3.6 HYDROLOGY AND WATER QUALITY

This section of the Environmental Impact Report (EIR) describes existing hydrology and water quality resources, and analyzes potential impacts resulting from implementation of the Fountain Valley Crossings Specific Plan (FVCSP) Project (Project) on stormwater runoff, drainage, flood risk, groundwater resources, and water quality. A range of water resource issues are addressed in other EIR sections: water supply and demand projections are addressed in Section 3.12, *Utilities*; geologic groundwater basins are addressed in Section 3.3, *Geology and Soils*; and groundwater contamination is addressed in Section 3.5, *Hazards and Hazardous Materials*.

3.6.1 Environmental Setting

Hydrology is a multidisciplinary subject that addresses the occurrence, circulation, and distribution of Earth's waters. Hydrologic resources within the Project area include surface water and groundwater.

3.6.1.1 Regional Hydrologic Setting

The Project area is located within the Santa Ana River watershed. The Santa Ana River watershed is the largest in Orange County (County), covering approximately 210.47 square miles. The Santa Ana River begins almost 75 miles northeast in the San Bernardino Mountains, crossing through San Bernardino County and central Orange County, where it is then channelized at the Prado Dam before flowing through the heavily urbanized coastal Orange County and emptying into the Pacific Ocean. The River serves as the main tributary to the watershed, with Santiago Creek acting as the largest tributary to the River within Orange County.

3.6.1.2 Local Hydrologic Setting

The Project area is located within the East Coastal Plain Hydrologic Subarea of the Lower Santa Ana River Hydrologic Area (Santa Ana Regional Water Quality Control Board [RWQCB 2016]). Annual rainfall in the City of Fountain Valley (City) averages 13.84 inches (City of Fountain Valley 2016).

Adjacent to and within the Project area, the Fountain Valley Channel conveys stormwater and urban runoff from the Project area and surrounding areas to the Talbert Channel, where it is then conveyed to the Santa Ana River Salt Marsh.

Surface Water Hydrology

Stormwater and urban runoff from the Project area drain through the Fountain Valley Channel, as well as storm drains or downspouts that connect to the City's drainage network. The Fountain Valley Channel runs adjacent to the northwest portion of the Project area and passes through the western portion of the Project area. The 96-mile Santa Ana River runs adjacent to the eastern edge of the Project area, flowing southwest toward the ocean. In the vicinity of the Project

area, the Santa Ana River is channelized and contained within concrete embankments. The Fountain Valley Channel is lined with riprap and some landscaping. The Fountain Valley Channel ultimately drains into the Pacific Ocean at Huntington Beach.

Encompassing over 3,200 square miles, the Santa Ana River watershed is the largest watershed in Southern California. Since 1989, the U.S. Army Corps of Engineers (USACE) has significantly reduced flood risks along the Santa Ana River by completing the construction of concrete-lined levees and flood control channels along much of the River and its tributaries. With the newly constructed levees, the Project area is no longer within the 100-year floodplain (Figure 3.6-1). According to regional Flood Insurance Rate Maps for the Project area, the entire site is located within "Zone X", which is defined as "areas of 0.2 percent annual chance flood; areas of one percent annual chance flood with average depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from one percent annual chance flood" (Federal Emergency Management Agency [FEMA] 2009). Most of the City is within the Prado Dam Inundation Area, which is subject to inundation in the event of a failure of the Prado Dam (City of Fountain Valley 1995).

Surface Water Quality

The reach of the Santa Ana River that begins upstream of the City and continues to the Pacific Ocean (Reach 1) is a generally dry flood control facility and highly channelized (Figure 2-1). Much of the water conveyed along the Santa Ana River recharges the Orange County Groundwater Basin stream of Reach 1. The downstream end of the forebay/recharge area and the ordinary limit of surface flows is at 17th Street in the City of Santa Ana (RWCQB 2016). The downstream Santa Ana River Salt Marsh is designated as critical habitat for the Coastal California gnatcatcher and the San Diego fairy shrimp (U.S. Fish & Wildlife Service [USFWS] 2015).

Under the Surface Water Ambient Monitoring Program (SWAMP) in 2006, the RWQCB began actively monitoring surface waters of the Santa Ana Region and contracted the Stream Ecology and Assessment Lab (SEAL) to undertake a five-year project that focused on assessing the biotic integrity of streams in Region 8. Santa Ana Region 8 later joined the Stormwater Monitoring Coalition (SMC), an interagency group of state and regional stormwater agencies within the counties of Los Angeles, Riverside, San Bernardino, Orange, Ventura, and San Diego. In coordination with the Southern California Coastal Water Research Project (SCCWRP), SMC initiated a regional biological assessment program to characterize the health of the southern California freshwater streams (RWQCB 2012).

The results of ambient surface water monitoring and listing by the RWQCB show that while Reach 1 of the Santa Ana River is not included on the 303(d) list of impaired water bodies, Reaches 2, 3, 4, and 6 are listed for indicator bacteria, cadmium, copper, lead, pathogens, and salinity/total dissolved solids (TDS)/chlorides (State Water Resource Control Board [SWRCB] 2011).

Groundwater Hydrology

Groundwater beneath the Project area underlies the lower Santa Ana River watershed and is within the Orange County Groundwater Basin (Basin). During field exploration at the adjacent Hyundai Motor America facility, groundwater was encountered at depths of 8 to 11 feet below grade. Review of the Seismic Hazard Report of the Newport Beach Quadrangle indicated that the historically high groundwater is approximately 5 feet below grade at the Project area. The encountered groundwater conditions appear to be consistent with the historically high groundwater conditions (City of Fountain Valley 2012).

The Orange County Water District (OCWD) is responsible for managing the Orange County Groundwater Basin. To maintain groundwater quality, OCWD conducts an extensive monitoring program that serves to manage the Basin's groundwater production, control groundwater contamination, and comply with all necessary laws and regulations. A network of nearly 700 wells provides OCWD a source for samples, which are tested for a variety of purposes. The OCWD collects 600 to 1,700 samples each month to monitor the quality of the Basin's water. These samples are collected and tested according to approved federal and state procedures as well as industry-recognized quality assurance and control protocols (OCWD 2015).

Groundwater Quality

Samples collected throughout the Basin are used to monitor the impacts of basin extraction, determine the effectiveness of the seawater intrusion barriers, assess the impacts of historic and current land uses, and serve as a sentinel or early warning of emerging contaminants of concern. The OCWD's comprehensive water quality monitoring programs fall roughly into three categories: (1) compliance with permits and drinking water regulations, (2) OCWD Board approved projects for research and other purposes, and (3) basin management.

In accordance with the Federal Safe Drinking Water Act (SDWA), approximately one-third of the City's drinking water wells are sampled every year for general minerals, metals, and secondary maximum contaminant level (MCL) constituents (color, odor, TDS, sodium, chloride, alkalinity, etc.), while sampling for volatile organic compounds (VOCs) and nitrates is conducted every year. Quarterly monitoring is required if VOCs are detected or if nitrate concentrations exceed 50 percent of the MCL. In addition, OCWD monitors wells routinely for selected chemicals on the unregulated lists, chemicals with Notification Levels, or new chemicals of concern (OCWD 2015).

Groundwater quality is determined principally by the chemical nature of the sediments and rocks in which the groundwater is contained. Groundwater is typically evaluated for its chemical constituents to assess current conditions and beneficial uses, or to identify possible contamination sources. Chemical constituent sources can be natural (e.g., contact with mineralized rock) or human-related (e.g., pesticide or fertilizer contamination).

3.6.2 Regulatory Setting

3.6.2.1 Federal Regulations

Federal Clean Water Act (CWA) (Section 404)

The Federal CWA and subsequent amendments, under the enforcement authority of the U.S. Environmental Protection Agency (USEPA), was established "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The Act established the basic structure for regulating discharges of pollutants into the waters of the U.S. It gave the USEPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also set water quality standards for all contaminants in surface waters and made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions.

Clean Water Act Section 303(D) List of Impaired Water Bodies and Total Maximum Daily Loads

In accordance with Section 303(d) of the CWA, states must present the USEPA with a list of "impaired water bodies," defined as those water bodies that do not meet water quality standards. The CWA also requires the development of actions, known as total maximum daily loads (TMDLs), to improve water quality of impaired water bodies. The TMDL process includes development of a TMDL report with an implementation plan, and adopting and amending the Basin Plan to legally establish the TMDL and to specify regulatory requirements for compliance. As part of the Basin Plan Amendment, waste load allocations are specified for entities that have permitted discharges.

Clean Water Act Section 402 National Pollutant Discharge Elimination System (NPDES) Program

The NPDES Stormwater Program regulates stormwater discharges from three potential sources: municipal separate storm sewer systems (MS_4), construction activities, and industrial activities. As authorized by the CWA, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the U.S. and MS_4 facilities. To prevent harmful pollutants from being washed or dumped into an MS_4 facility, operators must obtain a NPDES permit and develop a stormwater management program. The program regulates for TMDL, which is the maximum amount of an impairing substance or stressor (e.g., pollutant) that a water body can receive and assimilate, and still safely meet Water Quality Standards, defined by the Federal CWA. Implementing programs to meet TMDLs defined under the NPDES Stormwater Program is performed at the state level.

FEMA National Flood Insurance Program

The National Flood Insurance Program (NFIP) was created by Congress in 1968. It provided a means for property owners to financially protect themselves from flood damage. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the program. Participating communities agree to adopt and enforce ordinances that meet or

exceed FEMA requirements to reduce the risk of flooding. The City of Fountain Valley is a participating community and must adhere to the NFIP.

3.6.2.2 State Regulations

Water Quality Control Plan for the Santa Ana River Basin (Basin Plan)

The RWQCB maintains the Basin Plan in accordance with federal and state law. The Basin Plan establishes beneficial uses for surface and groundwater in the region, and sets forth the regulatory water quality standards to protect those designated beneficial uses. Where multiple designated beneficial uses exist, water quality standards must protect the most sensitive use. In cases where the Basin Plan does not contain a water quality objective for a particular pollutant, other criteria are used to establish a standard. Other criteria may be applied from SWRCB documents (e.g., the Inland Surface Waters Plan and the Pollutant Policy Document) or from water quality criteria developed under Section 304(a) of the CWA. Permits issued to control pollution (i.e. waste-discharge requirements and NPDES permits) must implement Basin Plan requirements (i.e. water quality standards), taking into consideration beneficial uses to be protected.

California Governor's Drought Declarations

California Governor Brown on January 17, 2014 proclaimed a State of Emergency and directed state officials to take all necessary actions to make water immediately available. On April 25, 2014, the Governor issued an executive order to speed up actions necessary to reduce harmful effects of the drought, and he called on all Californians to redouble their efforts to conserve water. On December 22, 2014 Governor Brown issued Executive Order B-28-14 extending directives to the Department of Water Resources and the Water Board to take actions necessary to make water immediately available through May 31, 2016 and to extend California Environmental Quality Act (CEQA) suspensions for certain water supply projects. On April 1, 2015, the governor issued Executive Order B-29-15. Key provisions include ordering the SWRCB to impose restrictions to achieve a 25 percent reduction in potable urban water usage through February 28, 2016. On May 9, 2016, the governor issued Executive Order B-37-16, establishing longer-term water conservation measures through the end of January 2017, which include monthly water use reporting, strengthened urban drought contingency plans, elimination of wasteful water use practices, and mandated adjustments to emergency water conservation regulations and restrictions during extended drought conditions. These extended water conservation measures recognize differing water supply conditions for many communities, and require that communities develop water efficiency measures and conservations plans specific to the conditions of their respective sources of water supply.

The SWRCB adopted new emergency conservation regulations on May 18, 2016, that repeal and replace prior drought regulations that used a percentage-based water reduction standard. The new regulations, effective from June 2016 through January 2017, require local agencies to ensure a three-year water supply assuming a continuous shortage such as that experienced 2012 through 2015. Water agencies will be required to meet a conservation standard equal to the projected shortage in their supplies and report to the SWRCB. The Governor's drought declaration

also calls upon local urban water suppliers and municipalities to implement their local water shortage contingency plans immediately in order to avoid or forestall outright restrictions that could become necessary later in the drought season.

California Porter-Cologne Water Quality Control Act

This Act grants the SWRCB ultimate authority over state water rights and water quality policy and establishes nine Regional Water Quality Control Boards to oversee water quality on a day-to-day basis at the local/regional level. This Act is the basic water quality control law for California and works in concert with the Federal CWA. The Porter-Cologne Act states that a RWQCB may include water discharge prohibitions applicable to particular conditions, areas, or types of waste within its regional plan. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative.

State Water Resources Control Board

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCBs conduct planning, permitting, and enforcement activities. The NPDES permit is divided into two parts: construction and post-construction. The construction permitting is administered by the SWRCB, while the post-construction permitting is administered by the RWQCB.

Development projects typically result in the disturbance of soil that requires compliance with the NPDES General Permit, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities (Order No. 2009-0009-DWQ, NPDES Number CAS000002). This Statewide General Construction Permit regulates discharges from construction sites that disturb 1 or more acres of soil. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre of total land area must comply with the provisions of this NPDES permit, and develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). The project applicant must submit a Notice of Intent (NOI) to the SWRCB, to be covered by the NPDES General Permit, and prepare the SWPPP before beginning construction. Implementation of the SWPPP starts with the commencement of construction and continues through the completion of the project. Upon completion of the project, the applicant must submit a Notice of Termination (NOT) to the SWRCB to indicate that construction is completed.

Non-Point Source Pollution Control Program

The purpose of the Non-Point Source (NPS) Pollution Control Program is to improve the state's ability to effectively manage NPS pollution and conform to the requirements of the CWA and the Federal Coastal Zone Act Reauthorization Amendments of 1990. These documents were developed by staff of the SWRCB's Division of Water Quality and the California Coastal Commission (CCC), in coordination with the RWQCBs and staff from over 20 other state agencies.

3.6.2.3 Local Policies and Regulations

Orange County Public Works

According to the Orange County Public Works Watershed Division (OC Watersheds), the specific water pollutant control elements of the Orange County Stormwater Program are documented in the 2003 Drainage Area Management Plan (DAMP) (OC Watersheds 2003). The Orange County Stormwater Program is a municipal regulatory compliance initiative focused on the management and protection of the County's streams, rivers, creeks, and coastal waters.

The Orange County DAMP is the permittees' (County of Orange, the Orange County Flood Control District, and the incorporated cities of Orange County) primary policy, planning, and implementation document for municipal NPDES Stormwater Permit compliance. The focus of the DAMP is addressing the impacts of urban runoff on water quality. In 2007, a proposed Orange County DAMP was introduced, but has not been approved. It is currently being updated to adhere to the current municipal NPDES Stormwater Permit (Permit No. CAS618030, Order No. R8-2009-0030, Amended by Orders R8-2010-0062). As part of the DAMP, OC Watersheds has recently produced an updated Exhibit 7.II – Model Water Quality Management Plan (WQMP), dated May 19, 2011. At this time it is anticipated that the Project would be required to follow the May 2011 Model WQMP requirements.

City of Fountain Valley General Plan

The following goals and policies from the City of Fountain Valley General Plan pertain to the Project:

> **Goal 5.1** Conserve, protect and enhance the natural resources in Fountain Valley to ensure their optimal use and support to the benefit of all present and future citizens of the City.
>
> > **Policy 5.1.1** Develop an environmental mitigation monitoring program to address the natural resources found in Fountain Valley.
>
> **Goal 5.2** Protect Fountain Valley's existing and future water resources.
>
> > **Policy 5.2.2** Work with federal, state, and County governments and agencies to maintain and improve the quality and quantity of local and regional groundwater resources available to the City.
>
> **Goal 5.3** Minimal soil erosion.
>
> > **Policy 5.3.1** Reduce soil erosion from wind and water.
>
> **Goal 6.3** Minimize risk and damage from flood hazards within the City.
>
> > **Policy 6.3.1** Maintain siting and development standards to reduce risk and damage from flood hazards within the City.

Policy 6.3.4 Minimize the adverse effects of urbanization upon drainage and flood control facilities.

City of Fountain Valley Municipal Code (FVMP)

The City has established standards and regulations for the management of stormwater in the FVMP. In addition, the City Zoning Code sets forth specific design guidelines and permit requirements for the management of stormwater and urban runoff.

Chapter 14.40, Stormwater Regulations. As the Project would entail new development and significant redevelopment of the Project area, the Project is required to comply with the requirements of the City's NPDES Permit and DAMP for the management and discharge of urban runoff and stormwater.[1]

Section 18.06.100, Erosion Control and Water Quality Requirement Systems. The Project is subject to the erosion control provisions imposed by the City NPDES Permit, requiring the control and management of erosion and erosive activities.

Section 21.18.120, Storm Water and Urban Runoff Management. This section of the FVMC requires Project compliance with the CWA, the City's NPDES Permit, the DAMP, and the City's Local Implementation Plan (LIP), requiring the reduction or elimination of urban and stormwater runoff to protect water quality, biological habitats, and beneficial uses of downstream waters. Under this requirement, the Project must implement low impact development (LID) Best Management Practices (BMPs) to reduce runoff and minimize potential impacts to hydrology and water quality.

3.6.3 Impact Assessment and Methodology

3.6.3.1 Thresholds for Determining Significance

The following thresholds of significance are based on Appendix G of the 2016 CEQA Guidelines. For purposes of this EIR, implementation of the Project may have a significant adverse impact on hydrologic resources or water quality if the Project would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);

[1] The FVMC defines significant redevelopment as a project that includes the addition or replacement of 5,000 square feet (sf) or more of impervious surface on an existing developed site.

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner 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 provision of substantial additional sources of polluted runoff;

- Otherwise substantially degrade water quality;

- Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map; refer to

- Place a structure within a 100-year flood hazard area that would impede or redirect flood flows;

- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; and/or

- Result in inundation by seiche, tsunami, or mudflow.

3.6.3.2 Methodology

The impact assessment methodology used in this analysis consisted of evaluating two types of impacts: 1) degradation of surface water or groundwater quality resulting from development of the Project (e.g., construction materials or urban pollutants, such as oil, grease, and heavy metals); and 2) potential impacts to the Project resulting from exposure to an existing flood hazard. Significance criteria for potential impacts were then developed and used to assess impact levels.

3.6.4 Project Impacts and Mitigation Measures

Impact HYD-1 Description

HYD-1 Construction and Operation of the Project would result in potentially significant impacts related to increased run-off amounts and degraded water quality (*Less than Significant*).

Construction

During construction phases that include excavation, grading, and other earthwork, an increase in soil erosion and sediment transport into surrounding surface water bodies would occur due to runoff waters moving over exposed areas and entering the existing municipal stormwater

drainage system leading to the Fountain Valley Channel and the Santa Ana River. This surface runoff may also contain eroded construction materials and hazardous materials that could potentially degrade surface water quality. In the vicinity of the Project area, the Santa Ana River consists of channelized drainage features with concrete embankments, and the Fountain Valley Channel is lined with riprap and features landscaping. Neither of these drainage features contain valuable wildlife habitat in the vicinity of the Project area. However, the downstream Santa Ana River Salt Marsh is designated as critical habitat for the coastal California gnatcatcher and the San Diego fairy shrimp. In addition, soil erosion could result in the creation of onsite rills and gully systems, clog up existing drainage channels, and transport soil into down-gradient areas within the Project area. Soil movement would occur in exposed graded or excavated areas, as well as in unprotected drainage culverts or basins.

Individual developments occurring under the Project would be required to prepare and submit a Notice of Intent (NOI) to the SWRCB demonstrating compliance with the General Construction NPDES Permit. Construction activities would be subject to inspection by the City Building and Safety Department. The General Permit requires that non-stormwater discharges from construction sites be eliminated or reduced to the maximum extent practicable, that a SWPPP be developed governing construction activities for the development sites, and that routine inspections be performed of all stormwater pollution prevention measures and control practices being used at the development sites, including inspections before and after storm events. Upon completion of construction, the applicant would be required to submit a Notice of Termination (NOT) to the SWRCB to indicate that construction is complete. With adherence to these regulations, impacts to surface water from construction activities would be *less than significant*.

Operation

Much of the existing Project area is fully developed with buildings and surface parking lots and is primarily impervious to groundwater infiltration with the exception of some landscaped areas. Therefore, additional development and redevelopment under the Project would not substantially increase the amount of impermeable surfaces and associated urban runoff entering the Fountain Valley Channel, Santa Ana River, and the Pacific Ocean. Rather, redevelopment of the Project area under the FVCSP would have a slightly beneficial impact on urban runoff and water quality since redevelopment of each subdistrict would require greater areal coverage requirements for open space, landscaping, and planted areas. As a result, land use changes anticipated to occur under implementation of the Project would increase the amount open space and permeable surfaces compared to existing conditions. Therefore, the Project would not result in a significant increase in polluted urban runoff to receiving water bodies and may result in beneficial impacts associated with reduced urban runoff, improved water quality, and improved groundwater infiltration.

In addition, stormwater runoff in the Project area would be managed consistently with the Orange County Municipal NPDES Stormwater Permit, which requires that new development and significant redevelopment projects incorporate LID measures to reduce the amount of pollutants washing offsite and to maintain pre-development surface water runoff rates. In accordance with

these requirements, stormwater runoff from the new impervious surfaces (driveways, parking areas, and building rooftops) would be infiltrated to the ground through various bioretention areas where possible, and flows from walkways and pedestrian improvements would also be infiltrated to the groundwater through adjacent landscaped areas. Under the Project, wherever feasible, new development/redevelopment will incorporate LID BMPs, thereby reducing the total area of impermeable surfaces within the Project area.

Therefore, potential impacts associated with water quality standards and waste discharge requirements during construction and operation of the Project would be *less than significant*.

Mitigation Measures

No mitigation required.

Impact HYD-2 Description

HYD-2 Implementation of the Project would not significantly alter existing drainage patterns, such that substantial erosion, siltation, or flooding onsite or offsite would occur (*Less than Significant*).

Construction

Construction activities anticipated to occur under implementation of the Project would generally consist of urban infill and redevelopment, which is served by an existing municipal stormwater drainage system described in Section 3.12, *Utilities*. Construction activities may involve site preparation and demolition activities including excavation and grading that could slightly alter onsite drainage patterns; however, these flows would be temporary and would continue to be directed into the same storm drain system as under existing conditions as well as conditions imposed as part of site-specific development. Therefore, construction activities under the Project would not substantially alter existing drainage patterns of the area such that substantial erosion, siltation, or flooding would occur and impacts would be *less than significant*.

Operation

The Project area is urbanized and served by the existing City municipal storm drain system described in Section 3.12, *Utilities*. The Project area does not contain any natural streams, creeks, lakes, or other water bodies. Onsite and offsite runoff drains into the existing municipal storm drain system, including the Fountain Valley Channel, which transects the Project area, and the channelized portions of the Santa Ana River. These features are designed to convey floodwater and surface runoff offsite before eventually discharging to the Santa Ana River Salt Marsh and Pacific Ocean. New land uses anticipated to occur under the Project would generally consist of urban infill and redevelopment that could result in changes to localized drainage patterns. However, individual developments occurring within the Project area would be subject to City review to ensure inclusion of design features that would continue to convey stormwater runoff to the existing municipal storm drain system.

Given that impermeable surfaces currently cover almost all of the Project area, the Project would not substantially increase the amount of impermeable surfaces and associated urban runoff. Rather, the Project would provide for increased permeable area through development standards that require new open space, landscaping, and planted areas. As a result, the amount of urban runoff would decrease as compared to existing conditions, as described in Impact HYD-1. Based on the above, the Project would not alter the existing drainage patterns of the Project area because all flows from future land uses would be routed to the same treatment facilities and storm drains as under existing conditions. Therefore, the Project would not substantially alter existing hydrological conditions or overall drainage patterns such that substantial erosion, siltation, or flooding onsite or offsite would occur, and this impact would be *less than significant*.

Mitigation Measures

No mitigation required.

Impact HYD-3 Description

HYD-3 The Project could interfere with groundwater recharge, resulting in potentially significant impacts to groundwater supplies and aquifer volumes (*Less than Significant*).

Construction

Construction activities under the Project may involve subsurface excavation for structural support and undergrounding of utility transmission lines. Given the relatively shallow depth of groundwater at the Project area, it is possible that subsurface excavation during construction could intercept shallow groundwater tables. Groundwater encountered during excavation activities would be pumped out of the construction trench in order to create a dry work area. However, this activity would be temporary and is unlikely to involve extensive dewatering; this activity therefore would not substantially affect groundwater levels in the Basin. The Project would not lower the groundwater table as a result of groundwater extraction or through a reduction in groundwater recharge. Therefore, potential construction impacts relating to groundwater supply and recharge would be *less than significant*.

Operation

Implementation of the Project would result in redevelopment of the Project area, resulting in a net increase in approximately 258,011 sf of developed areas and impervious surfaces. As previously described under Impact HYD-1, much of the Project area is built-out and consists of large industrial and commercial buildings, roadways, and parking lots with no notable vacant areas or open spaces. As such, few pervious surfaces which support groundwater recharge exist onsite. However, the FVCSP has identified six distinct subdistricts and provides specific goals, policies, and regulations for the development within each of these areas. Development standards of the FVCSP require that at least one primary public open space larger than 0.5 acre shall be provided within each of these areas. Given this requirement, there is the potential that a minimum of 3

acres of public space would be added to the Project area, much of which is likely to consist primarily of permeable surfaces. In addition, the FVCSP proposes and requires the installation of landscaped areas or other pervious surfaces to minimize runoff and provide additional opportunities for groundwater recharge. Furthermore, the FVCSP would require development within the Project area to implement LID and stormwater BMPs to improve water quality and reduce runoff. While the proposed Project would result in a net increase in development spaces, implementation of the Project would result in reduced site runoff, as well as increased opportunities for permeable ground surfaces and subsequent groundwater recharge. Therefore, impacts to groundwater supply and aquifer levels would be *less than significant* and *beneficial*. For further discussion of impacts to groundwater supplies, refer to Section 3.12, *Utilities*.

Mitigation Measures

No mitigation required.

Impact HYD-4 Description

HYD-4 The Project could result in potentially significant impacts on structures placed within a floodplain (*Less than Significant*).

According to the Flood Insurance Rate Map for the Project area, the entire Project area is located within "Zone X", which is defined as areas of 0.2 percent annual chance flood; areas of 1 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood. Because the Project area is largely protected from flooding by both the Fountain Valley Channel and the Santa Ana River and associated levee improvements described above in the Environmental Setting, it is not subject to 1 percent annual chance flood. Therefore, while minor flooding may be experienced onsite, the Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding. In addition, the Project area is located adjacent to the Santa Ana River and is likely subject to inundation in the event of failure or collapse the Prado Dam. However, due to the distance from Prado Dam and current emergency procedures that address dam failure or flooding, the likelihood of dam failure is low, and impacts are anticipated to be *less than significant*.

Mitigation Measures

No mitigation required.

3.6.4.1 Residual Impacts

Under implementation of the Project, no significant impacts to surface water quality, drainage patterns, or groundwater quality are anticipated, and no mitigation measures are required to further reduce potential impacts. While the Project area remains subject to potential inundation in the event of failure of the Prado Dam, the occurrence of such an event remains low, and existing emergency actions plans for the City and County would reduce potential impacts. Therefore,

impacts to water resources and hydrology resulting from Project implementation remain *less than significant.*

3.6.4.2 Cumulative Impacts

The geographic context for the analysis of cumulative impacts associated with water quality is the lower reach of the Santa Ana River watershed. Cumulative development within the lower Santa Ana River watershed and the Project area would have the potential to contribute to increased pollutant loading in urban runoff and change localized drainage patterns.

Land use changes anticipated to occur in the Project area would facilitate the creation of new pervious open spaces in accordance with City and FVCSP standards and requirements, thus reducing the urban runoff at individual development sites and within the Project area as a whole, compared to existing conditions. Further, potential impacts related to stormwater runoff are regulated across the City in the same manner as they are in the Project area. For example, the FVMC requires that new development and significant redevelopment comply with provisions governing stormwater discharge, the City's LIP and NPDES Order No. R8-2009-0030 to mitigate potential impacts to water quality from polluted stormwater runoff. Additionally, the LIP requires site design and the implementation of LID BMPs to reduce pollutants in stormwater runoff. Compliance with existing local, state, and federal regulations would prevent violation of water quality standards and minimize increases in urban runoff and the potential for contributing additional sources of polluted runoff. These requirements are more stringent and protective of water quality than those required during construction of existing buildings in the Project area. Additionally, the FVCSP would result in increased permeable area due to development standards that require new open space, landscaping, and planted areas; as a result, new land uses occurring under the Project would decrease urban runoff as compared to existing conditions. Redevelopment of sites in the Project area with new land uses that incorporate current BMP requirements could result in improved water quality as compared to existing conditions. Therefore, cumulative impacts to surface water hydrology and surface water quality would be *less than significant*.

Land use changes and increases in developed spaces across the City also have the potential to increase the demand for City groundwater supplies and reduce groundwater recharge. However, continued implementation of water conservation measures as part of City Municipal Code Title 14.18, *Water Conservation,* would ensure that appropriate measures are taken to reduce consumption of local and regional water supplies and that groundwater supplies are managed such that the groundwater aquifer is not withdrawn beyond the safe yield. In addition, development and landscape standards requiring the implementation of pervious materials and implementation of LID BMPs would ensure new development projects minimize the amount of impervious surfaces and provide additional opportunity for surface water permeation of ground surfaces. These mandated requirements would reduce urban runoff and promote opportunity for ground surface permeation and groundwater recharge. Therefore, cumulative impacts to groundwater levels would be *less than significant* and *beneficial.* A complete discussion of City water demand and supply in terms of groundwater resources is included in Section 3.17, *Utilities*.