3.2 Hydrology and Water Quality

This section of the EIR evaluates potential impacts on hydrology and water quality resulting from the Newland Sierra Project (project). The discussions found in the following sections are based on information provided by the findings from other approved planning documents and the following technical reports prepared for the proposed project:

- Stormwater Quality Management Plan (SWQMP) for Newland Sierra prepared by Fuscoe Engineering Inc. (Appendix Y), which includes the following attachments:
  - Attachment 1: Stormwater Pollutant Control BMP Worksheets, Form I-8, DMA Exhibit, and Individual Structural BMP DMA Mapbook
  - Attachment 2: Structural BMP Design Calculations, Hydromodification Management Exhibit, Potential Critical Coarse Sediment Yield Analysis (PCCSYA) prepared by REC Consulting, Inc., and Hydromodification Screening prepared by Chang Consultants
  - Attachment 3: Structural BMP Maintenance Plan
  - Attachment 4: County of San Diego PDP Structural BMP Verification for Permitted Land Development Projects
  - Attachment 5: Plan Sheets showing Permanent Storm Water BMPs, Source Control, and Site Design
- Preliminary Drainage Study prepared by Fuscoe Engineering (Appendix Z)
- Hydromodification Management Study prepared by Fuscoe Engineering (Appendix AA)
- Critical Coarse Sediment Yield Analysis prepared by REC Consultants (Appendix BB)
- Preliminary Floodplain Analysis, Stevenson Creek and Twin Oaks Valley Creek, prepared by Fuscoe Engineering (Appendix CC)
- Groundwater Resources Letter, prepared by Leighton and Associated for the Newland Sierra Project (Appendix J-3)

Comments received in response to the Notice of Preparation included concerns regarding the potential increase in stormwater runoff and water supply. These concerns are summarized and analyzed in this section. A copy of the Notice of Preparation and comment letters received in response to the Notice of Preparation is included in Appendix A of this EIR.

3.2.1 Existing Conditions

3.2.1.1 Hydrologic Setting (Drainage)

The project Site consists of natural hills and valleys over 1,985 acres. From a drainage perspective, the Site straddles two of the region's nine Hydrologic Units, the San Luis Rey Hydrologic Unit and the Carlsbad Hydrologic Unit. The project Site is divided among three local watersheds: South Fork Moosa Canyon, San Marcos Creek, and South Fork Gopher Canyon, comprising a total area of 3,148 acres within the area of hydrologic analysis for the project and include approximately 1,162 acres outside of the project boundary (see Figure 3.2-1). The South Fork Moosa Canyon and South Fork Gopher Canyon watersheds are part of the larger San Luis Rey River Watershed Management Area and the San Marcos Creek watershed is one of several watersheds within the larger Carlsbad Watershed Management Area. Each local watershed is described in further detail below.

The San Luis Rey River Watershed Management Area (WMA) is located in northern San Diego County and is bordered to the north by the Santa Margarita River WMA and to the south by the Carlsbad and San Dieguito River WMAs. The WMA is approximately 360,000 acres (562 square miles) and extends nearly 55 miles inland. The San Luis Rey River discharges to the Pacific Ocean in the City of Oceanside. Land uses within the WMA include residential, commercial/industrial, transportation infrastructure, schools, agriculture, recreation, and parks and open space with approximately half of the land currently undeveloped.

The Carlsbad WMA is located in northern San Diego County and is bordered to the north by the San Luis Rey River WMA and to the south by the San Dieguito WMA. The watershed extends over approximately 135,000 acres (211 square miles), extends nearly 24 miles inland, is formed by a group of six individual watersheds, and includes the entire Cities of Carlsbad, San Marcos and Encinitas and portions of the cities of Oceanside, Vista, Escondido, Solana Beach, and San Diego County unincorporated areas. Land uses within the WMA include residential, commercial/industrial, transportation infrastructure, schools, agriculture, recreation, and parks and open space. The Carlsbad WMA is the third most densely populated watershed in the San Diego Region.

South Fork Moosa Canyon Watershed

The South Fork Moosa Canyon watershed (referred to and identified as "Basin A" in Figure 3.2-1) drains to the east toward I-15. This watershed consists of 879 acres within the project Site, with a total of 1,265 acres within the area of analysis. Under existing conditions, flows are conveyed to the east through natural valleys and channels to I-15. Basin A is divided into 22 sub-basins of varying size that generate peak flows of between 4 cubic feet per second (cfs) and 783 cfs (see Table 3.1-4a of Appendix Z). This watershed is tributary to the San Luis Rey River.

San Marcos Creek Watershed

The portion of the project Site draining to San Marcos Creek is divided into two basins (referred to and identified as "Basin B" and "Basin C" in Figure 3.2-1). Runoff from Basins B and C flows south to Deer Springs Road, where it is conveyed under the roadway through multiple existing culverts and channels. This watershed consists of 696 acres within the project Site, with a total of 1,170 acres within the area of analysis. Under existing conditions, flows are conveyed to the southwest and west into Stevenson Creek and Deer Springs Creek, tributaries to Twin Oaks Valley Creek which is tributary to San Marcos Creek. Basin B is divided into 15 sub-basins of varying size that generate peak flows of between 9 cfs and 677 cfs and Basin C is divided into two sub-basins, sub-basin 26 and sub-basin 27, that generate peak flows of 193 cfs and 230 cfs, respectively (see Tables 3.1-4b and 3.1-4c of Appendix Z). This watershed is tributary to San Marcos Creek.

South Fork Gopher Canyon Watershed

The portion of the project Site draining to South Fork Gopher Canyon is divided into two basins (referred to and identified as "Basin D" and "Basin E" in Figure 3.2-1). Runoff from Basins D and E flows northwest toward Twin Oaks Valley Road. This watershed consists of 340 acres within the project Site, with a total of 713 acres within the area of analysis. Under existing conditions, flows are conveyed to the north and northwest toward Gopher Canyon. Basin D is divided into four sub-basins of varying size that generate peak flows of between 82 cfs and 226 cfs and Basin E is divided into four sub-basins that generate peak flows of between 84 cfs and 232 cfs (see Tables 3.1-4d and 3.1-4e of Appendix Z). This watershed is tributary to the San Luis Rey River.

Existing design flows and storm drain infrastructure for I-15, Deer Springs Road, and Twin Oaks Valley Road were obtained from as-built drawings and from maps at the California Department of Transportation (Caltrans), the County of San Diego (County), and the City of San Marcos as detailed in the Drainage Study (Appendix Z).

3.2.1.2 Water Quality Setting

As discussed above, the project Site straddles two of the region's nine Hydrologic Units and would contribute runoff to San Luis Rey River Watershed Management Area and the Carlsbad Watershed Management Area. In accordance with Section 303(d) of the federal Clean Water Act (CWA), the project Site and the Watershed Management Areas were compared to the current published List of Impaired Water Bodies, which lists the surface waters that do not meet applicable water quality standards, required pursuant to Section 303(d) of the CWA. The project would contribute runoff to four impaired water bodies, San Luis Rey River 903.12, the shoreline of the Pacific Ocean at the mouth of the San Luis Rey River, San Marcos Creek 904.53, and San Marcos Lake 904.52.

The San Luis Rey River is impaired for chloride enterococcus, fecal coliform, phosphorus, Total Dissolved Solids (TDS), total nitrogen as N, and Toxicity. The Pacific Ocean shoreline at the mouth of the San Luis Rey River is impaired for indicator bacteria. San Marcos Creek is impaired for DDE (dichloro-diphenyl-dichloro-ethylene, an organochlorine pesticide), phosphorus, sediment, toxicity, and selenium. San Marcos Lake is impaired for ammonia as nitrogen and nutrients. Water Quality Improvement Plans (WQIPs) for the San Luis Rey River and the Carlsbad Watershed Management Areas, as discussed in further detail below, identified bacteria as the highest priority pollutant for the San Luis Rey River and Pacific Ocean shoreline at the mouth of the San Luis Rey River water bodies and nutrients as the highest priority pollutant for the San Marcos Creek and San Marcos Lake water bodies.

3.2.1.3 Groundwater Resources

The project Site is not located within an alluvial groundwater basin as defined by California Bulletin 118 (DWR 2015), and, therefore, is not subject to the Sustainable Groundwater Management Act passed in 2014 (see Section 3.2.2, below). In addition, the primary bedrock unit on-site is Cretaceous-aged Granitic rocks (monzogranite) which is very hard, moderately weathered, slightly fractured and exhibits steep topographic relief. Based on these characteristics, much of the project Site is not likely support significant groundwater resources and the potential recharge rates within the Site are very low (Appendix J-3). However, four existing wells reside in the lowest elevations of the project Site where the Site supports a narrow band of alluvial deposits. These wells intercept fractured rock formations that yield water, however, these existing wells are not in use, no portion of the project would use or pump groundwater to support the water demand of the project, and the existing wells on-site would be abandoned as part of the project development in compliance with applicable state and County regulations.

Both the Vallecitos and Valley Center water districts provide potable water service within the vicinity of the project Site, but certain properties, including residential, agricultural, and golf course uses, in these districts continue to use groundwater from permitted private wells (Appendix V). Twin Oaks Valley, a watershed of 2.2 square miles in size, is to the west of the project Site and supports the majority of these private wells. The primary geologic unit found on the project Site and in the hills surrounding Twin Oaks Valley is granitic rock with the bottom of the Valley being composed of sedimentary and volcanic rock and deposits. Alluvial deposits can be found in the Valley area of the project Site and directly south of the project Site. The granite geologic unit results in poor infiltration rates whereas the sedimentary, volcanic, and alluvial deposits support better infiltration rates, thus the majority of the groundwater recharge within Twin Oaks Creek and the larger San Marcos Creek Watershed likely occurs in these narrower bands of sedimentary, volcanic, and alluvial deposits primarily off-site of the project Site and found within the Valley bottoms.

3.2.1.4 Flooding

Flooding is a general or temporary condition of partial or complete inundation of normally dry land areas. Flooding is commonly associated with the overflow of natural rivers or streams, but can also occur near stormwater facilities, dams, or in low-lying areas not designed to convey large quantities of runoff. Flooding can be induced by precipitation or as a result of increased rates and amounts of runoff and/or altered drainage patterns. Additionally, flooding could result from dam failure, seiches, or tsunamis. Dam inundation is flooding caused by the release of impounded water from structural failure or overtopping of a dam. Seiches or tsunamis can result from abrupt movements of large volumes of water due to earthquakes, landslides, volcanic eruptions, meteoric impacts, wind, or onshore slope failure. The project Site is not within any 100-year flood hazard zones or dam inundation zones (Appendix Z). However, certain off-site portions of the project's proposed improvements to Sarver Lane and Deer Springs Road are currently located within a 100-year flood hazard zone, as shown in Figure 3.2-2.

3.2.2 Regulatory Setting

Federal Regulations

Federal Emergency Management Agency Flood Plain Management Standards

The Federal Emergency Management Agency (FEMA) is the primary federal agency for coordination with communities to establish effective floodplain management standards. FEMA prepares Federal Insurance Rate Maps (FIRMs), which delineate the areas of Special Flood Hazard Areas and applicable risk premium zones. State and local agencies are responsible for implementing regulations, ordinances, and policies in compliance with FEMA requirements to address floodplain management issues. The project Site is not located within a mapped 100-year flood hazard zone, but certain portions of the area proposed for off-site roadway improvements would be located in such zones (Figure 3.2-2).

Federal Water Pollution Control Act (Clean Water Act)

The Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), was adopted in 1972 and established basic guidelines for regulating discharges of pollutants into waters of the United States. The CWA set up a system of water quality standards, discharge limitations, and permits to protect the designated beneficial uses of water resources. The CWA also requires that states adopt water quality standards to protect public health or welfare, enhance the quality of water, and serve the purposes of the CWA.

The CWA was amended in 1987, establishing the National Pollutant Discharge Elimination System (NPDES) Permit program, authorized by Section 402 of the CWA. In California, the U.S.

Environmental Protection Agency has authorized the State Water Resources Control Board (SWRCB) to implement the NPDES program. The NPDES program addresses non-agricultural sources of stormwater runoff that could adversely affect the quality of waters of the United States. Under the NPDES Program, regulated entities must obtain coverage under an NPDES storm water permit and implement a Storm Water Quality Management Plan (SWQMP) and a Storm Water Pollution Prevention Plan (SWPPP), and must use best management practices (BMPs) to reduce or prevent the discharge of pollutants into receiving waters. NPDES storm water permit regulations generally cover the following classes of storm water dischargers: operators of municipal separate storm sewer systems (MS4), owners and operators of certain industrial facilities, and operators of construction activities that disturb 1 or more acre of land. Implementation of the proposed project requires conformance with the NPDES Storm Water Program's Construction General Permit and the Regional MS4 Permit, as further defined and described below.

Other relevant provisions of the CWA include Sections 303(d), 401, and 404. Section 303(d) defines water quality standards as consisting of the uses of surface water (beneficial uses) and the water quality criteria applied to protect those uses (water quality objectives). State and regional water quality control boards (RWQCBs) have been charged with ensuring that beneficial uses and water quality objectives are established for all waters of the state. Section 401 requires applicants for federal permits relating to the construction or operation of a facility that may result in the discharge of a pollutant obtain certification of those activities from the state in which the discharge originates. Section 404 establishes a permitting program to regulate the discharge of dredged or filled material into waters of the United States, which is administered by the U.S. Army Corps of Engineers (ACOE) and enforced by the U.S. Environmental Protection Agency.

Federal Antidegradation Policy

Title 40, Section 131.12 of the Code of Federal Regulations contains the Federal Antidegradation Policy and implementation methods. In summary, each state is required to develop and adopt a statewide antidegradation policy consistent, at minimum, with the following: (1) existing instream water uses and associated level of water quality; and (2) maintaining existing water quality levels that exceeds the level necessary for protection of the waters, unless it is determined otherwise that a lower water quality is necessary to accommodate important economic or social development.

State and Regional Regulations and Plans

California Porter-Cologne Water Quality Control Act

The California Porter-Cologne Water Quality Control Act, also known as the California Water Code, was passed into law in 1969 and established the responsibilities and authorities of the

state's nine RWQCBs and the State Water Resources Control Board. In California, all surface waters and groundwater are considered to be "waters of the state" under this act. In accordance with this Act, a Water Quality Control Plan ("Basin Plan" as further described below) was first developed in 1994 for the San Diego Basin (Region 9) and since has undergone regulatory updates with the most recent update being effective May 17, 2016.

Sustainable Groundwater Management Act of 2014

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package 2014 (Assembly Bill 1739, Senate Bill 1168, and Senate Bill 1319) known as the Sustainable Groundwater Management Act of 2014. The legislation provides a framework for sustainable management of groundwater supplies by local authorities in high- and medium-priority alluvial basins, as designated by the California Water Resources Control Board. The groundwater sustainability agency, which can be a county, city, or water district, must be formed by June 30, 2017, and would be required to prepare a groundwater sustainability plan by January 31, 2022 (or January 31, 2020 for critically over-drafted basins). Each plan requires implementation measures to bring each basin into sustainability within 20 years of implementation of the plan. In San Diego County, four basins have been designated to require plans: the San Diego River Valley Basin, San Pasqual Valley Basin, San Luis Rey River Basin, and Borrego Valley Basin (all medium-priority basins). The project Site is not located within an alluvial groundwater basin as defined by California Bulletin 118 (DWR 2015), and is, therefore, not subject to the Sustainable Groundwater Management Act. For additional information on the Sustainable Groundwater Management Act, please refer to Section 2.14, Utilities and Services Systems, of this EIR.

San Diego Basin Plan

The San Diego Basin Plan, most recently amended on May 17, 2016, sets forth water quality objectives for Region 9. Specifically, the Basin Plan is designed to accomplish the following: (1) designate beneficial uses for surface and groundwater, (2) set the narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, (3) describe mitigation measures to protect the beneficial uses of all waters within the region, and (4) describe surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan. The Basin Plan incorporates by reference all applicable State Water Resources Control Board (State Water Board) and the San Diego RWQCB (San Diego Water Board) plans and policies.

Construction General Permit

Owners and operators of construction activities who disturb 1 or more acres of soil, or less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the SWRCB's Order 2012-0006-DWQ (amending Order 2009-0009-DWQ as amended by 2010-0014-DWQ), the Construction General Permit (SWRCB 2012). Construction and demolition activities subject to this permit include clearing, grading, grubbing, and excavation, or any other activity that results in a land disturbance equal to or greater than 1 acre. Permit applicants are required to submit a Notice of Intent to the SWRCB and prepare a SWPPP. The SWPPP must identify BMPs that are to be implemented to reduce construction impacts on receiving water quality based on potential pollutants. The SWPPP also must include descriptions of the BMPs to reduce pollutants in storm water discharges after all construction phases are completed at a site (post-construction BMPs).

Regional MS4 Permit (Order No. R9-2015-0100)

The San Diego Water Board regulates discharges from Phase I municipal separate storm sewer systems (MS4s) in the San Diego Region under the Regional MS4 Permit. The Regional MS4 Permit covers 39 municipalities, the County of San Diego (County), and special district entities (referred to collectively as Copermittees) located in San Diego County, Southern Orange County, and Southwestern Riverside County who own and operate large MS4s which discharge stormwater runoff (from rainfall events) and non-stormwater runoff (e.g., dry weather runoff from irrigation overspray) to surface waters throughout the San Diego Region.

Pursuant to the Clean Water Act, the Regional MS4 Permit includes requirements that prohibit non-storm water discharges into MS4s, and requires controls to reduce the discharge of pollutants in storm water to the maximum extent practicable. The Regional MS4 permit regulates pollutants, including pollutants such as suspended solids, sediment, pathogens, heavy metals, petroleum products and polynuclear aromatic hydrocarbons, synthetic organics, nutrients, oxygen demanding substances, detergents, and trash from sources associated with various forms of land development, including car emissions and maintenance, sewage, pesticides, household hazards, pet waste, and debris/litter.

The Regional MS4 permit establishes water quality standards and requires the application of pollution prevention, source control, and treatment control Best Management Practices (BMPs) to effectively prevent and remove pollutants from runoff. The Regional MS4 Permit requires that BMP design and implementation occur at every phase of development, including the planning, construction, and operational phases.

The Regional MS4 Permit, Order No. R9-2013-0001, was adopted on May 8, 2013, and initially covered the San Diego County Copermittees. Order No. R9-2015-0001 was adopted on February 11, 2015, amending the Regional MS4 Permit to extend coverage to the Orange County Copermittees, and Order No. R9-2015-0100 was adopted on November 18, 2015, amending the Regional MS4 Permit to extend coverage to the Riverside County Copermittees.

Water Quality Improvement Plans

Section II.B of the Regional MS4 Permit requires the Copermittees to develop Water Quality Improvement Plans (WQIPs) that guide the Jurisdictional Runoff Management Programs toward achieving water quality objectives in MS4 discharges and receiving waters. The Copermittees worked cooperatively to develop WQIPs for the region's nine separate Hydrologic Units. The project Site drains to two of these Hydrologic Units, specifically the San Luis Rey and Carlsbad Units which include the San Luis Rey River Watershed Management Area and the Carlsbad Watershed Management Area, respectively.

WQIPs were developed for these two WMAs, San Luis Rey and Carlsbad. In the case of the San Luis Rey Watershed Management Area WQIP, participating Agencies include the cities of Oceanside and Vista, the County of San Diego, and Caltrans. In the case of the Carlsbad Watershed Management Area WQIP, participating agencies included the cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, the County of San Diego, and Caltrans.

The process followed to develop the WQIPs is based on guidance from the Regional MS4 Permit. The WQIPs were developed in three phases to address the following five steps: (1) identification of the priority and highest priority water quality conditions; (2) identification of numeric goals for bacteria in the watershed; (3) identification of potential sources and development of implementation strategies to achieve the numeric goals; (4) development of the monitoring and assessment program to evaluate progress of implemented strategies toward achieving the goals; and (5) implementation of the adaptive management process.

County Plans, Ordinances, and Manuals

County of San Diego General Plan

The County's General Plan Conservation and Open Space Element includes goals, policies, and objectives regarding water resources. Applicable General Plan policies include the following (County of San Diego 2011):

- **Policy COS-4.2, Drought-Efficient Landscaping:** Require efficient irrigation systems and in new development encourage the use of native plant species and non-invasive drought tolerant/low water use plants in landscaping.

- **Policy COS-4.3, Stormwater Filtration:** Maximize stormwater filtration and/or infiltration in areas that are not subject to high groundwater by maximizing the natural drainage patterns and the retention of natural vegetation and other pervious surfaces. This policy shall not apply in areas with high groundwater, where raising the water table could cause septic system failures, moisture damage to building slabs, and/or other problems.
- **Policy COS-4.4, Groundwater Contamination:** Require land uses with a high potential to contaminate groundwater to take appropriate measures to protect water supply sources.

- **Goal COS-5, Protection and Maintenance of Water Resources:** Protection and maintenance of local reservoirs, watersheds, aquifer-recharge areas, and natural drainage systems to maintain high-quality water resources.
  - **Policy COS-5.1, Impact to Floodways and Floodplains:** Restrict development in floodways and floodplains in accordance with policies in the Flood Hazards section of the Safety Element.
  - **Policy COS-5.2, Impervious Surfaces:** Require development to minimize the use of directly connected impervious surfaces and to retain storm water run-off caused from the development footprint at or near the site of generation.
  - **Policy COS-5.3, Downslope Protection:** Require development to be appropriately sited and to incorporate measures to retain natural flow regimes, thereby protecting downslope areas from erosion, capturing runoff to adequately allow for filtration and/or infiltration, and protecting downstream biological resources.
  - **Policy COS-5.5, Impacts of Development to Water Quality:** Require development projects to avoid impacts to the water quality in local reservoirs, groundwater resources, and recharge areas, watersheds, and other local water sources.

County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance

The County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance (WPO) is the County's implementing ordinance for the body of applicable storm water regulations that apply within the County, including the Regional MS4 Permit requirements and soil disturbing activities (i.e., grading, clearing, and landscaping). The WPO contains discharge prohibitions and requirements that vary depending on type of land use activity proposed and location within the County.

The intent of the WPO is to protect water resources and improve water quality through management practices aimed at reducing polluted runoff. The WPO was amended in 2015 and adopted by the Board of Supervisors on January 27, 2016, to ensure that it is current with the minimum requirements of the recently amended Regional MS4 Permit (Order No. R9-2015-0100). The amendments included updating terminology and definitions related to land development priority development projects, removal of outdated sections, minor updates to discharge prohibitions, and the incorporation of an optional program to allow certain development projects to satisfy some of their stormwater compliance obligations at off-site locations.

County of San Diego Grading Ordinance

The County's Grading Ordinance (County Code of Regulatory Ordinances, Sections 87.601–87.608) combines regulations affecting grading and land clearing with activities affecting watercourses. The County's Grading Ordinance requires erosion control, sediment control, and other applicable construction-activity related BMPs in compliance with the State General Construction Permit.

County of San Diego Flood Damage Prevention Ordinance

The Flood Damage Prevention Ordinance (County Code of Regulatory Ordinances Sections 811.101–811.104) identifies Special Flood Hazard Areas throughout the County as having a special flood or flood-related erosion/sedimentation hazard and as being shown on a FIRM or on a County floodplain map. The Flood Damage Prevention Ordinance also defines methods to reduce flood losses. By complying with the requirements of this Ordinance, a project is considered to be in compliance with FEMA regulations.

County of San Diego Groundwater Ordinance

The County currently manages anticipated future groundwater demand through the County Groundwater Ordinance (County of San Diego March 2013). The Groundwater Ordinance applies to projects requiring specified discretionary permits that propose to use groundwater and identifies specific measures to mitigate the potential groundwater impacts of these projects. As the project does not propose the use of groundwater, this Ordinance does not apply to the project.

County of San Diego Hydrology Manual

The County's Hydrology Manual (County of San Diego June 2003) provides a uniform procedure for assessing stormwater flowrates and flooding potential within the County so that stormwater flows can be properly managed. The Hydrology Manual requires the estimation of peak flowrates (based on a 100 year storm event), volumes, and time distributions of stormwater runoff. Factors considered for any given analysis may include rainfall amount and storm

distribution, drainage area size, shape, and orientation, ground cover and soil type, the slope of the terrain and stream(s), precipitation zone number condition (an index of watershed wetness from antecedent rains), storage potential (e.g., overbank, ponds, wetlands, reservoirs, channel), watershed development potential, and characteristics of the local drainage system.

The Hydrology Manual was developed based on a substantial review of methods used across the United States. The procedures deemed most reliable have been incorporated and correlated with recorded hydrologic data and analysis of rainfall and runoff events that have occurred within the County. Much of this manual is based on the National Resources Conservation Service mapping and data for San Diego County. The Hydrology Manual also uses National Weather Service rainfall maps, which have been determined to be accurate for the purpose of the manual.

County of San Diego Best Management Practices Design Manual

The County of San Diego BMP Design Manual (BMP Design Manual) is the design manual for land development and public improvement projects in the unincorporated area to comply with the Regional MS4 Permit and to reduce the discharge of pollutants in storm water to the maximum extent practicable. The Manual replaced the County's Standard Urban Stormwater Mitigation Plan. It is focused on project design requirements and related post-construction requirements and provides guidance on which storm water management requirements apply to a given project; defines the performance standards for source control and site design BMPs, storm water pollution control BMPs, and hydromodification management BMPs based on the Regional MS4 Permit; outlines the required steps to the comprehensive storm water management design process; contains the source control and site design requirements applicable to all development; outlines the process of determining which category of on-site pollution control BMP or combination of BMPs is most appropriate for a given project and how those BMPs should be designed; provides guidance for meeting the performance standards for the two components of hydromodification management: protection of critical coarse sediment yield areas and flow control for post-project runoff; and describes the long-term maintenance requirements for structural BMPs.

County of San Diego Standard Lot Perimeter Protection Design System

The County of San Diego Standard Lot Perimeter Protection Design System provides design standards and maintenance requirements for desiltation basins and berms on standard lots.

3.2.3 Analysis of Project Effects and Determination as to Significance

3.2.3.1 Hydrology, Erosion, and Flooding

Guidelines for the Determination of Significance

The County has established guidelines for determining significance of impacts to hydrology (County of San Diego 2007a). A project will generally be considered to have a significant effect if it proposes any of the following, absent specific evidence to the contrary:

- The project will 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.
- The project will increase water surface elevations in a watercourse within a watershed equal to or greater than one square mile, by one foot or more in height and in the case of the San Luis Rey River, San Dieguito River, San Diego River, Sweetwater River, and Otay River, two-tenths of a foot or more in height.
- The project will result in increased velocities and peak flow rates exiting the project site that would cause flooding downstream or exceed the stormwater drainage capacity serving the site.
- The project will result in placing housing, habitable structures, or unanchored impediments to flow in a 100-year floodplain area or other special flood hazard area, as shown on a FIRM, a County Flood Plain Map, or County Alluvial Fan Map, which would subsequently endanger health, safety, and property due to flooding.
- The project will place structures within a 100-year flood hazard or alter the floodway in a manner that would redirect or impede flow resulting in any of the following:
    - Alter the Lines of Inundation resulting in the placement of other housing in a 100-year flood hazard; OR
    - Increase water surface elevation in a watercourse with a watershed equal to or greater than one square mile by one foot or more in height and in the case of the San Luis Rey River, San Dieguito River, San Diego River, Sweetwater River, and Otay River, two-tenths of a foot or more in height.

Analysis, Grading and Construction Activities

The following discussion addresses the project's potential impacts to hydrology, erosion/siltation, and flooding, as outlined in more detail above, during the construction process. Absent erosion control and sediment control BMPs, project grading and construction activities

could increase the potential for erosion and sedimentation on- and off-site. Absent BMPs to control the flowrate of off-site discharges, the project could result in increased velocities and peak flow rates exiting the project Site that could cause flooding downstream or exceed the stormwater drainage capacity serving the Site.

Pollutants associated with grading and construction can degrade water quality if they are washed into surface waters. Sediment is often the most common pollutant associated with construction sites because of the associated earth-moving activities and areas of exposed soil. As required by the SWRQB's Construction General Permit, the project would be required to prepare and implement a SWPPP to employ numerous erosion control, sediment control, tracking control, materials and waste management, non-stormwater management, and inspection and maintenance BMPs to minimize the potential for erosion, sedimentation, and water quality impacts related to the grading and construction process. As part of obtaining a grading permit, the project would be required to prepare its SWPPP, which must describe and depict in detail the various grading and construction-related BMPs necessary to minimize the project's impacts.

The project must include erosion control BMPs throughout active construction areas such as phasing of graded areas to control the amount of exposed soil subject to active work and scheduling of work to coincide with dry weather days, use of soil binders/stabilizers, geotextiles and mats, velocity dissipation, physical stabilization erosion control blankets, mulch, and hydro-seeding to control erosion from graded slopes and pads, earth dikes, swales, and chevrons, slope drains, lined spillways, and velocity dissipation devices at the discharge points to control flows off Site.

The project also must include sediment control BMPs such as silt fencing, desilting basins, sediment traps and check dams, street sweeping, stormdrain inlet protection, sandbag barriers, straw bale barriers, gravel bag berms, and fiber rolls. For graded pads, in addition to erosion control measures (e.g., soil binders/ hydro-mulch, hydro-seeding), the project would implement the County's Standard Lot Perimeter Protection Design System (County of San Diego 2012).

Tracking control BMPs would be required for the project's grading/construction process, including stabilization of construction entrances/exits and construction haul roads/roadways, entrance/exit tire and track washes, and wind erosion control.

Non-stormwater management control BMPs also would be required. These project BMPs include water conservation practices, limiting vehicle equipment cleaning, fueling, and maintenance to designated areas, the use of oil drip pans and liners under grading equipment and vehicles when not in operation, and limitations on paving and grinding operations during wet weather conditions.

The project must include materials and waste management BMPs through implementation of procedural and structural BMPs for: (1) collecting, handling, storing, and disposing of wastes generated by the construction process, (2) storage of all materials with the potential to containment stormwater runoff in designated areas with secondary containment measures (i.e., on top of a liner, bermed, and covered), (3) storage of chemicals, drums, and bagged material on pallets on top of liners and bermed, (4) use of designated concrete and paint washout areas, (5) storage of dirt/sand/rock stockpiles away from drainage courses and concentrated flows of runoff, and (6) collection and storage of construction trash and debris in designated areas and regular documented disposal at a waste management facility.

Inspection and maintenance BMPs throughout the project's grading and construction process also are required. These BMPs require compliance with the suite of BMPs described above. The BMPs would be regularly documented and assessed for adjustments and improvements. Erosion control, sediment control, and tracking control BMPs also must be regularly maintained throughout the construction process until the final permanent water quality and hydromodification BMPs are installed and functioning. Non-stormwater management controls and materials and waste management BMPs also must be regularly inspected, assessed, and adjusted as necessary to maintain compliance with the SWPPP.

Finally, the project must prepare and implement Rain Event Action Plans in advance of anticipated weather events that have the potential to create runoff to ensure that all exposed areas (i.e., areas subject to active grading or work) include the necessary BMPs as required by the SWPPP to control erosion and sedimentation.

The above list of BMP's is not necessarily exhaustive and other BMP's as detailed in the California Stormwater Quality Association Construction BMP Handbook may be included in the project's SWPPP as determined necessary by the County prior to the initiation of grading activities. With implementation of BMPs during the grading and construction process, erosion/siltation, and flooding impacts resulting from the project's grading and construction activities would be **less than significant.**

Analysis, Operations/Post-Development Condition

A land development project can alter the existing terrain, drainage patterns, and stormwater flowrates and volumes both within a project site and in off-site areas downstream of the project. Grading, road, driveway, parking lot, and sidewalk improvements, and new structures can increase the amount of impervious surface area and fill or alter existing drainages within a project site, which can have the effect of increasing runoff volumes and flowrates. Absent required stormwater infrastructure, including runoff detention, stormwater flow attenuation, and a system of stormwater BMPs, greater rates of runoff and/or altering existing drainage patterns

can cause erosion or siltation, increase water surface elevations in a watercourse, and/or cause downstream flooding or exceedances of downstream drainage capacities. Increasing the potential for flooding can affect downstream properties and structures, including altering the areas of inundation within a 100-year flood hazard zone.

To mitigate the effects development can have on increased erosion and siltation, the County requires each project to comply with a combination of low-impact development (LID) design guidelines, hydromodification design requirements, and flood control requirements. The project has incorporated a number of LID design features, including: (1) retention of approximately 73 percent of the project Site's existing topography and associated drainages through a combination of (2) preservation of 1,209 acres (61 percent of the total Site) of the Site's native habitat, (3) retention of an additional 235 acres of native habitat as Special Maintenance Areas and Fuel Modification Zones, separating impervious surfaces with landscape buffers, and (4) incorporation of bio-swales and bioretention basins to capture runoff from roads, sidewalks, and other impervious surfaces prior to runoff entering the project's storm drain system.

In addition to runoff from high volume storm events having the potential to cause erosion or siltation, lower volume but more frequent storms, particularly the types of storms that occur between every 2 years and every 10 years, can create hydromodification within existing drainages. Hydromodification is more a gradual, but unnatural/undesirable change to a drainage. Hydromodification can be a source of impairment in rivers, streams, lakes, and estuaries. Hydromodification can not only change a waterbody's physical structure, it can also change its natural function. These changes can cause problems such as changes in flow, increased sedimentation or erosion, higher water temperature, lower dissolved oxygen, degradation of aquatic habitat, harm to aquatic species and their predators, and decreased water quality

In accordance with the Regional MS4 Permit and the County's BMP Design Manual, the project has completed a Hydromodification Screening and a Potential Critical Coarse Sediment Yield Analysis (Attachment 2 of the SWQMP, Appendix Y to this EIR) to determine the project's potential to cause hydromodification impacts. Due to the project Site's geology being predominantly Granitic bedrock, the majority of the Site's drainages were determined to have a low susceptibility to hydromodification. Based on the results of these analyses and in compliance with the County's BMP Design Manual, the project has incorporated separate stormwater infrastructure for the areas of project Site to remain undeveloped with the potential to produce critical course sediment, thereby separating flows from the project's developed areas and flows from these undeveloped areas. In accordance with the BMP Design Manual, the project also has incorporated hydromodification detention basins to attenuate runoff from developed areas for the range of storm events having the potential to cause hydromodification to downstream drainages absent this flow attenuation from upstream developed areas.

Absent stormwater detention facilities, large storm events have the potential to cause increased water surface elevations in downstream watercourses and/or increases in velocities and peak flowrates that could cause flooding downstream or exceed the drainage capacity of downstream flood control facilities. In conformance with the County's Hydrology Manual (County of San Diego 2003), the drainage system for the project was designed to safely convey the 100-year storm event. It would include storm drain pipes, swales, curbs and gutters, and detention basins to control and detain runoff prior to runoff leaving the project Site. Please refer to the project's SWQMP included as Appendix Y to this EIR for exhibits showing the proposed drainage system.

Figure 3.2-3 shows the watersheds post development. As detailed in the project's Onsite and Offsite Preliminary Drainage Reports (Attachment 6 to Appendix X), the major watersheds are divided into 47 sub-basins to quantify flows at particular discharge points. Most of these sub-basins would remain unchanged within the project Site as a result of the project. Within the development area, swales, storm drain pipes, detention, and flow attenuation would be used to maintain or decrease peak runoff rates in the developed condition of the project Site compared to the existing condition. In this way, existing natural drainages to remain undeveloped by the project would see no change or reduced flowrates from stormwater flows coming from the project's developed areas. Calculations for the project's stormdrain system design were made using the methodology contained in the County's Hydrology Manual Table 3.2-1 provides a summary of basin areas and peak flows for existing and proposed conditions, including the effects of detention storage.

The project Site is outside of the FEMA 100-Year Flood Zone. However, portions of the project's off-site improvements to Sarver Lane and Deer Springs Road fall within the existing 100-year Flood Zone. The existing drainage facilities within these off-site areas are not sufficiently sized to accommodate the 100-year storm event form Stevenson Creek and Twin Oaks Valley Creek. As a result, storm flows overtop both roads creating a flooding condition during major storms. The project would eliminate this flooding condition with the improvements to both roads by installing a new drainage channel and system of culverts beginning at the intersection of Sarver Lane and Deer Springs Road and continuing along the east side of Deer Springs Road to the point where it would merge with the existing drainage channel along the north side of Sycamore Road. The proposed improvements include new sufficiently sized culverts under Deer Springs Road to convey the 100-year storm event for Twin Oaks Valley Creek. New hydromodification and water quality basins would also be incorporated along the new road facilities to accommodate runoff from the roads, providing detention and water quality facilities for these roads where none exist today.

A Preliminary Floodplain Analysis for Stevenson Creek and Twin Oaks Creek was prepared for the project (Appendix CC) to prepare a preliminary design for this new drainage channel and system of culverts. Through implementation of these new drainage facilities, the project would

eliminate the existing flooding condition along Sarver Lane and Deer Springs Road to benefit of these public facilities as well as property owners and businesses on both sides of these roads.

The project Site does not contain any 100-year Flood Zone, nor propose to alter the project Site in a way that would result in any on-Site flooding. Therefore, the project would not result in placing housing, habitable structures, or unanchored impediments to flow in a 100-year floodplain area. The project would also correct the existing substandard drainage facilities and the existing flooding condition along Sarver Lane and Deer Springs Road. Thus, the project would not increase flooding exposure to properties and existing structures along these roads. By designing these off-site drainage facilities to result in a "no rise" outcome to the existing water surface elevations within the watercourses along these road facilities, the project would not increase water surface elevations by 1 foot or more.

In summary, development of the project would result in an increase in stormwater runoff when compared to existing conditions due to the introduction of new impervious surfaces within the project Site. To mitigate any increase in runoff, reduce peak flows and protect areas downstream of the project Site, the project would incorporate swales, storm drain inlets and piping, detention, and flow attenuation in the developed condition of the project Site (refer to the project's SWQMP included as Appendix Y to this EIR for exhibits showing the proposed drainage system). Project design also includes water quality/hydromodification basins throughout. Off-site road improvements would incorporate new drainage facilities to correct the pre-existing flooding condition that occurs along Deer Springs Road and Sarver Lane. Therefore, although the project's introduction of new impervious surfaces would result in an increase in runoff flows, the incorporation of basins for detention and water quality, as well as compliance with County requirements for drainage design, would ensure that flooding does not occur downstream of the project Site and that watercourses are not substantially altered from existing conditions. Impacts would be **less than significant**.

Similarly, construction of the I-15 interchange improvements, which constitutes an off-site mitigation measure for the project, will not cause significant hydrology impacts, as they are not expected to substantially alter existing drainage patterns or increase water surface elevations, nor would they place housing or habitable structures within a floodplain, or place structures in a 100-year flood hazard; and, thus, avoidance, minimization, or mitigation measures do not appear to be necessary to alleviate potential hydrology impacts. Caltrans, nonetheless, can and should ensure the proposed interchange improvements and alternatives are evaluated; and can and should prepare, or cause to be prepared, a site-specific hydrology analysis if necessitated as part of the environmental review process.

3.2.3.2 Water Quality

Guidelines for the Determination of Significance

The County has two sets of guidelines for determining the significance of impacts to water quality, one for surface water quality (County of San Diego 2007b) and one for groundwater resources (County of San Diego 2007c). This latter document concerns groundwater use, which the project does not propose. As such, the guidelines for surface water quality are used here. A project will generally be considered to have a significant effect if it proposes any of the following, absent specific evidence to the contrary (County of San Diego 2007b):

- The project is a development project listed in County of San Diego, Code of Regulatory Ordinances (Regulatory Ordinances), Section 67.804(g), as amended and does not comply with the standards set forth in the County Stormwater Standards manual, Regulatory Ordinances Sect 67.813, as amended, or the Additional Requirements for Land Disturbance Activities, as set forth in Regulatory Ordinances, Section 67.
- The project would drain to a tributary of an impaired water body listed on the Clean Water Act Section 303(d) list, and will contribute substantial additional pollutant(s) for which the receiving water body is already impaired.
- The project would drain to a tributary of a drinking water reservoir and will contribute substantially more pollutant(s) than would normally run off from the project site under natural conditions.
- The project will contribute pollution in excess of that allowed by applicable State or local water quality objectives or will cause or contribute to the degradation of beneficial uses.
- The project does not conform to applicable Federal, State or local "Clean Water" statutes or regulations including but not limited to the Federal Water Pollution Control Act, California Porter-Cologne Water Quality Control Act, and the County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance.

Analysis, Construction

Proposed grading, excavation, and construction activities associated with the project could create a substantial additional source of polluted runoff that could have impacts on surface water quality. Potentially hazardous construction materials required for development of the project such as fuel, asphalt, oil, paint, solvents, lubricants, cement mix, soil/sand/rock stockpiles, and other similar materials handled and stored on construction sites could also result in impacts to downstream waterbodies. Debris and trash could be washed into existing drainage channels to downstream surface waters, resulting in degradation of water quality.

As required by the SWRQB's Construction General Permit, the project would be required to prepare and implement a SWPPP to employ numerous erosion control, sediment control, tracking control, materials and waste management, non-stormwater management, and inspection and maintenance BMPs to minimize the potential for erosion, sedimentation, and water quality impacts related to the grading and construction processes. As part of the process of obtaining a grading permit, the project would be required to prepare its SWPPP, which would describe and depict in detail the various grading and construction-related BMPs necessary to minimize the project's impacts.

The project would include erosion control BMPs throughout active construction areas such as phasing of graded areas to control the amount of exposed soil subject to active work and scheduling of work to coincide with dry weather days, use of soil binders/stabilizers, mulch, and hydro-seeding to control erosion from graded slopes and pads, earth dikes, swales, and chevrons, slope drains, lined spillways, and velocity dissipation devices at the discharge points to control flows off Site.

The project would include sediment control BMPs such as silt fencing, desilting basins, sediment traps and check dams, street sweeping, stormdrain inlet protection, physical stabilization erosion control blankets, sandbag barriers, straw bale barriers, gravel bag berms, and fiber rolls. For graded pads, in addition to erosion control measures (such as soil binders, hydraulic mulch/hydro-seeding), the project would implement the County's Standard Lot Perimeter Protection Design System (County of San Diego 2012).

The project would include tracking control BMPs such as stabilization of construction entrances/exits and construction haul roads/roadways, entrance/exit tire and track washes, and wind erosion control.

The project would include non-stormwater management control BMPs including water conservation practices, limiting vehicle equipment cleaning, fueling, and maintenance to designated areas, use of oil drip pans and liners under grading equipment and vehicles when not in operation, and limitations on paving and grinding operations during wet weather conditions.

The project would include materials and waste management BMPs through implementation of procedural and structural BMPs for collecting, handling, storing, and disposing of wastes generated by the construction process, storage of all materials with the potential to containment stormwater runoff in designated areas with secondary containment measures (i.e., on top of a liner, bermed, and covered), storage of chemicals, drums, and bagged material on pallets on top of liners and bermed, use of designated concrete and paint washout areas, storage of dirt/sand/rock stockpiles away from drainage courses and concentrated flows of runoff, and

collection and storage of construction trash and debris in designated areas and regular documented disposal at a waste management facility.

The project would include inspection and maintenance BMPs throughout the grading and construction process whereby compliance with the suite of BMPs described above would be regularly documented and assessed for adjustments and improvements. Erosion control, sediment control, and tracking control BMPs would be regularly maintained throughout the construction process until the final permanent water quality and hydromodification BMPs were installed and functioning. Non-stormwater management controls and materials and waste management BMPs would also be regularly inspected and assessed and adjusted as necessary to maintain compliance with the SWPPP.

Finally, the project would prepare and implement Rain Event Action Plans in advance of anticipated weather events that have the potential to create runoff to ensure that all exposed areas (i.e., areas subject to active grading or work) include the necessary BMPs as required by the SWPPP to control erosion and sedimentation.

The above list of BMP's is not necessarily exhaustive and other BMP's as detailed in the California Stormwater Quality Association Construction BMP Handbook may be included in the project's SWPPP as determined necessary prior to the initiation of grading activities. With implementation of the above described BMPs during the grading and construction process, erosions, siltation, and flooding impacts as result of grading and construction activities would be **less than significant.**

Analysis, Operations/Post-Development Condition

The project Site would contribute runoff to four impaired water bodies, San Luis Rey River 903.12, the shoreline of the Pacific Ocean at the mouth of the San Luis Rey River, San Marcos Creek 904.53, and San Marcos Lake 904.52.

The San Luis Rey River is impaired for chloride enterococcus, fecal coliform, phosphorus, total dissolved solids, total nitrogen as N, and Toxicity. The Pacific Ocean Shoreline at the mouth of the San Luis Rey River is impaired for indicator bacteria. San Marcos Creek is impaired for DDE (dichloro-diphenyl-dichloro-ethylene, an organochlorine pesticide), phosphorus, sediment, toxicity, and selenium. San Marcos Lake is impaired for ammonia as nitrogen and nutrients. WQIPs for the San Luis Rey River and the Carlsbad Watershed Management Areas, as discussed in further detail below, identified bacteria as the highest priority pollutant for the San Luis Rey River and Pacific Oceans Shoreline at the mouth of the San Luis Rey River water bodies and nutrients as the highest priority pollutant for the San Marcos Creek and San Marcos Lake water bodies.

As described in Section 3.2.2.1, the proposed project would include a stormwater drainage and conveyance system designed to adequately handle storm events and to provide water quality treatment. The drainage management system for the project would use multifunction BMPs to provide water quality treatment, hydromodification measures, and peak flow detention for the developed portions of the Site. To preserve the flow patterns of undisturbed areas upstream of developed areas, and to maintain critical coarse sediment supplies from the Site to downstream channels, a dual-pipe storm drain system would be used to separate runoff from potential critical coarse sediment areas and other undeveloped areas upstream of developed areas from runoff from the project's developed areas. A "clean" storm drain system would convey runoff from undisturbed areas and landscaped slopes, and would collect the treated discharge from the proposed BMPs. A separate "dirty" storm drain system would direct runoff from developed areas (where potential pollutant sources would be located) to BMPs for treatment. Where possible, runoff from developed areas would be directed to BMPs via surface flow, but in larger drainage areas, an underground storm drain system would be required.

The primary water quality BMP selected for the project is biofiltration. Biofiltration basins are preferred for the project Site for their combination of a medium to high level of treatment for all pollutants, and for their ability to provide hydromodification measures. Biofiltration basins are also an LID design feature, using natural processes to provide stormwater treatment and flow attenuation. Biofiltration is the primary treatment encouraged by the San Diego Regional Water Quality Control Board, and was selected for the proposed project to ensure compliance with the County's BMP Design Manual (County of San Diego 2016). The County's BMP Design Manual is the manual by which projects in the unincorporated area meet and implement the requirements of the Regional MS4 Permit and reduce pollutants to the maximum extent practical.

In conjunction with the Source Control BMPs outlined in the SWQMP, the proposed biofiltration basins would be distributed throughout the Site to provide water quality treatment and hydromodification measures for all developed areas of the project near the source of runoff, consistent with an LID approach to stormwater management. The biofiltration basins have been integrated into Site design where possible, or have been located in unobtrusive areas to minimize visual and grading impacts. The proposed road network would incorporate roadside swales and trails in many of the roads within the neighborhoods. In some neighborhoods where the street slope would be shallow enough, biofiltration basins would be incorporated into the roadside swales (refer to the project's SWQMP included as Appendix Y to this EIR for exhibits showing the proposed drainage system). To provide ponding within the roadside biofiltration basins, check dams and driveway crossings would be used to allow for a flat-bottomed area for biofiltration. The subdrain pipes for the roadside biofiltration basins would be linked, with a flow-control opening placed on the end of the subdrain pipe where it would enter a downstream catch basin or clean-out.

In addition to the Low Impact Development design features, Source Control BMPs, and various water quality and hydromodification structural BMPs, the project would incorporate separate BMPs for the equestrian uses in the Saddleback Staging Area and for the composting area in the Sierra Farms Park (refer to Section 2.8, Hazards and Hazardous Materials). The project's off-site improvements to Deer Springs Road and Twin Oaks Valley Road would include biofiltration basins that address applicable water quality and hydromodification requirements for these improvements. These two roads in their current state do not include any water quality or hydromodification controls for runoff from the road surfaces, therefore, the project would result in a substantial improvement in the water quality of this runoff and a reduction of downstream hydromodification impacts the runoff from these roads may be causing today.

The BMPs were designed in accordance with the County's BMP Design Manual (County of San Diego 2016). The proposed BMPs would combine aspects of biofiltration areas, biofiltration swales, and biofiltration basins, as described in the project's SWQMP (Appendix Y). Therefore, with the incorporation of stormwater drainage and water quality treatment systems in the form of biofiltration designed in accordance with the County's BMP Design Manual, stormwater containing potential pollutants sourced from the project Site would be treated to the maximum extent practicable prior to discharge or infiltration in accordance with the Regional MS4 Permit.

As a result, the project complies with the County's Stormwater Standards manual (the BMP Design Manual) and Regulatory Ordinances applicable to stormwater management. The project would comply with all applicable federal, state, regional, and local regulations and design manuals related to stormwater management and, thereby, the project would not contribute substantial additional pollutants for which the receiving water bodies are already impaired or contribute pollution in excess of that allowed by applicable state or local water quality objectives or cause or contribute to the degradation of beneficial uses. Finally, the project would not drain to a tributary of a drinking water reservoir. Thus, impacts would be **less than significant**.

Similarly, construction of the I-15 interchange improvements would be expected to comply with all applicable federal, state, regional, and local regulations and design manuals related to storm water management and, thereby, would neither contribute substantial additional pollutants for which the receiving water bodies are already impaired, nor contribute pollution in excess of that allowed by applicable state or local water quality objectives nor cause or contribute to the degradation of beneficial uses. Additionally, the off-site mitigation measure improvements would not drain to a tributary of a drinking water reservoir. Caltrans, nonetheless, can and should ensure the proposed interchange improvements and alternatives are evaluated; and can and should prepare, or cause to be prepared, a site-specific water quality analysis if necessitated by the environmental review process.

3.2.3.3 Groundwater Resources

Guidelines for the Determination of Significance

Based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.), a project would have a significant adverse environmental effect if the project would substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted). In addition to the CEQA Appendix G guideline, above, the County identifies conditions that, if met, would be considered a significant impact to groundwater resources (County of San Diego 2007c). These additional guidelines focus on groundwater quantity and the project's effect on groundwater storage, overdraft, and well interference. A significant impact would result if a soil moisture balance, or equivalent analysis, conducted using a minimum of 30 years of precipitation data, including drought periods, concludes that at any time groundwater in storage would be reduced to 50 percent or less as a result of groundwater extraction.

Analysis, Construction

Construction of the proposed project would result in a temporary increase in water usage for various construction activities such as watering for dust control and cleaning of vehicles and equipment. This water would be brought to the Site and not be sourced from any groundwater located within the project Site. In addition, the Vallecitos Water District does not pump groundwater, nor use it as a local water supply source (VWD 2015a). By not using or indirectly relying on groundwater as a source of water during construction, the project would not substantially deplete groundwater resources or substantially alter groundwater recharge. Impacts would be **less than significant.**

Analysis, Operation

The project would result in an increase in demand for water, which would be provided by the Vallecitos Water District. For analysis regarding water demand, usage, and supply, refer to this EIR, Section 2.14, Utilities and Service Systems. The project would not rely on any source of groundwater and not result in the depletion of any existing groundwater within the Site. The project would result in the introduction of new impervious surfaces that could alter groundwater recharge within the Site during rain events; however, as discussed in Section 3.2.1.3, primary bedrock unit onsite is Cretaceous-aged Granitic rocks (monzogranite) which is very hard, moderately weathered, slightly fractured and exhibits steep topographic relief. Based on these characteristics, much of the project Site is not likely support significant groundwater resources

and the potential recharge rates within the Site are very low. In addition, the project proposes to retain approximately 73 percent of the Site's existing natural topography, and the majority of the groundwater recharge within Twin Oaks Creek and the larger San Marcos Creek Watershed likely occurs off of the project Site in the sedimentary, volcanic, and alluvial deposits along the valley bottoms. Irrigation water applied in the project's developed areas would also serve to offset any altering of the project Site's contribution to groundwater recharge in its existing undeveloped state. Therefore, impacts to groundwater resources would be **less than significant**.

3.2.3.4 Consistency with Applicable Plans, Policies, and Ordinances

The proposed project would require efficient irrigation systems and the use of native plant species and non-invasive drought-tolerant/low-water-use plants in landscaping, including a plant palette composed mostly of low-water-use drought-tolerant plants, consistent with Policy COS-4.2 of the County's General Plan (County of San Diego 2011). The project would maximize stormwater filtration and infiltration by preserving natural drainage patterns and retaining as much natural vegetation and pervious surfaces as possible. The project's proposed land uses, which include residential and non-residential uses, would not create the high potential to cause groundwater contamination. Stormwater quality and hydromodification impacts would be addressed through project design BMPs and LID design. The project's roadway-adjacent bioswales (in landscaped medians and parkways), its separation of impervious surfaces from pervious surfaces, and its use of pervious walking paths reflect the implementation of LID BMPs. The project's biofiltration swales and biofiltration basins, which would treat and detain runoff, constitute the project's structural BMPs. The project's restrictions on the use of fertilizers, pesticides, and herbicides in common areas, commercial areas, and parks; prohibitions on dumping and discharges of any kind into the storm drain system; and educational materials provided to new homebuyers and Community residents constitute source control BMPs, consistent with Policies COS-4.3 and COS-4.4, and Goal COS-5 of the County's General Plan.

In addition, the County has required the completion of a project Drainage Study (EIR, Appendix Z), Hydromodification Study (EIR, Appendix AA), and SWQMP (EIR, Appendix Y). These studies have been incorporated into the project design to analyze impacts relating to stormwater runoff and to ensure proposed stormwater runoff control facilities are adequately sized, that the hydrology generally follows the existing drainage pattern, and that impacts to drainage and flooding are minimized to the extent feasible. The project would be consistent with Policies COS-5.1 though COS-5.3 and COS-5.5 of the County's General Plan.

For additional details on the proposed project's consistency with applicable plans, policies, and ordinances, see this EIR, Section 3.3, Land Use and Planning.

3.2.4 Cumulative Impact Analysis

3.2.4.1 Hydrology, Erosion, and Flooding

The drainage system for the proposed project was designed to safely convey the 100-year storm event. The system would include storm drain pipes, swales, curbs and gutters, and detention basins to control runoff. Calculations for design were made using methodology presented in the County's Hydrology Manual (County of San Diego 2003). Developed conditions would result in an increase in storm runoff when compared to the existing condition due to the introduction of new impervious surfaces within the project Site. Detention basins have been incorporated into project design to accommodate this increase in peak flows. Cumulative projects within these watersheds also have the potential to alter individual site hydrology and potentially increase erosion. However, all cumulative projects would be subject to substantially similar hydrological, erosion control, and flood abatement requirements by the RWQCB, County, or other jurisdiction per site-specific topography/drainage and floodplains. The project, in combination with cumulative projects, would comply with applicable drainage requirements to ensure that cumulative impacts would be less than significant. Therefore, the project would **not result in a cumulatively considerable impact** on hydrology, erosion, or flooding.

3.2.4.2 Water Quality

The project Site is upstream of impaired water bodies listed on the CWA Section 303(d) list, including San Luis Rey River 903.12, the Pacific Ocean Shoreline at the Mouth of the San Luis Rey River, San Marcos Creek 904.53, and San Marcos Lake 903.12. With incorporation of stormwater drainage and water quality treatment systems in the form of biofiltration and flow-through planters designed in accordance with the County's BMP Design Manual (County of San Diego 2016) and RWQCB Order No. R9-2013-001, stormwater runoff would be adequately treated prior to discharge. Other cumulative projects upstream of these listed impaired water bodies would have similar potential to introduce new or increased sources of polluted runoff. Similar to the proposed project, all cumulative projects that would result in polluted runoff would be subject to RWQCB and/or County stormwater discharge requirements to ensure that pollution in receiving waters does not increase. Therefore, the project, in combination with cumulative projects, would **not result in a cumulatively considerable impact** on water quality.

3.2.4.3 Groundwater Resources

The project would not use on-site groundwater and would be served by the Vallecitos Water District, which does not pump groundwater, nor use it as a local water supply source (VWD 2015a). As discussed in this EIR, Section 3.2.1.3, the primary bedrock unit onsite is Cretaceous-aged Granitic rocks (monzogranite) which is very hard, moderately weathered, slightly fractured and exhibits

steep topographic relief. Based on these characteristics, much of the project Site is not likely to support significant groundwater resources and the potential recharge rates within the Site are very low. In addition, the majority of the groundwater recharge within Twin Oaks Creek and the larger San Marcos Creek Watershed likely occurs off of the project Site in the sedimentary, volcanic, and alluvial deposits along the valley bottoms, and the project proposes to retain 73 percent of the existing natural topography, the project would also not interfere substantially with groundwater recharge. Therefore, the project **would not result in a cumulatively considerable impact** to groundwater resources resulting from cumulative withdrawal from active wells in the area.

3.2.5 Significance of Impacts Prior to Mitigation

Impacts to hydrology and water quality would be less than significant.

3.2.6 Mitigation Measures

No mitigation measures are required.

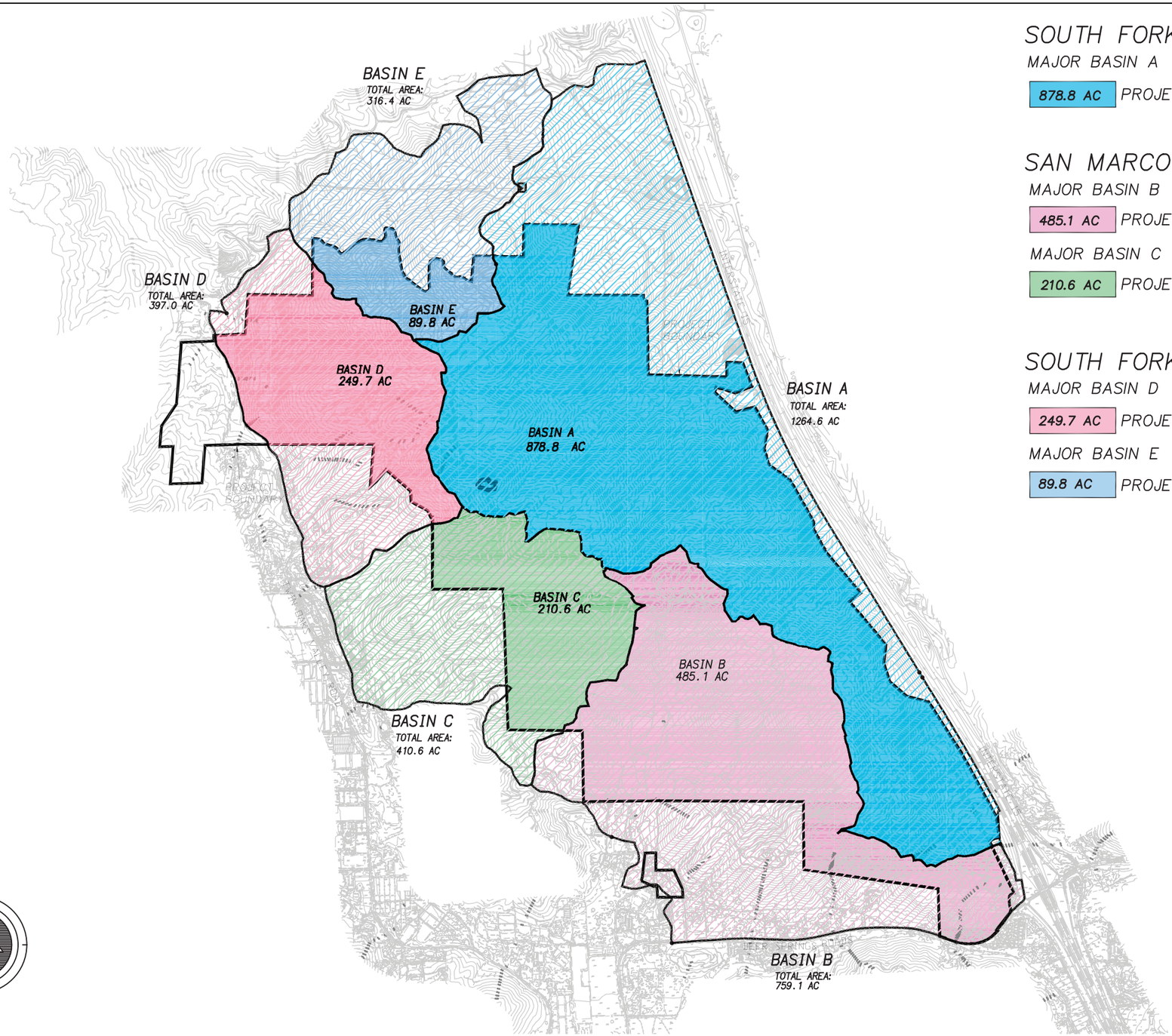
3.2.7 Conclusion

Impacts to hydrology and water quality would be less than significant. No mitigation measures are required.

Table 3.2-1
Basin Areas and Peak Flows for Existing and Proposed Conditions

Major Watersheds	Basin	Pre-Development		Post-Development	
		Area (acres)	*Peak Flow (cfs)*	*Area (acres)*	*Peak Flow (cfs)*
South Fork Moosa Canyon	Basin A	1,264.5	1,781	1,264.7	1,707
San Marcos Creek	Basin B	759.2	1,106	764.6	1,040
	Basin C	410.6	423	410.7	355
South Fork Gopher Canyon	Basin D	397.0	623	396.9	617
	Basin E	316.4	568	316.4	568

Source: Drainage Study, Appendix Z
cfs = cubic feet per second



SOUTH FORK MOOSA CANYON

MAJOR BASIN A

878.8 AC PROJECT AREA — 1264.6 AC HYDRAULIC ANALYSIS AREA

SAN MARCOS CREEK

MAJOR BASIN B

485.1 AC PROJECT AREA — 759.1 AC HYDRAULIC ANALYSIS AREA

MAJOR BASIN C

210.6 AC PROJECT AREA — 410.6 AC HYDRAULIC ANALYSIS AREA

SOUTH FORK GOPHER CANYON

MAJOR BASIN D

249.7 AC PROJECT AREA — 397.0 AC HYDRAULIC ANALYSIS AREA

MAJOR BASIN E

89.8 AC PROJECT AREA — 316.4 AC HYDRAULIC ANALYSIS AREA

SOURCE: FUSCOE ENGINEERING 2016

FIGURE 3.2-1

Existing Major Watersheds

Newland Sierra Environmental Impact Report

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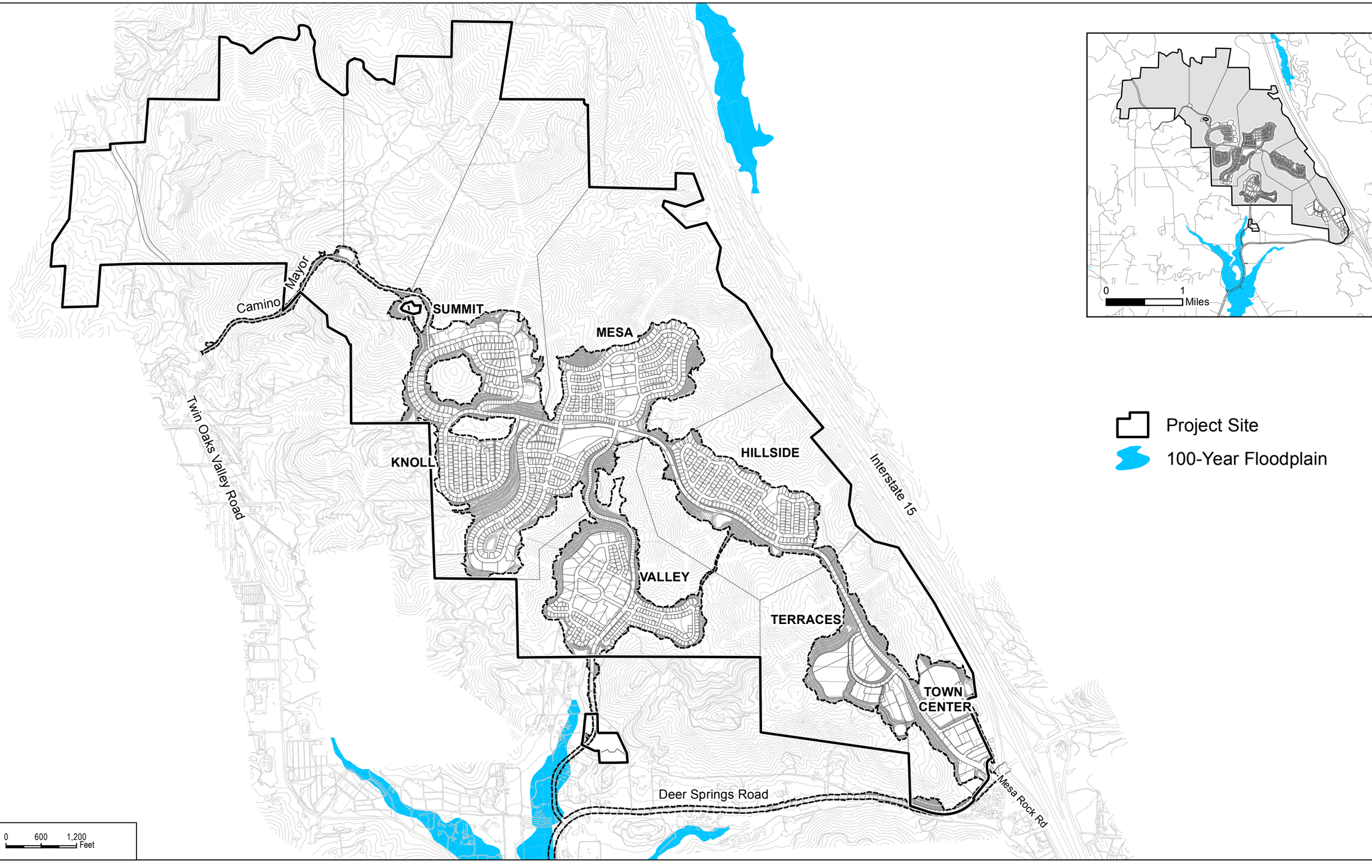

SOURCES: HYDROLOGY-USGS; SITE PLAN-FUSCOE ENGINEERING 2016

FIGURE 3.2-2

100-Year Flood Hazard Zone

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Document Path: Z:\Projects\Z60801MAP\DOC\MAPS\EIR\Section 3\Sec 3.2 Hydro\Fig 3.2-2 100-YR FEMA SitePlan 20160[illegible].mxd

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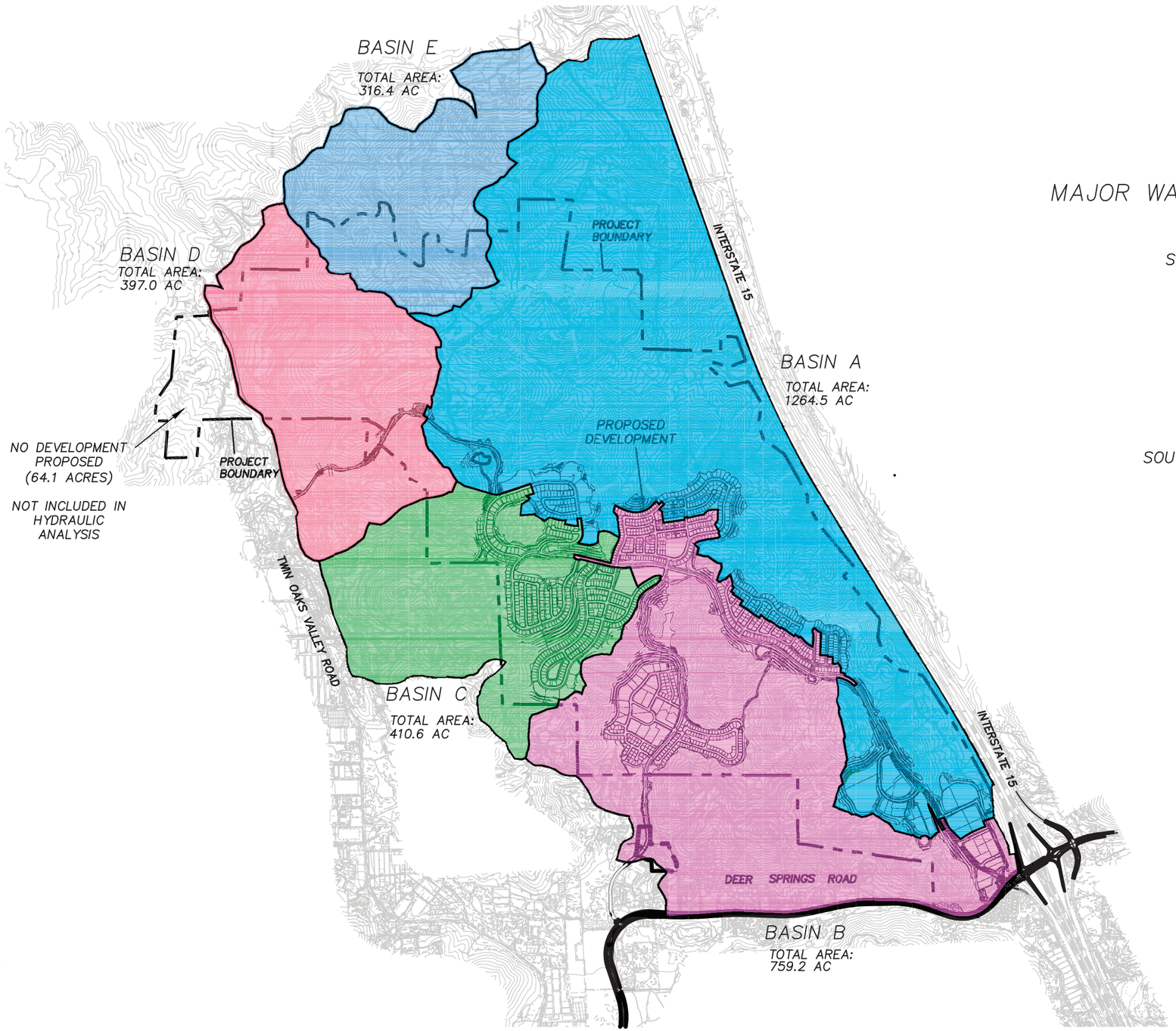

MAJOR WATERSHED TRIBUTARY AREA:

SOUTH FORK MOOSA CANYON TRIBUTARY:

1264.5 AC	MAJOR BASIN A

SAN MARCOS CREEK TRIBUTARY:

759.2 AC	MAJOR BASIN B
410.6 AC	MAJOR BASIN C

SOUTH FORK GOPHER CANYON TRIBUTARY:

397.0 AC	MAJOR BASIN D
316.4 AC	MAJOR BASIN E

SOURCE: FUSCOE ENGINEERING 2016

FIGURE 3.2-3

Major Watersheds Post Development

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