5.8 HYDROLOGY AND WATER QUALITY

This section describes the existing hydrology and water quality of the project area, potential environmental impacts, recommended mitigation measures to help reduce or avoid impacts and the level of significance of project impacts after mitigation. The information and analysis provided in this section is largely derived from the Quasi-Two-Dimensional Hydraulics & Scour Analysis - Santa Ana River Technical Memorandum prepared by AECOM dated June 2014 (Appendix H of this Draft EIR).

5.8.1 EXISTING CONDITIONS

5.8.1.1 Surface Hydrology

The project area is located within the Santa Ana Regional Water Quality Board's (RWQCB) jurisdictional area, within the Santa Ana Watershed (six digit Hydrologic Unit Code [HUC]-6 #180702), and the Gypsum Creek Sub-Watershed (12 digit HUC #180702031001). The Santa Ana River Watershed drains an area of approximately 2,800 square miles, and the Gypsum Creek-Santa Ana River Sub-Watershed drains and area of approximately 38 square miles (United States Geological Survey [USGS] National Map 2014). The Santa Ana River watershed drains portions of four counties in southern California, including San Bernardino, Riverside, Los Angeles, and Orange. The Santa Ana River (SAR) has several major tributaries including Mill, San Timoteo, Temescal Creek/San Jacinto River, Santiago, Bear, City, Lytle, Chino and Salt Creeks, as well as Perris Valley Drain. The SAR is approximately 96 miles long from the headwaters to the Pacific Ocean.

The Santa Ana River Parkway Extension Project (proposed project) is located on the north and south sides of the SAR between Gypsum Canyon Road on the west and the Orange/Riverside/San Bernardino County boundaries on the east. The SAR flows through the center of the project area. The project area includes levees or elevated earthen benches, and portions of a regional railroad corridor, Featherly Regional Park (including Canyon RV Park), Chino Hills State Park (CHSP), and the Green River Golf Club (GRGC). A levee on the north bank of the SAR includes an Orange County Flood Control District (OCFCD) service road, which marks the southern border of the Villa Del Rio neighborhood. Hydrology within the SAR is largely controlled by the presence of Prado Dam, upstream of the project area.

5.8.1.2 Rainfall

Climate within the watershed varies by geography. Mountainous areas have cold winters and mild summers, while valley floors have mild winters and hot, dry summers. Snow may occur in the mountains during winter with average precipitation of approximately up to 47 inches in the San Jacinto Mountains. Precipitation for the watershed as a whole averages approximately 17 inches (Thiros 2010). Precipitation for the watershed primarily occurs in the winter months and most of the runoff in the watershed is produced from these storms. Runoff drains into the SAR primarily during and immediately after intense or prolonged precipitation with intense periods of rainfall (Riverside County Flood Control and Water Conservation District [RCFCD] 1994).

The climate at the project area is dry during the late spring, summer, and early fall. The nearest rain gauge (#270) is located in the City of Yorba Linda and is operated by OC Public Works as part of the Automated Local Evaluation in Real Time (ALERT) system. Rain gauge #270 resides at an elevation of 300 feet and is located adjacent to the intersection of Fairmont Boulevard and Esperanza Road. The average annual rainfall for this rain gauge is 13.89 inches, with the most average rainfall in January (3.36 inches), and the least average rainfall in July (0.01 inches) (OC Almanac 2014).

5.8.1.3 Floodplains and Flood Hazards

A long history of recurrent but infrequent flood problems in southern California is revealed in records kept by missions and other historical sources, including diaries from Mission Fathers, early travelers, and settlers. There are accounts of floods occurring as far back as 1770. Of these early southern California accounts, the floods of 1780, 1825, 1862, 1884, 1891, and 1916 were of major proportions. The 1916 event saw levels in Lake Elsinore reach stages such that flow from San Jacinto River confluenced with the SAR (RCFCD 1994). Floods occurring since 1851 have been described in more detail than previous floods and provide some basis for determining the relative magnitudes of major flood events and their recurrence intervals. Recorded data from 1897 to present show medium to large winter floods occurring in January 1910, January 1916, February 1937, March 1938, January 1943, January and February 1969, February and March 1978, February 1980, March 1983, January, February and March 1995, and December, January and February 1998. The Federal Register (V. 22, N. 139, p. 39802) (Federal Register 2003) cites that the Santa Ana Levee project (1961) provided sufficient protection from the 1969 event. The 1980 event, although smaller in discharge, caused the levee to fail and resulted in severe flooding in the City of Santa Ana. Prado Dam, immediately upstream of the project area in the Chino Hills' Lower Santa Ana River Canyon, was completed in 1941 and built by the Army Corps of Engineers.

As shown on the Federal Emergency Management Agency (FEMA) maps 06059C0180J, 06059C0090J, 06059C0185J, 06065C1335G, 06065C0668G, and others, the project area is in or adjacent a floodplain and is also within the special flood hazard area subject to inundation by the 100-year flood. A 100-year flood, also known as the 1 percent chance flood and base flood, is a flood that has a 1 percent chance of being equaled or exceeded in any given year.

5.8.1.4 Geology and Hydrogeology

The proposed project is located within the Peninsular Ranges geomorphic province of Southern California within Santa Ana Canyon between the Puente Hills to the north and the Santa Ana Mountains to the south. Specifically, the proposed project is located within the Santa Ana River floodplain. Folded and faulted Cretaceous to Miocene-age marine and non-marine sedimentary rocks make up the surrounding bedrock units. Faults that offset the bedrock units generally trend north to north west, similar to the Whittier-Elsinore fault system that is the main structural feature in the region (United States Department of the Interior 1964).

In the project area and vicinity, materials consist of documented and undocumented artificial fill placed in various locations, including engineered flood embankments, park areas and roads. Alluvial channel deposits underlie these artificial fills and consist of interconnected sand and gravel deposits with discontinuous clay and silt layers.

5.8.1.5 Water Quality

According to the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan), the project area is located along Reach 2 of the SAR, and ultimately drains to the Pacific Ocean. Reach 2 is listed on the 2010 Clean Water Act (CWA) Section 303(d) list of impaired water bodies for bacteria (SWRCB and CalEPA 2011). The project area is adjacent to State Route (SR) 91, portions of a regional railroad corridor, Featherly Regional Park including Canyon RV Park, CHSP, and the GRGC, all of which have the potential to substantially contribute pollutants to the SAR in the vicinity of the project area.

5.8.1.6 Regulatory Setting

Water Quality

Regulatory Background

Stormwater discharges are regulated by the United States Environmental Protection Agency (USEPA) through the CWA. The CWA includes a framework for regulating municipal and industrial stormwater discharges under the National Pollutant Discharge Elimination System (NPDES). The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual residences that are connected to a municipal system, use a septic system, or do not have a surface discharge, do not require a NPDES permit. However, industrial, municipal, and other facilities must obtain permits if their discharges are conveyed directly to surface waters. In Orange County, the NPDES permit program is administered by the RWQCB. The NPDES General Permit No. CAS000002 for Stormwater Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ as amended by Order Nos. 2010-0014-DWQ and 2012-0006-DWQ (Construction General Permit [CGP]) is required for sites with a total disturbed area of one acre or more. The CGP is administered by the State Water Resources Control Board (SWRCB) and implemented by its nine RWQCBs. The CGP requires development of a Stormwater Pollution Prevention Plan (SWPPP) that identifies structural and non-structural best management practices (BMPs) to reduce impacts to surface water associated with sediment and other construction-related pollutants. In addition, the CGP requires projects that are located within an area covered by a Phase 1 or 2 Municipal Separate Storm Sewer System (MS4) Permit to comply with the requirements of the MS4 permittee's post-construction requirements for water quality and flow.

The RWQCB has ordered Waste Discharge Requirements for the County of Orange, OCFCD, and incorporated cities of Orange County in the Phase I Permit (RWQCB 2009).

The Phase I Permit is based on the following plans:

- CWA (USEPA 1972).
- Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) (RWQCB 2008).
- California Toxics Rule (CTR) (California EPA [CalEPA] 2000).
- California Toxics Rule Implementation Plan (SWRCB 2005).
- Ocean Plan (SWRCB and CalEPA 2012).
- Enclosed Bays and Estuaries Plan (SWRCB and CalEPA 2009).
- Thermal Plan (SWRCB 1998).

Together, these plans define the requirements for maintaining and, where possible, enhancing the water quality of lakes, streams, creek and channel segments, groundwater, tidal prisms, enclosed bays, estuaries, and oceans for the Santa Ana Region, which includes the project area. Several of these bodies are listed in the Basin Plan as receiving waters having beneficial uses, including, as noted, Santa Ana River Reach 2 (17th Street to Prado Dam).

The RWQCB's intent of the Phase I Permit (RWQCB 2009) is to require the implementation of BMPs to reduce to the maximum extent practicable, the discharge of pollutants in urban stormwater to support the attainment of water quality standards. The water quality standards are based on numerical effluent limitations specified in the CWA and the CTR, and numerical and narrative water quality objectives defined for beneficial uses of the receiving waters.

Construction-related dewatering waste and other non-stormwater/de-minimus discharges to surface waters (e.g., wastes associated with well installation and aquifer testing waste) for the County of Orange, OCFCD, and the incorporated cities of Orange County within the Santa Ana Region Areawide Urban Storm Water Runoff are covered by the General Waste Discharge Requirements for Discharges to Surface Waters That Pose an Insignificant (De Minimus) Threat to Water Quality, Order No. R8-2009-0003, NPDES No. CAG998001, (De Minimus Surface Water Discharge Permit). Operational waste discharge requirements for the County of Orange, OCFCD, and the incorporated cities of Orange County within the Santa Ana Region Areawide Urban Storm Water Runoff are covered by Order No. R8-2009-0030, NPDES No. CAS618030 (Orange County Municipal Separate Storm Sewer System [MS4] Permit).

Water Quality Standards

The applicable receiving waters of the Basin, as defined in the Basin Plan, are considered to be Outer Bolsa Bay, Huntington Harbor, Anaheim Bay National Wildlife Refuge, Anaheim Bay, and tidal prisms of flood control channels discharging to coastal or bay waters.

As listed in the Basin Plan, the applicable or listed beneficial uses of the receiving waters mentioned above are:

- NAV – Navigation.
- REC1 – Water Contact Recreation.
- REC2 – Non-Water Contact Recreation.
- COMM – Commercial and Sport fishing.
- BIOL – Preservation of Biological Habitats of Special Significance.
- WILD – Wildlife Habitat.
- RARE – Rare, Threatened or Endangered Species.
- SPWN – Spawning, Reproduction and Development.
- MAR – Marine Habitat.
- SHEL – Shellfish Harvesting.
- EST – Estuarine Habitat.

Both numeric and narrative water quality objectives are listed in the Basin Plan for these beneficial uses. Additional numeric water quality objectives are provided in the CWA and CTR for toxic chemicals. The waterbody type, as defined in Chapter 4, Water Quality Objectives, of the Basin Plan, considered to be applicable to the project area is enclosed bays and estuaries, because the Basin drains to this waterbody type.

The Basin Plan lists numeric criteria for coliform bacteria, residual chlorine, and pH; and it lists narrative objectives for algae, color, floatables, oil and grease, dissolved oxygen, radioactivity, suspended and settleable solids, sulfides, surfactants (surface-active agents), taste and odor, temperature, toxic substances, and turbidity. The CWA and CTR list numeric criteria for a number of chemicals including metals, phenols, volatile organic compounds (VOCs), and pesticides.

Section 303(d) Impaired Waterbodies and Total Maximum Daily Loads (TMDLs)

The current 2010 CWA Section 303(d) List for the Santa Ana Region was reviewed to determine if the project area is listed as an impaired waterbody. The 303(d) List identifies receiving waters that are known to be impacted with certain pollutants, and the proposed completion date for a total maximum

daily load (TMDL) directive to be implemented for each pollutant. SAR (Reach 2) is listed for indicator bacteria. Based on this listing, a TMDL for indicator bacteria is proposed to be implemented by 2021.

New Development/Significant Redevelopment Project Implications

The proposed project is classified as a New Development/Significant Redevelopment project as described in the Phase I Permit (RWQCB 2009), DAMP (County of Orange, et al. 2006) and LIP (County of Orange, et al. 2009).

Under the Orange County MS4 Permit, Water Quality Management Plans (WQMPs) are required for projects that meet certain criteria, including:

- A development project that creates 10,000 square feet or more of impervious surface.
- Includes parking lots 5,000 square feet or more including associated drive aisle, and potentially exposed to urban stormwater runoff.

WQMPs set the Low Impact Development (LID) and BMP requirements for operation of a project. LID is the management of surface water through land development strategies that reduce the impacts of development on the quality, volume, and intensity of stormwater runoff. These impacts can be reduced through the implementation of engineered BMPs that return the site to predevelopment hydrologic conditions. Examples of LID BMPs include treatment systems, retention and infiltration basins, and minimization of impervious surfaces.

Pollutants of concern within the project area are materials that could be generated (discharged) as a result of a project and those that are already present as pollutants in the receiving waters. The pollutants of concern and their origins for the project area are as follows:

- Sediment and turbidity (arising from work conducted within the SAR, erosion, and stormwater runoff) that can be detrimental to aquatic life.
- Nutrients such as nitrogen and phosphorus from fertilizers and eroded soils that can cause excessive growth of algae and other organisms in the receiving waters.
- Bacteria and viruses from animal wastes such as from pets, posing a health hazard or fostering excessive growth of undesirable organisms in the receiving waters.
- Potentially toxic metals such as cadmium, chromium, copper, lead, mercury, nickel, and zinc from industrial materials, paints, and coatings.
- Organic compounds such as petroleum hydrocarbons (including oil and grease), solvents, and pesticides, which can reach nuisance or even toxic levels.
- Pesticides, herbicides, rodenticides, and insecticides that can be toxic to humans and other ecosystem components.
- Oxygen-demanding (biodegradable) substances such as proteins, carbohydrates, and fats that can decrease oxygen levels in the receiving waters.

- Gross pollutants such as paper, plastic, polystyrene, aluminum, biodegradable materials, and other wastes that can pose an aesthetic or nuisance impact, increase oxygen demand, or foster growth of undesirable aquatic organisms.

Construction Dewatering

Regulation of construction discharges are covered under the NPDES program. As such, these activities are required to comply with relevant sections of the CGP.

5.8.2 THRESHOLDS OF SIGNIFICANCE

Based upon the thresholds contained in Appendix G of the California Environmental Quality Act (CEQA) Guidelines, implementation of the proposed project would result in a significant adverse impact related to hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements.

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

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding or erosion on- or off-site.

- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

- Otherwise substantially degrade water quality.

- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

5.8.3 METHODOLOGY RELATED TO HYDROLOGY AND WATER QUALITY

The assessment of impacts to hydrology and water quality was based primarily on the following documents:

- Quasi-Two-Dimensional Hydraulics & Scour Analysis - Santa Ana River Technical Memorandum (AECOM 2014c).

- Santa Ana River Canyon Habitat Management Plan Maintenance and Monitoring Report (LSA 2013).

The Quasi-Two-Dimensional Hydraulics & Scour Analysis - Santa Ana River Technical Memorandum, prepared for the proposed project, utilized the United States Army Corps of Engineers' (ACOE) HEC-RAS numerical model, which was designed to calculate water surface profiles in channels assuming a steady flow and uniform discharge based on site hydrology. The HEC-RAS model is a one-dimensional model widely used throughout the United States for analysis of open channels. Hydraulic modeling was performed using a HEC-RAS model provided by the County. The ACOE HEC-6 model is a one-dimensional moveable bed open channel hydraulic and sediment model. The model was designed to

simulate change in riverbed profiles resulting from sediment scour and deposition over long periods of time. The model segments hydrograph data into a progression of steady flow events with varied discharge and duration. The Santa Ana River Canyon Habitat Management Plan Maintenance and Monitoring Report provided information of controlled releases from Prado Dam and ordinary high water mark for inputs to the model.

Also, the assessment of impacts to hydrology and water quality included an evaluation of the identified impairments and defined beneficial uses discussed in the Basin Plan for the applicable section of the SAR.

5.8.4 POTENTIAL IMPACTS

5.8.4.1 Impacts Related to Water Quality Standards and/or Waste Discharge Requirements

Project construction activities would involve trail and bridge construction, and related staging and grading activities. Construction activities would also require pile installation and grading along the stream corridor, as well as within the SAR itself. Grading activities could potentially result in sediment runoff into river and ultimately, downstream receiving waters during runoff events, as well as sediment tracking from construction truck trips leaving the project area. Construction of the trail and bridge amenities would involve use of concrete, asphalt, and other building materials that could contaminate stormwater if not properly managed. However, construction of the proposed project would be subject to the CGP because it would disturb more than one acre of soil. As such, the County would be required to prepare and implement a SWPPP and a WQMP which meet the requirements of the CGP and Orange County's MS4 Permit, respectively. The required SWPPP contain BMPs to specifically address erosion control issues that may result during construction activities. BMPs such as silt curtains, erosion control fiber mats, silt fences, sandbag barriers, and sediment traps would be implemented to capture sediment, stabilize slopes, and prevent runoff and sediment from entering receiving waters. Adherence to the required SWPPP and the implementation of standard BMPs during construction would reduce the potential for increased siltation, erosion, including hazardous materials spills. Furthermore, any necessary construction dewatering activities would also require compliance with the CGP, so as not to degrade surface water quality. Therefore, adherence to the provisions of the Orange County MS4 Permit, the De Minimus Surface Water Discharge Permit, and the SWPPP as part of compliance with General Permit 2009-0009-DWQ would reduce construction-related impacts associated with water quality to a level that would be considered less than significant.

The WQMP will contain BMPs to address potential post-construction impacts to surface water quality, including sediment transport, trash and debris, nitrates, and bacteria. BMPs such as revegetation to stabilize disturbed soils, grading design that increases stormwater retention and infiltration, and maintenance programs to remove trash, debris, and waste would be implemented to reduce the potential for impacts to surface water runoff. However, implementation of the proposed project would extend the trail through the project area, which could introduce additional horse manure into the project area. Additional horse manure would result in an increase in nitrates and bacteria which could potentially result in negative impacts to the quality of surface water runoff. Therefore, a potentially significant impact related to water quality could occur during operation of the proposed project.

5.8.4.2 Impacts Related to Alteration of the Existing Drainage Pattern of the Area Resulting in Erosion, Siltation, and/or Flooding On- Or Off-Site

Construction of the proposed project would occur adjacent to and within the SAR. However, these activities would be temporary and, as discussed above, would be performed in compliance with RWQCB

requirements, including preparation of a SWPPP and implementation of BMPs to minimize erosion and siltation. Therefore, adherence to NPDES-related provisions would ensure impacts associated with alteration of the existing drainage pattern during construction would be less than significant.

Implementation of the proposed project (e.g., the introduction of bridge pylons within the SAR) has the potential to result in changes to the existing drainage pattern of the area. Hydraulic impacts associated with the introduction of bridge pylons were modeled to assess the impacts of erosion, siltation, and flooding.

Overall, it was determined that all hydraulic impacts within the SAR resulting from the proposed project are expected to occur within approximately 1,500 feet of the proposed structures, and thus are very localized to within a small portion of the SAR's channel that has an overall total length of approximately 96 miles. Moreover, these changes to stream hydraulics will only be realized during the 100-year event, and any more frequent events will result in a smaller extent of impacts. In some very frequent events (i.e. the 2-year event) there is not expected to be any impacts on hydraulics in the SAR. The hydraulic impacts from the placement of the proposed project are generally a small reduction in velocity (i.e. less than approximately 1 foot per second flow velocity decrease) and a corresponding small increase in flow depth (i.e. less than approximately one foot of flow depth increase) within the area of impact. These impacts are considered less than significant.

Impacts to vegetation within the zone of local hydraulic change from the proposed project were also examined. Hydraulic impacts to vegetation are important since increased velocity could result in a reduction in plant community area and/or density, contributing to erosion and water quality impairments within the SAR. There are 2.4 acres of discernible impacts to the flood regime that would occur during the 100-year design event and, therefore, impact some existing plant populations from the proposed project during the design storm. It is important to note that these impacts are limited to decreases in velocity between -0.25 to -1.0 feet per second only: no increase in velocity is expected to impact vegetation during the design event. Therefore, only decreases in channel velocity are expected to occur during the 100-year flow event. More frequent events are expected to have less impact to channel velocity, as well as smaller areas within the SAR where channel velocity is changed from the existing condition as a result of construction of the proposed project. Additionally, the study results indicate the following: 1) the overall hydrology will not be impacted by the proposed project; 2) the hydraulic impacts to the SAR are expected to be limited only to the vicinity of Bridges #1 and #2 during the design event with no hydraulic impacts occurring as a result of the construction of Bridge #3; 3) the impacts to local hydraulics during the design are expected to primarily be limited to small decreases in velocity (e.g., changes of velocity less than -0.25 feet per second); 4) the acreage of impacts with a decrease in velocity greater than 1.0 foot per second during the design event is expected to be 0.0 acre; and 5) the acreage of impacts with an increase in velocity greater than 1.0 foot per second during the design event is expected to be 0.2 acre, with none of this category of impact occurring to vegetation. These findings indicate that the level of impacts to channel hydraulics and subsequent hydraulic impacts on existing vegetation is less than significant.

Additionally, implementation of the proposed project would introduce new impervious surfaces to the project area (in the form of the bikeway, Staging Area, bridges and attendant features) that could increase stormwater runoff rates and result in increased erosion and/or siltation. However, operation of the proposed project would be subject to the Orange County MS4 Permit New Development/Significant Redevelopment requirements because it would create more than 10,000 square feet of new impervious surfaces and would include a permanent Staging Area, which would include a parking area that is greater than 5,000 square feet. As such, the County would be required to prepare and implement a WQMP that meets the requirements of the Orange County MS4 Permit. The WQMP would contain BMPs to address the quality and quantity of stormwater including impacts related to erosion and/or siltation. BMPs such

as revegetation to stabilize disturbed soils, erosion resistant ground cover such as mulch or gravel, and streambank stabilization would be required to reduce the potential for erosion and siltation related impacts. Therefore, adherence to the provisions of the Orange County MS4 Permit and the WQMP and BMPs would reduce operation related impacts associated with erosion and siltation to a level that would be considered less than significant.

5.8.4.3 Impacts Related to Exceedance of Capacity of Stormwater Drainage Systems or Provision of Substantial Additional Sources of Polluted Runoff

Construction activities would be temporary and, as discussed above, would be performed in compliance with RWQCB requirements, including preparation of a SWPPP and BMPs. Therefore, the temporary nature of construction activities and adherence to NPDES-related provisions would ensure construction-related activities within a 100-year flood hazard area would be less than significant.

Implementation of the proposed project would introduce new impervious surfaces to the project area, which would result in a minor increase in stormwater runoff. This minor increase in stormwater runoff would be a relatively small increase compared to the design storm for the SAR, which is 30,000 cubic feet per second. Therefore, implementation of the proposed project would not reduce the capacity of the SAR. Impacts would be considered less than significant. No additional water quality-related impacts beyond those identified in Section 5.8.4.1, above, would occur.

5.8.4.4 Impacts Related to Substantial Degradation in Water Quality

No additional water quality-related impacts beyond those identified in Section 5.8.4.1, above, would occur.

5.8.4.5 Impacts Related to Placement of Structures Within a 100-Year Flood Hazard Area

Construction activities would be temporary and, as discussed above, would be performed in compliance with RWQCB requirements, including preparation of a SWPPP and BMPs. Therefore, the temporary nature of construction activities and adherence to NPDES-related provisions would ensure construction-related activities within a 100-year flood hazard area would be less than significant.

As discussed above, hydraulic modeling for the proposed project showed that impacts are expected to occur within approximately 1,500 feet of the proposed structures, and thus are very localized to within a small portion of the SAR's channel. The hydraulic impacts from the placement of the proposed project are generally a small reduction in velocity (i.e. less than approximately 1 foot per second flow velocity decrease) and a corresponding small increase in flow depth (i.e. less than approximately one foot of flow depth increase) within the area of impact. These impacts related to placement of structures within a 100-year flood hazard area are considered less than significant.

5.8.5 MITIGATION MEASURES

The biological resource Mitigation Measure BR-13 discussed in Section 5.3 (Biological Resources) of this Draft EIR would also serve to reduce potentially significant operational water quality impacts related to the introduction of additional horse manure into the project area to below a level of significance.

BR-13 Prior to commencement of riding and hiking trail operations, an ongoing O & M Program shall be prepared and approved by the County, in order to mitigate potential long-term impacts to biological resources and water quality from horse manure. Such a plan should

contain BMPs specifically developed for equestrian uses (e.g., Mazboudi 2004; Cal-IPC 2012). The O & M Program may be part of an already-established program operated by OC Parks. The O & M Program shall identify items to be maintained and specify maintenance levels, funding resources, and work responsibility. The O & M Program shall also manage maintenance frequency for specific trail segments or the trail in its entirety, based on the maintenance plan or unique conditions. The County shall be responsible for overseeing or maintaining the trail facilities and establishing a consistent level of maintenance.

5.8.6 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Implementation of Mitigation Measure BR-13 and adherence with the requirements of the CGP and Orange County MS4 Permit would reduce impacts related to hydrology and water quality to a level that is less than significant.