-2.2** Continue to monitor land uses discharging into water sources and water recharge areas, to prevent potential contamination from hazardous or toxic substances.
- **Policy OSC-2.2** Minimize soil erosion and siltation from construction activities through monitoring and regulation.

Goal SAF-2: Strive to minimize injury and loss of life, damage to public and private property and infrastructure, and economic and social disruption caused by flood hazards.

- **Policy SAF-2.1** Continue to maintain and improve levels of storm drainage service.
- **Policy SAF-2.2** Continue to work with the appropriate local, State and Federal agencies (i.e., Los Angeles County Department of Public Works, Caltrans, Federal Emergency Management Agency, etc.) to reduce the potential for flood damage in the City of Carson.
- **Policy SAF-2.3** Ensure that areas experiencing localized flooding problems are targeted for storm drain improvements. To this end, work closely with Los Angeles County Department of Public Works and other cities in the South Bay region to ensure that facilities are adequate to accommodate storm waters.

- **Policy SAF-2.4** As development intensifies and/or as redevelopment occurs in the City, ensure that storm drain systems are adequate to accommodate any intensification of uses, as well as existing uses.
- **Policy SAF-2.5** Periodically review and recommend appropriate changes to the Los Angeles County Department of Public Works for the Storm Drainage Master Plan for Los Angeles County

City of Carson Individual Watershed Management Program

The City of Carson is a permittee of the County MS4 Permit. To address MS4 Permit requirements, the City of Carson prepared an Individual Watershed Management Program (I-WMP) to meet TMDL and non-water quality standards (referred to collectively as "WQSs"). The I-WMP allows the City of Carson to determine to what extent its existing stormwater quality management program is meeting TMDLs and non-TMDL WQSs, based on outfall monitoring against ambient WQSs.

The City of Carson is also participating in a Coordinated Integrated Monitoring Plan (CIMP). The CIMP addresses all of the monitoring requirements specified in the County MS4 Permit's Monitoring and Reporting Program element. The purpose of the CIMP is to: (1) characterize watersheds/sub-watersheds relative to WQSs; (2) determine to what extent MS4 permittees are meeting or not meeting WQSs; and (3) achieve monitoring cost savings through collective participation with other permittees sharing common watershed location.

City of Compton

City of Compton Individual Watershed Management Program

The City of Compton is in the process of developing an I-WMP and is participating in a CIMP. As the City of Compton does not have an approved Integrated Monitoring Plan, the City of Compton is therefore immediately subject to the baseline monitoring and reporting requirements of the County MS4 Permit, Attachment E. Pursuant to Attachment E of the County MS4 Permit, baseline monitoring requirements include receiving water monitoring during wet and dry weather, stormwater outfall based monitoring, non-stormwater outfall based screening and monitoring, new development/re-development effectiveness tracking, and regional studies. The City of Compton is also responsible for complying with the annual reporting requirements, pursuant to Attachment E, Part XVIII of the County MS4 Permit.

City of Compton General Plan

The *Draft Compton General Plan 2030* (City of Compton 2011) identified goals and policies from the Conservation, Open Space, and Recreation and Public Safety Elements related to hydrology, stormwater, and flood hazards

Conservation, Open Space, and Recreation Goal 1: Conserve and protect water resources.

- **Conservation, Open Space, and Recreation Policy 1.1:** The City of Compton will protect groundwater resources from depletion and contamination.
- **Conservation, Open Space, and Recreation Goal 2:** Preserve and rehabilitate the Compton Creek Open Space.
- **Conservation, Open Space, and Recreation Policy 2.1:** The City of Compton will support the efforts of the LA River and San Gabriel Rivers Watershed Council in the goals and objectives of the Compton Creek Watershed Management Plan.

Public Safety Goal 2: Protect residents, workers, and visitors from flood hazards.

- **Public Safety Policy 2.1:** The City of Compton will work with the Los Angeles County Department of Public Works to identify and construct needed local and regional storm drain improvements to prevent flooding problems in Compton.
- **Public Safety Policy 2.2:** The City of Compton will require local drainage-related improvements as part of new development approvals.

City of Long Beach

Applicable regulations for the City of Long Beach are described above in Frame 1.

Unincorporated County

Applicable regulations for unincorporated County areas are described above in the *Regional* regulatory setting.

Frame 3

City of Compton

Applicable regulations for the City of Compton are described above in Frame 2.

City of Cudahy

City of Cudahy General Plan

The *Cudahy 2040 General Plan* identifies goals and policies from the Open Space and Conservation and Safety Elements related to hydrology, water quality, and flood hazards (City of Cudahy 2018).

Goal OSCE-1: A sustainable urban environment protects valuable natural resources (water, air, and soil) and limits waste production

- **Policy OSCE-1.7**: Integrate stormwater treatment best practices—including bioswales, pervious pavement—wherever possible, especially in landscaping and parking lot design.
- **Policy OSCE-1.8:** Incorporate Low Impact Development (LID) approaches into the design and upgrades of public infrastructure.
- **Policy OSCE-1.9:** Reduce impermeable surface coverage citywide.

Goal OSCE-4: Safe and efficient infrastructure systems (sewer, water, storm drain) that are maintained to sustainably grow with the community.

- **Policy OSCE-4.1**: Coordinate with the owning/operating sewer, water, and storm drain agencies to ensure adequate maintenance and regulatory compliance.
- **Policy OSCE-4.2**: Ensure new projects comply with the Los Angeles County MS4 permit.
- **Policy OSCE-4.3**: Encourage use of onsite Best Management Practices (BMPs) or biofiltration to treat storm water for project sites where infiltration is infeasible.

Goal SE-4: A prepared and resilient Cudahy

- **Policy SE-4.1**: Ensure and maintain the structural and operational integrity of essential public facilities during earthquakes and flooding.
- **Policy SE-4.3:** Prioritize improvements to Cudahy's storm water management systems (storm drain improvements, reduction of impervious surfaces, etc.) to better serve areas prone to intermittent flooding.
- **Policy SE-4.4:** Require improvements to be made to utility transmission and distribution systems including electrical, gas, water, wastewater, and storm drainage, thus accommodating

new growth and ensuring that maintenance is performed on these systems in a manner that provides safety, reliability, and environmental compatibility.

City of Downey

City of Downey General Plan

The *Downey Vision 2025 General Plan* identifies goals and policies from the Conservation and Safety Elements related to water quality, stormwater, and flood hazards (City of Downey 2005).

Goal 4.2: Prevent the contamination of groundwater.

- **Policy 4.2.1:** Monitor and improve groundwater quality.
- **Goal 4.3:** Reduce the contamination level at beaches and oceans.
- **Policy 4.3.1:** Reduce the contaminant level of stormwater and urban runoff generated within Downey.

Goal 5.6: Minimize potential adverse impacts from flooding.

- **Policy 5.6.1**: Protect life and property from flooding hazards.
- **Policy 5.6.2**: Minimize the potential for flooding due to stormwater generation.

City of Lynwood

City of Lynwood General Plan

The *City of Lynwood General Plan* identifies goals and policies from the Environmental Resources, Community Development, and Public Health and Safety Elements related to water resources and stormwater (City of Lynwood 2003).

Goal WR-1: Protect surface and subsurface water resources in the water basin that are impacted by actions within the City.

- **Policy WR-1.1 Ensure Clean Water**: The City shall ensure that development and redevelopment projects do not degrade surface waters and groundwater basin.

Goal SO-1: Ensure the protection of soils from erosion by wind and water.

- **Policy SO-1.1 Soil Erosion from Grading:** The City shall control grading of land to minimize the impact of soil erosion from wind and water.

Goal SD-1: Provide for the planning and funding mechanism to conduct, expand, and maintain storm drain facilities needed to protect existing and future development.

- **Policy SD-1.1: Adequate Facilities**. The City shall provide storm drain facilities with sufficient capacity to protect the public and property from stormwater damage.
- **Policy SD-1.2: Facilities Funding**. The City shall assure that adequate funding is available to improve existing and construct new storm drain facilities.
- **Policy SD-1.3: Facilities Management**. The City shall manage flood control facilities in accordance with local state and federal guidelines.

Goal HM-1: Protect the public health, safety, and welfare through the planning and implementation measures for the siting, reporting, and transportation of hazardous materials in or through the City of Lynwood.

- **Policy HM-1.5**: Contamination Prevention, Protect soils and surface and groundwater from contamination.

City of Paramount

City of Paramount General Plan

The *Paramount General Plan* identifies goals and policies from the Resource Management and Public Facilities Elements related to water resources and water quality (City of Paramount 2007).

- **Resource Management Element Policy 10**: The City Paramount will continue to evaluate the feasibility of the expanded joint-use of the open space lands used for flood control and utility easements.
- **Resource Management Element Policy 21**: The City of Paramount will continue to cooperate with the other agencies that are charged with improving air and water quality in the region.
- **Public Facilities Element Policy 1**: The City of Paramount will work to maintain good water quality.
- **Public Facilities Element Policy 4**: The City of Paramount will protect, conserve, and enhance water resources through implementation of the Water Master Plan.
- **Public Facilities Element Policy 9**: The City of Paramount will work to eliminate problems of ponding on local streets.

City of South Gate

City of South Gate General Plan

South Gate General Plan 2035 identifies goals and policies from the Green City and Public Facilities Elements related to water quality, flood hazards, and stormwater (City of South Gate 2009).

Goal GC 3: Enhanced utilization of the LA River and the Rio Hondo Channel as open space.

- **Policy 3.1.5:** New development that may result in increased water pollution to the LA River or the Rio Hondo Channel will be required to mitigate the potential sources of pollution, especially pollution from stormwater runoff.

Goal GC 4: The prevention of hazards from flooding

- **Policy 4.1.1:** The City of South Gate Natural Hazard Mitigation Plan, including all background materials, goals, policies, objectives and implementation measures will be incorporated into this General Plan.
- **Policy 4.1.2:** New development in South Gate should not exacerbate potential flooding hazards.
- **Policy 4.1.3:** The City will provide continued support for the Los Angeles County Drainage Project (LACDP), which reduces the flood risk in a significant portion of the City.
- **Policy 4.1.4:** The City will coordinate with the flood-control activities of the Los Angeles County Department of Public Works.
- **Policy 4.1.5:** The City will work with the Emergency Services Division of the Los Angeles County Division of the Army Corps of Engineers to develop better flood warning systems.
- **Policy 4.1.6:** The Public Works Department will continue to identify and enforce NPDES provisions within the City.

Goal GC 5: The protection of local and global natural resources

- **Policy 5.3.1:** Large parking lots as part of new development or major renovations should be well landscaped with trees and other greenery and designed to hold and filter stormwater runoff, reduce heat island effects and create a comfortable pedestrian environment.

Goal GC 6: A robust green building program

- **Policy 6.1.6:** When feasible or required by law, new development should utilize Low Impact Design (LID) features, including infiltration of stormwater, but LID should not interfere with the City's goals of infill development and appropriate densities as defined in the Community Design Element.

Goal PF 7: To collect, store and dispose of stormwater in a way that is safe, sanitary, and environmentally acceptable

- **Policy P.7.1.1:** Stormwater infrastructure will be maintained in good condition.
- **Policy P.7.1.2:** The City should provide sufficient funds to maintain necessary stormwater infrastructure.
- **Policy 7.1.3:** The City's stormwater infrastructure will comply with the National Pollutant Discharge Elimination System (NPDES) Act and all other legal and environmental requirements.
- **Policy 7.2.1:** The City will comply with the Best Management Practices contained in the Los Angeles County Standard Urban Stormwater Mitigation Plan (SUSMP).
- **Policy 7.2.2:** The City will seek to reduce the amount of stormwater that leaves the City, and will seek to improve the quality of stormwater that does leave the City.
- **Policy 7.2.3:** Where feasible, new development projects should handle all stormwater on site. Exceptions may be made where the design of such on-site stormwater facilities will have a negative impact on the urban quality of the development.
- **Policy 7.2.4:** A watershed management approach should be used in addressing, planning and managing stormwater issues.
- **Policy 7.2.5**: Existing property owners will be encouraged to reduce stormwater runoff by modifying their properties and reducing impermeable surfaces.
- **Policy 7.2.6:** Parking lots should be paved with permeable materials, whenever possible.

Unincorporated County

Applicable regulations for unincorporated County areas are described above in the *Regional* regulatory section.

Frame 4

City of Bell

City of Bell General Plan

The *City of Bell 2030 General Plan* identifies policy in the Resource Management Element related to water quality. In addition, the City of Bell implements programs related to stormwater management and flood hazards to ensure the City of Bell's policies are realized (City of Bell 2018).

Issue: To promote the conservation and preservation of important natural resources, including air and water.

- **Resource Management Element Policy 19:** The City of Bell shall continue to cooperate with the other agencies that are charged with improving air and water quality in the region. The City shall cooperate with the SCAQMD and water districts in undertaking any studies of air and water quality.

City of Bell Gardens

The *City of Bell Gardens General Plan 2010* identifies policy in the Conservation Element related to water quality. In addition, the City of Bell Gardens implements programs related to stormwater management and flood hazards to support the general plan policies (City of Bell Gardens 1995).

- **Conservation Element Policy 3:** The City of Bell Gardens shall protect the quality of water in the underground water basin by optimizing open space

City of Commerce

City of Commerce General Plan

The *City of Commerce 2020 General Plan* identifies policies in the Resource Management and Health and Safety Elements related to hydrology and water quality. In addition, the City of Commerce implements programs related to stormwater pollution prevention to support the general plan policies (City of Commerce 2008).

- **Resource Management Policy 1.2:** The city of Commerce will cooperate, to the degree necessary, with federal, state, and county agencies, and surrounding cities, in the maintenance and improvement in the quality of local groundwater.
- **Resource Management Policy 5.1:** The city of Commerce will do its part in the conservation and protection of air, water, energy, and land in the Southern California region.
- **Safety Policy 3.3:** The city of Commerce will continue to request local water purveyors to provide the city with periodic reports concerning water quality.
- **Safety Policy 4.2:** The city of Commerce will work with other agencies to reduce the potential flood hazard in the city.
- **Community Development Policy 7.3:** The city of Commerce will take a proactive role in meeting with regional planning agencies to ensure that the local community's voice is heard in the planning public facilities.

City of Huntington Park

City of Huntington Park General Plan

The *City of Huntington Park 2030 General Plan* identifies policies in the Research Management and Health and Safety Elements related to water resources, drainage, and flooding (City of Huntington Park (City of Huntington Park 2017).

Issue: Conserve & Protect Water Resources

- **Resource Management Element Policy 5:** The City of Huntington Park shall protect groundwater resources from depletion and pollution

Issue: Flooding

- **Health & Safety Element Policy 5:** The City of Huntington Park shall work with the Los Angeles County Department of Public Works to identify and construct needed local and regional storm drain improvements to relieve local flooding problems in Huntington Park.
- **Health & Safety Element Policy 6:** The City of Huntington Park shall support the Army Corps of Engineers to expand the capacity of the Rio Hondo and LA River channels.
- **Health & Safety Element Policy 7:** The City of Huntington Park shall prepare and maintain a master drainage plan.
- **Health & Safety Element Policy 8:** The City of Huntington Park shall require local drainage-related improvements to be implemented as part of new development approvals.

City of Maywood

City of Maywood General Plan

The *City of Maywood General Plan* identifies goals and policies in the Conservation Element related to water quality. In addition, the Safety Element identifies man-made and natural hazards that may affect the City of Maywood (City of Maywood 2008).

Conservation Element Goal 3: Provide for the proper management of natural resources both in the city and region are so that they may be protected for the benefit of present and future residents.

- **Policy 3.1:** Develop and enforce local criteria of air and water quality so that the city may reduce its share of these regional problems.

City of Vernon

City of Vernon General Plan

The *City of Vernon General Plan* identifies goals and policies in the Resources, Circulation and Infrastructure, and Safety Elements related to water resources, stormwater, and flood hazards (City of Vernon 2007).

Resource Element Goal R-1 Conserve and protect the region's water and energy resources.

- **Resource Element Policy R-1.3:** Seek and pursue the most practicable and cost-effective means of implementing National Pollutant Discharge Elimination Systems requirements.

Goal CI-5 Maintain the storm drainage system to assure the protection of lives and property in Vernon.

- **Policy CI-5.1:** Periodically evaluate the size and condition of the storm drainage system to determine its ability to handle expected storm runoff.
- **Policy CI-5.2:** Evaluate the impact of all new developments and expansion of existing facilities on storm runoff, and require that the cost of upgrading existing drainage facilities to handle the additional runoff is paid for by the development which generates the need to improve a facility.
- **Policy CI-5.3:** Monitor the use and storage of hazardous materials to prevent accidental discharge into the storm drainage system.
- **Policy CI-5.4:** Allow new development projects to creatively implement NPDES standards and requirements.

Safety Element Goal S-1: Minimize the risk to public health, safety, and welfare associated with the presence of natural and human-caused hazards.

- **Safety Element Policy S-1.1:** Periodically update and maintain the Multi-hazard Functional Plan in an effort to identify potential contingencies and emergency conditions and define the necessary response by public safety and other personnel.

Unincorporated County

Applicable regulations for unincorporated County areas are described above in the *Regional* regulatory section.

Frame 5

City of Los Angeles

Applicable regulations for the City of Los Angeles are described above in Frame 1.

Frame 6

City of Los Angeles

Applicable regulations for the City of Los Angeles are described above in Frame 1.

City of Glendale

City of Glendale General Plan

The City of Glendale General Plan identifies goals and policies in the Open Space and Conservation, Community Facilities, and Safety Elements related to hydrology, water quality, drainage facilities, and flood hazards (City of Glendale 1975, 1993, 2003).

Open Space and Conservation Element Goal 2: Protect vital or sensitive open space areas including ridgelines, canyons, streams, geologic formations, watersheds and historic, cultural, aesthetic and ecologically significant areas from the negative impacts of development and urbanization.

Open Space and Conservation Element Goal 6: Preserve and protect valuable water and mineral resources

Open Space and Conservation Element Goal 10: Integrate safety concerns into the management of natural resources including recognition of geologic hazards and flood, fire and seismic risks.

Open Space and Conservation Element Goal 12: Continue to conserve water resources and provide for the protection and improvement of water quality.

- **Open Space and Conservation Policy 5:** Proper management of environmental resources, especially natural resources, can assist in reducing hazards to the life and property of the City's residents and should be considered in project planning.

Community Facilities Goals: Provide for a logical, urban design statement as a means of harmonizing community facilities with other land uses; Formulate independent and inter-jurisdictional programs which establish a maximum utilization of all community facilities; Enhance the current level and quality of community facilities and services, and improve the accessibility to them.

- **Utilities Policies:** Maintain the high standard of utility services; Monitor future needs for the increase in utility services; Utilize all relevant, technological advancements to provide for the improved quality and quantity of energy at the lowest possible cost within the constraints of environmental considerations.

Safety Element Goal 3: Reduce the loss of life, injury, private property damage, infrastructure damage, economic losses, and social dislocation and other impacts resulting from flooding hazards.

- **Safety Element Policy 3-1:** The City shall investigate the potential for future flooding in the area and will encourage the adoption of flood-control measures in low-lying areas of alluvial fans, along major channels, and downgradient of large reservoirs and water tanks.

Frame 7

City of Los Angeles

Applicable regulations for the City of Los Angeles are described above in Frame 1.

City of Burbank

Burbank General Plan

The *Burbank2035 General Plan* identifies goals and policies in the Open Space and Conservation and Safety Elements related to water resources, drainage, and flood hazards (City of Burbank 2013).

Open Space and Conservation Element Goal 1 Resource Management: The public is involved in preserving open space, conserving resources, and improving the natural environment.

- **Policy 1.3:** Coordinate the City's open space program with regional parks, open space, and conservation plans.

Open Space and Conservation Element Goal 9 Water Resources: Adequate sources of high-quality water provide for various uses within Burbank.

- **Policy 9.5:** Require on-site drainage improvements using native vegetation to capture and clean stormwater runoff.

Safety Element Goal 6 Flood Safety: Potential risks—such as injury, loss of life and property, and economic and social disruption—caused by flood and inundation are minimized.

- **Policy 6.1:** Inform applicants of flood risks and development requirements within the 100-year, 200-year, or 500-year floodplains or in other high-risk inundation areas. Recommend hazard mitigation where possible.
- **Policy 6.2:** Continue to participate in the National Flood Insurance Program to ensure that flood insurance will be available to individuals in the community. Publicize the availability of flood insurance to Burbank residents and business owners.
- **Policy 6.3:** Continue to maintain and upgrade the City-operated flood control system to ensure the system is capable of protecting existing and planned development.
- **Policy 6.4:** Consult with Los Angeles County and other agencies to maintain and improve capacity of local and regional flood control systems.
- **Policy 6.5:** Enforce regulations prohibiting the draining of rainwater into the sewer system.
- **Policy 6.6:** Prepare and update a stormwater master plan to ensure proper maintenance and improvements to storm drainage facilities.
- **Policy 6.7:** Employ strategies and design features to reduce the area of impervious surface in new development projects

Unincorporated County

Applicable regulations for unincorporated County areas are described above in the *Regional* regulatory section.

Frame 8

City of Los Angeles

Applicable regulations for the City of Los Angeles are described above in Frame 1.

Frame 9

City of Los Angeles

Applicable regulations for the City of Los Angeles are described above in Frame 1.

3.9.3 Impact Analysis

3.9.3.1 Methods

This analysis qualitatively evaluates the construction and operations impacts of the proposed Project on hydrology and water quality based on literature review of conditions within and adjacent to the project area. The impacts were assessed on a programmatic level based on the relevant regulatory framework.

All project elements were analyzed by comparing baseline conditions, as described in Section 3.9.2, *Setting*, to conditions during construction and/or operations of the Project. The analysis focuses on issues related to surface hydrology, groundwater supply, surface water and groundwater quality, and flood hazards. The key construction-related impacts were identified and evaluated qualitatively based on the physical characteristics of the Project and the magnitude, intensity, location, and duration of activities.

- **Surface Water Hydrology.** The surface water hydrology impact analysis considered changes in waterbodies, impervious surfaces, and drainage patterns. Information on the change in impervious surface, runoff quantities, and drainage patterns was provided by the *2020 LA River Master Plan*, Appendix Volume II Draft Technical Backup Document, and Flood Risk Management, Water Quality, and Water Supply Progress Memo. The analysis of changes of the LA River channel involved a comparison of existing on-site hydrological conditions and new/modified conditions proposed as part of the Project.

- **Groundwater Hydrology.** Potential impacts on groundwater supply were analyzed using information from publicly available publications and site-specific technical reports, including the *2020 LA River Master Plan* Appendix Volume II Draft Technical Backup Document. The potential for project actions, including construction dewatering, impacts of the Project on groundwater, and potential effects on water level drawdown, was evaluated.

- **Surface Water and Groundwater Quality.** Impacts of the Project on surface water and groundwater quality were analyzed using information on potential existing sources of pollution generated by activities such as trails and access gateways, building maintenance, pesticide use, trash, and material storage. These impacts were then compared to potential project-related sources of pollution during construction, such as sediments and other construction materials, and during operation, such as trail use, building maintenance, pesticide use, trash, and storage of hazardous materials.

- **Flood Hazards.** The impact analysis for flood risk was conducted using FEMA mapping to determine the existing flood zone and information from the Flood Risk Management, Water Quality, and Water Supply Progress Memo regarding changes in the drainage system and layout that may affect flood risk.

Impacts associated with Typical Projects (i.e., the Common Elements and Multi-Use Trails and Access Gateways), the six kit of parts (KOP) categories, and related design components—as well as the *2020 LA River Master Plan* in its entirety—are analyzed qualitatively at a program level. Where the two Typical Projects or the six KOP categories have similar impacts related to a specific criterion, the discussion is combined. Where differences between the Typical Projects or the KOP categories are identified, the impact analysis is presented separately. Furthermore, construction and

operations impacts are presented together where they largely overlap and it would not be meaningful to discuss them separately to address a specific criterion.

3.9.3.2 Criteria for Determining Significance

Thresholds of Significance

For the purposes of the analysis in this PEIR, and in accordance with Appendix G of the State CEQA Guidelines, the proposed Project would have a significant environmental impact if it would:

3.9(a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

3.9(b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin.

3.9(c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:

- Result in substantial erosion or siltation on or off site.
- Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Impede or redirect flood flows.

3.9(d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

3.9(e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.9.3.3 Impacts and Mitigation Measures

Impact 3.9(a): Would the proposed Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Typical Projects

Common Elements

Construction

The Common Elements Typical Project locations could occur anywhere off-channel (between top of levee and fenceline) along the LA River; therefore, the potential for the proposed Project to violate

water quality standards or otherwise substantially degrade water quality could occur throughout the project study area. As a result, construction impacts for the Common Elements Typical Project for Frame 1 through Frame 9 would be similar and are discussed together.

Project construction activities such as demolition/material removal, grading, stockpiling of spoil materials, and other construction-related earth-disturbing activities could result in short-term water quality degradation associated with soil erosion and subsequent sediment transport to adjacent properties, roadways, or watercourses via storm drains. Sediment transport to local drainage facilities such as drainage inlets, culverts, and storm drains could result in reduced storm flow capacity, causing localized ponding or flooding during storm events. Construction activities could also generate dust, settlement, litter, oil, and other pollutants that could temporarily contaminate water runoff from a construction site.

Common Elements Typical Project construction activities must comply with the NPDES Construction General Permit. All construction activities must also comply with the County MS4 Permit and its associated provisions and, if applicable, the appropriate local MS4 permit, stormwater management requirements, and general plan and ordinances for the local jurisdiction, which contain standards to ensure that water quality is not degraded. As part of the Construction General Permit, standard erosion control measures and BMPs would be identified in a SWPPP and would be implemented during construction to reduce sedimentation of waterways and loss of topsoil.

Compliance with grading permits and the NPDES Construction General Permit would require use of BMPs to restrict soil erosion and sedimentation and restrict non-stormwater discharges from the construction site as well as release of hazardous materials. As a performance standard, selected construction BMPs would represent the best available technology that is economically achievable and best conventional pollutant control technology to reduce pollutants.

Other potential water quality degradation issues could include chemical spills, such as fuels from construction equipment, into storm drains or groundwater aquifers if proper minimization actions are not implemented. However, BMPs, as required by Los Angeles County grading permits and the NPDES Construction General Permit, would be implemented to reduce pollutants in stormwater and other NPS runoff. Measures range from source control such as straw wattles, mulch, and managing vehicle and equipment cleaning, fueling, and maintenance, to treatment of polluted runoff. BMPs can include watering active construction areas to control dust generation during earthmoving activities; using water sweepers to sweep streets and haul routes; and installing erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, and sandbag dykes) to prevent silt runoff to public roadways, storm drains, or waterways. As appropriate, disturbed soil would be revegetated as soon as possible with the appropriate selection and schedule of plants.

Erosion-control measures for disturbed surfaces would be required by the NPDES Construction General Permit during the rainy season, which generally occurs between October and April. In addition to complying with the Construction General Permit, construction activities would be required to comply with local stormwater quality and grading, erosion, and sediment control ordinances. These requirements involve development and implementation of erosion and sediment control plans (ESCPs) specific to the construction site to minimize water quality impacts.

In the event that dewatering for an individual project site is required, the SWPPP would include a dewatering plan, which would establish measures to prevent and minimize sediment and contaminant releases into groundwater during excavation. Dewatering activities would be required

to comply with the NPDES Construction General Permit, Los Angeles Regional Water Board WDRs for discharges of groundwater (Order No. R4-2018-0125), and local dewatering requirements to prevent potential water quality impacts on surface waters or ensure proper treatment measures are implemented prior to discharge. In the event of dewatering during construction activities or before dewatering to surface water via a storm drain, the contractor would obtain coverage under the NPDES Construction General Permit from the Los Angeles Regional Water Board. Coverage under the NPDES Construction General Permit typically includes dewatering activities as authorized non-stormwater discharges, provided that dischargers prove the quality of water to be adequate and not likely to affect beneficial uses. All requirements of dewatering would be met to ensure water quality is not affected.

Construction would be required to comply with the Long Beach MS4 Permit (for work within Frame 1) and the County MS4 Permit requirements and their associated provisions, local jurisdictions' stormwater management programs, and the NPDES Construction General Permit. Furthermore, a stormwater control plan may be required for each activity. Compliance with these requirements would ensure that construction activities under the Common Elements Typical Project do not result in a violation of water quality standards or WDRs, or otherwise result in water quality degradation.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations

Water quality in urban developments is influenced by processes and activities that take place within the watershed. The quality of the stormwater runoff from the Project and surrounding development is typical of urban watersheds where water quality is affected primarily by discharges from both point and nonpoint sources. Point and nonpoint sources include outfalls, winter storms, overland flow, exposed soil, roofs, parking lots, and streets. Water quality throughout the vicinity of the project area is directly affected by stormwater runoff that contains fertilizers, pesticides, automobile and traffic pollutants (e.g., oil, grease, metals), sediment with associated pollutants from soil erosion, trash, and other pollutants. Pollutants accumulate on impervious areas and are mobilized during precipitation events. "First flush" storm events, during which pollutants that have accumulated are concentrated with little dilution by the initial storm event of the season, have the largest impact on water quality in receiving waters. However, water quality degradation is temporary, and limited to wet-weather runoff.

Although a subset of projects could decrease impervious surfaces, implementation of the Common Elements Typical Project may also result in an increase in impervious surfaces at specific locations, which could cause increased runoff rates and volumes and associated pollutants such as automobile and pesticide use. Increased stormwater runoff would also increase the potential for erosion and sedimentation. Increased pollutant loading to surface waters as well as degraded groundwater quality also could occur. However, project operations would comply with the County MS4 Permit

and its associated provisions, the Public Works LID Standards Manual, and local stormwater management programs, as required.

The *2020 LA River Master Plan* includes structural and non-structural BMPs that would be implemented to capture, convey, and control pollutant discharge, and infiltrate stormwater during a rain event. The *2020 LA River Master Plan* Design Guidelines (Design Guidelines; as described in Chapter 2, *Project Description*, and included in Appendix B) include a variety of recommended stormwater BMPs and related site improvements included in the Common Elements Typical Project that would be required to manage drainage and stormwater. Stormwater BMPs as included under the Common Elements Typical Project and described in the Design Guidelines may include rain gardens, vegetated swales/bioswales, vegetated filter/infiltration strips, infiltration trenches, stormwater planters, and tree well filters. BMP methods would be decided by the implementing agency and implemented depending on the available space, intended use, and soil suitability for infiltration at the project site. Ideal rain garden locations would be identified and implemented where there is more space to implement the Project and graded to increase the capture and retention of runoff while maintaining the growth of native plantings. Swales would be installed along paved trails or other linear projects to convey water at a slower rate than that of traditional pipes. Infiltration strips and trenches are ideal for smaller spaces or areas adjacent to structures, such as narrow rights-of-way.

BMPs would be designed to work with the overall stormwater approach for the project site. Furthermore, BMPs would be properly sized with respect to tributary drainage areas they are treating. Recommended best practices, including pre-treatment BMPs to remove solids, sediments, trash, and debris, may be added or required. BMP design would comply with the Public Works LID Standards Manual.

Surface areas would be designed to direct runoff toward stormwater BMPs, landscaped areas, or other water collection and treatment areas, as required by grading and drainage plans and permit approvals. Furthermore, where neighborhood streets drain directly into the river, new projects would create bioswales or treatment basins to collect stormwater runoff. The use of recommended stormwater BMPs such as rain gardens, swales, and infiltration strips and trenches to retain stormwater and allow infiltration would be considered in project design. Implementation of stormwater treatment areas, landscape features, and open space areas would allow water to percolate into the ground, thereby treating stormwater runoff through biological uptake, and reducing the discharge of pollution to the storm drain system. Any potential contaminants would be filtered, minimizing adverse effects on groundwater quality. The Design Guidelines also encourage the use of permeable paving, filtration and percolation of stormwater, and on-site water retention or detention to reduce or eliminate water pollution and reduce runoff. Planting strategies along setbacks, buffers, levees, and floodwalls would also provide opportunities for stormwater treatment before it enters the river. In addition, river pavilions would incorporate water and environmental best practices including on-site water retention, detention, and filtration, as well as green roofs and pervious paving, which provide water quality benefits.

With implementation of stormwater BMPs and compliance with NPDES Construction General Permit post-construction stormwater standards, the County MS4 Permit, and other local water quality requirements, degradation of surface water and groundwater quality from operations of the Common Elements Typical Project would be minimized. The Public Works LID Standards Manual provides guidance for the implementation of stormwater quality control measures and the recommended design methodology to manage stormwater in Los Angeles County. Implementation

of stormwater BMPs such as rain gardens, vegetated swales, infiltration strips, and stormwater planters, as well as planting buffers and permeable materials, would reduce stormwater runoff flows and associated pollutants and treat stormwater runoff. In addition, the NPDES Construction General Permit emphasizes runoff reduction through on-site stormwater reuse, interception, evapotranspiration, and infiltration through non-structural controls and conservation design measures (e.g., downspout disconnection, soil quality preservation/enhancement, interceptor trees). Post-construction measures must also meet requirements of the NPDES Construction General Permit post-construction stormwater standards and the County's runoff rates and volumes for permanent post-construction stormwater BMPs for water quality protection. Furthermore, the Common Elements Typical Project would be designed to manage flows and associated polluted runoff leaving project sites to levels required by the County Hydrology Manual. It would be designed and maintained in accordance with County, city, and Los Angeles Regional Water Board water quality requirements, such as the County MS4 Permit, and general plan policies. Therefore, operation of the Common Elements Typical Project would not violate any water quality standards or degrade water quality.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Multi-Use Trails and Access Gateways

Construction

Construction impacts related to violating water quality standards or WDRs, or otherwise substantially degrading surface or groundwater quality would be similar to the those described above under the Common Elements Typical Project. Locations of Typical Projects for Multi-Use Trails and Access Gateways could occur anywhere along the LA River; therefore, violations of water quality standards or otherwise substantially degrading water quality could occur throughout the proposed project area. As a result, construction and operation impacts for the Multi-Use Trails and Access Gateways Typical Project in Frame 1 through Frame 9 would be similar and are discussed together.

Construction activities including earth-disturbing activities could result in short-term water quality impacts associated with soil erosion and sediment transport. Construction activities could also generate dust, litter, oil, and other pollutants that could temporarily contaminate runoff. However, construction activities must comply with the NPDES Construction General Permit, County MS4 Permit, local MS4 permits and their associated provisions, stormwater management requirements, general plans, and ordinances for the jurisdiction where the future Multi-Use Trails and Access Gateways Typical Project may be located. Standard erosion control measures and BMPs would be identified in a SWPPP and implemented during construction. Construction activities would also be required to comply with local stormwater quality and grading, erosion, and sediment control ordinances. These requirements involve implementation of ESCPs and compliance with grading

permits at the construction site. BMPs would also restrict non-stormwater discharges and release of hazardous materials from the construction site, and reduce pollutants in stormwater and other NPS runoff. Measures range from source control to treatment of polluted runoff. Disturbed soil would be revegetated as soon as possible, as necessary. Dewatering activities would comply with NPDES, Los Angeles Regional Water Board, County MS4 Permit, and local dewatering requirements to prevent and minimize contaminant releases into groundwater during excavation and prevent potential surface water quality impacts.

Compliance with the County MS4 Permit, NPDES Construction General Permit, and local stormwater requirements would ensure that construction activities under the Multi-Use Trails and Access Gateways Typical Project do not result in a violation of water quality standards or WDRs, or otherwise result in water quality degradation.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant No mitigation is required.

Operations

Similar to the Common Elements Typical Project, the Multi-Use Trails and Access Gateways Typical Project could result in an increase in impervious surfaces at specific locations, which could cause increased runoff rates and volumes, increased pollutant loading, and increased potential for erosion and sedimentation. However, operation of the Multi-Use Trails and Access Gateways Typical Project would comply with the County MS4 permit, the County LID Ordinance and Public Works LID Standards Manual, relevant general plan policies, and local stormwater management programs, as required. Additional stormwater BMPs could be implemented for multi-use trails to manage and treat stormwater runoff, as required by local MS4 requirements and the *2020 LA River Master Plan*. The Design Guidelines include a variety of recommended stormwater BMPs such as rain gardens, vegetated swales, vegetated filter/infiltration strips, infiltration trenches, stormwater planters, and tree well filters. BMP methods would be implemented depending on the available space and soil suitability for infiltration at the project site. Swales would be installed along paved trails or other linear projects to convey water slowly. Infiltration strips and trenches are ideal for smaller spaces such as narrow rights-of-way. Tree well filters also work effectively with linear landscapes such as trails. New trails, particularly those that are paved with impervious materials, would slope to drain away from the river channel toward a bioswale or other BMP areas. Larger gateways may include vegetation buffers and other vegetated areas, providing treatment of stormwater before it enters the river. Implementation of stormwater BMPs, habitat corridors, and other vegetated areas would allow water to percolate into the ground, filtering potential contaminants, reducing the discharge of pollution, and minimizing adverse effects on groundwater quality. The Design Guidelines also encourage the use of permeable paving, filtration and percolation of stormwater, and on-site water retention or detention to mitigate or eliminate water pollution and reduce runoff.

Through compliance with the NPDES Construction General Permit, County MS4 Permit, and other local water quality requirements and consideration and encouragement of the recommended stormwater BMPs included in the Design Guidelines, impacts on surface water and groundwater quality would be minimized. Therefore, the Multi-Use Trails and Access Gateways Typical Project would not violate any water quality standards or degrade water quality.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

2020 LA River Master Plan Kit of Parts

The Common Elements Typical Project analyzed above could be implemented in whole or as a combination of its individual elements with all the KOP categories discussed below. Therefore, for potential impacts of the Common Elements Typical Project, see above. The impact discussion below focuses on specific KOP categories only. Each of the KOP categories is analyzed separately where differences in impacts exist; KOP categories with similar impacts are grouped together.

Construction

KOP Categories 1 through 6

The specific location (in-channel or off-channel), configuration, and design for KOP Categories 1 through 6 have not been determined and would depend on numerous factors including community needs, flow and channel capacity needs and requirements, flow rates and volumes, project proponent decisions, and availability of funding. Considering KOP Category 1 includes a variety of construction activities ranging from trail modifications to development of facilities, habitat corridors, and channel access ramps anywhere in the project study area, construction of KOP Category 1 could result in potentially significant impacts associated with temporary water quality impacts. Off-channel construction activities could result in short-term water quality impacts associated with soil erosion and sediment transport; generate dust, litter, oil, or chemical spills; or release other pollutants that could temporarily contaminate runoff or runoff into storm drains or groundwater aquifers. In-channel impacts could differ from off-channel construction impacts. In-water work, within the channel, could result in suspended sediments in the water column that can lower levels of dissolved oxygen, increase salinity, increase concentrations of suspended solids, and possibly release chemicals present in sediments into the water. The degree of turbidity resulting from the suspended sediments would vary substantially with the amount and duration of the construction activity. However, impacts would be temporary and generally confined to within a few hundred yards of the activity. After initial resuspension of sediment, dispersion would occur, and background levels would be restored within a short time frame. Normal circulation and tidal effects in the estuary would generally disperse and dilute the water that was temporarily affected by construction activities.

Compliance with the Long Beach MS4 Permit (for work within Frame 1) and County MS4 Permit and their associated provisions, NPDES Construction General Permit, local stormwater management and water quality requirements, general plans, and ordinances would ensure that water quality impacts from construction activities are minimized. Furthermore, any in-channel work within Frame 1 where the channel is tidally influenced would be subject to requirements of a Section 10 Rivers and Harbors Appropriation Act permit and remaining channel areas would require Section 401 and Section 404 permits. These permits would specify BMPs and require preparation and implementation of plans for the protection of water quality (e.g., a Debris Management Plan; a Spill Prevention, Control, and Countermeasure Plan; equipment fueling requirements to require proper fuel transfer procedures; equipment maintenance requirements to minimize fuel leaks and spills; a Materials Management Disposal Plan; mooring requirements to capture construction debris; measures to avoid cement, concrete, and saw water from entering the LA River channel; and measures to ensure proper disposal of construction material). Standard erosion and stormwater control measures and BMPs, as identified in a SWPPP, would be implemented. BMPs would also restrict non-stormwater discharges and release of hazardous materials from the construction site, and reduce pollutants in stormwater and other NPS runoff.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations

Certain design components of KOP Category 1 inform the Multi-Use Trails and Access Gateways Typical Project analyzed above in more detail. Therefore, for potential construction and operation impacts of these design components, see above. The design components analyzed in this section include those listed in Section 2.5.1 in Chapter 2, *Project Description*, under the *KOP Category 1: Trails and Access Gateways* heading.

KOP Category 1

Increases in impervious surfaces associated with KOP Category 1 could result in increased runoff rates and volumes, increased pollutant loading, and increased potential for erosion and sedimentation. The magnitude of impacts is related to the area of increased impervious areas.

However, stormwater BMPs as outlined in the Design Guidelines may be implemented to manage and treat stormwater runoff, as required by the Long Beach MS4 Permit and the County MS4 Permit. BMPs such as swales, infiltration strips and trenches, and tree wells are particularly effective along linear projects such as trails. New impervious trails would slope to drain away from the river channel toward BMP areas. KOP Category 1 includes the addition of vegetated buffers, habitat corridors, rain gardens, and other BMPs, which would also improve water quality through infiltration and treatment. Bacteria and nutrient pollution from trail usage including equestrian trails and facilities would comply with NPS regulations. With compliance with the County MS4

Permit and its associated provisions, general plan policies, and other local water quality requirements, impacts on surface water and groundwater quality from the operation of KOP Category 1 would be minimized.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 2

As described in Section 2.5.1, in Chapter 2, *Project Description*, KOP Category 2 could provide a range of flood management functions, utilizing design components such as check dams and deployable barriers, levees, and armored channels/vertical walls; removing/adding concrete or bridge pier modifications; and installing channel texturing/grooving/smoothing and access ramps.

Design components under KOP Category 2 would provide water quality benefits. Channel modifications may include terracing the banks that can serve as small planting trays, wildlife ramps, and wetland terraces, allowing for infiltration and filtering of potential contaminants. Other channel modifications with water quality benefits include storm drain daylighting and changing the material of the channel (soft bottom/concrete removal), which improve infiltration and treatment potential. Sediment removal would remove excess sediment from the channel that would otherwise restrict the free flow of water or decrease the natural filtration of harmful chemicals. Other design components include armored channels, hardened bottom or sides of a channel, embankments, levees that would reduce scour and erosion, and check dams, which manage flows and reduce velocity and erosion and aerate water, thereby improving water quality. Channel modifications could also include daylighting. Daylighting involves the replacement of underground drainage pipes with a channel that is above ground. Daylighting is combined with planting to create a habitat or water quality benefit. A daylit storm drain allows for infiltration and/or treatment of runoff in vegetated infiltration zones before runoff is conveyed into the LA River. Operation of KOP Category 2 is not expected to result in an increase in water quality impairments such that water quality standards would be violated.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 3

Design components of KOP Category 3 include multiuse bridges and cantilevers. These features would include impervious surfaces and result in increased runoff rates and volumes, increased pollutant loading, and increased potential for erosion and sedimentation.

However, platforms would increase park space and contain a range of habitats, including riparian and upland conditions. A range of habitats could provide water quality benefits including stormwater treatment and retention through biological uptake, contaminant filtration, and reduction of the discharge of pollution to the storm drain system. Platforms would utilize planting soil mix, a drainage layer, and waterproofing for vegetated areas. The replacement of underground drainage pipes with a vegetated channel for storm drain daylighting would also provide water quality benefits. In addition, recommended stormwater BMPs as identified in the Design Guidelines would manage stormwater quality. Improving water quality through storm drain daylighting could also be included. Operation of KOP Category 3 is not expected to result in an increase in water quality impairments such that water quality standards would be violated.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 4

Diversions include elements such as pumps, diversion pipes, tunnels, channels, underground galleries, side channels, overflow weirs, storm drain interceptors, and wetlands. Diversions would remove wet- or dry-weather flows from the river to increase overall system capacity during larger storm events and provide opportunities for treatment. Diversions also provide ancillary water supply and water quality benefits by enabling storage of water in the diversion for subsequent treatment and use during and after smaller storms. Underground galleries are large subsurface tanks that hold water, or allow it to seep into the ground, while still allowing for passive land uses on top. Storm drain interceptors capture water for possible other uses, such as treatment and/or use prior to allowing the water to discharge into the channel. Wetlands divert water out of the LA River channel and improve water quality in habitat areas. Operation of KOP Category 4 would be beneficial to water quality and would not result in an increase in water quality impairments such that water quality standards would be violated.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

KOP Category 5

Reclaiming the floodplain can create space for the river where the hydrologic relationship between a river and its floodplain can be reconnected. Reconnecting the floodplain or transitioning adjacent rights-of-way or public lands into floodable areas would include incorporation of wetlands, naturalized banks, braided channels, fields, surface storage, and side channels into subsequent project features. Implementation of these landscape features and open space areas would allow water to infiltrate, treating stormwater runoff, filtering contaminants, and reducing the discharge of pollution to the storm drain system. The design components under KOP Category 5 would not result in an increase in water quality impairments such that water quality standards would be violated and in fact would contribute to improved flood management and water quality.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 6

As described in Chapter 2, *Project Description*, KOP Category 6 could provide a range of functions including urban agriculture, composting, natural treatment systems, wetlands, recreation fields, surface and subsurface storage, injection wells, water treatment facilities, recycled water pipe connections (herein referred to as purple pipe connections), dry wells, spreading grounds, and storm drain daylighting. Off-channel land assets combined with in-channel and right-of-way improvements can further ensure projects are multi-benefit, addressing multiple needs including improving water quality. Nutrient pollution from urban agriculture and composting would be required to comply with NPS regulations. A natural treatment system involves planted and organic materials to filter water by absorbing harmful chemicals and nutrients, providing water quality benefits. Purple pipe connections would allow for treated water to be pumped into and used within a local recycled water network or in a local recycled water network for use at a project site. Spreading grounds allow surface water runoff to percolate slowly into the ground and help to control and improve water quality. Spreading grounds, injection wells, and dry wells allow access to subsurface aquifers and can affect groundwater quality. However, existing regulations would require design features under KOP Category 6 to address water quality such that there would be no adverse impacts. Therefore, operation of KOP Category 6 is not expected to result in an increase in water quality impairments such that water quality standards would be violated.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Overall 2020 LA River Master Plan Implementation

One of the primary goals and objectives of the *2020 LA River Master Plan* is to promote healthy, safe, clean water. Construction activities could result in short-term water quality degradation associated with soil erosion and subsequent sediment transport, generation of pollutants, or accidental spills that could temporarily contaminate runoff, surface water, or groundwater. However, BMPs, as required in a SWPPP, would be required during construction to reduce erosion and restrict non-stormwater discharges from the construction site and control release of hazardous materials.

The majority of the 107 projects (77 percent) are expected to be extra-small and small projects in size (up to 3 acres/1 mile), with negligible changes in impervious surface areas, compared to existing conditions. Therefore, runoff rates and volumes would be similar to those under existing conditions and would continue to infiltrate into the ground, filtering potential contaminants and minimizing the discharge of pollution and adverse effects on groundwater quality. In addition, medium, large, and extra-large projects would include multi-benefit design components in the *2020 LA River Master Plan*, along with recommendations such as water treatment facilities, natural treatment systems, storm drain daylighting, sediment removal, vegetated buffers, and wetlands. These multi-benefit design components also provide water quality benefits. In addition, recommended stormwater BMPs as described in the Design Guidelines would be implemented such as rain gardens, vegetated swales, vegetated filter strips, and infiltration strips and trenches. Stormwater BMPs would capture, convey, and control pollutant discharge. Implementation of stormwater treatment areas, landscape features, and open space areas would allow water to percolate into the ground, thereby treating stormwater runoff through biological uptake and reducing the discharge of pollution to the storm drain system. Furthermore, all projects would comply with the NPDES Construction General Permit, County MS4 Permit, and other local water quality requirements and stormwater ordinances. The Public Works LID Standards Manual provides guidance for the implementation of stormwater quality control measures and the recommended design methodology to manage stormwater in Los Angeles County. Therefore, implementation of the overall *2020 LA River Master Plan* would not violate any water quality standards or degrade water quality.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Impact 3.9(b): Would the proposed Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

Typical Projects

Common Elements

Construction

For the Common Elements Typical Project, maximum excavation depths would be approximately 7 feet below ground surface (bgs). In the event groundwater is encountered during construction, dewatering would be conducted on a one-time or temporary basis during the construction phase and would not result in a loss of water that would substantially deplete groundwater supplies. After dewatering activities are completed, water levels would return to pre-construction conditions. The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would most likely come from nearby hydrants and existing surface supplies and/or would be trucked to the site.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operation

Natural groundwater recharge throughout the project area occurs primarily from infiltration of rainfall and applied water recharge. New impervious areas can reduce infiltration capacities so that more precipitation runs off into storm drains or nearby surface waters instead of infiltrating and recharging the underlying aquifer. However, the Common Elements Typical Project would not substantially interfere with groundwater recharge because it would not increase groundwater demand or decrease the size of groundwater recharge areas. The *Los Angeles County General Plan* as well as the individual city general plans within Frames 1 through 9 include policies to protect natural groundwater recharge areas, promote groundwater recharge, and manage drainage and stormwater. Implementation of recommended stormwater BMPs and landscaped areas that promote infiltration would allow for infiltration and promote groundwater recharge. After project implementation, recharge in the area would continue to occur through infiltration of precipitation and applied water recharge.

Pavilion areas, cafés, and other facilities in the Common Elements Typical Project would be designed to direct runoff toward landscaping, stormwater BMP areas, or other water collection and treatment areas, as required by grading and drainage plans and permit approvals. Stormwater BMPs such as rain gardens, vegetated swales, vegetated filter strips, and infiltration strips and trenches would retain rainwater and allow infiltration and would be considered and encouraged in project design,

as described in the Design Guidelines, but the decision to implement would be determined by the project proponent. Infiltration can be further enhanced by the installation of perforated pipes within the dripline of larger shrubs and tree species. These stormwater areas, landscape features, and open space areas would allow for groundwater infiltration, allowing water to percolate into the ground, thereby providing increased benefits for groundwater recharge.

The majority of water used for irrigation would likely be recycled water. Other water supply for the Common Elements Typical Project would be served by the applicable respective water agency. All Typical Projects, regardless of where they are located along the LA River, are not expected to demand substantial amounts of water such that demand would exceed supply. Water conservation measures in effect in the 18 different jurisdictions through which the LA River passes would help minimize any localized demands for water. Therefore, operation of the Common Elements Typical Project would not substantially decrease groundwater supplies. Further information regarding water and groundwater supply is described in Section 3.18, *Utilities/Service Systems.*

As described above, water supply throughout the project study area is from groundwater sources, and is greatest in the lowest reaches of the LA River (Frames 1 through 4). However, irrigation supply and system components would comply with the Public Works LID Standards Manual, County water sources, conservation standards, and the current CALGreen. Recycled or reclaimed water would be used for irrigation, where possible. For native planting, irrigation systems would only be utilized for plant establishment and drought-period watering, as recommended in the *2020 LA River Master Plan* and required by the applicable regulatory requirements. Therefore, the Project would not substantially decrease groundwater supplies, interfere with groundwater recharge, or impede sustainable groundwater management of the basin.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Multi-Use Trails and Access Gateways

Construction

Multi-Use Trails and Access Gateways Typical Project construction-related impacts from decreasing groundwater supplies or interfering with groundwater recharge would be similar to those described above under the Common Elements Typical Project. Maximum excavation depths for the Multi-Use Trails and Access Gateways Typical Project would be approximately 2 feet bgs for trails or access gateway foundation and up to 7 feet bgs for fencing. In the event groundwater is encountered during construction, dewatering would be conducted on a temporary basis and would not result in a loss of water that would substantially deplete groundwater supplies. After dewatering activities are completed, water levels would return to pre-construction conditions.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operation

Implementation of *2020 LA River Master Plan* recommended stormwater BMPs and vegetated buffers would allow for infiltration and promote groundwater recharge. After project implementation, recharge in the area would continue to occur through infiltration of precipitation and applied water recharge.

Trail features of the Multi-Use Trails and Access Gateways Typical Project would be designed to direct runoff toward stormwater BMP areas, vegetated buffers, or other water collection and treatment areas. These stormwater areas and landscape features, where implemented, would allow for groundwater infiltration, allowing water to percolate into the ground, thereby providing increased benefits for groundwater recharge. During operation, water conservation methods and system components would comply with the Public Works LID Standards Manual, County water sources, conservation standards, and the current CALGreen. As a result, construction and operation activities of the proposed Project would not substantially utilize groundwater supplies. Therefore, the Multi-Use Trails and Access Gateways Typical Project would not substantially decrease groundwater supplies, interfere with groundwater recharge, or impede sustainable groundwater management of the basin.

Impact Determination

Impacts would less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

2020 LA River Master Plan Kit of Parts

The Common Elements Typical Project analyzed above could be implemented in whole or as a combination of its individual elements with all the KOP categories discussed below. Therefore, for potential impacts of the Common Elements Typical Project, see above. The impact discussion below focuses on specific KOP categories only.

KOP Category 1

Certain design components of KOP Category 1 inform the Multi-Use Trails and Access Gateways Typical Project analyzed above in more detail. Therefore, for potential construction and operation

impacts of these design components, see above. The design components analyzed in this section include those listed in Section 2.5.1 under the *KOP Category 1: Trails and Access Gateways* heading.

Construction

Maximum excavation depths for construction of KOP Category 1 would generally be approximately 10 feet. However, some design components such as the water tower, underpass, and habitat corridors may require deeper excavations to clear utilities, separate the grade from the roadway/railway, provide adequate drainage at a sump location, or provide deep footings. A conservative assumption for excavation depths is approximately 60 feet bgs. However, excavation depths depend on numerous site-specific factors and may vary once a project site is determined. In the event groundwater is encountered during construction, dewatering would be conducted on a one-time or temporary basis during the construction phase and would not result in a loss of water that would substantially deplete groundwater supplies. After dewatering activities are completed, water levels would return to pre-construction conditions. The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would most likely come from nearby hydrants and existing surface supplies and/or would be trucked to the site.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations

New impervious areas associated with KOP Category 1 could reduce infiltration such that more precipitation runs off into storm drains or surface waters instead of infiltrating and recharging the underlying aquifer. However, the *2020 LA River Master Plan* KOP Category 1 includes multi-benefit design components such as river gateways, common elements, vegetated buffers, habitat corridors, and stormwater BMPs including swales and rain gardens. These multi-benefit design components would allow for groundwater infiltration, allowing water to percolate into the ground, thereby providing increased benefits for groundwater recharge. Trails would be designed to direct runoff toward stormwater BMP areas, vegetated buffers, or other open spaces for water collection and groundwater recharge. In addition, operation of trails would not use groundwater supply. Therefore, construction and operation of KOP Category 1 is not expected to substantially decrease groundwater supplies or interfere with groundwater recharge.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 2

Construction

Maximum excavation depths for construction of footings for walls or other structures would be approximately 20 feet bgs of the channel invert. Cast-in-drilled-hole piles would require excavation depths of approximately 30 feet bgs. However, excavation depths depend on numerous site-specific factors and may vary once a project site is determined. In the event groundwater is encountered during construction, dewatering would be conducted on a one-time or temporary basis during the construction phase and would not result in a loss of water that would substantially deplete groundwater supplies. After dewatering activities are completed, water levels would return to pre-construction conditions. The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would most likely come from nearby hydrants and existing surface supplies and/or would be trucked to the site.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations

New impervious areas could reduce infiltration capacity and increase the volume of runoff into storm drains or surface waters instead of allowing groundwater recharge. However, the *2020 LA River Master Plan* channel modifications KOP Category 2 would include terracing the banks and providing small planting areas, allowing for groundwater infiltration and providing increased benefits for groundwater recharge. Other channel modifications that affect groundwater recharge include changing the material of the channel or adding or removing concrete, depending on capacity requirements. Sediment removal would remove excess sediment from the channel that would otherwise decrease the natural filtration of harmful chemicals that could otherwise infiltrate into groundwater. Check dams would also reduce the velocity of river flows and provide micro habitat and vegetated areas, providing opportunities for groundwater recharge. Deployable barriers and levees could also manage river flows and volumes. Storm drain daylighting would replace underground drainage pipes with vegetated channels, allowing for infiltration into underlying aquifers. Furthermore, channel modifications would not use groundwater supplies or impede sustainable groundwater management of the basin. Operation of KOP Category 2 is not expected to substantially decrease groundwater supplies or interfere with groundwater recharge.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 3

Construction

Maximum excavation depths for construction of KOP Category 3 would be approximately 30 feet bgs. However, excavation depths depend on numerous site-specific factors and may vary once a project site is determined. In the event groundwater is encountered during construction, dewatering would be conducted on a one-time or temporary basis during the construction phase and would not result in a loss of water that would substantially deplete groundwater supplies. After dewatering activities are completed, water levels would return to pre-construction conditions. The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would most likely come from nearby hydrants and existing surface supplies and/or would be trucked to the site.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations

Design components of KOP Category 3 include multiuse bridges and cantilevers. These features would result in impervious surfaces associated with increased runoff and reduced infiltration capacity and groundwater recharge. However, the addition of impervious surfaces would not interfere with groundwater recharge because features would be raised above ground and would not recharge or drain directly to native soil; therefore, KOP Category 3 would not impede sustainable groundwater management of the basin. Furthermore, platforms would increase park space and contain a range of habitat, including riparian and upland conditions. These features allow infiltration and retention of water, which would reduce runoff, where appropriate. After project implementation, recharge in the area would continue to occur through infiltration of precipitation. Platforms would utilize planting soil mix and a drainage layer. In addition, stormwater BMPs as identified in the Design Guidelines, where implemented, would also provide landscape features and open space areas for groundwater infiltration, allowing water to percolate into the ground. Furthermore, groundwater supplies would not be used for operation of KOP Category 3. Therefore, construction and operation of KOP Category 3 is not expected to substantially decrease groundwater supplies or interfere with groundwater recharge.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 4

Construction

Diversions include design components such as underground galleries, pipes, and tunnels. Underground galleries require deep excavations because they are typically placed below the elevation of a local storm drain invert. These excavations may extend up to 30 feet bgs, while excavation depths of pipes and tunnels are approximately 30 feet bgs and 25 feet bgs, respectively. However, excavation depths depend on numerous site-specific factors and may vary once a project site is determined. In the event groundwater is encountered during construction, dewatering would be conducted on a one-time or temporary basis during the construction phase and would not result in a loss of water that would substantially deplete groundwater supplies. After dewatering activities are completed, water levels would return to pre-construction conditions. The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would most likely come from nearby hydrants and existing surface supplies and/or would be trucked to the site.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations

Diversions include elements such as tunnels, pipes, pumps, and weirs that remove wet- or dry-weather flows from the river to increase overall system capacity during larger storm events and provide opportunities for treatment and reuse of water for groundwater recharge during smaller storm events, or the dry season when flows are reduced. Diversions would result in negligible changes in impervious surface areas, compared to existing conditions. Therefore, infiltration rates and recharge would be similar to those under existing conditions. Diversions also include underground galleries, large subsurface tanks that hold water or allow water to seep into the ground, promoting groundwater recharge while still allowing for passive land uses on top. Wetlands are areas intended to be saturated or partially saturated as water is diverted and provide vegetated areas for infiltration and groundwater recharge into the underlying aquifer. Furthermore, groundwater supplies would not be used for operation of KOP Category 4. Therefore, operation of

KOP Category 4 would provide groundwater resource benefits and is not expected to substantially decrease groundwater supplies or interfere with groundwater recharge.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 5

Construction

Design components of KOP Category 5 would require maximum excavation depths of 25 feet bgs, although most other KOP Category 5 design components, such as a recreation field or side channel, would generally require shallower excavation. However, excavation depths depend on numerous site-specific factors and may vary once a project site is determined. In the event groundwater is encountered during construction, dewatering would be conducted on a one-time or temporary basis during the construction phase and would not result in a loss of water that would substantially deplete groundwater supplies. After dewatering activities are completed, water levels would return to pre-construction conditions. The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would most likely come from nearby hydrants and existing surface supplies and/or would be trucked to the site.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations

Design components of KOP Category 5 include wetlands, naturalized basins, braided channels, fields, surface (water) storage, and side channels. These design components create space for the river where the hydrologic relationship between a river and its floodplain can be reconnected. Reconnecting the floodplain or transitioning adjacent rights-of-way or public lands into floodable areas would also increase the area for groundwater recharge. Surface storage or open basins typically function during rain events for the purpose of groundwater recharge or water conservation. Naturalized banks are a planted or otherwise “soft” edge to a channel or basin and braided channels reconfigure the low-flow channel into a series of interweaving waterways for the purpose of improved ecological function, including groundwater seepage. Fields are areas of open

land intended to flood, which also provide opportunities for infiltration and groundwater recharge. Groundwater supplies would not be used for operation of design features of KOP Category 5. Therefore, construction and operation of KOP Category 5 would provide groundwater resource benefits and is not expected to substantially decrease groundwater supplies or interfere with groundwater recharge.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 6

Construction

Design components of KOP Category 6 include construction of injection wells and dry wells along with multiple structures such as affordable housing projects. Injection wells can extend several hundred feet bgs while dry wells can extend up to 100 feet bgs; however, excavation depths depend on numerous site-specific factors and may vary once a project site is determined. In the event groundwater is encountered during construction, dewatering would be conducted on a one-time or temporary basis during the construction phase and would not result in a loss of water that would substantially deplete groundwater supplies. After dewatering activities are completed, water levels would return to pre-construction conditions. The water supply for construction activities (e.g., dust control, concrete mixing, material washing) would most likely come from nearby hydrants and existing surface supplies and/or would be trucked to the site.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations

Some design features under KOP Category 6 may result in increased impervious surface areas, which would reduce groundwater recharge capacity. However, design features under KOP Category 6 would generally occur in areas with existing impervious surfaces and would not substantially interfere with groundwater recharge. KOP Category 6 would be required to comply with the appropriate local stormwater management programs including incorporating sustainable site

design features that would reduce stormwater runoff associated with impervious surfaces and minimizing adverse effects related to groundwater recharge.

Off-channel land assets combined with in-channel and right-of-way improvements can further ensure projects are multi-benefit, addressing multiple needs, including groundwater supply and recharge. KOP Category 6 provides a range of benefits including urban agriculture, composting, natural treatment systems, wetlands, recreation fields, surface and subsurface water storage, injection wells, water treatment facilities, purple pipe connections, dry wells, groundwater recharge spreading grounds, and storm drain daylighting. Typically, during rain events, surface storage stores water for purposes including groundwater recharge. Groundwater recharge spreading grounds are broad land areas that allow collected surface water (i.e., runoff) to percolate slowly into the ground. Due to their size, spreading grounds are typically located higher in the watershed where soils are more conducive to recharge, situated above a potable groundwater aquifer, and near large channels where access to surface water runoff is greatest. In the *2020 LA River Master Plan*, injection wells would supplement local groundwater supply. Groundwater supply benefits are also related to dry wells that allow water to access subsurface aquifers. Implementation of KOP Category 6 would not impede sustainable groundwater management of the basin. Therefore, operation of KOP Category 6 is not expected to substantially decrease groundwater supplies or interfere with groundwater recharge.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Overall 2020 LA River Master Plan Implementation

Groundwater sources are used for water supply throughout the project study area. An objective of the *2020 LA River Master Plan* is to improve local water supply reliability. The *2020 LA River Master Plan* includes multi-benefit design components such as groundwater recharge spreading grounds, surface storage, underground galleries, concrete removal, wetlands, fields, and injection and dry wells. These multi-benefit design components also provide groundwater resource benefits including groundwater recharge and supply. In addition, stormwater BMPs such as rain gardens, vegetated swales, vegetated filter strips, and infiltration strips and trenches as described in the Design Guidelines would be considered and encouraged for all projects, but the decision to implement would be determined by the project proponent. These stormwater BMPs as well as other landscape features and open space areas would allow for groundwater infiltration, allowing water to percolate into the ground, thereby providing increased benefits for groundwater recharge. In addition, projects would comply with the Public Works LID Standards Manual, County water sources, conservation standards, and the current CALGreen. Recycled or reclaimed water would be used for irrigation, where possible. For native planting, irrigation systems would only be utilized for plant establishment and drought-period watering, as recommended in the *2020 LA River Master Plan* and required by the applicable regulatory requirements. Therefore, the overall *2020 LA River Master*

Plan implementation would provide groundwater resource benefits and would not substantially decrease groundwater supplies, interfere with groundwater recharge, or impede sustainable groundwater management of the basin.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Impact 3.9(c): Would the proposed Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would: result in substantial erosion or siltation on or off site; substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site; create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flood flows?

Typical Projects

Common Elements

Construction—Frames 1 through 4

During construction, stormwater drainage patterns could be temporarily altered. However, the Common Elements Typical Project would implement construction BMPs, required in the project SWPPP to minimize the potential for erosion or siltation in nearby storm drains and temporary changes in drainage patterns during construction. During construction, implementation of an ESCP is also required. Construction BMPs would capture and infiltrate small amounts of sheet-flow into the ground such that off-site runoff from the construction site would not increase, ensuring that drainage patterns are not significantly altered. Measures required by the NPDES Construction General Permit would also limit site runoff during construction and would not alter stormwater drainage patterns. BMPs would be implemented to control construction site runoff, ensure proper stormwater control and treatment, and reduce the discharge of pollution to the storm drain system.

Therefore, construction of the Common Elements Typical Project would not substantially alter the existing drainage pattern of the area in a manner that would result in substantial erosion or siltation or increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. Project construction would not result in an exceedance of drainage system capacities.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Construction—Frames 5 Through 9

Construction impacts related to substantially altering the existing drainage pattern in a manner that would result in erosion or flooding or contributing runoff that would exceed the capacity of drainage systems would be similar to the impacts described above under Frames 1 through 4. The Common Elements Typical Project would be subject to the same construction requirements described above, including implementing construction BMPs, required in the project SWPPP, and implementation of an ESCP to minimize the potential for erosion or siltation. Common Elements Typical Project construction activities would also comply with the NPDES Construction General Permit. The NPDES Construction General Permit requires implementation of BMPs to control construction site runoff, ensure proper stormwater control and treatment, and reduce the discharge of pollution to the storm drain system.

However, several reaches in the LA River in Frames 5 through 9 do not meet existing design standards for flood conveyance capacity (Geosyntec and Olin 2018). As a result, baseline conditions of the system capacity are exceeded in large storm events. Therefore, in a large storm event, any increase in site runoff that may occur due to construction of the Common Elements Typical Project in these frames could exceed the system capacity. As a result, during construction, the Project could create or contribute surface water runoff in Frames 5 through 9 that could exceed the capacity of existing stormwater drainage systems.

The proponent of any project that has the potential of increasing the FEMA 1 percent storm event (100-year) BFE shall consult with the NFIP Administrator(s) of the local jurisdiction(s) to ascertain whether the project proponent will need to obtain a CLOMR from FEMA. If the local jurisdiction determines a CLOMR is required, the project proponent shall obtain the CLOMR prior to construction. Within 6 months after completion of project construction, the project proponent shall apply to FEMA for a final LOMR. The CLOMR and LOMR applications will require hydraulic analyses of pre-project and post-project conditions. The Common Elements Typical Project would be designed to avoid any rise in the BFE.

With implementation of the NPDES Construction General, Mitigation Measures 3.9-1a and 3.9-1b, project construction would not result in an exceedance of drainage system capacities because it would not impede or redirect flood flows and would minimize exposing people or structures to a significant risk of loss, injury, or death involving flooding.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

As part of site design for all new developments, the applicants will prepare Drainage Report(s) for the appropriate implementing agency review and approval prior to issuance of a grading, building, site development, or any construction permits. All development, including interim conditions during construction and interim conditions with temporary improvements, within the project site is required to address stormwater management and implement stormwater control measures. Drainage report(s) will include, at a minimum, all of the following:

- Verification of existing stormwater and flood conveyance facilities, including size, elevation, material, capacity, and condition, including the existing stormwater collection system in the project area.
- Hydrologic analysis of construction-period conditions and implementation of all temporary facilities necessary during construction to avoid increases in peak flows.
- Hydrologic analysis of existing and proposed operational peak flows that accounts for all areas that will be disturbed by new development.
- Hydraulic analysis for evaluating pipe capacity and sizing of new pipes. The capacity of existing pipes that are proposed for reuse and new pipes will be sized in accordance with the County's methodology, as noted in the County Hydrology Manual or local municipal code, or otherwise approved by the County or City Engineer.
- Applicants will implement all permanent facilities necessary. such as channel refurbishment and a bypass tunnel, as included in the *2020 LA River Master Plan* to avoid increases in operational peak flows.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Based on the results of the drainage report(s) in Mitigation Measure HYDRO-1a, measures during construction and operation may be required to ensure flood flows are not impeded and to minimize redirected flood flows. The measures will identify site-specific drainage facilities necessary to avoid flows exceeding the existing system during construction and implement the necessary flood-reduction strategies and capacity improvements. Specific measures include:

- If an extreme storm event is anticipated, then temporary stormwater control measures will be implemented to avoid increases in peak flows. Stormwater control measures include but are not limited to interim onsite detention facilities, capture and reuse measures, and/or other measures approved by the County, designed to maintain or reduce current, pre-development, surface runoff, and stormwater discharge to the public storm drain system.
- Necessary flood-reduction strategies and capacity improvements will be implemented.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

Operations—Frames 1 through 4

Under the *2020 LA River Master Plan*, operation of Common Elements Typical Project along the river must occur within the constraints of managing flood risk. This includes maintaining existing flood conveyance capacity and not deteriorating the capacity in deficient reaches. Flow at the river mouth is hydraulically unstable; however, this area is a tidally influenced estuary and the following 5 river miles are hydraulically stable. North of Compton Creek (Frame 1) through the City of Vernon (Frame 4), flow is predominantly (stable) supercritical, with short (stable) subcritical and unstable sections.

The design discharge and capacity of the LA River generally increase in the downstream direction to account for the increasing flow from runoff from the contributing tributary watersheds. River reaches within Frame 1 through Frame 4 currently meet existing design standards for flood conveyance capacity. Frame 1 through Frame 4 provide protection for both the 50-year and 100-year flood (2 percent annual chance of exceedance and 1 percent annual chance of exceedance, respectively), and the lower 12 miles (in Frames 1 through 3) were improved to accommodate the 133-year flood (0.75 percent annual chance of exceedance).

Although the impervious surface areas under future project conditions are unknown, impervious surface areas are assumed to increase under future development when compared to baseline conditions at specific locations. The amount of impervious surface cover is related to stormwater runoff. Larger areas of impervious surface are associated with larger volumes and flows of stormwater runoff. Therefore, stormwater flows would increase with future development under the Common Elements Typical Project. However, the Common Elements Typical Project would be required to comply with the Long Beach MS4 Permit (for work within Frame 1) and the County MS4 Permit and their associated provisions, local jurisdictions' LID requirements, and the appropriate local stormwater management programs. County-led, -funded, or -permitted projects would also comply with the Public Works LID Standards Manual. Incorporating sustainable site design features into project design would reduce stormwater runoff associated with impervious surfaces. The Common Elements Typical Project would be in compliance with the Los Angeles County LID and other appropriate ordinances and MS4 requirements to manage stormwater and associated pollutants. In addition, stormwater BMPs are included under the Common Elements Typical Project and could include rain gardens, vegetated swales/bioswales, vegetated filter/infiltration strips, infiltration trenches, stormwater planters, and tree well filters, as described under Impact 3.9(a). The Design Guidelines include a variety of recommended stormwater BMPs and site improvements to manage drainage and stormwater. Sustainable site design features such as stormwater treatment areas, surface landscaping design, and permeable materials would increase permeability and reduce stormwater runoff flows and associated pollutants. Typical drawdown time requirements for infiltration systems are between 72 and 96 hours; therefore, adequate drainage of the planting area is necessary for heavier storms or obstructed systems. Furthermore, river pavilions could incorporate on-site water retention, detention, and filtration, green roofs, and pervious paving. For the 85 percent rain event, stormwater features would capture 100 percent of on-site rainfall. Furthermore, Frame 1 through Frame 4 provide protection for both the 50-year and 100-year flood (2 percent annual chance of exceedance and 1 percent annual chance of exceedance, respectively), and the lower 12 miles (in Frames 1 through 3) were improved to accommodate the 133-year flood (0.75 percent annual chance of exceedance). Therefore, operation of the Common Elements Typical Project in Frames 1 through 4 would not result in increased surface runoff in a manner that would result in flooding on or off site, contribute runoff water that would exceed the existing or planned drainage system, or impede or redirect flood flows.

In addition, the NPDES Construction General Permit requires dischargers to maintain pre-development drainage rates. The operation and maintenance activities for the Common Elements Typical Project such as litter control, cleanup, vandal control, tree trimming, and weed control would not increase flood risk. Therefore, operation would not provide additional sources of polluted runoff.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations—Frames 5 through 9

Operation of the Common Elements Typical Project in Frames 5 through 9 would not result in substantial erosion or increased surface runoff in a manner that would result in flooding on or off site, or substantially alter the existing drainage pattern of the site or area. However, due to existing flood capacity deficiencies, the Common Elements Typical Project could contribute runoff water that would exceed the existing or planned drainage system, provide additional sources of polluted runoff, or impede or redirect flood flows.

Flow in the in the soft-bottom portions of the Glendale Narrows (Frame 6) is predominantly (stable) subcritical; however, short (stable) supercritical regions in the Glendale Narrows occur where the channel bottom consists of concrete, accelerating flows to reduce water depths under bridges. Concrete portions of the river are predominantly supercritical, although local constrictions such as bridges cause flow to locally back up, form hydraulic jumps, and become subcritical. There are several regions within Frame 6 and Frame 7 along the river that are hydraulically unstable, which may result in large and unstable surface waves. Effects of these waves are often alleviated by increasing channel and levee height to contain the waves and/or constructing channel side-slopes with rough cobble material to reduce wave run-up.

The design capacity throughout the channel varies in levels of flood risk reduction. Several reaches of the channel in Frames 5 through 9 have been identified where the conveyance capacity for the 1 percent (100-year) flood event (1 percent annual chance of exceedance) is not currently met. For example, the river has less than 2 percent storm event (50-year) flood protection along the Glendale Narrows as well as the river above the Sepulveda Flood Control Basin. River reaches throughout Frame 5 through Frame 9 also have capacity constraints for the 1 percent storm event (100-year) flood, and could exceed the capacity of the channel in a large storm event.

Reducing flows to the channel may be achieved through implementation of LID, BMPs, and distributed storage. The Common Elements Typical Project would comply with the County MS4 Permit, the County LID ordinance and Public Works LID Standards Manual, and local stormwater management programs. In addition, recommended BMPs in the Design Guidelines would also help manage drainage, stormwater, and associated pollutants. However, several reaches in the LA River in Frames 5 through 9 do not meet existing design standards for flood conveyance capacity

(Geosyntec and Olin 2018). Therefore, in a large storm event, any increase in site runoff that may occur during operation of the Common Elements Typical Project in these frames could exceed the system capacity. As a result, during operation, the Common Elements Typical Project could create or contribute surface water runoff in Frames 5 through 9 that could exceed the capacity of existing stormwater drainage systems.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

Multi-Use Trails and Access Gateways

Construction—Frames 1 through 4

Construction impacts of the Multi-Use Trails and Access Gateways Typical Project related to substantial increases in the amount of surface runoff in a manner that would result in flooding, adverse impacts related to drainage capacity, and other associated impacts would be similar to the impacts described above under the Common Elements Typical Project. The Multi-Use Trails and Access Gateways Typical Project would implement construction BMPs, required in the project SWPPP, and an ESCP to minimize the potential for erosion or siltation. The Multi-Use Trails and Access Gateways Typical Project would also comply with the NPDES Construction General Permit, which requires implementation of BMPs to control construction site runoff, ensure proper stormwater control and treatment, and reduce the discharge of pollution to the storm drain system.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Construction—Frames 5 through 9

As discussed above under the Common Elements Typical Project, several reaches in the LA River do not meet existing design standards for flood conveyance capacity. Therefore, in a large storm event, any increase in site runoff would exceed the system capacity.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Apply the following mitigation measures, which are described above.

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

Operations—Frames 1 through 4

Operations impacts of the Multi-Use Trails and Access Gateways Typical Project related to substantial increases in the amount of surface runoff in a manner that would result in flooding, adverse impacts related to drainage capacity, and other associated impacts would be similar to the impacts described above under the Common Elements Typical Project.

The design discharge and capacity of the LA River generally increases in the downstream direction. River reaches within Frames 1 through 4 currently meet existing design standards for flood conveyance capacity, providing protection for both the 50-year and 100-year flood (2 percent annual chance of exceedance and 1 percent annual chance of exceedance, respectively), and the lower 12 miles (Frames 1 through 3) provide protection for the 133-year flood (0.75 percent annual chance of exceedance).

The Multi-Use Trails and Access Gateways Typical Project would comply with the County MS4 Permit, the County LID ordinance and Public Works LID Standards Manual, and local stormwater management programs. Incorporating sustainable site design features into project design would manage stormwater runoff associated with impervious surfaces and reduce pollutant loading. In addition, recommended stormwater BMPs included in the Design Guidelines such as rain gardens, vegetated swales/bioswales, vegetated filter/infiltration strips, infiltration trenches, stormwater planters, and tree well filters, as described under Impact 3.9(a), could manage drainage, stormwater, and associated pollutants. Multi-Use Trails and Access Gateways Typical Project construction activities would comply with the NPDES Construction General Permit. The NPDES Construction General Permit requires dischargers to maintain pre-development drainage rates. Flood reduction strategies would also retain or slow stormwater flow, allowing it to percolate into the ground, and improving water quality.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations—Frames 5 through 9

Several reaches of the channel in Frames 5 through 9 have been identified where the conveyance capacity for the 1 percent storm event (100-year) flood is not currently met, notably along the Glendale Narrows and reach above the Sepulveda Flood Control Basin.

The *2020 LA River Master Plan* would comply with the County MS4 Permit, the County LID ordinance and Public Works LID Standards Manual, and local stormwater management programs. In addition, the Design Guidelines provide recommended measures to manage drainage, stormwater, and associated pollutants. However, several reaches in the LA River in Frames 5 through 9 do not meet existing design standards for flood conveyance capacity (Geosyntec and Olin 2018). Therefore, in a large storm event, any increase in site runoff that may occur during operation of the Multi-Use Trails and Access Gateways Typical Project in these frames would exceed the system capacity. As a result, during operation, the Multi-Use Trails and Access Gateways Typical Project could create or contribute surface water runoff in Frames 5 through 9 that could exceed the capacity of existing stormwater drainage systems.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Apply the following mitigation measures, which are described above.

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

2020 LA River Master Plan Kit of Parts

The Common Elements Typical Project analyzed above could be implemented in whole or as a combination of its individual elements with all the KOP categories discussed below. Therefore, for potential impacts of the Common Elements Typical Project, see above. The impact discussion below

focuses on specific KOP categories only. Each of the KOP categories is analyzed separately where differences in impacts exist; KOP categories with similar impacts are grouped together.

Construction

KOP Categories 1 through 6

Stormwater drainage patterns could be temporarily altered during construction. In addition, several reaches in the LA River do not meet existing design standards for flood conveyance capacity. As a result, baseline conditions of the system capacity are exceeded in large storm events. In a large storm event, flows could exceed the system capacity. As a result, construction of KOP Categories 1 through 6 could result in potentially significant impacts associated with creating or contributing water that would exceed the capacity of existing stormwater drainage systems.

During construction, BMPs would be implemented, as required in the SWPPP, to minimize erosion or siltation and temporary changes in drainage patterns. Construction BMPs would also control construction site runoff, ensuring proper stormwater control and treatment to reduce the discharge of pollution to the storm drain system. Channel modification and diversion design components include strategies to reduce flood risks related to reducing flows to the channel and increasing channel capacity. However, several reaches in the LA River channel do not meet existing design standards for flood conveyance capacity for the 1 percent storm event (100-year) flood. Existing flood conveyance deficiencies would continue similar to existing conditions. Until strategies to reduce flood risks are implemented, KOP Categories 1 through 6 could create or contribute stormwater flows that could exceed the capacity of existing stormwater drainage systems. Therefore, in a large storm event, any increase in site runoff could exceed the drainage system capacity.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Apply the following mitigation measures, which are described above.

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

Operations

Certain design components of KOP Category 1 inform the Multi-Use Trails and Access Gateways Typical Project analyzed above in more detail. Therefore, for potential construction and operation impacts of these design components, see above. The design components analyzed in this section include those listed in Section 2.5.1 under the *KOP Category 1: Trails and Access Gateways* heading.

KOP Category 1

Impervious surface areas could increase compared to existing conditions at specific locations, resulting in increased runoff rates and volumes. Considering several reaches in the LA River channel do not meet existing design standards for flood conveyance capacity, in a large storm event, any increase in site runoff could exceed the system capacity. KOP Category 1 would include multi-benefit design components such as vegetated buffers and habitat corridors, which would infiltrate small volumes of runoff. However, during larger flood events, these features would likely become closely saturated to capacity and would have a minimal effect in the reduction of runoff in major rainfall events. As a result, operation of KOP Category 1 could create or contribute stormwater flows that would exceed the capacity of existing stormwater drainage systems. Also, any above-ground project components within a FEMA 1 percent storm event (100-year) floodplain such as new vegetation (which can change the hydraulic friction factor of the floodplain), structures, or fences/gates that run perpendicular to the flow can result in increasing the floodwater levels. Structures dislodged by large flows can become floating debris and cause damage, block, or redirect flows to unintended paths. KOP Category 1 would be designed to avoid any rise in the BFE and design of subsequent projects would minimize hydraulic constraints by considering factors such as orientation, anchoring, and vegetation type. However, planting in the LA River channel would only occur where excess hydraulic capacity is confirmed.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Apply the following mitigation measures, which are described above.

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

KOP Category 2

During construction, BMPs would be implemented, as required in the SWPPP, to minimize erosion or siltation and temporary changes in drainage patterns. Construction BMPs would also control construction site runoff, ensuring proper stormwater control and treatment to reduce the discharge of pollution to the storm drain system.

Several reaches in the LA River do not meet existing design standards for flood conveyance capacity, and a large storm event could exceed the system capacity. As a result, operation of KOP Category 2 could result in potentially significant impacts associated with creating or contributing water that would exceed the capacity of existing stormwater drainage systems.

KOP Category 2 would include multi-benefit design components such as a check dam, deployable barriers, levees, armored channels, vertical walls, reshaping of low flows, channel smoothing, texturing/smoothing, soft-bottom/concrete removal, and sediment removal. These design components include strategies to reduce flood risks related to reducing flows to the channel and increasing channel capacity and would be implemented depending on channel capacity requirements. For example, check dams reduce flow rates, deployable barriers such as flood gates can temporarily be lifted or lowered to channel or detain water, levees provide flood management from seasonal high water, reshaping low-flow channels improves channel hydraulics, and changing the material finish of the river channel including texturing and channel smoothing increases velocities and flow rates. Increasing the channel capacity may be achieved through increased channel width, adding levees or increasing existing levee heights, decreasing hydraulic roughness including removing vegetation, renovating existing structures, or increasing the areas with concrete channel bottoms to convey flows more effectively. Increasing the height of existing levees or adding parapet walls to the river channel would increase capacity and reduce flood risks, but requires raising several bridges, reduces connectivity to the river for wildlife and people, and is a visual impairment. Channel refurbishment such as removing invasive vegetation, removing sediment from the channel bottom, replacing dense or woody vegetation with more pliant and lower-profile native grasses, and ongoing maintenance would increase hydraulic capacity and would improve flood risk mitigation to approximately the 2 percent storm event (50-year) flood protection level (2 percent annual chance of exceedance), but would not meet the 1 percent storm event (100-year) flood protection level (1 percent annual chance of exceedance) goal. Placement of concrete on the channel bottom would reduce friction and substantially increase channel capacity, and would support the 1 percent flood event (100-year) flood risk protection goal. However, this approach would require bridges to be redesigned and the rising groundwater in the Glendale Narrows region would have to be continuously managed via groundwater pumping. To meet the 1 percent storm event (100-year) flood risk reduction goal, a combination of channel refurbishments and a bypass tunnel would generally provide enough flood capacity. Hydrologic and hydraulic analyses and modeling would be required to assess suitability and applicability of possible flood risk reduction strategies. Therefore, operation of KOP Category 2 would contribute to improved flood flows due to channel modifications and is not expected to substantially increase the amount of surface runoff in a manner that would result in flooding, adverse impacts related to drainage capacity, and other associated impacts.

Although the potential project impacts on the channel flow are beneficial, they would result in changes to the 1 percent storm event (100-year) floodplain. The project proponent shall consult with the NFIP Administrator(s) of the local jurisdiction(s) to ascertain whether the project proponent will need to obtain a CLOMR from FEMA. If the local jurisdiction determines a CLOMR is required, the project proponent shall obtain the CLOMR prior to construction. Within 6 months after completion of project construction, the project proponent shall apply to FEMA for a final LOMR. The CLOMR and LOMR applications will require hydraulic analyses of pre-project and post-project conditions. KOP Category 2 would be designed to avoid any rise in the BFE.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Apply the following mitigation measures, which are described above.

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

KOP Category 3

Design components of KOP Category 3 include multiuse bridges and cantilevers. These features would result in impervious surfaces associated with increased runoff. These design components would be raised, and runoff rates and volumes would be similar to those under existing conditions. However, several reaches in the LA River channel do not meet existing design standards for flood conveyance capacity. As a result, baseline conditions of the system capacity are exceeded in large storm events. Therefore, in a large storm event, any increase in site runoff could exceed the system capacity. As a result, operation of KOP Category 3 could create or contribute stormwater flows that would exceed the capacity of existing stormwater drainage systems.

KOP Category 3 would include multi-benefit design components such as habitat crossings and provide park space, which would reduce stormwater runoff. Platforms would utilize a drainage layer and waterproofing for vegetated areas. The replacement of underground drainage pipes with a vegetated channel for storm drain daylighting would also control runoff. However, during larger flood events, these features would likely become closely saturated to capacity and would have a minimal effect in the reduction of runoff in major rainfall events. Also, any above-ground project components within a 1 percent flood event (100-year) floodplain such as new vegetation (which can change the hydraulic friction factor of the floodplain) or structures can result in increasing floodwater levels. KOP Category 3 would be designed to avoid any rise in the BFE. However, structures dislodged by large flows become floating debris and may cause damage or block or redirect flood flows to unintended paths.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Apply the following mitigation measures, which are described above.

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

KOP Category 4

Diversions such as side channels and diversion pipes, tunnels, and channels would alter drainage patterns during operation. Several reaches in the LA River do not meet existing design standards for flood conveyance capacity. In a large storm event, flows could exceed the system capacity. As a result, operation of KOP Category 4 could result in potentially significant impacts associated with creating or contributing water that would exceed the capacity of existing stormwater drainage systems.

Diversions include elements such as pumps, diversion pipes, tunnels, channels, underground galleries, side channels, overflow weirs, storm drain interceptors, and wetlands. Diversions would remove wet- or dry-weather flows from the river to increase overall system capacity during larger storm events and provide opportunities for treatment. These design components include strategies to reduce flood risks related to reducing flows to the channel and increasing channel capacity. Diversion pipes, tunnels, and channels allow for the conveyance of water through or around hydraulic restriction. An overflow weir is a low point along a levee or dam that allows for the flow of water into or out of a hydraulic system. Diversions also provide water quality benefits by enabling storage of water in the diversion for subsequent treatment and use during and after smaller storms. Increasing the channel capacity may be achieved through construction of diversions or a bypass tunnel. A bypass tunnel to divert a portion of the flow around the Glendale Narrows may provide additional water supply and water quality benefits by allowing storage of water in the tunnel for subsequent treatment and use during and after smaller storms. However, a 40-foot-diameter concrete tunnel alone would have deficient capacity to meet the 1 percent storm event (100-year) flood risk capacity goal. Larger and/or multiple tunnels could also be considered. The estimated peak flow for the 1 percent storm event (100-year) flood is approximately 95,000 cubic feet per second; however, a bypass tunnel would only provide a flood capacity of 54,000 cubic feet per second (Geosyntec et al. 2020b). A combination of a bypass tunnel and channel refurbishment would generally provide enough flood capacity to meet the 1 percent storm event (100-year) flood risk reduction goal. Furthermore, KOP Category 4 would be designed to avoid any rise in the BFE. Therefore, operation of KOP Category 4 would contribute to improved flood flows due to water reuse and reduced runoff and is not expected to substantially increase the amount of surface runoff in a manner that would result in flooding, adverse impacts related to drainage capacity, and other associated impacts.

Although the potential project impacts on the channel flow are beneficial, they would result in changes to the 1 percent storm event (100-year) floodplain. The project proponent shall consult with the NFIP Administrator(s) of the local jurisdiction(s) to ascertain whether the project proponent will need to obtain a CLOMR from FEMA. If the local jurisdiction determines a CLOMR is required, the project proponent shall obtain the CLOMR prior to construction. Within 6 months after completion of project construction, the project proponent shall apply to FEMA for a final LOMR. The CLOMR and LOMR applications will require hydraulic analyses of pre-project and post-project conditions.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Apply the following mitigation measures, which are described above.

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

KOP Category 5

KOP Category 5 design components such as wetlands, braided channels, fields, surface water storage, and side channels would alter drainage patterns during operation. In addition, several reaches in the LA River channel do not meet existing design standards for flood conveyance capacity. Therefore, in a large storm event, any increase in site runoff could exceed the system capacity, and the system capacity is exceeded in large storm events under baseline conditions.

However, design components such as wetlands, naturalized banks, fields, and surface water storage would allow water to infiltrate, treating stormwater runoff, and reducing stormwater runoff. These features would likely become closely saturated to capacity during larger flood events and would have a minimal effect in the reduction of runoff in major rainfall events.

Impact Determination

Impacts would be potentially significant**.**

Mitigation Measures

Apply the following mitigation measures, which are described above.

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

KOP Category 6

Several reaches in the LA River channel do not meet existing design standards for flood conveyance capacity. As a result, baseline conditions of the system capacity are exceeded in large storm events. Therefore, in a large storm event, any increase in site runoff could exceed the system capacity. As a result, operation of KOP Category 6 could result in potentially significant impacts associated with

creating or contributing water that would exceed the capacity of existing stormwater drainage systems.

KOP Category 6 design components include urban agriculture, composting, natural treatment systems, wetlands, recreation fields, surface storage, water treatment facilities, purple pipe connections, spreading grounds, and storm drain daylighting. Surface storage would store water, typically during rain events, capturing water before it reaches the channel, or alongside the channel where flows from within the channel are diverted. Spreading grounds allow surface water runoff to percolate slowly into the ground and help to control and improve water quality. Urban agriculture areas, wetlands, and fields would allow water to infiltrate, treating stormwater runoff and reducing stormwater runoff. KOP Category 6 would be designed to avoid any rise in the BFE. However, during larger flood events, these features would likely become closely saturated to capacity and would have a minimal effect in the reduction of runoff in major rainfall events.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Apply the following mitigation measures, which are described above.

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

Overall 2020 LA River Master Plan Implementation

Construction and Operations

Stormwater drainage patterns could be temporarily altered during construction. BMPs would be implemented, as required in the SWPPP, to minimize erosion or siltation and temporary changes in drainage patterns. Construction BMPs would also control construction site runoff, ensuring proper stormwater control and treatment to reduce the discharge of pollution to the storm drain system. However, existing flood conveyance deficiencies would continue similar to existing conditions. Until strategies to reduce flood risks are implemented, construction of the overall *2020 LA River Master Plan* could create or contribute stormwater flows that could exceed the capacity of existing stormwater drainage systems.

Operation of the overall *2020 LA River Master Plan* must occur within the constraints of managing flood risk. This includes maintaining existing flood conveyance capacity and improving capacity in deficient reaches. Runoff rates and volumes are also expected to increase compared to existing conditions due to changes in impervious surface areas. One of the goals of the *2020 LA River Master Plan* is to reduce flood risk and improve resiliency. There are two categories of strategies to reduce flood risks: (1) reduce flows to the channel and (2) increase channel capacity. The flood risk

reduction strategies alone do not meet the 1 percent storm event (100-year) protection level goal. However, a combination of approaches including full implementation of the 2037 EWMP goals (i.e., 28 percent reduction in impervious areas), channel refurbishment, and a bypass tunnel could provide flood conveyance capacity. Implementation of LID, BMPs, and distributed storage would reduce runoff through increased infiltration or temporary storage and provide substantial water quality improvements through contaminant filtration and biological uptake. The combined effect of LID, BMPs, and distributed storage with channel refurbishment and a bypass tunnel would have substantial flood reduction benefits for flow rates below the peak of a 1 percent storm event (100-year) flood. A combination of channel refurbishment and a bypass tunnel would provide enough capacity to meet the 1 percent storm event (100-year) flood risk reduction goal throughout most of the Glendale Narrows, with the exception of a short reach immediately upstream of Verdugo Wash (Frame 6). Adequate open space is available in this area where localized flood reduction strategies may be implemented to provide additional conveyance. For further details related to increasing the channel capacity, refer to the *2020 LA River Master Plan* Appendix Volume II Draft Technical Backup Document (Los Angeles County Public Works 2021), and Water Resources: Flood Risk Management, Water Quality, and Water Supply Progress Memo (OLIN and Geosyntec 2018).

In addition, projects would comply with the NPDES Construction General Permit, County MS4 Permit, the County LID ordinance and Public Works LID Standards Manual, and local stormwater management programs. In addition, the Design Guidelines provide further recommended measures to manage drainage, stormwater, and associated pollutants. All *2020 LA River Master Plan* projects would be designed to avoid any rise in the BFE. However, several reaches in the LA River channel do not meet existing design standards for flood conveyance capacity. As a result, baseline conditions of the system capacity are exceeded in large storm events. Therefore, in a large storm event, any increase in site runoff could exceed the system capacity. As a result, operation of the overall *2020 LA River Master Plan* could create or contribute stormwater flows that would exceed the capacity of existing stormwater drainage systems.

Impact Determination

Impacts would be potentially significant.

Mitigation Measures

Apply the following mitigation measures, which are described above.

Mitigation Measure HYDRO-1a: Require Site-Specific Drainage Studies to Address Stormwater Management.

Mitigation Measure HYDRO-1b: Require Stormwater Control Measures.

Significance after Required Mitigation

Impacts would be less than significant for later activities when carried out by the County.

Impacts would be significant and unavoidable for later activities when not carried out by the County.

Impact 3.9(d): In flood hazard, tsunami, or seiche zones, would the proposed Project risk release of pollutants due to project inundation?

Typical Projects

Common Elements

Construction

As discussed under Section 3.9.2.2, *Geographic*, the lower 2 to 3 miles of the river are subject to flood risks from tsunami. In addition, the LA River channel as well as land areas within Frame 1 and Frame 3 through Frame 9 are within the 1 percent storm event (100-year) flood hazard area. As a result, in a flood hazard, the Common Elements Typical Project could risk release of pollutants due to project inundation.

During construction activities under the Common Elements Typical Project, stormwater BMPs would be implemented, as required by federal, county, and local policies to minimize degradation of water quality associated with stormwater runoff or construction-related pollutants. In addition, construction and maintenance activities would be subject to local stormwater ordinances, stormwater requirements established by County MS4 Permit requirements, and regional WDRs. Other measures in the SWPPP would include a range of stormwater control BMPs (e.g., installing silt fences, staked straw wattles, geofabric) to prevent silt runoff to storm drains or waterways. Therefore, impacts related to a risk of release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone are not expected to occur.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations

Operations of the Common Elements Typical Project would be subject to stormwater requirements established by the Long Beach (Frame 1 only) and County MS4 Permit requirements, regional WDRs, and local jurisdictions' water quality and stormwater ordinances. Furthermore, the Common Elements Typical Project would be designed in accordance with the federal and local requirements such as NFIP and general plan policies to reduce impacts associated with flood risks. County-led, -funded, or -permitted projects would also comply with the County Hydrology Manual. In addition, stormwater BMPs are included under the Common Elements Typical Project and could include rain gardens, vegetated swales/bioswales, vegetated filter/infiltration strips, infiltration trenches, stormwater planters, and tree well filters, and are further described under Impact 3.9(a). The Design Guidelines include a variety of recommended stormwater BMPs that are encouraged to manage stormwater and associated pollutants; however, the decision to implement would be determined by the project proponent. Stormwater BMPs may include rain gardens, vegetated

swales/bioswales, vegetated filter/infiltration strips, infiltration trenches, stormwater planters, and tree well filters. Flood reduction strategies also include increasing channel capacity through channel widening, increased levee heights, diversions/bypass tunnels, channel refurbishment, and addition of concrete channel bottoms. Implementation of a combination of flood reduction strategies would also result in reduced risk of release of pollutants due to project inundation. In addition, these strategies would provide substantial water quality improvements through contaminant filtration and biological uptake or through storage of water for subsequent treatment and use during and after smaller storms. Therefore, impacts related to a risk of release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone are not expected to occur.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Multi-Use Trails and Access Gateways

Construction

Construction impacts of the Multi-Use Trails and Access Gateways Typical Project for the *2020 LA River Master Plan* related to risk of pollutant release due to project inundation would be similar to the impacts described above under the Common Elements Typical Project.

Stormwater BMPs would be implemented during construction, as required by federal, county, and local policies to minimize stormwater runoff and associated construction-related pollutants. Construction would be subject to local stormwater ordinances and stormwater requirements established by Long Beach MS4 Permit (for work within Frame 1) and County MS4 Permit requirements and their associated provisions. Measures in the SWPPP, as required by the Construction General Permit, would include a range of stormwater control BMPs. Therefore, impacts related to a risk of release of pollutants due to project inundation are not expected to occur.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operations

Operation impacts of the Multi-Use Trails and Access Gateways Typical Project for the *2020 LA River Master Plan* related to risk of pollutant release due to project inundation would be similar to the impacts described above under the Common Elements Typical Project.

Operation would comply with the County Hydrology Manual, County Stormwater Ordinance, the County MS4 Permit requirements, and relevant local water quality and stormwater ordinances. The Design Guidelines include stormwater BMPs such as rain gardens, vegetated swales, vegetated filters/infiltration strips, infiltration trenches, and stormwater planters to manage stormwater and associated pollutants. In addition, a range of flood reduction strategies may be used to provide increased flood conveyance capacity. Flood reduction strategies include reducing flows to the channel and increasing channel capacity through LID, increasing capacity of existing basins, channel widening, diversions/bypass tunnels, and channel refurbishment. Implementation of a combination of flood reduction strategies would also reduce the risk of release of pollutants due to project inundation. These flood reduction strategies would also provide water quality improvements. Therefore, impacts related to a risk of release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone are not expected to occur.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

2020 LA River Master Plan Kit of Parts

The Common Elements Typical Project analyzed above could be implemented in whole or as a combination of its individual elements with all the KOP categories discussed below. Therefore, for potential impacts of Common Elements Typical Project, see above. The impact discussion below focuses on specific KOP categories only. Each of the KOP categories is analyzed separately where differences in impacts exist; KOP categories with similar impacts are grouped together.

Construction

KOP Categories 1 through 6

Design components of KOP Category 6 include construction of structures such as affordable housing and cultural centers. The LA River channel is within the 1 percent storm event (100-year) flood zone and the lower 2 to 3 miles of the river are subject to flood risks from tsunami. Considering KOP Category 6 includes a variety of construction activities ranging from trail modifications to development of facilities, and channel access ramps anywhere in the study area, construction of KOP Categories 1 through 6 could result in potentially significant impacts associated with risk of release of pollutants due to project inundation.

Construction activities would comply with the NPDES Construction General Permit, which requires implementation of stormwater BMPs to minimize degradation of water quality associated with stormwater runoff or construction-related pollutants. Specific stormwater control BMPs would be implemented for construction occurring during the wet season. Efforts would be made to minimize the potential for large rain events to mobilize pollutants during construction. In addition, construction and maintenance activities would be subject to local stormwater ordinances, stormwater requirements established by Long Beach MS4 Permit (for work within Frame 1) and County MS4 Permit requirements and their associated provisions, and regional WDRs. In-water work would require Section 401 and Section 404 permits or a Section 10 permit. These permits would specify BMPs and require preparation and implementation of plans for the protection of water quality such as a Spill Prevention, Control, and Countermeasure Plan and equipment fueling requirements to minimize fuel leaks and spills. Therefore, impacts related to a risk of release of pollutants due to project inundation in a flood hazard or tsunami are not expected to occur.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Operation

Certain design components of KOP Category 1 inform the Multi-Use Trails and Access Gateways Typical Project analyzed above in more detail. Therefore, for potential construction and operation impacts of these design components, see above. The design components analyzed in this section include those listed in Section 2.5.1 under the *KOP Category 1: Trails and Access Gateways* heading.

KOP Category 1

KOP Category 1 includes design components including vegetated buffers and habitat corridors. These design components would be in compliance with the requirements of the County Hydrology Manual to minimize flood risks. In addition, KOP Category 1 could incorporate rain gardens and other stormwater BMPs to manage runoff and associated pollutants through infiltration and treatment. In addition, operation would comply with stormwater requirements established by the Long Beach MS4 Permit (for work within Frame 1) and the County MS4 Permit requirements, regional WDRs, and local water quality and stormwater ordinances. Operation of KOP Category 1 is not expected to result in a risk of release of pollutants due to project inundation in a flood hazard or tsunami.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 2

Channel modifications would include multi-benefit design components such as check dams, deployable barriers, levees, armored channels, vertical walls, reshaping of low flows, channel smoothing, texturing/smoothing, soft-bottom/concrete removal, and sediment removal. These design components include strategies to reduce flood risks, and associated pollutants, related to reducing flows to the channel and increasing channel capacity. Design components under KOP Category 2 would also provide water quality benefits. Channel modifications may include terracing the banks that can serve as small planting trays, wildlife ramps, and wetland terraces, allowing for infiltration and filtering of potential contaminants. Other channel modifications with water quality benefits include storm drain daylighting and changing the material of the channel (soft-bottom/ concrete removal), which affect infiltration and treatment potential. Channel modifications such as increased channel capacity through channel widening, increased levee heights, diversions/bypass tunnels, channel refurbishment, and addition of concrete channel bottoms also provide flood reduction strategies. Implementation of a combination of flood reduction strategies would also result in reduced risk of release of pollutants due to project inundation. These strategies would also provide substantial water quality improvements through contaminant filtration and biological uptake or through storage of water for subsequent treatment and use during and after smaller storms. In addition, operation would comply with stormwater requirements established by the Long Beach MS4 Permit (for work within Frame 1) and County MS4 Permit requirements, regional WDRs, local water quality and stormwater ordinances, and relevant flood policies. County-led, -funded, or -permitted projects would also comply with the County Hydrology Manual. Operation of KOP Category 2 is not expected to result in a risk of release of pollutants due to project inundation in a flood hazard or tsunami.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 3

Design components of KOP Category 3 include multiuse bridges and cantilevers. Platforms would increase park space and contain a range of habitat, including riparian and upland conditions. Water quality benefits related to increased park space and addition of habitats include stormwater treatment and retention through biological uptake, contaminant filtration, and reduction of discharge of pollution to the storm drain system. Platforms would utilize a drainage layer and waterproofing for vegetated areas. The replacement of underground drainage pipes with a vegetated channel for storm drain daylighting would also provide water quality benefits. In addition, operation would comply with stormwater requirements established by the Long Beach MS4 Permit

(for work within Frame 1) and County MS4 Permit requirements, regional WDRs, local jurisdictions' water quality and stormwater ordinances, and relevant flood policies. County-led, -funded, or -permitted projects would also comply with the County Hydrology Manual. Operation of KOP Category 3 is not expected to result in a risk of release of pollutants due to project inundation in a flood hazard or tsunami.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 4

Diversions include components such as pumps, diversion pipes, tunnels, channels, underground galleries, side channels, overflow weirs, storm drain interceptors, and wetlands. These design components include strategies to reduce flood risks and remove flows from the river to increase overall system capacity during larger storm events. Diversions also provide water quality benefits by enabling storage of water in the diversion for subsequent treatment and use during and after smaller storms. Storm drain interceptors capture water for possible other uses, such as treatment and/or use prior to allowing the water to discharge into the channel. Wetlands divert water out of the LA River channel and improve water quality in habitat areas. Channel modifications such as diversions/bypass tunnels also provide flood reduction strategies. A combination of diversions (i.e., a bypass tunnel) and channel refurbishment would generally provide enough flood capacity to meet the 1 percent storm event (100-year) flood risk reduction goal and associated pollutants. Implementation of a combination of flood reduction strategies would also result in reduced risk of release of pollutants due to project inundation. These strategies would also provide substantial water quality improvements through contaminant filtration and biological uptake or through storage of water for subsequent treatment and use during and after smaller storms. In addition, operation would comply with the stormwater requirements established by Long Beach MS4 Permit (for work within Frame 1) and County MS4 Permit requirements, regional WDRs, local jurisdictions' water quality and stormwater ordinances, and relevant flood policies. Therefore, operation of KOP Category 4 is not expected to result in a risk of release of pollutants due to project inundation in a flood hazard or tsunami.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 5

KOP Category 5 includes design components such as wetlands, naturalized banks, braided channels, fields, surface water storage, and side channels. Implementation of these landscape features and open space areas would allow water to infiltrate, treating stormwater runoff, filtering contaminants, and reducing the discharge of pollution to the storm drain system. Operation would also comply with stormwater requirements established by Long Beach MS4 Permit (for work within Frame 1) and County MS4 Permit requirements, regional WDRs, local water quality and stormwater ordinances, and relevant flood policies. Operation of KOP Category 5 would reduce the risk of pollutant release by accommodating flood waters and treating runoff and is not expected to result in a risk of release of pollutants due to project inundation in a flood hazard or tsunami.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

KOP Category 6

KOP Category 6 design components including urban agriculture, composting, natural treatment systems, wetlands, recreation fields, surface and subsurface storage, water treatment facilities, purple pipe connections, spreading grounds, and storm drain daylighting. KOP Category 6 combined with in-channel and right-of-way improvements can further ensure projects are multi-benefit, addressing multiple needs including runoff and associated pollutants. Surface storage would store water, typically during rain events, capturing water before it reaches the channel or alongside the channel where flows from within the channel are diverted. Spreading grounds allow surface water runoff to percolate slowly into the ground and help to control and improve water quality. Urban agriculture areas, wetlands, and fields would allow water to infiltrate, treating stormwater runoff and reducing stormwater runoff. In addition, operation would comply with the stormwater requirements established by Long Beach MS4 Permit (for work within Frame 1) and County MS4 Permit requirements, regional WDRs, local water quality and stormwater ordinances, and relevant flood policies. County-led, -funded, or -permitted projects would also comply with the County Hydrology Manual. Operation of KOP Category 6 is not expected to result in a risk of release of pollutants due to project inundation in a flood hazard or tsunami.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Overall 2020 LA River Master Plan Implementation

Primary objectives of the *2020 LA River Master Plan* are to promote healthy, safe, clean water; to reduce flood risk; and improve resiliency. Operation of the overall *2020 LA River Master Plan* must occur within the constraints of managing flood risk. Managing flood risks would also reduce the risk of pollutants due to project inundation. Strategies to reduce flood risks include reducing flows to the channel and increasing channel capacity. A combination of channel refurbishment and a bypass tunnel would generally provide enough capacity to meet the 1 percent storm event (100-year) flood risk reduction goal and associated pollutants. In addition, medium, large, and extra-large projects included in the *2020 LA River Master Plan* would include multi-benefit design components, such as water treatment facilities, natural treatment systems, storm drain daylighting, sediment removal, vegetated buffers, and wetlands, and would provide water quality benefits. Stormwater BMPs such as rain gardens, vegetated swales, vegetated filter strips, and infiltration strips and trenches would be implemented. Stormwater BMPs, landscape features, and open space areas would capture, convey, and control pollutant discharge, treating stormwater runoff through biological uptake and reducing the discharge of pollution. Furthermore, all projects would comply with the NPDES Construction General Permit, County MS4 Permit, County Hydrology Manual, local stormwater ordinances, Public Works LID Standards Manual, Design Guidelines, and local stormwater management programs. In addition, operation would reduce the risk of pollutant release by managing flood waters and provide treatment for associated pollutants. Therefore, the overall *2020 LA River Master Plan* implementation would not result in a risk of release of pollutants due to project inundation in a flood hazard or tsunami.

Impact Determination

Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

Impacts would be less than significant. No mitigation is required.

Impact 3.9(e): Would the proposed Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Typical Projects

Common Elements

Construction

Water quality within Frames 1 through 9 is under the jurisdiction of the Los Angeles Regional Water Board's Basin Plan. Groundwater within Frame 1 (West Coast Basin), Frame 2 through Frame 5 (Central Basin), and Frame 6 through Frame 9 (San Fernando Valley Basin) are all considered very low-priority groundwater basins and are not subject to the SGMA.

Commonly practiced BMPs such as straw wattles and mulch would be implemented to control construction site runoff associated with construction of the Common Elements Typical Project and to reduce the discharge of pollutants to storm drain systems from stormwater and other NPS runoff. As part of compliance with permit requirements during ground-disturbing or construction activities, implementation of water quality control measures and BMPs would ensure that water quality standards would be achieved, including the water quality objectives that protect designated beneficial uses of surface water and groundwater, as defined in the water quality control plan. Construction runoff would also have to comply with the appropriate water quality objectives for the region. Implementation of stormwater control BMPs during construction, as required by the NPDES Construction General Permit, would reduce the discharge of pollutants and adverse impacts on water quality. The NPDES Construction General Permit also requires stormwater discharges not to contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or water quality standards, including designated beneficial uses. Therefore, construction would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

Operations

Compliance with Los Angeles County MS4 Permit including EWMPs would also reduce stormwater runoff flows and associated pollutants. In addition, implementing the appropriate general plan policies would require the protection of groundwater recharge areas and groundwater resources, where available, as required by a sustainable groundwater management plan. Furthermore, the Common Elements Typical Project would not result in adverse impacts on the local groundwater aquifer. Incorporation of stormwater BMPs and landscaping to manage stormwater would also reduce stormwater runoff flows and associated pollutants. The Common Elements Typical Project would be required to comply with the County MS4 permit, the Public Works LID Standards Manual, relevant general plan policies, and local stormwater management and water quality requirements. In addition, stormwater BMPs are included in the Common Elements Typical Project. The Design Guidelines include a variety of recommended stormwater BMPs and related site improvements that can be implemented as BMPs to manage drainage and stormwater; the stormwater BMPs could include rain gardens, vegetated swales/bioswales, vegetated filter/infiltration strips, infiltration trenches, stormwater planters, and tree well filters. Stormwater BMPs that are incorporated would allow water to percolate into the ground, thereby treating stormwater runoff through biological uptake and reducing the discharge of pollution to the storm drain system. Any potential contaminants would be filtered, minimizing adverse effects on groundwater quality as well. The Common Elements Typical Project would be consistent with provisions in the Basin Plan. Therefore, the Common Elements Typical Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

Multi-Use Trails and Access Gateways

Construction

Impacts related to conflicting with or obstructing implementation of a water quality control plan or sustainable groundwater management plan for the Multi-Use Trails and Access Gateways Typical Project would be similar to the impacts described above under Common Elements Typical Project. Groundwater basins within Frames 1 through 9 are considered very low-priority groundwater basins and are not subject to the SGMA.

Commonly practiced BMPs such as straw wattles and mulch would be implemented to control construction site runoff, reduce the discharge of pollutants, and ensure that water quality standards and objectives, as defined in the water quality control plan, would be achieved. Compliance with the NPDES Construction General Permit and the County's water quality standards and general plan policies would also reduce stormwater runoff flows and associated pollutants, and require the protection of groundwater resources, as required by a sustainable groundwater management plan. Therefore, the Multi-Use Trails and Access Gateways Typical Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

Operation

Impacts related to conflicting with or obstructing implementation of a water quality control plan or sustainable groundwater management plan for the Multi-Use Trails and Access Gateways Typical Project would be similar to the impacts described above under Common Elements Typical Project. Groundwater basins within Frames 1 through 9 are considered very low-priority groundwater basins and are not subject to the SGMA.

Stormwater BMPs, vegetated buffers, and habitat corridors would be incorporated into the Multi-Use Trails and Access Gateways Typical Project. Incorporation of these site design features and

compliance with the County's water quality standards and general plan policies would also reduce stormwater runoff flows and associated pollutants, and require the protection of groundwater resources, as required by a sustainable groundwater management plan. In addition, implementation of stormwater BMPs would ensure that water quality standards and objectives, as defined in the water quality control plan, would be achieved. The Multi-Use Trails and Access Gateways Typical Project would be in compliance with the County MS4 permit, the Public Works LID Standards Manual, relevant general plan policies, and local stormwater management and water quality requirements. The Multi-Use Trails and Access Gateways Typical Project would be consistent with provisions in the Basin Plan. Therefore, the Multi-Use Trails and Access Gateways Typical Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

2020 LA River Master Plan Kit of Parts

The Common Elements Typical Project analyzed above could be implemented in whole or as a combination of its individual elements with all the KOP categories discussed below. Therefore, for potential impacts of Common Elements Typical Project, see above. The impact discussion below focuses on specific KOP categories only. Each of the KOP categories is analyzed separately where differences in impacts exist; KOP categories with similar impacts are grouped together.

Construction

KOP Categories 1 through 6

Commonly practiced BMPs such as straw wattles and mulch would be implemented to control construction site runoff, reduce the discharge of pollutants, and ensure that water quality standards and objectives, as defined in the water quality control plan, would be achieved. Compliance with the NPDES Construction General Permit and the County's water quality standards and general plan policies would also reduce stormwater runoff flows and associated pollutants, and require the protection of groundwater resources, as required by a sustainable groundwater management plan. In-channel work requires a Section 10 Rivers and Harbors Appropriation Act permit or a Section 401 and Section 404 permit. These permits would specify BMPs and require preparation and implementation of plans for the protection of water quality. Therefore, KOP Categories 1 through 6 would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

Operations

Certain design components of KOP Category 1 inform the Multi-Use Trails and Access Gateways Typical Project analyzed above in more detail. Therefore, for potential construction and operation impacts of these design components, see above. The design components analyzed in this section include those listed in Section 2.5.1 under the *KOP Category 1: Trails and Access Gateways* heading.

KOP Category 1

Stormwater BMPs, vegetated buffers, and habitat corridors would be incorporated into KOP Category 1. Incorporation of these site design components and compliance with the County's water quality standards and general plan policies would also reduce stormwater runoff flows and associated pollutants, and require the protection of groundwater resources, as required by a sustainable groundwater management plan. In addition, implementation of stormwater BMPs would ensure that water quality standards and objectives, as defined in the water quality control plan, would be achieved. The Project would comply with the County MS4 permit, the Public Works LID Standards Manual, relevant general plan policies, and local stormwater management and water quality requirements. Operation of KOP Category 1 would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

KOP Category 2

KOP Category 2 includes multi-benefit design components such as terracing the banks that can serve as small planting trays, wildlife ramps, and wetland terraces, which allow infiltration and filtering of potential contaminants. Other channel modifications with water quality benefits include storm drain daylighting and changing the material of the channel (soft-bottom/concrete removal), which affect infiltration and treatment potential. Sediment removal would remove excess sediment from the channel that would otherwise restrict the free flow of water or decrease the natural filtration of harmful chemicals. Incorporation of these site design components and compliance with the County's water quality standards and general plan policies would also reduce stormwater runoff flows and associated pollutants, and require the protection of groundwater resources, as required by a sustainable groundwater management plan. In addition, implementation of stormwater BMPs would ensure that water quality standards and objectives, as defined in the water quality control plan,

would be achieved. Furthermore, the Project would comply with the County MS4 permit, the Public Works LID Standards Manual, relevant general plan policies, and local stormwater management and water quality requirements. Operation of KOP Category 2 would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

KOP Category 3

Design components of KOP Category 3 include multiuse bridges and cantilevers. Platforms would increase park space and contain a range of habitat, including riparian and upland conditions. Water quality benefits related to a range of habitats include stormwater treatment and retention through biological uptake, contaminant filtration, and reduction of the discharge of pollution to the storm drain system. The replacement of underground drainage pipes with a vegetated channel for storm drain daylighting would also provide water quality benefits. Incorporation of these site design components and compliance with regional water quality standards and general plan policies would also reduce stormwater runoff flows and associated pollutants, and require the protection of groundwater resources, as required by a sustainable groundwater management plan. In addition, implementation of stormwater BMPs would ensure that water quality standards and objectives, as defined in the water quality control plan, would be achieved. Furthermore, the Project would comply with the County MS4 permit, the Public Works LID Standards Manual, relevant general plan policies, and local stormwater management and water quality requirements. Operation of KOP Category 3 would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

KOP Category 4

KOP Category 4 includes design components such as pumps, diversion pipes, tunnels, channels, underground galleries, side channels, overflow weirs, storm drain interceptors, and wetlands. Diversions would remove wet- or dry-weather flows from the river during larger storm events and provide opportunities for treatment. Diversions also provide ancillary water supply and water

quality benefits by enabling storage of water in the diversion for subsequent treatment and use during and after smaller storms. Storm drain interceptors capture water for possible other uses, such as treatment and/or use prior to allowing the water to discharge into the channel. Wetlands divert water out of the LA River channel and improve water quality in habitat areas. Incorporation of these site design components and compliance with regional water quality standards and general plan policies would also reduce stormwater runoff flows and associated pollutants, and require the protection of groundwater resources, as required by a sustainable groundwater management plan. In addition, implementation of stormwater BMPs would ensure that water quality standards and objectives, as defined in the water quality control plan, would be achieved. Furthermore, the Project would comply with the County MS4 permit, the Public Works LID Standards Manual, relevant general plan policies, and local stormwater management and water quality requirements. Operation of KOP Category 4 would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

KOP Category 5

KOP Category 5 design components include incorporation of wetlands, naturalized banks, braided channels, fields, surface storage, and side channels into project features. Implementation of these landscape features and open space areas would allow water to infiltrate, treating stormwater runoff, filtering contaminants, and reducing the discharge of pollution to the storm drain system. Incorporation of these site design components and compliance with regional water quality standards and general plan policies would also reduce stormwater runoff flows and associated pollutants, and require the protection of groundwater resources, as required by a sustainable groundwater management plan. In addition, implementation of stormwater BMPs would ensure that water quality standards and objectives, as defined in the water quality control plan, would be achieved. Furthermore, the Project would comply with the County MS4 permit, the Public Works LID Standards Manual, relevant general plan policies, and local stormwater management and water quality requirements. Operation of KOP Category 5 would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

KOP Category 6

KOP Category 6 design components could provide a range functions related to water quality including urban agriculture, composting, natural treatment systems, wetlands, recreation fields, surface and subsurface storage, injection wells, water treatment facilities, purple pipe connections, dry wells, spreading grounds, and storm drain daylighting. Nutrient pollution from urban agriculture and composting would comply with NPS regulations. Spreading grounds allow surface water runoff to percolate slowly into the ground and help to control and improve water quality. Spreading grounds, injection wells, and dry wells allow access to subsurface aquifers and can affect groundwater quality. Incorporation of these site design components and compliance with regional water quality standards and general plan policies would also reduce stormwater runoff flows and associated pollutants, and require the protection of groundwater resources, as required by a sustainable groundwater management plan. In addition, implementation of stormwater BMPs would ensure that water quality standards and objectives, as defined in the water quality control plan, would be achieved. Furthermore, the design components would comply with the County MS4 permit, the Public Works LID Standards Manual, relevant general plan policies, and local stormwater management and water quality requirements. Operation of KOP Category 6 would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

Overall 2020 LA River Master Plan Implementation

One of the primary objectives of the *2020 LA River Master Plan* is to promote healthy, safe, clean water. Medium, large, and extra-large projects would include multi-benefit design components such as water treatment facilities, natural treatment systems, storm drain daylighting, sediment removal, vegetated buffers, and wetlands, providing water quality benefits. In addition, stormwater BMPs as described in the Design Guidelines are recommended to be implemented such as rain gardens, vegetated swales, vegetated filter strips, and infiltration strips and trenches. Stormwater BMPs would capture, convey, and control pollutant discharge. Implementation of stormwater treatment areas, landscape features, and open space areas would allow water to percolate into the ground, thereby treating stormwater runoff through biological uptake and reducing the discharge of pollution to the storm drain system. Furthermore, all elements of the *2020 LA River Master Plan* would comply with the NPDES Construction General Permit, County MS4 Permit, Public Works LID Standards Manual, and other local water quality requirements and stormwater ordinances. The overall *2020 LA River Master Plan* would be consistent with provisions in the Basin Plan. Therefore,

implementation of the overall *2020 LA River Master Plan* would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact Determination

No impacts would occur.

Mitigation Measures

No mitigation is required.

Significance after Required Mitigation

No impacts would occur. No mitigation is required.

Cumulative Impacts

The geographic context for an analysis of cumulative impacts on hydrology and water quality would be the LA River Watershed because drainage and water quality impacts are a result of all waterbodies that are part of the watershed that contribute to downstream impacts. A description of the regulatory setting and approach to cumulative impacts analysis is provided in Section 3.0.2.

Criteria for Determining Significance of Cumulative Impacts

The proposed Project would have the potential to result in a cumulatively considerable impact on hydrology and water quality if, in combination with other projects within the greater Los Angeles region, it would violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality; substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin; substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would: result in substantial erosion or siltation on or off site, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site, create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, or impede or redirect flood flows; risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones; or conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Cumulative Condition

Further urbanization in the greater Los Angeles region and implementation of transportation improvements and land use strategies would result in a continuing increase in stormwater runoff, water quality degradation, and exposure of persons and property to floodplain hazards.

Cumulative growth and development would generate additional pollutants from residential, commercial, industrial, and transportation facilities. The increase in impervious surface areas would increase urban runoff, resulting in the transport of greater quantities of contaminants to receiving waters that may currently be impaired (SCAG 2020). Paved surfaces and drainage conduits can accelerate the velocity of runoff, concentrating peak flows in downstream areas faster than under natural conditions. In addition, the increase in impervious areas could decrease groundwater

recharge, increase runoff rates and/or volumes, place structures within flood zones, and expose additional people and property to risks associated with dam inundation, seiche, tsunami, and/or mudflow. Population growth could contribute incrementally to depleted groundwater supplies due to substantial additional demands for potable water such that there would be a net deficit in aquifer volume or a lowering of local groundwater level (SCAG 2020). It is not anticipated that cumulative projects in the County would contribute incrementally by placing housing within a 100-year flood hazard area due to compliance with flood safety requirements and flood management plans (Los Angeles County 2014); however, the placement of regional projects within a 100-year flood hazard area would impede or redirect flows when considered cumulatively (SCAG 2020).

The Los Angeles County General Plan Update EIR (Los Angeles County 2014) notes that buildout in the County would involve soil disturbance, construction, and operation of developed land uses that could each generate pollutants affecting stormwater. Although specific impacts may not rise to significant runoff or pollutant levels, the cumulative effect would be significant.

However, various regulatory requirements are in place to minimize these effects, including the CWA, compliance with which is administered by the Los Angeles RWQCB. Other requirements involve preparing and implementing stormwater pollution prevention plans pursuant to the Statewide General Construction Permit, complying with the County MS4 Permit, improving flood management facilities and design requirements to raise structures above flood zones, and complying with recommendations in geotechnical reports to minimize mud flows (SCAG 2020). Even with compliance with water quality, drainage, and flood safety regulations and policies, impacts on hydrology and water quality would be cumulatively significant. Therefore, there is a cumulative condition related to hydrology and water quality.

Contribution of the Project to Cumulative Impacts

One of the primary objectives of the *2020 LA River Master Plan* is to promote healthy, safe, clean water. Construction activities could result in short-term water quality degradation associated with soil erosion and subsequent sediment transport, generation of pollutants, or accidental spills that could temporarily contaminate runoff, surface water, or groundwater. However, BMPs, as required in a SWPPP, would be required during construction to reduce erosion and restrict non-stormwater discharges from the construction site as well as release of hazardous materials. In addition, Mitigation Measures HYDRO-1a and b would reduce potential project impacts related to erosion, runoff, and potential flooding, to less-than-significant levels.

The proposed Project would not affect the County's ability to implement or enforce its goals or policies or otherwise be inconsistent with regulatory requirements related to the minimization of water quality impacts. The Project would comply with the NPDES Construction General Permit, Long Beach MS4 Permit and County MS4 Permit and their associated provisions, and other local water quality and LID requirements and stormwater ordinances. Therefore, implementation of the *2020 LA River Master Plan* would not violate any water quality standards or degrade water quality and several components would likely improve water quality.

Implementation of the proposed Project would not deplete groundwater supply or interfere with groundwater recharge. Irrigation supply and system components would comply with local jurisdictions' LID requirements, County water sources, conservation standards, and the current CALGreen. Recycled or reclaimed water would be used for irrigation, where possible. *2020 LA River Master Plan* implementation would provide groundwater resource benefits and would not substantially decrease groundwater supplies, interfere with groundwater recharge, or impede

sustainable groundwater management of the basin. Furthermore, the *2020 LA River Master Plan* would be consistent with goals and policies identified in the applicable general plans related to hydrology and water quality. The proposed Project would not make a cumulatively considerable contribution to a cumulative impact on hydrology and water quality.