3.1.2 Hydrology and Water Quality

This section describes existing groundwater, surface water, water quality, stormwater, and flooding conditions within the Project Area[1] and evaluates potential impacts to hydrology and water quality that could result from implementation of Otay Ranch Village 14 and Planning Areas 16/19 (Proposed Project). The analysis in this section is based on the review of existing resources, applicable laws and regulations, and the following technical reports prepared for the Proposed Project:

- *CEQA* [California Environmental Quality Act] *Drainage Study for Otay Ranch Village 14 and Planning Areas 16/19*, prepared by Hunsaker & Associates San Diego Inc. (Hunsaker) (Appendix 3.1.2-1)
- *Priority Development Project (PDP) Storm Water Quality Management Plan (SWQMP), Proctor Valley Village (Village 14) and Planning Areas 16 and 19*, prepared by Hunsaker (Appendix 3.1.2.-2)
- *Otay Ranch Village 14 and Planning Areas 16/19 Water Conservation Plan*, prepared by Dexter Wilson Engineering Inc. (Appendix 3.1.2-3)
- *Hydromodification Flow Control Study Otay Ranch Village 14 and Planning Areas 16/19*, prepared by Hunsaker (Appendix 3.1.2-4)

This section tiers from the Otay Ranch Final Program Environmental Impact Report (Otay Ranch PEIR) (City of Chula Vista and County of San Diego 1993a) because the Proposed Project is within the boundaries of the Otay Ranch General Development Plan/Subregional Plan (City of Chula Vista and County of San Diego 1993b), and development of the Project Area was analyzed in the Otay Ranch PEIR. The Otay Ranch PEIR determined that impacts could be reduced to below a level of significance with mitigation measures.

3.1.2.1 Existing Conditions

Environmental Setting

Hydrology

The Project Area covers approximately 1,283.5 acres of land on site and approximately 85.4 acres of off-site improvements, totaling approximately 1,369 acres. The Project Area is located in the southwestern portion of the San Diego Basin. The San Diego Basin is divided into 11 hydrologic units, 54 hydrologic areas, and 147 hydrologic subareas. In accordance with the

[1] The Project Area reflects the applicant's ownership located within Otay Ranch Village 14 and Planning Areas 16/19 and certain off-site areas for infrastructure.

California Department of Water Resources definitions, hydrologic units are the entire watershed of one or more streams; hydrologic areas are major tributaries and/or major groundwater basins within the hydrologic unit; and hydrologic subareas are major subdivisions of hydrologic areas, including both water-bearing and non-water-bearing formations. The Project Area is located within the Otay Hydrologic Unit of the San Diego Hydrologic Basin, under the Proctor and Jamul Hydrologic Subareas (Basin 910.32 and 910.33) (RWQCB 2012).

The Otay River watershed encompasses approximately 160 square miles in southwestern San Diego County (County) and is one of three hydrologic units that discharge into San Diego Bay. The watershed consists of unincorporated County areas but also includes portions of the Cities of Chula Vista, Imperial Beach, Coronado, National City, and San Diego. The predominant land uses in the watershed are open space (67%) and urban/residential (20%). The major inland hydrologic features are the Upper and Lower Otay Reservoirs, which are two water supply reservoirs that also provide important habitat and recreational opportunities. Conserved lands within the watershed include the San Diego National Wildlife Refuge and the Rancho Jamul Ecological Reserve.

The current population in the Otay River watershed is approximately 150,000 people. The pollutant of concern is the presence of elevated coliform bacteria in the Pacific Ocean receiving waters near Coronado. However, an expected population increase of 88% from 1998 to 2015 substantially increased the volume of urban runoff in the watershed and could significantly alter the present water quality status. In the absence of effective watershed-based management, the natural resources of the Otay River watershed may be significantly degraded (Project Clean Water 2015).

A Water Quality Improvement Plan was developed and approved in February 2016 by the co-permittees within each respective hydrologic unit watershed (Project Clean Water 2015). The agencies involved in the development of the *San Diego Bay Watershed Management Area Water Quality Improvement Plan* include the Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego; San Diego County; San Diego County Regional Airport Authority; and San Diego Unified Port District. The Water Quality Improvement Plan is a requirement of updated stormwater regulations adopted by the Regional Water Quality Control Board (RWQCB). The ultimate goal of the Water Quality Improvement Plan is to protect, preserve, enhance, and restore water quality of receiving water bodies. The agencies evaluated available data, information, and public input and used the assessment process to identify water quality conditions in the San Diego Bay watershed. The water quality conditions were prioritized and determined to be the focus of their programmatic efforts. The Otay Hydrologic Unit's highest and focused priority conditions are bacteria and trash.

The Project Area is currently undeveloped. The existing topography is characterized by steep to rolling hills, incised canyons, and the relatively flat Proctor Valley floor (see Figure 3.1.2-1, Proctor Valley Drainages). Drainages within the Project Area flow toward Proctor Valley from

the higher elevations east and west of the Project Area. Drainages generally connect to the Proctor Valley drainage, which runs parallel to Proctor Valley Road and flows in a north/south direction, eventually draining into Upper Otay Reservoir. Proctor Valley Road runs roughly parallel to this natural drainage and currently has minimal, if any, drainage facilities. Runoff from the undisturbed canyons east of Proctor Valley sheet flows over small portions of Proctor Valley Road into Proctor Valley. In some instances, runoff is conveyed within a storm drain culvert crossing underneath Proctor Valley Road. The eastern portion of Planning Area 19 includes a ridge that directs runoff naturally west toward Proctor Valley or east toward Jamul Creek (see Figure 3.1.2-1). Jamul Creek is a natural stream that is only interrupted by State Route 94 crossing. After passing through a culvert crossing at State Route 94, Jamul Creek continues to flow downstream and confluences with Dulzura Creek just upstream of the Lower Otay Reservoir. Small wetland areas are also present along Proctor Valley.

The Upper Otay Reservoir serves as the City of San Diego's (City) smallest impounding reservoir. The Upper Otay Reservoir was established in 1959 as a hatchery for the propagation and introduction of Florida-strain largemouth bass (*Micropterus salmoides*). When full, the Upper Otay Reservoir has 20 surface acres. Overflow from the Upper Otay Reservoir empties into the Lower Otay Reservoir, which is created by the Savage Dam, which was constructed in 1918.

Water Quality

Unfiltered and untreated urban stormwater can contain a number of pollutants that may eventually flow to surface waters. The main cause of urban stormwater pollution is the discharge of inadequately treated waste or pollutants into the natural water system. Over recent decades, rapid growth and urbanization have placed increased pressure on water resources and have resulted in local impacts to water quality.

Urbanization increases the amount of pollutants generated by human activities within a watershed and the amount of impervious (paved) surfaces, reducing the amount of water that would normally infiltrate the soil and be filtered naturally. Pollutants such as fertilizers and pesticides, motor oil, antifreeze, sediment, heavy metals, bacteria, and viruses that accumulate on impervious surfaces are easily picked up by rainfall runoff and flow downstream through the stormwater conveyance system to surface waters.

The stormwater conveyance system is not connected with the sanitary sewer system.. The typical result is that pollutants are carried directly into surface water by runoff. Stormwater discharges that enter the natural receiving waters can be polluted by point sources or non-point sources. Point-source pollution refers to pollutants discharged to surface water through any discernable, confined, and discrete conveyance, and non-point-source pollution refers to diffuse, widespread,

and cumulative sources of pollution and is the primary source of surface water and groundwater contamination (County of San Diego 2011).

The County is responsible for ensuring that urban runoff water conveyed in the proposed storm drain systems will be treated in compliance with RWQCB regulations and National Pollution Discharge Elimination System (NPDES) minimum criteria prior to discharging into natural watercourses.

Runoff from the Project Area currently discharges to Proctor Valley, which acts as a natural drainage way by directing flows in a southwesterly direction towards the Upper Otay Reservoir. The Upper Otay Reservoir serves as a recreational area and a dam, with overflow into the downstream Lower Otay Reservoir. Water from the Lower Otay Reservoir (and, thus, from the entire catchment of the reservoir) rarely discharges to the Otay River downstream of Savage Dam. Water from the Otay Reservoir System is conveyed in a pipeline to the Otay Water District Treatment Plant, treated to drinking water standards, and distributed as potable water to homes and businesses in the City and neighboring communities. The only time any water is released from the Otay Reservoir System into the Otay River downstream is when the reservoir fills up and overflows, which has happened only seven times since 1917. The City reviewed and provided input on Appendices 3.1.2-1 and 3.1.2-4. Based on this coordination, the assumptions and results presented in this section are in conformance with the City requirements for drainage above the Otay Reservoir System.

Groundwater Resources

The County overlies a complex groundwater resource that varies greatly throughout the region. The County has the following three general aquifer categories: fractured rock, alluvial and sedimentary, and desert basin. These aquifer categories are described below.

Fractured rock underlies approximately 73% of the unincorporated area of the County. The Project Area is largely underlain by fractured rock aquifers. Fractured rock aquifers are present in the foothills and mountainous regions of the County where precipitation is higher than the regions with lower elevations. As a result, recharge rates to fractured rock aquifers can be greater than in the lower-elevation areas. Additionally, due to the low storage capacity, recharge to fractured rock aquifers can cause relatively fast rises to the water table, which can have relatively fast declines to the water table from groundwater pumping in years without significant recharge (County of San Diego 2011).

Alluvial and sedimentary aquifers are found in approximately 13% of the unincorporated area of the County. These aquifers are typically found in river and stream valleys, around lagoons, near the coastline, and in the intermountain valleys. Most of these aquifers have relatively high hydraulic conductivity, porosity, and storage and, in general, would be considered good aquifers on the basis of

their hydrogeologic characteristics. Alluvial and sedimentary aquifers can be underlain by fractured rock aquifers, which potentially provide additional storage (County of San Diego 2011).

Desert basin aquifers are found in approximately 14% of the unincorporated area of the County in the far eastern area. In general, desert basin aquifers are characterized by extremely limited groundwater recharge but typically have large storage capacities. Desert basin aquifers within the County are composed of unconsolidated sediments that typically have storage capacities ranging from 5% to 30% of the total aquifer volume (County of San Diego 2011).

The coastal zone of the County is mostly supplied with imported water from member agencies of the San Diego County Water Authority. The remaining portion of the County (approximately 65%) is completely dependent on groundwater resources, which are the only source of water for approximately 41,000 residents (County of San Diego 2011).

Based on information obtained from the state's GeoTracker database, the depth to groundwater at a nearby property is approximately 88 feet. The groundwater flow direction in the vicinity of the Project Area is estimated to be in a southwesterly direction (*Phase I Environmental Site Assessment for the Proctor Valley Property Located Southwest of Jamul, San Diego County, California*, prepared by Gaston & Associates and included as Appendix 3.1.1-1). The *Geotechnical Review of Preliminary Tentative Map and Grading Plan, Otay Ranch Village 14 and Planning Areas 16/19*, prepared by Advanced Geotechnical Services and included as Appendix 2.6-1, found that shallow groundwater was not observed, and that intermittent flows within the active primary and tributary drainages should be anticipated during rain events.

Flooding and Dam Inundation

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 carry water. Flooding can be induced by precipitation or as a result of increased rates and amounts of runoff and altered drainage patterns. Any alteration to natural drainage patterns by modifying landforms that control the conveyance of surface water can increase the potential for flooding. Grading or other modifications, including directly altering the course of a stream or river by excavating or altering embankments, can increase velocities of floodwaters, which increases the potential for flooding downstream of the modification.

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, or onshore slope failure (County of San Diego 2011).

No previous hydrologic analyses are known to exist for the Project Area. According to the Federal Emergency Management Agency (FEMA) Flood Map Service Center, no flood map has been printed, and no historic or pending actions appear to have occurred for this area. Since the site lies outside any FEMA floodplain boundaries, no Letters of Map Revision are required (Appendix 3.1.2-1).

Regulatory Setting

Federal Regulations

Federal Emergency Management Agency

FEMA is the primary federal agency with the responsibility of administering programs and coordinating with communities to establish effective floodplain management standards. FEMA is responsible for developing the Flood Insurance Rate Map, which delineates Special Flood Hazard Areas and flood risk zones. State and local agencies are responsible for implementing regulations, ordinances, and policies in compliance with FEMA requirements to address floodplain management issues.

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 established a system of water quality standards, discharge limitations, and permits to protect the designated beneficial uses of water resources. The CWA also requires states to 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, which established the NPDES permitting program, authorized by Section 402 of the CWA. Other relevant provisions of the CWA include Section 401, which requires that 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 of the CWA 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 and enforced by the U.S. Environmental Protection Agency. In California, the U.S. Environmental Protection Agency has authorized the State Water Resources Control Board (SWRCB) to implement the NPDES program.

National Pollutant Discharge Elimination System Program (CWA Section 402)

The CWA was amended in 1972 to include that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the CWA added Section 402(p), which establishes a

framework for regulating municipal and industrial stormwater discharges under the NPDES program. In November 1990, the Environmental Protection Agency published final regulations that also establish stormwater permit application requirements for discharges of stormwater to waters of the United States from construction projects that encompass 5 or more acres of soil disturbance. Regulations (Phase II Rule) that became final on December 8, 1999, expanded the existing NPDES program to address stormwater discharges from construction sites that disturb land equal to or greater than 1 acre and less than 5 acres (small construction activity). The regulations also require that stormwater discharges from small municipal separate storm sewer systems be regulated by an NPDES permit.

Federal Antidegradation Policy

The federal antidegradation policy (40 CFR 131.12) requires states to develop statewide antidegradation policies and identify methods for implementing them. Pursuant to this policy, state antidegradation policies and implementation methods must, at a minimum, protect and maintain the following: (1) existing in-stream water uses; (2) existing water quality where the quality of the waters exceeds levels necessary to support existing beneficial uses, unless the state finds that allowing lower water quality is necessary to accommodate economic and social development in the area; and (3) water quality in waters considered an outstanding national resource. State permitting actions must be consistent with the federal antidegradation policy.

National Flood Insurance Act

The National Flood Insurance Act of 1968 established the National Flood Insurance Program to provide flood insurance within communities that adopt floodplain management programs to mitigate future flood losses. The act also requires identification of all floodplain areas within the United States and the establishment of flood risk zones within those areas. FEMA is the primary agency responsible for administering programs and coordinating with communities to establish effective floodplain management standards. FEMA is responsible for preparing Flood Insurance Rate Maps that delineate the areas of known special flood hazards and their risk applicable to the community (County of San Diego 2011).

State Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act) (California Water Code, Section 13000 et seq.) was established to create a regulatory program to protect water quality and beneficial uses of the state's waters. Accordingly, the Porter-Cologne Act established the responsibilities and authorities of the SWRCB and the nine RWQCBs.

State Water Resources Control Board

The SWRCB issues stormwater permits in accordance with the NPDES program, which requires regulated entities to obtain coverage under an NPDES stormwater permit and to implement a stormwater pollution prevention plan (SWPPP) or a stormwater management plan and to use best management practices (BMPs) to reduce or prevent the discharge of pollutants into receiving waters, as described below.

California Water Code

The Porter-Cologne Act, which became Division 7 (Water Quality) of the California Water Code, establishes the responsibilities and authorities of the nine RWQCBs and the SWRCB. Among other things, it directs each regional board to formulate and adopt a water quality control plan—known as a basin plan—for all areas within the region. The water quality objectives used for this environmental impact report (EIR) are primarily those set forth in the Basin Plan (San Diego Region 9) adopted by the RWQCB. The Basin Plan defines existing and potential beneficial uses and water quality objectives for coastal waters, groundwater, surface waters, imported surface waters, and reclaimed waters in the basin.

Sustainable Groundwater Management Act of 2014

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package (Assembly Bill 1739 [Dickinson], Senate Bill 1168 [Pavley], and Senate Bill 1319 [Pavley]) 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 SWRCB. The groundwater sustainability agency, which can be a county, city, or water district, prepares a groundwater sustainability plan, with the agencies initiating the plan decided by June 2017 and implementing the plan by January 31, 2022. Each plan requires implementation measures to bring each basin into sustainability within 20 years of the implementation of the plan. In the County, the following 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 Area is located outside of these basins.

Local Regulations

County of San Diego Code of Regulatory Ordinances, Sections 67.801–67.814, Watershed Protection, Storm Water Management, and Discharge Control Ordinance

The County's Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) was adopted in March 2008 and revised in February 2016. The purpose of the WPO is to

protect water resources and improve water quality by controlling the non-stormwater conveyance system and receiving waters, to cause the use of management practices by the County and its citizens to reduce the adverse effects of polluted runoff discharges on waters of the state, to secure benefits from the use of stormwater as a resource, and to ensure that the County is compliant with state and federal laws. The WPO establishes standards and requirements that are legally enforceable by the County within the County's jurisdiction. Projects that require a permit (e.g., administrative permit, major use permit, grading permit) are required to demonstrate compliance with the WPO. Section 67.804 of the WPO, for example, specifically addresses waste discharge and prohibits the discharge of pollutants to the stormwater system unless they are permitted through the NPDES program. Sections 67.806 through 67.809 identify minimum required construction and post-construction water quality BMPs applicable to all dischargers.

San Diego Regional Water Quality Control Board

The San Diego RWQCB is responsible for implementing and enforcing the laws and regulations regarding water quality in the San Diego region. For stormwater runoff, the RWQCB requires compliance with RWQCB regulations and the applicable provisions of the federal CWA, including NPDES criteria and permitting. The RWQCB San Diego Basin Plan (Basin Plan) is the water quality control plan for the San Diego Basin and establishes the beneficial uses and water quality objectives for surface-water and groundwater resources.

In accordance with RWQCB Order No. R9-2013-0001, dated May 8, 2013, waste discharge requirements for discharges of urban runoff from municipal storm drainage systems cannot contain pollutant loads that cause or contribute to a violation of receiving-water water-quality objectives or that have not been reduced to the maximum extent practicable. Post-construction BMPs, which refer to specific stormwater management techniques, are required for each project within the jurisdiction of the County.

San Diego Basin Plan

The Basin Plan sets forth water quality objectives for activities that could potentially cause an adverse impact on the beneficial uses of water. Specifically, the Basin Plan is designed to accomplish the following: (1) designate beneficial uses for surface water 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 antidegradation 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 SWRCB and RWQCB plans and policies (County of San Diego 2011).

As stated in the Basin Plan, the Otay River Hydrologic Unit is a club-shaped area of approximately 160 square miles. The major stream system traversing the San Diego Basin is the Otay River and its

tributaries. Major population centers within the Basin Plan area include the communities of Imperial Beach in the coastal area to Jamul and Dulzura communities inland. The annual precipitation generally increases landward from the coast and varies from less than 11 to 19 inches. The Coronado, Otay, and Dulzura Hydrologic Areas compose the Otay Hydrologic Unit.

County of San Diego BMP Design Manual

The County's BMP Design Manual (February 2016) addresses and provides guidance for complying with updated post-construction stormwater requirements for standard projects and priority development projects. It also provides updated procedures for planning, preliminary design, selection, and design of permanent stormwater BMPs (based on the performance standards presented in the MS4 permit and the County's WPO).

The Proposed Project's compliance with the County General Plan would require preparation of a SWPPP and implementation of construction-specific BMPs as described under the Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ).

County of San Diego Groundwater Ordinance

The County adopted the San Diego County Groundwater Ordinance in 1991, which was last amended in 2013. The ordinance establishes regulations for the protection, preservation, and maintenance of groundwater resources. The purpose of the ordinance is to ensure that development does not occur in groundwater-dependent areas of the County unless adequate supplies are available to serve both existing and proposed uses (County of San Diego 2013). Section 67.722 of the ordinance (All Other Projects) regulates the areas within the County outside Borrego Valley and any future groundwater-impacted basins. For discretionary permit applications, the following findings must be made: (1) For projects using greater than 20 acre-feet per year, or 20,000 gallons per day, groundwater resources must be adequate to meet the groundwater demands of the project and the groundwater basin if the basin were developed to the maximum density and intensity permitted by the general plan; or (2) For all other projects, groundwater resources must be adequate to meet the groundwater demands of that project.

San Diego County Hydromodification Management Plan

San Diego Regional Water Quality Control Board Order R9-2007-0001 requires that hydromodification and its influence on water quality be addressed through the implementation of a hydromodification management plan (HMP) to manage increases in runoff discharge rates and durations (10% of Q2 to Q10 rainfall events[2]) from "priority development projects." The HMP is

[2] Refers to the flow rate of the rainfall event: Q2 means once every 2 years and Q10 means once every 10 years.

required to identify increased frequencies and durations of runoff that could cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force. The HMP must establish standards to control flows and avoid erosion. Supporting analyses must be based on continuous hydrologic simulation modeling. Consistent with this directive, the County prepared the San Diego County HMP. Subsequently, the San Diego RWQCB Order R9-2013-0001 added the following to hydromodification management BMP requirements: Each priority development project must avoid critical sediment yield areas known to the co-permittee or identified by the optional watershed management area analysis or implement measures that allow critical coarse sediment to be discharged to receiving waters such that there is no net impact to the receiving water.

City of San Diego Source Water Protection Guidelines

The City, which owns and operates the Otay Reservoir System as a public water supply reservoir, has conditions for development projects upstream of the reservoirs to protect them from stormwater pollution through a nondegradation policy for total dissolved solids (TDS). The City also has Source Water Protection Guidelines to guide future activities, including development projects, in the County watersheds that drain into drinking water reservoirs. The guidelines provide a simplified BMP selection process to ensure that preferred source water protection BMPs are considered. Although use of these guidelines is voluntary, the water quality protection principles included in the guidelines are intended to ensure project consistency with state and local stormwater permit requirements.

Otay River Watershed Management Plan

The *Otay River Watershed Management Plan* was prepared pursuant to a joint exercise of powers agreement between the County, San Diego Unified Port District, and Cities of San Diego, Chula Vista, and Imperial Beach. The purpose of the Watershed Management Plan is to provide a comprehensive framework management plan to guide ongoing watershed uses; source water protection; and other resource protection, enhancement, and restoration activities. To achieve this, the plan does the following: (1) characterizes the watershed's various natural resources and land uses; (2) identifies key goals; (3) assesses and prioritizes threats to existing beneficial uses and natural resources; (4) identifies strategies for the protection, enhancement, and restoration of beneficial uses and natural resources in the watershed, including source water protection and a water quality monitoring strategy; (5) provides adaptive management strategies and objectives to monitor and evaluate the effectiveness of the strategies and proposes potential remedial actions; and (6) prepares the plan so that it can be easily updated to reflect changes in physical, biological, chemical, land use, and regulatory conditions (Aspen Environmental Group 2006).

The Watershed Management Plan is not a regulatory document. Rather, it is a policy document intended to be consistent with the regulatory requirements under the NPDES municipal permit, applicable local general plans, and local resource plans and programs. As such, it is designed to

serve as a programmatic advisory document for decision makers to use as a tool. The strategies outlined in the plan are only recommendations that may need to be refined by each jurisdiction.

San Diego County General Plan

The Conservation and Open Space Element of the San Diego County General Plan establishes goals, policies, and programs that value and protect natural resources to ensure they are available for the future. This element promotes efficient use of water resources and strives to ensure the long-term sustainability of non-renewable resources. The following goals and policies relate to the Proposed Project (County of San Diego 2011):

> **Goal COS-4: Water Management.** A balanced and regionally integrated water management approach to achieve the long-term viability of the County's water quality and supply.
>
> - **Policy COS-4.1: Water Conservation.** Require development to reduce the waste of potable water through use of efficient technologies and conservation efforts that minimize the County's dependence on imported water and conserve groundwater resources.
> - **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-4.4: Groundwater Contamination**. Require land uses with a high potential to contaminate groundwater to take appropriate measures to protect water supply sources.
> - **Policy COS-4.5: Recycled Water.** Promote the use of recycled water and graywater systems where feasible.
>
> **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 County General Plan Safety Element.
> - **Policy COS-5.2: Impervious Surfaces**. Require development to minimize the use of directly connected impervious surfaces and to retain stormwater 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.

Otay Ranch General Development Plan/Otay Subregional Plan

The Otay Ranch GPD/SRP contains an Urban Runoff Facilities Section that establishes goals, objectives, polices, and implementation measures to ensure the timely provision of local urban runoff facilities. The following policies in the section are relevant to the Proposed Project (City of Chula Vista and County of San Diego 1993):

Goal: Ensure that water quality within the Otay Ranch project area is not compromised.

Goal: Ensure that the City of San Diego's water rights within the Otay River Watershed shall not diminish.

- **Policy:** An urban runoff diversion system shall be designed to ensure the protection of water quality within Otay Lakes.
- **Policy:** Best Management Practices (BMPs) including, but not limited to urban runoff diversion systems, shall be developed to protect water quality within Otay Lakes.
- **Policy:** Integrated Pest Management should be used for all public places.
- **Policy:** Use of chemical pesticides should be avoided along streets and highways.

3.1.2.2 Analysis of Project Effects and Determination as to Significance

3.1.2.2.1 Hydrology

Guidelines for the Determination of Significance

For this EIR, the County's Guidelines for Determining Significance: Hydrology (County of San Diego 2007a) apply to both the direct impact analysis and the cumulative impact analysis. These

guidelines were developed by the County to address significance questions in the CEQA Guidelines, Appendix G (14 CCR 15000 et seq.). A significant impact would result if:

- The project would increase water surface elevation in a watercourse within a watershed equal to or greater than 1 square mile by 1 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, 2/10 of a foot or more in height.
- The project would result in increased velocities and peak flow rates exiting the project site that would cause flooding downstream or exceed the stormwater drainage system capacity serving the site.
- The project would 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.

Analysis

Urbanization modifies natural watershed and stream hydrologic and geomorphic processes by introducing increased volumes and duration of flow through increased runoff from impervious surfaces and drainage infrastructure. Potential changes to the hydrologic regime may include increased runoff volumes, frequency of runoff events, long-term cumulative duration, and increased peak flows. Urbanization may also introduce dry-weather flows where only wet-weather flows existed prior to development. These changes are referred to as "hydromodification."

Hydromodification intensifies sediment transport and often leads to stream channel enlargement and loss of habitat and associated riparian species. Under certain circumstances, development can also cause a reduction in the amount of sediment supplied to the stream system, which can lead to stream channel incision and widening. These changes also have the potential to impact downstream channels and habitat integrity. A project that increases runoff due to impervious surfaces and traps sediment from upland watershed sources creates compounding effects.

A change to the Project Area's hydrologic regime would be considered a condition of concern if the change could have a significant impact on downstream natural channels and habitat integrity.

Construction Impacts

Land-disturbing construction activities associated with implementation of the Proposed Project, such as grading and excavating of new building foundations, roads, driveways, parking areas, and trenches for utilities, would result in the localized alteration of drainage patterns and potentially increase the rate of peak flow for any given precipitation event. Alterations may

temporarily result in erosion and siltation if flows were substantially increased or routed to facilities or channels without capacity to carry the flow.

Construction impacts due to development of the Proposed Project, including the Proctor Valley Road North and Perimeter Trail Options, would be minimized through compliance with the Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ). This permit requires the discharger to perform a risk assessment for the proposed development with differing requirements based on the determined level. Also, the permit requires preparation and implementation of a SWPPP that must include erosion and sediment control BMPs that would meet or exceed measures required by the determined risk level of the Construction General Permit. A construction site monitoring program that identifies monitoring and sampling requirements during construction is a required component of the SWPPP. Additionally, the Proposed Project would include site design and low-impact design features, such as modular wetland units and biofiltration basins, that would limit stormwater drainage, erosion, and sedimentation.

Furthermore, the General Order for Dewatering would minimize impacts from construction dewatering and other non-stormwater discharges regulated by the General Order. The discharger would be required to screen the effluent for priority pollutants, comply with numeric effluent limitations, conduct effluent and receiving water monitoring during the discharge, and submit a discharge report to the RWQCB for every discharge. With the implementation of site design features, low-impact design features, BMPs, and compliance with the Construction General Permit and the General Order for Dewatering, construction of the Proposed Project would result in **less than significant** impacts from the alteration of existing drainage or hydrology of the area in a manner that would result in flooding, exceed the capacity of stormwater drainage systems, or result in substantial erosion or siltation**.**

The Proposed Project would not alter a floodway in a manner that would redirect or impede flow resulting in an increase of water surface elevation in a watercourse with a watershed equal to or greater than 1 square mile by 1 foot or more in height. Additionally, the Proposed Project would not redirect or impede flow resulting in an increased water surface elevation in the Otay River of 2/10th of a foot or more in height (Appendix 3.1.2-4). For these same reasons, the Proposed Project **would not result in any significant impact** to hydrology in the Project Area.

Operational Impacts

Development of the Proposed Project would result in an increase in the amount of impervious surfaces relative to existing conditions throughout the Project Area, which, in turn, would result in an increase in the rate or amount of surface runoff. No stormwater drainage system currently exists in the Project Area, and stormwater drains naturally through open channels or drainages.

The Proposed Project would consist of development of a stormwater drainage system, including local piped collection systems and open channels or drainage facilities. The stormwater drainage system and any potential impacts resulting from its construction are discussed in more detail in Section 3.1.8, Utilities and Service Systems.

Surface runoff within the Project Area presently drains through natural watercourses throughout the Project Area, ultimately flowing into the Proctor Valley and Jamul Creek drainages. Proctor Valley Road runs roughly parallel to this natural drainage way and currently has minimal, if any, drainage facilities.

In the developed condition, the Project Area would drain in the same general direction as the existing condition toward the Upper Otay Reservoir. Developed site topography would range from approximately 595 feet above mean sea level to 1,265 feet above mean sea level, which includes the site of the water tank proposed to be located within the northeastern portion of the Proposed Project. Runoff from the Proposed Project would discharge to the Upper Otay Reservoir through Proctor Valley and/or Jamul Creek. Runoff from on-site developed areas would be conveyed toward the proposed water quality and HMP treatment facilities prior to discharging into Proctor Valley or Jamul Creek. Where feasible and possible, a separate storm drain system would route off-site runoff flow through the Project Area and outfall into Proctor Valley and/or Jamul Creek drainages. Comingled runoff located upstream of a water quality facility would be treated by that respective water quality facility prior to discharging into the downstream natural drainage channel.

As shown in Table 3.1.2-1, Summary of Pre- vs. Post-Developed Condition Flows to the Upper Otay Reservoir as Impacted by the Proposed Project, when the individual post-development peak flows are combined, the Proposed Project would increase 100-year peak flows by an estimated 700 cubic feet per second (cfs) from approximately 12,036 cfs in the pre-developed condition to 12,736 cfs in the post-development condition. However, post-development storm drain facilities would be able to accommodate the proposed peak-flow increases. The proposed improvements to Proctor Valley Road, including storm drains, culverts, and arch crossings, were designed to safely convey the developed condition 100-year peak flow. The Upper Otay Reservoir has adequate storage capacity for the peak-flow increase described previously. In addition, the proposed water quality and hydromodification features are expected to reduce the overall potential for erosion and siltation. Implementation of the wider Proctor Valley Road North Option street sections 10a, 10b, and 10c would not significantly increase these flows and treatment requirements.

Because the capacity of the Upper Otay Reservoir is more than sufficient to store and/or convey the proposed peak-flow increases, and proposed upstream storm drains would be sized to convey the projected 100-year peak flow, no on-site detention basins would be required as part of the

Proposed Project. Table 3.1.2-1 summarizes the overall effect of on-site development on the discharge of the 100-year peak flow event to the Upper Otay Reservoir.

The Proposed Project could result in dry-weather flows, primarily from potential excess irrigation runoff. To reduce the potential generation of dry-weather flows, landscape watering would be controlled by advanced metering systems designed to minimize or eliminate excess watering. Moreover, any dry-weather flows would be routed to the low-impact development project design features, which would minimize dry-weather discharges from the Project Area. As discussed previously, the Proposed Project would not alter a floodway in a manner that would redirect or impede flow resulting in an increase of water surface elevation in the Otay River of 2/10th of a foot or more in height or a watercourse with a watershed equal to or greater than 1 square mile by 1 foot or more in height (Appendix 3.1.2-4). Therefore, operational impacts to the hydrology of the Project Area would be **less than significant**.

3.1.2.2.2 Water Quality

Guidelines for the Determination of Significance

For this EIR, the County's Guidelines for Determining Significance: Surface Water Quality (County of San Diego 2007b) and Guidelines for Determining Significance and Report Format and Content Requirements: Groundwater Resources (County of San Diego 2007c) apply to the direct impact analysis and the cumulative impact analysis. The following significance guidelines were developed by the County to address impact questions from the CEQA Guidelines, Appendix G. A significant impact would result if:

- The project is a development project listed in County of San Diego, Code of Regulatory Ordinances (Regulatory Ordinances), Section 67.802(i), as amended, and would not comply with the standards set forth in the County Stormwater Standards Manual, Regulatory Ordinances, Section 67.813, as amended, or the Additional Requirements for Land Disturbance Activities set forth in Regulatory Ordinances, Section 67.
- The project would drain to a tributary of an impaired water body listed on the CWA, Section 303(d), List and would contribute substantial additional pollutants for which the receiving water body is already impaired.
- The project would drain to a tributary of a drinking water reservoir and would contribute substantially more pollutants than would normally run off from the project site under natural conditions.
- The project would contribute pollution in excess of that allowed by applicable state or local water quality objectives or would cause or contribute to the degradation of beneficial uses.

- The project would 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

Compliance with the San Diego County BMP Design Manual and Additional Requirements for Land Disturbance Activities set forth in the WPO would ensure that the Proposed Project complies with applicable state and federal laws that protect surface-water quality. The County BMP Design Manual identifies specific requirements that a discharger must comply with to minimize impacts to surface-water quality to a less-than-significant level. The Proposed Project is consistent with standards identified in the San Diego BMP Design Manual and Additional Requirements for Land Disturbance Activities. The Stormwater Management Plan prepared for the Proposed Project (Appendix 3.1.2-2) describes specific BMPs as required by the County BMP Design Manual and WPO.

The Proposed Project would conform to applicable federal, state, and local clean water statutes and regulations, including the CWA, Porter-Cologne Act, and County WPO.

Construction Impacts

Construction of the Proposed Project would involve grading and site preparation activities. Without implementation of specific state and federal laws that protect surface water quality, the Proposed Project could result in sources of polluted runoff during construction that would have short-term impacts on surface water and groundwater quality through activities such as demolition, clearing and grading, excavating fill materials, stockpiling soils and materials, pouring concrete, painting, and asphalt surfacing. Construction activities would involve various types of equipment, such as bulldozers, scrapers, graders, loaders, compactors, dump trucks, cranes, water trucks, and concrete mixers. Additionally, soils and construction materials would be stockpiled outdoors.

Construction activities associated with the Proposed Project, including the Proctor Valley Road North and Perimeter Trail Options, would comply with Chapter 29 of the California Building Code, which regulates excavation activities and construction of foundations and retaining walls, and Chapter 70 of the California Building Code, which regulates grading activities, including drainage and erosion control. Prior to construction, a site-specific SWPPP would be prepared in accordance with the Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ). Therefore, runoff during construction of the Proposed Project would be captured and treated, and no pollutants associated with construction are anticipated

to be washed into surface waters. In addition, construction stormwater BMPs, which would be specified in the site-specific SWPPP, would be implemented and incorporated into the construction plan sets, reducing potential pollution during construction activities. The Proposed Project's construction stormwater BMPs would ensure that hydrocarbons, such as fuels; asphalt materials; oils; and hazardous materials, such as paints and concrete slurries, once captured, treated, and discharged from construction sites, would not impact aquatic plants and animals downstream.

For coverage by the Construction General Permit, the applicant is required to submit to the SWRCB a Notice of Intent and develop a SWPPP describing BMPs to be used during and after construction to prevent discharge of sediment and other pollutants in stormwater runoff from the Project Area. The BMPs would provide erosion and sedimentation control through measures such as silt fences, fiber rolls, gravel bags, temporary desilting basins, velocity-check dams, temporary ditches or swales, stormwater inlet protection, soil stabilization measures (such as erosion control mats, tackifier, or hydroseeding), and vehicle and equipment maintenance. The Proposed Project would be subject to the regulations in effect at the time of the grading permit and/or building permit, and compliance is strictly monitored by the County and RWQCB.

The County Grading Ordinance limits grading to an area that can be cleared or graded and left exposed at one time. This applies to the acreage the owner/contractor can adequately protect prior to a predicted rain storm. Under the County Grading Ordinance, at no time can disturbed soil be more than 50 acres for an individual grading permit or combination of grading permits. Due to the size of the Project Area, grading has the potential to require the concurrent grading of more than 50 acres. Although this has the potential to exceed the grading allowed under the County Grading Ordinance, the ordinance does state that the Director of Public Works may, on a case-by-case basis, approve extensions of the disturbed soil area limit. Soil stabilization and sediment control materials would be maintained on site around the disturbed soil areas. Under the limitation of grading requirements, grading is expected to be phased at larger sites. Also, according to the County Grading Ordinance, it may be necessary to deploy erosion and sediment-control BMPs in areas that are not actively being worked on before additional grading is done. In addition to requiring compliance with a project-specific SWPPP and the Construction General Permit, the ordinance requires proper inspection, monitoring, and maintenance of construction BMPs during dry- and wet-weather conditions. A qualified person who is trained in the use of BMPs would be on site daily, although not necessarily full time, to evaluate the conditions of the site with respect to stormwater pollution prevention.

Runoff generated by any interim mass-graded pad would drain to temporary desilt basins to be sized and located for each respective pad. For mass-graded pads, the only potential pollutant of concern that would be generated by these pads is sediment. Desilt basins would target this sole pollutant prior to discharging flows to the receiving storm drain system. Applicable erosion-control measures for permanent stabilization would comply with California Stormwater Quality

Association Handbook measures and with each area's SWPPP. Future development of each mass-graded pad would be the responsibility of the future builder, ensuring that future developed runoff would be treated in accordance with the governing water quality requirements at the time of construction prior to discharging to the receiving storm drain system. If new technology that increases treatment capacity is available at the time of construction, it would be used.

Therefore, although construction of the Proposed Project has the potential to violate water quality standards, compliance with the California Building Code, San Diego Area Regional Standard Drawings, clean water statutes and regulations, County regulatory ordinances, and Standard Specifications for Public Works Construction, as well as preparation of site-specific SWPPPs, would ensure that impacts are **less than significant**.

Operational Impacts

The Proposed Project would include commercial and residential development featuring both pervious and impervious surfaces. Impervious surfaces include structures, concrete, and asphalt surfaces. The Project Area would include pervious surfaces such as landscaped areas, unpaved pervious surfacing, vegetated swales, biofiltration areas, and areas that would remain in their natural condition (Appendix 3.1.2-2). Potential pollutant sources include on-site storm drain inlets; interior floor drains and elevator shaft sump pumps; indoor and structural pest control; landscaping; pools, spas, ponds, and other water features; food service areas; fuel dispensing areas; loading docks; fire sprinkler test water; rooftops; parking/driveways; roads; sidewalks; general use areas; and trash storage areas. The following text discusses the effects of the proposed development, as well as the applicable regulatory requirements and Proposed Project design features, such as vegetated swales and biofiltration basins, to reduce potential impacts to surface water quality.

Low-Impact Development and Site Design Best Management Practices

The Proposed Project would include conservation of 426.7 acres of Otay Ranch Resource Management Plan (RMP) Preserve land. This area features natural vegetation, floodplains, wetlands, steep slopes, and areas with erosive or unstable soil conditions. In addition, existing natural drainage channels would be retained where feasible. The Proposed Project would minimize impervious surfaces through a clustered lot design, curb-cuts to landscaping, rural swales, and direction of street runoff to the biofiltration basins located throughout the Development Footprint and along Proctor Valley Road. Pervious surfaces would be incorporated within the developed Project Area. Other low-impact design measures would include the reuse of native soils and the use of smart irrigation systems. The Proposed Project would minimize erosion from slopes by only disturbing slopes when necessary, minimizing cut-and-fill areas to reduce slope lengths, rounding or shaping slopes to reduce concentrated flow, and collecting concentrated flows in stabilized drains and channels.

Source-Control Best Management Practices

On-site storm drain inlets can be a potential source of runoff pollutants. Inlets would be marked with the words "No Dumping! Flows to Bay," or similar language, where feasible. Indoor and structural pest control is also a potential source of runoff pollutants; therefore, the Proposed Project would include integrated pest management strategies, and integrated pest management information would be provided to owners, lessees, and operators. Pesticide for outdoor landscaping is another source of runoff pollutants; thus, landscaping would be designed to minimize irrigation and runoff, promote surface infiltration where appropriate, and minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.

Plazas, sidewalks, and parking lots would be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing would be collected to prevent entry into the storm drain system. Wash-water containing any cleaning agent or degreaser would be collected and discharged to the sanitary sewer and not discharged to a storm drain.

Proposed source-control BMPs would be installed by the developer/builder. A homeowner's association would be established and responsible for ongoing maintenance of source-control private improvements for the life of the Proposed Project.

Stormwater Capture and Treatment Control BMP Design

The Proposed Project would include 14 region-specific biofiltration basins at the downstream portions of the developed areas and along Proctor Valley Road that serve as both pollution-control and flow-control measures. Region-specific biofiltration basins are designed specifically for the soil types found on the site (County of San Diego 2016). The size of each biofiltration basin would be designed to retain at least the 85th percentile storm (Appendix 3.1.2-2). Three biofiltration areas are proposed along the southern portion of Proctor Valley Road. Eleven biofiltration areas would be located within the developed portions of Village 14 and Planning Areas 16/19 (Appendix 3.1.2-2).

The biofiltration design and BMPs were selected based on their effectiveness for pollutant removal and ability to also be used for flow control. The biofiltration basins proposed for water quality treatment have been sized to treat the water quality flows based on RWQCB Order R9-2013-0001. As a pretreatment measure, proprietary flow-through treatment control BMPs are proposed immediately upstream of the two larger biofiltration facilities. The vegetated biofiltration areas used for treatment control would include an engineered fill layer for maximum pollutant removal. This biofiltration subbase would provide a "high pollutant" removal efficiency for pollutants such as coarse sediment, trash, and fine particles. The biofiltration subbase would provide "medium pollutant" efficiency for dissolved particles. This means that the proposed water quality basins would have high pollutant removal efficiency for the primary pollutants of concern typically associated with

this type of development (e.g., sediments, heavy metals, bacteria, and viruses) (see Appendix 3.1.2-2 for more details). Biofiltration facilities would provide a medium pollutant efficiency for pollutants that tend to be dissolved, such as nutrients.

The modular wetland units would be designed to filter stormwater runoff, including dry-weather flows. These modular wetland units are pre-engineered biofiltration systems composed of a pretreatment chamber containing filtration cartridges, a horizontal flow biofiltration chamber with a peripheral void area, and a centralized and vertically extending underdrain. The biofiltration chamber contains non-organic material, a layer of plant establishment media, and a discharge chamber containing an opening control structure. Treated water would flow horizontally through the pretreatment chamber cartridges, biofiltration chamber, and opening control structure.

Due to the low natural infiltration rates of the Project Area's type D soils, infiltration is not recommended for some of the proposed basins. Each basin would be designed to retain at least the 85th percentile storm. The basins would be designed to accept the peak flow and to regulate the appropriate water quality treatment and flow-control amounts. This volume would be stored below the basin spillway elevation (e.g., riser, weir). Runoff contained below the overflow elevation of the basin riser would be slowly discharged from the treatment control basin through low-flow orifices in the basin riser. After passing through the riser, an outlet pipe would discharge runoff to the receiving storm drain. Volume-based BMPs would be designed to settle the runoff volume produced from the 85th percentile storm event to a maximum of 96 hours. A vector plan would be required if the drawdown times exceed 96 hours.

The proposed swales, roadside biofiltration areas, water quality basins, and street-sweeping source-control BMPs would prevent the larger sources of nutrients (such as leaves) from entering the Otay Reservoir System. According to the County's BMP Design Manual, nutrients mostly come from fertilizers or natural minerals that are dislodged from eroded soils. Additionally, nutrients can come from leaves or dead plants. Nutrients from fertilizers and eroded soils are already dissolved and can only be reduced by preventing them from entering runoff. Nutrients from leaves or dead plants become dissolved once they are allowed to sit in water and degrade. Dissolved nutrients in the form of fertilizers would be reduced through the proposed source-control BMPs and by encouraging homeowners and the homeowner's association to minimize their use.

Tributary of Impaired Water Body

The Village 14 portion of the Project Area is located adjacent to Proctor Valley Creek, which directly discharges into the Upper Otay Reservoir. The eastern portion of Planning Areas 16/19 drains toward Jamul Creek, which ultimately discharges into the Lower Otay Reservoir. The on-site storm drain that conveys developed flows would be routed through a biofiltration basin prior to discharging into

either Proctor Valley or Jamul Creek. Overflow from the Upper Otay Reservoir empties into the Lower Otay Reservoir, whose discharge is monitored by the Savage Dam.

The Lower Otay Reservoir is listed as an impaired water body listed on the CWA, Section 303(d), List, primarily impacted by nitrogen, which is typically due to fertilizers. As previously described, the Proposed Project includes several low-impact design features and BMPs, such as biofiltration areas, that would reduce dissolved nutrients in the form of fertilizers from entering the Lower Otay Reservoir with maximum removal efficiency. As discussed previously, 14 biofiltration areas would be incorporated into the Proposed Project (Appendix 3.1.2-2). Therefore, the Proposed Project would not contribute substantial additional pollutants for which the receiving water body is already impaired, and impacts would be **less than significant**.

Tributary to Drinking Water Reservoir

The City, which owns the Upper and Lower Otay Reservoir, considers the Otay Reservoir System a drinking water supply; therefore, development projects upstream of the reservoir have to protect against stormwater pollution. Thus, the proposed treatment approach for the Proposed Project must comply with the City's Source Water Protection Guidelines. According to the Source Water Protection Guidelines, the Proposed Project is a Tier 3 development that warrants the highest consideration for source-water quality protection (City of San Diego 2004).

The Otay Water District would supply the irrigation water for the Proposed Project. The main sources of water for the Otay Water District are the Carlsbad Desalination Plant, Twin Oaks Plant, Helix Plant, and Skinner Plant. According to the 2016 Consumer Confidence Report, the average TDS from these treatment plants were 194, 690, 640, and 647 parts per million, respectively (OWD 2017).

Subsequent to on-site pollutant control treatment in the Proposed Project's biofiltration facilities, the treated surface runoff from the Proposed Project would enter the Upper Otay Reservoir, and then the Lower Otay Reservoir. It would be further treated by the Lower Otay Reservoir Treatment Plant, and then sent for distribution to the City. According to the City's 2015 Annual Drinking Water Quality Report, the average TDS concentration from the Lower Otay Reservoir was 621 parts per million (City of San Diego 2016).

Water quality results show that the highest TDS concentration in the Otay Water District's potable water that would be used to irrigate for the Proposed Project is 410 parts per million, which is lower than the average TDS concentration of 564 parts per million at the Lower Otay Treatment Plant outfall (Appendix 3.1.2-2). Overall, runoff from the Proposed Project would contribute a small portion of the total Lower Otay Reservoir volume. It is expected that some additional TDS contribution would occur through human activity in the Project Area. In response

to this, proposed swales, roadside biofiltration areas, biofiltration water quality basins, and source-control BMPs would be used. In addition, hydromodification control measures would minimize the erosion of soils. Residents and the homeowner's associations would be discouraged from using fertilizers, and residents would be discouraged from washing cars at home. Furthermore, the Proposed Project would reduce the amount of natural open space, which would decrease the TDS that occur through natural erosion processes in the existing condition.

In summary, the Proposed Project is not expected to cause adverse effects to the Upper Otay Reservoir and Lower Otay Reservoir due to the anticipated lower TDS concentration in the Proposed Project's irrigation water compared with the TDS at the reservoirs outfall, the use of source-control BMPs, and the decrease in overall erosion potential due to reduced natural areas. The Proposed Project would not 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. Overall, water quality impacts from the Proposed Project would be **less than significant**.

3.1.2.2.3 Groundwater Resources

Guidelines for the Determination of Significance

For this EIR, the County's Guidelines for Determining Significance and Report Format and Content Requirements: Groundwater Resources (County of San Diego 2007c) applies to both the direct impact analysis and the cumulative impact analysis. The following significance guidelines were developed by the County to address question (b) in the CEQA Guidelines, Appendix G:

> b) Would the proposed project 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 which would not support existing land uses or planned uses for which permits have been granted)?

A significant impact would result if:

- The project would reduce the level of groundwater in storage to 50% or less as a result of groundwater extraction, as shown using a soil moisture balance, or equivalent analysis, conducted using a minimum of 30 years of precipitation data, including drought periods.
- The project would result in a decrease in water level of 20 feet or more in off-site groundwater wells after a 5-year projection of drawdown, or a decrease in saturated thickness of 5% or more in the off-site wells, if site-specific data indicates water-bearing fractures exist that substantiate an interval of more than 400 feet between the static water level in each off-site well and the deepest major water bearing fracture in the wells.

- The project would result in any additional groundwater use in a fractured rock basin that has been demonstrated to be in an overdraft condition.

Analysis

The Proposed Project would obtain its water supply from the Otay Water District, which, in turn, obtains water from surface reservoirs or other imported water sources. The Proposed Project does not propose use of groundwater for any purpose.

No groundwater was encountered during site field testing conducted as part of a geotechnical investigation in 2016 (Appendix 2.6-1). The groundwater table is expected to occur deeper than 100 feet below the lowest existing grades at the site. However, it is not uncommon for seepage conditions to develop where none previously existed due to the permeability characteristics of the geologic units encountered. During the rainy season, perched water conditions are likely to develop within the drainage areas that may require special consideration during grading operations. Groundwater elevations are dependent on seasonal precipitation, irrigation, and land use, among other factors, and vary as a result.

Since no groundwater was encountered during subsurface exploration, it is not expected to be a constraint to the development of the Proposed Project. However, seepage within near-surface formational materials and perched groundwater conditions within the canyon drainages may be encountered during grading operations, especially during the rainy season. Potential impacts associated with groundwater would be reduced through the incorporation of waste management and materials pollution control BMPs and non-stormwater management BMPs, included as part of the SWPPP and Stormwater Management Plan. Therefore, although construction of the Proposed Project is not anticipated to deplete groundwater supplies or interfere with groundwater recharge, the necessary RWQCB permit would be obtained, and appropriate control measures would be implemented if dewatering is necessary.

Infiltration basins, which can help recharge groundwater, were explored as BMPs for the Proposed Project. Infiltration basins require a minimum soil infiltration rate and are not appropriate at sites with hydrologic soil type D. Due to the type D clay soils typically located in the region, some on-site basins were not considered to be feasible options for infiltration for the Proposed Project.

The Proposed Project would neither interfere substantially with groundwater recharge or off-site groundwater well usage nor use the groundwater supply for any construction or operational use. Compliance with the necessary RWQCB permits would further reduce potential impacts to groundwater. Impacts to groundwater from construction of the Proposed Project would be **less than significant**.

3.1.2.2.4 Flooding and Dam Inundation

Guidelines for the Determination of Significance

For the purpose of this EIR, the County's Guidelines for Determining Significance: Hydrology (County of San Diego 2007a) applies to both the direct impact analysis and the cumulative impact analysis. These significance guidelines were developed by the County to address impact questions in the CEQA Guidelines, Appendix G. The Proposed Project is not located within an area that could be affected by a seiche or tsunami.

A significant impact would result if:

- The project would 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 Federal Insurance Rate Map, a County Flood Plain Map, or County Alluvial Fan Map, which would subsequently endanger health, safety, and property due to flooding. Flooding includes mudflows and debris flows.
- The project would 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: (a) alter the Lines of Inundation resulting in the placement of other housing in a 100-year flood hazard; or (b) increase water-surface elevation in a watercourse with a watershed equal to or greater than 1 square mile by 1 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, 2/10 of a foot or more in height.

Analysis

The Proposed Project would introduce residential uses to a currently undeveloped site. However, the County's Hazard Mitigation Plan indicates that the Project Area is outside of designated 100- and 500-year floodplain areas and other special flood hazard areas (County of San Diego 2010). Therefore, no hazards related to flooding are anticipated. The Proposed Project would not place structures within a 100-year flood hazard or alter a floodway in a manner that would redirect or impede flow resulting in an increase of water-surface elevation in a watercourse with a watershed equal to or greater than 1 square mile by 1 foot or more in height. Additionally, the Proposed Project would not redirect or impede flow resulting in an increased water-surface elevation in the Otay River of 2/10th of a foot or more in height. Impacts from the Proposed Project would be **less than significant**.

3.1.2.3 Cumulative Impact Analysis

The Project Area is located within the relatively level Proctor Valley and on adjacent rolling terrain. The Project Area is undeveloped. The elevation within the Project Area ranges between 590 and 1,270 feet above mean sea level. The Project Area is surrounded by San Miguel Mountain and the Jamul Mountains immediately to the northwest and southeast, with the foothills of these mountains encroaching into the study area. The eastern portions of Planning Area 16 are located in the Jamul Mountains and contain the highest elevations. For purposes of the cumulative analysis, the geographic area includes the entire Otay River watershed and considers the cumulative projects listed in Table 1-7, Cumulative Projects List, and depicted on Figure 1-16, Cumulative Projects.

Hydrology

A potential cumulative impact could occur if the Proposed Project, in combination with other past, present, and future related projects, would alter existing drainage or hydrology of the area in a manner that would result in flooding, exceed the capacity of stormwater drainage systems, or result in substantial erosion or siltation. Cumulative projects could result in a potential cumulative impact to hydrology and drainage by increasing impervious surfaces within the County, potentially altering existing drainage patterns and increasing the potential for runoff that would lead to erosion and siltation. The cumulative projects within the same drainage basin occupied by the Proposed Project, including but not limited to Jamul Highlands (approximately 23 single-family residential lots in Jamul), Simpson Farms (approximately 95 single-family residential lots in Jamul), Sweetwater Vistas (approximately 225 residential units located in Spring Valley), and Otay Village 13 (1,938 residential units and a 200-room hotel located in Otay Ranch), could have a substantial contribution to a potential cumulative impact to hydrology and drainage. However, these projects are required to undergo CEQA review and would be subject to regulations such as NPDES or others as applicable.

As described previously, the Proposed Project would result in less-than-significant impacts to hydrology and drainage. The Proposed Project has the potential to contribute to a hydrology impact as a result of erosion resulting from increased stormwater runoff. However, implementation of low-impact development BMPs, including infiltration and detention of stormwater runoff and other measures to reduce erosion, and hydromodification would be used and sized to meet the hydromodification control standard. As previously stated, these same standards would be are required for cumulative projects located within the same watershed. Therefore, the Proposed Project's incremental effects, in combination with other cumulative projects, **would not be cumulatively considerable**.

Water Quality

A potential cumulative impact could occur if the Proposed Project, in combination with other past, present, and future related projects, would violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality. Construction and development associated with cumulative projects, such as residential, commercial, or infrastructure development, would contribute point- and non-point-source pollutants to downstream receiving waters that have the potential to violate water quality standards. The cumulative projects, taken from Table 1-7, include but are not limited to Jamul Highlands (approximately 23 single-family residential lots in Jamul), Simpson Farms (approximately 95 single-family residential lots in Jamul), Sweetwater Vistas (approximately 225 residential units located in Spring Valley), and Otay Village 13 (1,938 residential units and a 200-room hotel located in Otay Ranch) (see Figure 1-16). These cumulative projects within the same hydrologic units occupied by the Proposed Project could have a substantial contribution to a potential cumulative impact to water quality.

As previously described, the Proposed Project would result in less-than-significant impacts to water quality. The Proposed Project's surface runoff water quality during construction and operation would comply with adopted regulatory requirements designed by SWRCB and San Diego RWQCB to ensure that regional development does not adversely affect water quality in receiving waters. The Proposed Project would conform to applicable federal, state, and local clean water statutes and regulations, including the CWA, Porter-Cologne Act, and County WPO. Any future urban development, including all cumulative projects, occurring in the watersheds must also comply with these requirements. Therefore, the anticipated quality of effluent expected from the Proposed Project, in combination with cumulative projects, would not contribute concentrations of pollutants of concern that would be expected to cause or contribute to a violation of the water quality standards of surface receiving waters. As a result, the Proposed Project's incremental effects on surface water quality **would not be cumulatively considerable**.

Groundwater Resources

A potential cumulative impact could occur if the Proposed Project, in combination with other past, present, and future related projects, would substantially degrade the quality of or deplete supplies of groundwater resources, interfere substantially with groundwater recharge, or result in a waterlogging impact that would affect proposed structures. Groundwater basins typically serve localized areas; therefore, any cumulative impacts would generally be localized. The area of cumulative analysis for groundwater quality, supplies, and recharge includes the areas that share groundwater basins with the Proposed Project. The cumulative projects, taken from Table 1-7, include but are not limited to Jamul Highlands (approximately 23 single-family residential lots in Jamul), Simpson Farms (approximately 95 single-family residential lots in Jamul), Sweetwater

Vistas (approximately 225 residential units located in Spring Valley), and Otay Village 13 (1,938 residential units and a 200-room hotel located in Otay Ranch) (see Figure 1-16).

As previously described, the Proposed Project would neither interfere substantially with groundwater recharge or off-site groundwater well usage nor use the groundwater supply for any construction or operational use. Compliance with the necessary RWQCB permits would further reduce potential impacts to groundwater. Cumulative projects would also be subject to the RWQCB permits. Therefore, the Proposed Project, combined with cumulative projects, **would not result in a cumulatively considerable impact** to groundwater resources.

Flooding and Dam Inundation

Cumulative projects would result in development that would convert permeable surfaces to impermeable surfaces, such as through the construction of buildings, parking lots, and roadways. New development would have the potential to alter existing drainage patterns, increase the amount of runoff, and potentially increase flooding in the San Diego region, even though many cumulative projects would be subject to regulations that reduce the potential for existing drainages to be altered in a way that would result in flooding on or off site. The cumulative projects, taken from Table 1-7, include but are not limited to Jamul Highlands (approximately 23 single-family residential lots in Jamul), Simpson Farms (approximately 95 single-family residential lots in Jamul), Sweetwater Vistas (approximately 225 residential units located in Spring Valley), and Otay Village 13 (1,938 residential units and a 200-room hotel located in Otay Ranch) (see Figure 1-16). Therefore, even though required regulations would minimize the cumulative impact of these projects, a potentially cumulatively considerable impact to flooding would occur.

As previously described, the Proposed Project would result in **less-than-significant** impacts related to exposing people to flooding from the failure of a levee or dam. The Proposed Project would not include construction of any dams or levees, and the Project Area is outside of designated 100- and 500-year floodplain areas or other special flood hazard areas. Therefore, the Proposed Project's contribution to this potential cumulative impact **would not be cumulatively considerable**.

3.1.2.4 Conclusion

With implementation of site design and low-impact design features, structural treatment control BMPs, and compliance with the Construction General Permit and the General Order for Dewatering, construction of the Proposed Project would result in **less-than-significant** impacts from the alteration of existing drainage or hydrology of the area in a manner that would result in peak-flow increases that exceed the capacity of stormwater drainage systems or result in substantial erosion or siltation. Runoff from on-site developed areas would be conveyed toward water quality and HMP treatment facilities prior to discharging into Proctor Valley and/or Jamul

Creeks, from where these would flow into the Otay Reservoir System. The Upper Otay Reservoir has sufficient capacity to contain both wet- and dry-weather flows; therefore, operational impacts would be **less than significant**.

Compliance with the California Building Code, San Diego Area Regional Standard Drawings, Standard Specifications for Public Works Construction, and preparation of site-specific SWPPPs would reduce potential water quality impacts from construction of the Proposed Project to **less than significant**. The Proposed Project, including the Proctor Valley Road North and Perimeter Trails Options, would not contribute pollution in excess of that allowed by applicable state or local water quality objectives or contribute to the degradation of beneficial uses. Operational water quality impacts would be **less than significant**.

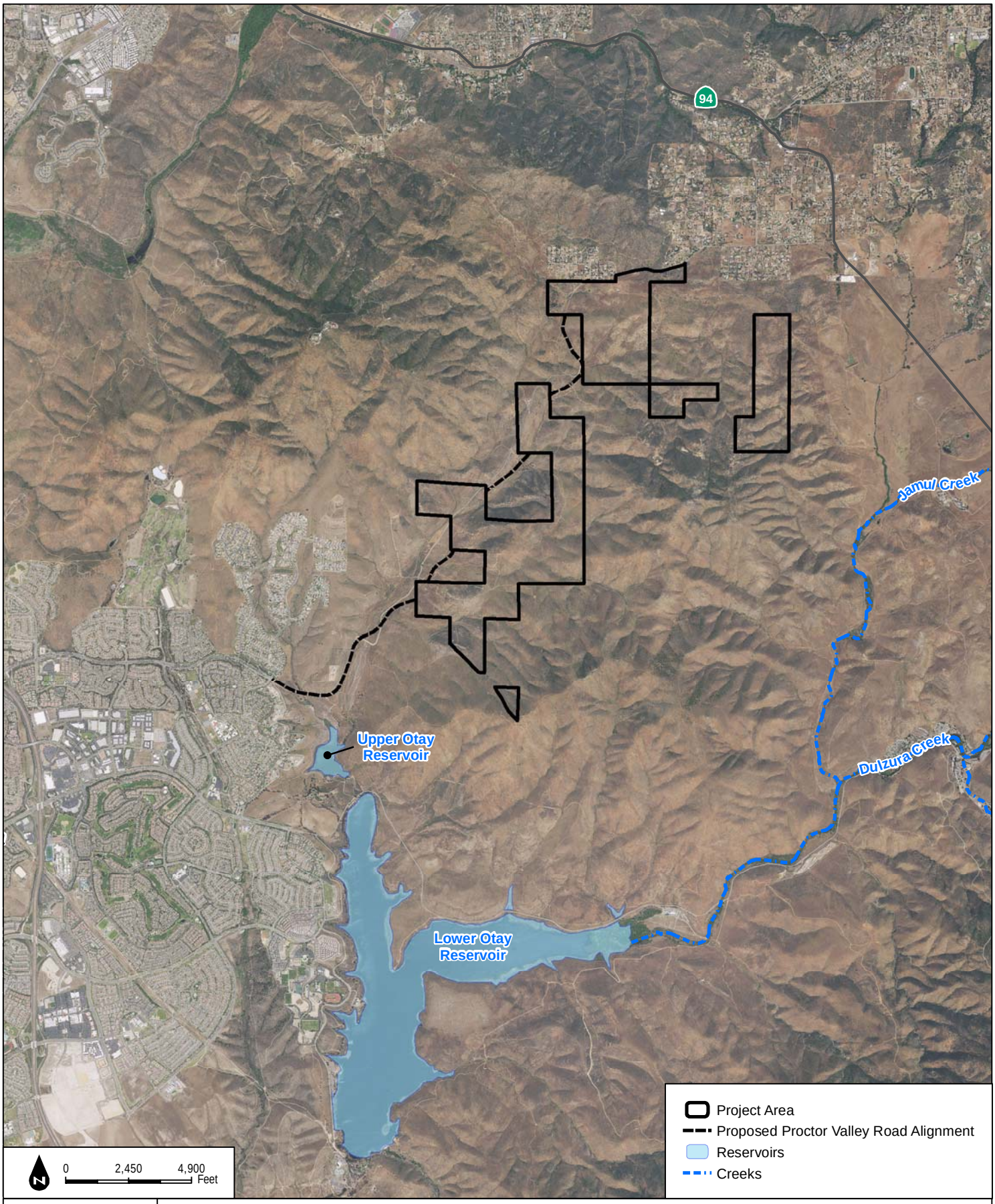
The Proposed Project does not propose the use of groundwater for any purpose and would not affect off-site groundwater usage. The groundwater table is expected to occur deeper than 100 feet below the ground surface and is not expected to be a constraint to Proposed Project development. The necessary RWQCB permit would be obtained, and appropriate control measures would be implemented if dewatering is necessary, ensuring that impacts to groundwater would be **less than significant**.

The Project Area is outside designated 100- and 500-year floodplain areas and other special flood hazard areas. Therefore, no hazards related to flooding are anticipated, and impacts would be **less than significant**.

Table 3.1.2-1
Summary of Pre- vs. Post-Developed Condition Flows to the Upper Otay Reservoir as Impacted by the Proposed Project

Condition	Tributary Area (acres)	100-Year Peak Flow (cfs)
Pre-Developed	6,880.65	12,036
Post-Developed	6,880.24	12,736
Difference	**−0.41**	**+700**

cfs = cubic feet per second



SOURCE: NAIP 2016; Hunsaker 2017; SANGIS 2017

FIGURE 3.1.2-1

Proctor Valley Drainages

DUDEK

Otay Ranch Village 14 and Planning Areas 16/19

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