3.9 HYDROLOGY AND WATER QUALITY

INTRODUCTION

This section summarizes the hydrology, drainage, and water quality analyses performed by Kasraie Consulting, for the Project. A detailed presentation of the technical data and calculations is provided in ***Appendix 3.9*** *of this environmental impact report (EIR). This section includes an evaluation of the existing conditions on the site, a comparison of the pre-project and the post-project conditions, a determination of the potential impacts of the project, and recommended mitigation measures. The purpose of this technical evaluation is to determine the impact of the Plan on surface water drainage, groundwater quality, and storm water quality in the vicinity of the site that are tributary to the Walnut Canyon watershed.*

3.9.1 EXISTING CONDITIONS

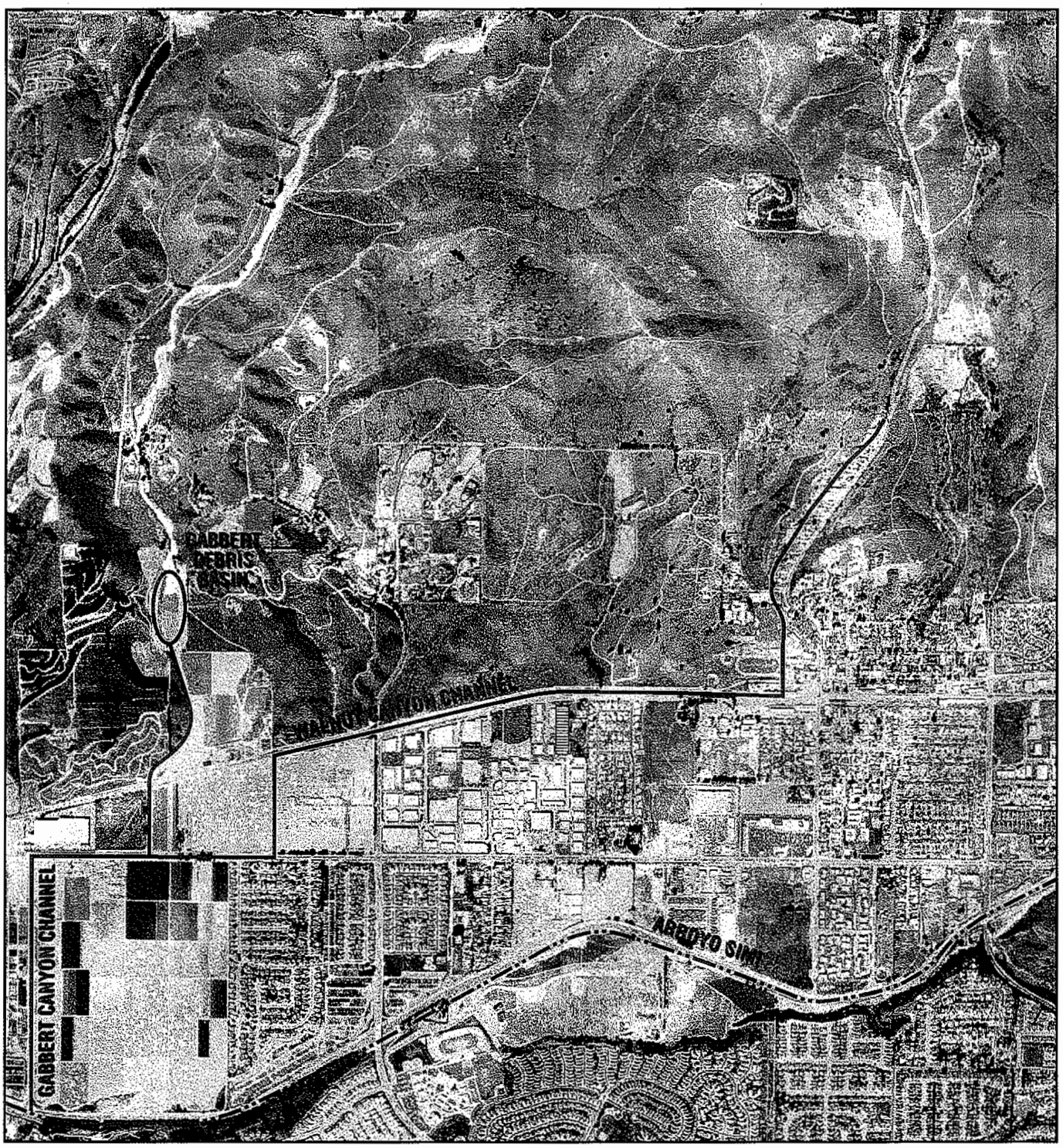
3.9.1.1 Watershed

The Project consists of the conversion of approximately 277.30 acres of predominately undeveloped vacant land to a mix of residential, open space, flood detention, and transportation land uses. The site is located in southeastern Ventura County within the City of Moorpark, just north of Poindexter Avenue between Walnut Canyon Road and Gabbert Road. The Plan area lies within the Walnut Canyon watershed, which drains a low-lying portion of the Santa Susana Mountains southwest into the Arroyo Simi and ultimately into Calleguas Creek.

The Plan area is presently undeveloped land. The existing drainage pattern is primarily overland sheet flow collecting into several natural watercourses that traverse the site and discharge to the existing rectangular, concrete Walnut Canyon Channel via overspill pads at various locations along the top of bank of the channel.

The overall Hitch Ranch watershed includes approximately 721 acres of land that is tributary to Walnut Canyon Channel. The off-site watershed is approximately 436 acres of hilly terrain with a cover of weedy vegetation, chaparral, and scrub brush. (Refer to **Figure 3.9-1, Walnut Canyon Watershed Regional Aerial Photograph**)

Walnut Canyon Channel consists primarily of approximately 2.5 miles of improved concrete channels that were originally constructed by the Soil Conservation Service (SCS) between 1959 and 1962. These regional drainage facilities are located in Zone 3 of the Ventura County Flood Control District (VCFCD), a precursor to the Ventura County Watershed Protection District (VCWPD).



SOURCE: Ventura County Flood Control District, March 1997.

FIGURE **3.9-1**

IMPACT SCIENCES

Walnut Canyon Watershed Regional Aerial Photograph

A 1997 study, *Gabbert and Walnut Canyon Channels Flood Control Deficiency Study* identified existing deficiencies within both the Gabbert and Walnut Canyon Channel system. Due to recent private development on a significant portion of this watershed area and limited hydraulic conveyance capacity of the existing channel system, flood protection deficiency exists and is documented on the current Flood Insurance Rate Map (FIRM) for the City of Moorpark. Shallow flooding occurring from channel overtopping has been documented.

There are no improved channels existing within the Plan area. All existing creek and stream beds are unimproved and undisturbed. Walnut Canyon Channel borders approximately 5,600 feet of the Project site along the southern border. The entire Walnut Canyon Channel is owned and maintained by VCWPD. The existing channel system consists almost entirely of a concrete rectangular channel section. The depths of the channel primarily range from 4 to 6 feet for the entire length. The average slopes of the channel vary from 1.5 percent to 3 percent in the upstream reaches where the canyon is steep to approximately 0.5 percent in the lower sections within the Arroyo Simi floodplain where it is much flatter. The channel base widths in the Walnut Canyon Channel range from 7 to 12 feet. There are no existing debris basins, detention basins, or agricultural basins within the existing Plan area.

3.9.1.2 Floodplain Mapping and Hydraulic Modeling

Flooding

The County of Ventura participates in the National Flood Insurance Program (NFIP). NFIP participants must adopt and enforce minimum floodplain management standards, including identification of flood hazards and flooding risks. Participation in the NFIP allows communities to purchase low-cost insurance protection against losses from flooding.

The potential for flooding directly associated with the limited hydraulic capacity of the Gabbert and Walnut Canyon Channel systems is reflected in the published floodplain mapping for the Moorpark area which indicates the 100-year flooding through the urbanized portions of the City. The current FIRM for the City of Moorpark became effective January 20, 2010 and is shown on panels 06111C818E through 06111C0836E[1].

[1] Federal Emergency Management Agency. *FEMA Flood Map Service Center: Search by Address*. Available online at: https://www.msc.fema.gov/portal/search?AddressQuery=moorpark%2C%20california, accessed February 25, 2020.

Figure 3.9-2 – FEMA Flood Zone Map

As shown on **Figure 3.9-2, FEMA Flood Zone Map** (FIRM Panel 06111C0817E for the Walnut Canyon Channel) the current flood zones within the Hitch Ranch development site are designated at Zone X (500-year flood zone) along Walnut Canyon Drain, and shown as an Approximate Zone A along Gabbert Road (100-year flood zone).

As shown on the FIRM maps, flooding on the Project site is limited to the southern portion of the site in the area of the proposed regional detention basins and along the unnamed creek adjacent to Gabbert Road.

Hydraulic Analysis

The VCWPD's window-based Modified Rational Method application Ventura County Rational Method Hydrology Model, version 2.64.0.37 (VCRAT) was used to develop a runoff hydrograph from each individual subarea. The hydrology model corresponds to a "link-node" model that simulates the physical rainfall-runoff processes occurring in the watershed. Runoff hydrographs are computed within the model for each subarea, routed through the conveyance system, and combined with other subarea hydrographs as the analysis proceeds downstream through watershed.

The study area watershed is an ungaged watershed (one that is separated from other drainages), and synthetic methods are necessary in order to predict the rainfall-runoff response. The baseline hydrology study prepared by VCWPD for the Gabbert and Walnut Canyon Channel watershed developed a series of hydrologic parameters to characterize the watershed subareas and evaluate the runoff.

For a specified design storm, VCRAT calculates a hydrograph of runoff at all subarea collection points within the watershed, combines hydrographs from each subarea, and routes the combined hydrograph through the defined channel system. The program accounts for channel storage and it reports peak flow rates in each reach of each drain, coincident flowrates of tributaries at confluences, and hydrographs at subarea collection points as specified in the program input. The required input data for a subarea consists of the area, time of concentration (Tc), soil type, and design storm type. Channel routing parameters can be added if needed. If a subarea is provided with channel routing information, the program routes the accumulated flow from that subarea and any tributary subarea down to the collection point for the next subarea (downstream end of the channel) before it is confluenced with the hydrograph from the next downstream subarea. The result is the calculation of a peak flow rate and hydrograph based on a synthetic unit hydrograph for the specified design storm frequency.

3.9.1.3 Water Quality

Storm Water Quality Regulations

Section 303 of the federal Clean Water Act requires states to adopt water quality standards for all surface waters of the United States. Section 304(a) requires the Environmental Protection Agency (EPA) to publish water quality criteria that accurately reflects the latest scientific knowledge of the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. Section 303(c)(2)(b) of the Clean Water Act requires states to adopt numerical water quality standards for toxic pollutants for which the EPA has published water quality criteria and which reasonably could be expected to interfere with designated uses in a water body.

Water quality objectives for all waters in the state are established under applicable provisions of Section 303 of the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act. The California State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB) are responsible for assuring implementation of and compliance with the Clean Water Act and the Porter-Cologne Water Quality Control Act.

National Pollutant Discharge Elimination Systems Permits. The National Pollutant Discharge Elimination System (NPDES) permit system was established as part of implementation of the Clean Water Act to regulate municipal and industrial discharges to surface waters of the United States. The Clean Water Act prohibits the discharge of any pollutant into navigable waters from a point source unless the discharge is in compliance with a NPDES Program permit. The purpose of the NPDES program is to manage urban storm water, thus minimizing pollution of the environment to the maximum extent practicable. The NPDES program consists of characterizing receiving water quality, identifying harmful constituents, targeting potential sources of pollutants, and implementing a comprehensive storm water management program.

The NPDES Program requires local agencies and project applicants to obtain permits to discharge storm water into "waters of the State." The regulations provide that discharges of storm water to waters of the United States from construction activities are effectively prohibited unless the discharge is conducted in compliance with an NPDES permit. Construction activities subject to this General Permit include clearing, grading, disturbances to the ground such as stockpiling, and excavation. Disturbance refers to exposed soil resulting from activities such as clearing, grading, and excavating. Construction activities can include road building, construction of buildings, and demolition.

In 1990, the EPA promulgated rules establishing Phase I of the NPDES storm water program. Phase I addresses—among other discharges—discharges from large construction activities disturbing 5 acres or more of land. The EPA finalized the Phase II Storm Water Program in December 1999. The Phase II Storm Water Program generally provides that regulated operators of small "municipally owned storm water systems (MS4s)" located in urban areas, which are defined to include universities, shall implement programs and policies to control polluted storm water runoff through the use of NPDES permits. Phase II also covers small construction activities that result in land disturbance of equal to or greater than 1 acre and less than 5 acres.

Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the Clean Water Act contain general requirements regarding NPDES permits. Section 402(p) of the Clean Water Act (an amendment to Section 404) established a framework for regulating construction storm water discharges under the NPDES Program. Section 307 describes the factors that EPA must consider in setting effluent limits for priority pollutants.

State Water Quality Regulations. In California, the NPDES Program is administered by the nine California Regional Water Quality Control Boards (RWQCBs). Each RWQCB is required to adopt a water quality control plan, or basin plan, as required by Section 303 of the CWA and the Porter-Cologne Water Quality Control Act. The plans establish water quality standards and objectives for California rivers and their tributaries. The Porter-Cologne Water Quality Control Act requires that basin plans recognize and reflect regional differences in existing water quality, the beneficial uses of the region's ground and surface waters, local water quality conditions and problems, and that they implement a program for achieving water quality objectives (*California Water Code*, Section 13050[j]).

Regional Water Quality Regulations. General Construction Activity Storm Water NPDES permits (General Permit) are issued for storm water discharges by the RWQCB. The Hitch Ranch Specific Plan site is within the Los Angeles Regional Water Quality Control Board.

The Los Angeles Regional Water Quality Control Board's (LARWCB) has established numeric sizing criteria for post-construction best management practices (BMPs) for new development within Ventura County and the incorporated cities under Order No. R4-2010-0108. The proposed numeric sizing criteria is intended to reduce adverse impacts to Los Angeles regional waters caused by new sources of urban pollution and increased volumes of storm water and non-storm water flows resulting from new development. The proposed water quality facilities will comply with the LARWCB water quality permit/order as follows:

1. Site Design Principles and Techniques are a stormwater management strategy that emphasizes conservation and use of existing site features to reduce the amount of runoff and pollutant loading that is generated from a project site.

2. Source Control Measures limit the exposure of materials and activities so that potential sources of pollutants are prevented from making contact with stormwater runoff.

3. Retention BMPs are stormwater BMPs that are designed to retain water onsite, and achieve a greater reduction in surface runoff from a project site than traditional stormwater Treatment Control Measures. The term "Retention BMPs" encompasses infiltration, rainwater harvesting, and evapotranspiration BMPs. Retention BMPs are preferred and shall be selected over biofiltration BMPs and Treatment Control Measures where technically feasible to do so.

4. Biofiltration BMPs are vegetated stormwater BMPs that remove pollutants by filtering stormwater through vegetation and soils.

5. Treatment Control Measures are engineered BMPs that provide a reduction of pollutant loads and concentrations in stormwater runoff.

Applicable projects (Section 1.4) must reduce Effective Impervious Area (EIA) to less than or equal to five percent (≤5%) of the total project area, unless infeasible. Impervious surfaces are rendered "ineffective" if the design storm volume is fully retained onsite using Retention BMPs. Biofiltration BMPs may be used to achieve the 5% EIA standard if Retention BMPs are technically infeasible.

Storm Water Non-Point Source Pollutants

The effects of urbanization, agriculture, and ranching can cause increased levels of non-point source pollutants in storm water runoff. This runoff can have a negative impact on adjacent streams and other receiving waters. Receiving waters can assimilate naturally a limited quantity of various constituent pollutants, but there are thresholds beyond which the measured amount results in an undesirable impact. The evaluation of a project includes whether it will impair the beneficial use of the receiving waters. Beneficial uses, as set forth in the Water Quality Control Plan, Los Angeles Region, Basin Plan for Coastal Watersheds of Los Angeles and Ventura Counties (1994), include municipal and domestic water supply, industrial water supply, groundwater recharge, freshwater replenishment, contact and non-contact recreation, warm freshwater ecosystem, and wildlife habitat. Non-point source pollutants are characterized by major categories—sediment, nutrients, trace metals, oxygen-demanding substances, bacteria, oil and grease, and other toxic chemicals—in order to assist in determining the pertinent data and its use. Receiving waters can assimilate a limited quantity of various constituent elements. However,

there are thresholds beyond which the measures amount becomes a pollutant and results in an undesirable effect.

Typical non-point source pollutants include the following:

Sediment. Sediment is comprised of tiny soil particles that are washed or blown into surface waters; it is the major pollutant by volume in storm water runoff. Suspended soil particles can cause the water to look cloudy or turbid and also act as a vehicle to transport other pollutants including nutrients, trace metals, and hydrocarbons. Construction sites are the largest source of sediment for urban areas under development.

Another major source of sediment is stream bank erosion, which an increase in peak rates and volumes of runoff from urbanization can accelerate. Detention and retention basins, depending on location, often have the affect of adding perennial water to drainage courses that previously had runoff only during the rainy season. Shallow aquifers throughout the area fill due to this constant flow. Perennial flow can be present in locations that did not previously exist. A constant wet bottom in a channel or drainage course causes faster and higher peak flows plus additional erosion in the soft bottom channels, which is considered problematic.

Nutrients. Nutrients are a major concern for surface water quality, especially phosphorous and nitrogen, which can cause algae and excessive vegetative growth. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching groundwater. Orthophosphate from auto emissions also contributes phosphorus in areas with heavy automobile traffic. Nutrient export is typically greatest from development sites with the most impervious areas. Other problems resulting from excess nutrients are surface algae, water discolorations, odors, toxic releases, and overgrowth of plants.

Trace Metals. Trace metals are primarily a concern because of their potential toxic effects on aquatic life and their potential to contaminate drinking water supplies. The most common trace metals found in urban runoff are lead, zinc, and copper. Fallout from automobile emissions is also a major source of lead in urban areas. A large fraction of trace metals in urban runoff is attached to sediment, and this effectively reduces the level that is immediately available for biological uptake and subsequent bioaccumulation. Metals associated with the sediment settle out and accumulate in soils. The toxicity of trace metals in runoff varies with the hardness of the receiving water. As total hardness of the water increases, the threshold concentration levels for adverse effects increases.

Oxygen-Demanding Substances. Aquatic life is dependent on the dissolved oxygen in the water. When organic matter is consumed by microorganisms, dissolved oxygen is consumed in the process. A rainfall

event can deposit large quantities of oxygen-demanding substances in receiving waters. The biochemical oxygen demand of typical urban runoff is comparable to effluent from an effective secondary wastewater treatment plant. A water quality problem can occur when the rate of oxygen-demanding material exceeds the rate of oxygen replenishment. Oxygen demand is estimated by direct measure of dissolved oxygen and indirect measures such as levels of biochemical oxygen demand, chemical oxygen demand, oils and greases, and total organic carbon.

Bacteria. Bacteria levels in undiluted urban runoff typically exceed public health standards for water-contact recreation. Total coliform counts typically exceed EPA water quality criteria at most sites in most rain events. Although the coliform bacteria that are detected may not be a direct health risk, they are often associated with human pathogens.

Oil and Grease. Runoff containing oil and grease typically contains a wide variety of hydrocarbons, some of which can be toxic to aquatic life in low concentrations. These materials initially float on water and create a rainbow-colored film. Hydrocarbons are quickly absorbed in sediment. The major source of hydrocarbons in urban runoff is leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in the runoff from parking lots, roads, and service stations. Residential land uses generate less hydrocarbons; however, illegal disposal of waste oil into storm drains can be a local problem.

Other Toxic Chemicals. Pollutants generally related to hazardous wastes or toxic chemicals can be detected in storm water. Pollutant scans have been conducted in previous national studies of urban runoff, which evaluated the presence of over 120 toxic chemicals and compounds. Scans rarely revealed toxins that exceeded the current safety criteria. The urban runoff scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied household hazardous waste). Measures of toxic pollutants in storm water include (1) phthalate (plasticizer compound), (2) phenols and creosols (wood preservatives), (3) pesticides/herbicides, (4) oils and greases, and (5) metals.

3.9.1.4 Hazards

Floodplains and Flooding

Flooding generally occurs when soil and vegetation cannot absorb excess rainwater or snowmelt, and water runs off the land in quantities that cannot be carried in stream channels or kept in natural ponds or man-made reservoirs. Periodic floods occur naturally on many rivers, forming areas known as floodplains. These river floods usually result from heavy rain, sometimes combined with melting snow, which causes the rivers to overflow their banks. A flood that rises and falls rapidly with little or no

advance warning is called a flash flood. Flash floods usually result from intense rainfall over a relatively small area.

Flooding occurs occasionally on streets and roads in urbanized areas where storm waters are diverted into manmade or artificial drainage systems. In urbanized areas with significant area of impervious surfaces, storm water is not able to permeate and percolate into the soil, and is diverted into a storm drainage system. In some areas, these drainage systems are occasionally overloaded with storm water drainage, or the drains become clogged with leaves and other debris, thereby impeding storm water drainage onto transportation facilities (i.e., roadways). The ability of the storm drainage system to accommodate water flows is also largely based on ground permeability and infrastructure capacity. In metropolitan areas, agencies responsible for maintaining and upgrading drainage facilities to accommodate volume are local cities and the counties.

Principal impacts of flooding include damage to permanent structures, relocation of non-stationary objects, loss of human life, and damage to infrastructure and soil conditions. After the initial damage from floodwaters, standing water often creates a secondary level of destruction, by ruining crops, further undermining and damaging infrastructure, and contaminating water wells. Debris flows are another hazard associated with flooding, when heavy soils and rocks slide down into a valley, threatening the infrastructure below.

100-Year Floodplain

The 100-Year floodplain denotes an area that has a one percent chance of being inundated during any particular 12-month period. The risk of this area being flooded in any given year is one percent but statistically the risk is almost 40 percent in any 50-year period. Floodplain zones are determined FEMA and used to create Flood Insurance Rate Maps (FIRMs).[2] These tools assist communities in mitigating flood hazards through land use planning. FEMA also outlines specific regulations for any construction located within a 100-year floodplain, whether residential, commercial, or industrial.

Seiche

A seiche is an oscillation of a body of water in an enclosed or semi enclosed basin, such as a reservoir, harbor, lake, or storage tank. Many examples of seiches can be found in Southern California, where water reservoirs have been constructed or developed by damming rivers. The seiches serve as a means of flood

2 FEMA. *Flood Insurance Rate Map (FIRM)*. Available online at: https://www.fema.gov/flood-insurance-rate-map-firm, accessed February 25, 2020.

control and a holding tank for drinking and agricultural water. The City of Moorpark does not include any reservoirs, harbors, or lakes.

Tsunami

Tsunamis are massive waves triggered by large earthquakes along fault lines near the ocean. Tsunamis have potential to crash and flood areas much further inland than regular ocean waves. Such inundation can cause severe damage to local infrastructure and even loss of life.

3.9.2 REGULATORY FRAMEWORK

3.9.2.1 Federal Regulations

Rivers and Harbors Appropriation Act of 1899, Section 10

Authorization from the United States Army Corps of Engineers (USACOE) must be obtained for construction of a structure in or over any navigable water of the U.S., pursuant to Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S. Code [USC] 403). Authorization is also needed for structures built near navigable water if they would affect the course, location, condition, or capacity of the water body, as through re-channelization, disposal of fill, and so forth.

Wild and Scenic Rivers Act of 1968 (WSRA)

The objective of the WSRA (Public Law 90–542), dated October 2, 1968, is the preservation of certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition. The WSRA provides permanent protection for some of the country's most outstanding free flowing rivers and prohibits federal support for actions such as the construction of dams or other harmful instream activities.

Clean Water Act of 1972, as amended (CWA)

The law was originally enacted as the Federal Water Pollution Control Act (FWPCA; Public Law 92–500) in 1948, but took on its modern form when completely rewritten in 1972 in an act entitled the Federal Water Pollution Control Act Amendments of 1972, now commonly known as the Clean Water Act. Major changes have subsequently been introduced via amendatory legislation including the Clean Water Act of 1977 and the Water Quality Act of 1987.

The Clean Water Act (CWA) is the primary federal law in the United States governing water pollution. Its objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters

by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. It is one of the United States' first and most influential modern environmental laws. As with many other major U.S. federal environmental statutes, it is administered by the U.S. Environmental Protection Agency (EPA), in coordination with state governments. Its implementing regulations are codified at 40 C.F.R. Subchapters D, N, and O (Parts 100-140, 401-471, and 501-503).

Section 303(d)

Section 303(d) of the Federal CWA requires the SWRCB to list impaired water bodies and determine TMDLs of pollutants or other stressors that are contributing excessively to these impaired waters.

Section 401 – Water Quality Certification

Section 401 establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and regulating quality standards for surface waters. Under the CWA, the U.S. Environmental Protection Agency (U.S. EPA) has implemented pollution control programs such as setting wastewater standards for industries and surface waters.

Section 402

Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit process. In California, NPDES permitting authority is delegated to, and administered by the nine RWQCBs. Pursuant to Section 402, a discharge of any pollutant from a point source into navigable waters, are prohibited unless an NPDES permit is obtained. Point sources are discrete conveyances such as pipes or manmade ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

Section 402(p) establishes that, storm water permits are required for discharges from a municipal separate storm sewer system (MS4) serving a population of 100,000 or more. U.S. EPA defines an MS4 as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned or operated by a State (40 CFR 122.26(b)(8)).

The California Department of Transportation (Caltrans) is responsible for the design, construction, management, and maintenance of the State highway system, including freeways, bridges, tunnels, Caltrans' facilities, and related properties, and is subject to the permitting requirements of CWA Section

402(p). Caltrans' discharges consist of storm water and non-storm water discharges from state-owned rights-of-way.

Before July 1999, discharges from Caltrans' MS4 were regulated by individual NPDES permits issued by the RWQCBs. On July 15, 1999, the SWRCB issued a statewide permit (Order No. 99-06-DWQ) that regulated all discharges from Caltrans MS4s, maintenance facilities, and construction activities. On September 19, 2012, Caltrans' permit was reissued (Order No. 2012-0011-DWQ), and it became effective on July 1, 2013.

Caltrans' Storm Water Management Plan (SWMP) describes the procedures and practices used to reduce or eliminate the discharge of pollutants to storm drainage systems and receiving waters. The SWMP was most recently updated in July of 2016.

Section 404 – Discharge of Dredge or Fill Material

Section 404 of the federal CWA is administered and enforced by the U.S. Army Corps of Engineers (USACOE). Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. USACOE administers the day-to-day program, including the determination of eligibility of project for use of Categorical Exclusions and Nationwide Permits, and review and consideration of individual permit decisions and jurisdictional determinations. USACOE also develops policy and guidance; and enforces Section 404 provisions.

Executive Order 11990 - Protection of Wetlands

This executive order is an overall wetlands policy for all agencies managing federal lands, sponsoring federal projects, or providing federal funds to state or local projects. This executive order requires that when a construction project involves wetlands, a finding must be made by the federal agency that there is no practicable alternative to such construction, and that the proposed action includes all practicable measures to minimize impacts to wetlands resulting from such use.

Pollution Prevention Act of 1990

The Pollution Prevention Act (42 USC §13101 et seq.) focused on reducing the amount of pollution through cost-effective changes in production, operation, and raw materials. The Act focuses on source reduction which reduces the release of hazardous substances through practices that increase efficiency in energy, water, or other natural resources.

Antidegradation Policy

The Antidegradation Policy under U.S. EPA's Water Quality Standards Regulations (48 F.R. 51400, 40 CFR 131.12, November 8, 1983), requires states and tribes to establish a three-tiered antidegradation program to prevent a decrease in water quality standards.

- Tier 1—Maintains and protects existing uses and water quality conditions that support such uses. Tier 1 is applicable to all surface waters.

- Tier 2—Maintains and protects "high quality" waters where existing conditions are better than necessary to support "fishable/swimmable" waters. Water quality can be lowered in such waters but not to the point at which it would interfere with existing or designed uses.

- Tier 3—Maintains and protects water quality in outstanding national resource waters (ONRWs). Water quality cannot be lowered in such waters except for certain temporary changes.

Antidegradation was explicitly incorporated into the federal CWA through 1987 amendments, codified in section 303(d)(4)(B), requiring satisfaction of antidegradation requirements before making certain changes in NPDES permits.

Clean Water Rule: Definition of Waters of the United States (WOTUS Rule)

On June 29, 2015, the U.S. EPA and USACOE jointly published the final WOTUS Rule (40 CFR Parts 110, 112, 116, et al. and 33 CFR Part 328) for determining the extent to which wetlands and other water features are protected under the CWA. The original final rule:

- **Clearly defines and protects tributaries that impact the health of downstream waters.** The CWA protects navigable waterways and their tributaries. The rule says that a tributary must show physical features of flowing water—a bed, bank, and ordinary high water mark—to warrant protection. The rule provides protection for headwaters that have these features and science shows can have a significant connection to downstream waters.

- **Provides certainty in how far safeguards extend to nearby waters.** The rule protects waters that are next to rivers and lakes and their tributaries because science shows that they impact downstream waters. The rule sets boundaries on covering nearby waters for the first time that are physical and measurable.

- **Protects the nation's regional water treasures.** Science shows that specific water features can function as part of a system and impact the health of downstream waters. The rule protects prairie

potholes, Carolina and Delmarva bays, pocosins, western vernal pools in California, and Texas coastal prairie wetlands when they impact downstream waters.

- **Focuses on streams, not ditches.** The rule limits protection to ditches that are constructed out of streams or function like streams and can carry pollution downstream. So, ditches that are not constructed in streams and that flow only when it rains are not covered.

- **Maintains the status of waters within Municipal Separate Storm Sewer Systems.** The rule does not change how those waters are treated and encourages the use of green infrastructure.

- **Reduces the use of case-specific analysis of waters.** Previously, almost any water could be put through a lengthy case-specific analysis, even if it would not be subject to the Clean Water Act. The rule significantly limits the use of case-specific analysis by creating clarity and certainty on protected waters and limiting the number of similarly situated water features.

A CWA permit is only needed if a "water of the United States" is going to be polluted or destroyed. The Clean Water Rule only protects the types of waters that have historically been covered under the CWA. It does not regulate most ditches and does not regulate groundwater, shallow subsurface flows, or tile drains. It does not make changes to current policies on irrigation or water transfers or apply to erosion in a field. The Clean Water Rule addresses the pollution and destruction of waterways—not land use or private property rights.

States opposing the far-reaching impacts of the WOTUS rule challenged the validity of the rule in 13 states, and the fight has expanded nationwide. Attorney generals from 18 states filed a motion with the 6th Circuit Court of Appeals in Ohio in early September asking the court to place a stay on WOTUS, barring EPA from enforcing it for 50 days. The move came after U.S. District Court-District of North Dakota placed a stay on the WOTUS rule in the 13 states under its jurisdiction but, in a separate ruling, refused to expand the injunction nationwide. In February 2018, the EPA established an applicability date of February 2020 for the 2015 Rule defining WOTUS. The lack of clarity and timeliness has left many agencies confused and the 2015 Rule remains in effect in only 22 states, the District of Columbia, and the U.S. territories. Information is currently being updated on an ongoing basis.

National Flood Insurance Act

The U.S. Congress passed the National Flood Insurance Act in 1968 and the Flood Disaster Protection Act in 1973 to restrict certain types of development on floodplains and to provide for a NFIP. The purpose of these acts is to reduce the need for large, publicly-funded flood control structures and disaster relief. The NFIP is a federal program administered by the Flood Insurance Administration of FEMA. It enables

individuals who have property (a building or its contents) within the 100-year floodplain to purchase insurance against flood losses. FEMA works with the states and local communities to identify flood hazard areas and publishes a flood hazard boundary map of those areas. Floodplain mapping is an ongoing process in the Bay Area and flood maps must be regularly updated for both major rivers and tributaries as land uses and development patterns change.

Executive Order 11988, Flood Plain Management

The objective of Presidential Executive Order 11988, dated May 24, 1977, is the avoidance of, to the extent possible, long- and short-term adverse impacts associated with the occupancy and modification of the base floodplain (100-year floodplain) and the avoidance of direct and indirect support of development in the base floodplain wherever there is a practicable alternative. Under the Executive Order, the USACOE must provide leadership and take action to:

- Avoid development in the base floodplain unless it is the only practicable alternative,
- Reduce the hazard and risk associated with floods,
- Minimize the impact of floods to human safety, health, and welfare, and
- Restore and preserve the natural and beneficial values of the base floodplain.

3.9.2.2 State

Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act of 1967 (Cal. Water Code Section 13000 et seq.), requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters. These criteria include the identification of beneficial uses, narrative to the applicable and numerical water quality standards, and implementation procedures.

The Porter-Cologne Water Quality Control Act also authorizes the State Boards to adopt, review, and revise policies for all waters of the state (including both surface and ground waters) and directs the regional boards to develop Basin Plans. The act also authorizes State Boards to adopt Water Quality Control Plans. In the event of inconsistencies among state and regional board plans, the more stringent provisions apply.

Lake or Streambed Alteration

The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, Section 1600

of the California Fish and Game Code requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state, or local government agency or public utility that proposes an activity that will:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water. If CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. In August 2005, the California Fish and Game Commission policy regarding wetlands resources stated that "it is the policy of the Fish and Game Commission to seek to provide for the protection, preservation, restoration, enhancement and expansion of wetland habitat in California" and to "strongly discourage development in or conversion of wetlands."[3] As a result, although the Commission has no independent statutory permitting authority related to wetlands, the policy underscores that the Commission does not support wetland development proposals unless "project mitigation assures there will be 'no net loss' of either wetland habitat values or acreage" and "prefers mitigation which would achieve expansion of wetland acreage and enhancement of wetland habitat values." The Agreement includes reasonable conditions necessary to protect those resources and must comply with CEQA. The entity may proceed with the activity in accordance with the final Agreement.

Antidegradation Policy

California's antidegradation policy, formally known as the Statement of Policy with Respect to Maintaining High Quality Waters in California (SWRCB Resolution No. 68-16), restricts degradation of surface and ground waters. It protects waters where existing quality is higher than necessary for the protection of beneficial uses. Any actions with the potential to adversely affect water quality must 1) be

[3] California Fish and Game Commission. *Miscellaneous Policies: Wetlands Resources*. Available online at: http://www.fgc.ca.gov/policy/p4misc.aspx#WETLANDS, accessed December 17, 2018.

consistent with maximum benefit to the people of the State, 2) not unreasonably affect present and anticipated beneficial use of the water, and 3) not result in water quality less than that prescribed in water quality plans and policies. Any actions that can adversely affect surface waters are also subject to the federal antidegradation policy (40 CFR Section 131.12) developed under the CWA.

Sustainable Groundwater Management Act (SGMA)

On September 16, 2014 Governor Edmund G. Brown Jr. signed a three-bill package known as the Sustainable Groundwater Management Act. The legislation allows local agencies to customize groundwater sustainability plans to their regional economic and environmental needs. SGMA creates a framework for sustainable, local groundwater management for the first time in California history.

The three bills that make up SGMA are Assembly Bill (AB) 1739 by Assembly Member Roger Dickinson, Senate Bill (SB) 1319, and SB 1168 by Senator Fran Pavley.

In September 2015, Governor Brown signed SB 13, by Senator Fran Pavley. The Bill makes various technical, clarifying changes to SGMA including requirements for groundwater sustainability agency formation, the process for State Water Board intervention if no responsible agency is specified for a basin, guidelines for high- and medium-priority basins, and participation of mutual water companies in a groundwater sustainability agency.

Construction General Permit

The California Construction Stormwater Permit (Construction General Permit) 1, adopted by the SWRCB, regulates construction activities that include clearing, grading, and excavation resulting in soil disturbance of at least 1 acre of total land area. The Construction General Permit authorizes the discharge of stormwater to surface waters from construction activities. It prohibits the discharge of materials other than stormwater and authorized non-stormwater discharges and all discharges that contain a hazardous substance in excess of reportable quantities established in Title 40, Sections 117.3 or 302.4 of the CFR, unless a separate NPDES permit has been issued to regulate those discharges. The Construction General Permit requires that all developers of land where construction activities will occur over more than 1 acre do the following:

- Complete a Risk Assessment to determine pollution prevention requirements pursuant to the three Risk Levels established in the General Permit;
- Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the Nation;

- Develop and implement a stormwater pollution prevention plan (SWPPP), which specifies BMPs that will reduce pollution in stormwater discharges to the Best Available Technology Economically Achievable/ Best Conventional Pollutant Control Technology standards; and
- Perform inspections and maintenance of all BMPs.

To obtain coverage under the NPDES Construction General Permit, the Legally Responsible Person must electronically file all permit registration documents with the SWRCB before the start of construction. Permit registration documents must include:

- Notice of Intent,
- Risk Assessment,
- Site Map,
- SWPPP,
- Annual Fee, and
- Signed Certification Statement.

Typical BMPs contained in SWPPPs are designed to minimize erosion during construction, stabilize construction areas, control sediment, control pollutants from construction materials, and address post construction runoff quantity (volume) and quality (treatment). The SWPPP must also include a discussion of the program to inspect and maintain all BMPs.

California Green Building Standards Code

Chapters 4 and 5 of the California Green Building Standards Code (CALGreen) include mandatory measures for residential and nonresidential development, respectively. Section 4.106.2 requires residential projects that disturb less than 1 acre and are not part of a larger common plan of development, manage stormwater drainage during construction through use of on-site retention basins, filtration systems where stormwater is conveyed to a public drainage system, and/or compliance with a stormwater management ordinance. Section 5.106.1 requires newly constructed nonresidential projects and additions of less than 1 acre to prevent the pollution of stormwater runoff because of construction through compliance with a local ordinance or implementing BMPs that address soil loss and good housekeeping to manage equipment, materials, and wastes.

California Department of Transportation NPDES Permit

The California Department of Transportation (Caltrans) was originally issued a statewide NPDES permit (Order 99-06-DWQ) in 1999, which requires Caltrans to regulate nonpoint source discharge from its properties, facilities, and activities. The Caltrans permit requires development of a program for communication with local agencies, and coordination with other MS4 programs where those programs overlap geographically with Caltrans facilities. As part of the permit, Caltrans is required to create and annually update a Stormwater Management Plan (SWMP) that is used to outline the regulation of pollutant discharge caused by current and future construction and maintenance activities. SWMP requirements apply to discharges from Caltrans stormwater conveyances, including catch basins and drain inlets, curbs, gutters, ditches, channels, and storm drains. The SWMP applies to discharges consisting of stormwater and non-stormwater resulting from the following:

- maintenance and operation of state-owned highways, freeways, and roads;
- maintenance facilities;
- other facilities with activities that have the potential for discharging pollutants;
- permanent discharges from subsurface dewatering;
- temporary dewatering; and
- construction activities.

The discharges addressed by the SWMP flow through municipal stormwater conveyance systems or flow directly to surface water bodies in the state. These surface water bodies include creeks, rivers, reservoirs, lakes, wetlands, lagoons, estuaries, bays, and the Pacific Ocean and tributaries.

This SWMP applies to the oversight of outside agencies' or non-Caltrans entities' (third parties) activities performed within Caltrans' MS4 to ensure compliance with stormwater regulations. Non-Caltrans activities include highway construction and road improvement projects, as well as residential use and business operations on leased property.

The SWMP must be approved by the SWRCB and, as specified in the permit, it is an enforceable document. Compliance with the permit is measured by implementation of the SWMP. Caltrans' policies, manuals, and other guidance related to stormwater are intended to facilitate implementation of the SWMP. Caltrans also requires all contractors to prepare and implement a program to control water pollution effectively during the construction of all projects.

In lieu of the more recently adopted General Construction Permit as described above, Caltrans continues to modify its current policies and procedures to be consistent with the new permit.

California Stormwater Quality Association Best Management Practices Handbooks

The California Stormwater Quality Association (CASQA) is a professional member association dedicated to the advancement of stormwater quality management through collaboration, education, implementation guidance, regulatory review, and scientific assessment. CASQA's membership is comprised of a diverse range of stormwater quality management organizations and individuals, including cities, counties, special districts, industries, and consulting firms throughout the state. CASQA develops and publishes four BMP Handbooks. The New Development and Redevelopment Handbook provides guidance on developing project-specific SWMPs, including selection and implementation of BMPs, for a particular development or redevelopment project.

Cobey-Alquist Floodplain Management Act

The Cobey-Alquist Floodplain Management Act (California Water Code 8400-8415) and Executive Order B-39-77 support the NFIP. The Act encourages local governments to plan, adopt, and enforce land use regulations for floodplain management, to protect people and property from flooding hazards. The Act also identifies requirements that jurisdictions must meet to receive State financial assistance for flood control. Executive Order B-39-77 requires state agency compliance with good floodplain management practices.

California Fish and Game Code

The California Department of Fish and Wildlife is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify the Department of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and

watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

California Ocean Plan

The California Ocean Plan establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the state's coastal waters. The plan applies to point and nonpoint source discharges. Both the SWRCB and the six coastal RWQCBs implement and interpret the California Ocean Plan. The California Ocean Plan identifies the applicable beneficial uses of marine waters. These beneficial uses include preservation and enhancement of designated Areas of Special Biological Significance (ASBS), rare and endangered species, marine habitat, fish migration, fish spawning, shellfish harvesting, recreation, commercial and sport fishing, mariculture, industrial water supply, aesthetic enjoyment, and navigation.

The California Ocean Plan establishes a set of narrative and numerical water quality objectives to protect beneficial uses. These objectives are based on bacterial, physical, chemical, and biological characteristics as well as radioactivity. The water quality objectives in Table 1 (formerly Table B) of the California Ocean Plan apply to all receiving waters under the jurisdiction of the plan and are established for the protection of aquatic life and for the protection of human health from both carcinogens and noncarcinogens. Within Table 1 there are 21 objectives for protecting aquatic life, 20 for protecting human health from noncarcinogens, and 42 for protecting human health from exposure to carcinogens. The Ocean Plan also includes an implementation program for achieving water quality objectives. Effluent limitations are established for the protection of marine waters.

3.9.2.3 Regional

Water Quality Control Plan for the Los Angeles Region

The RWQCB has prepared a Water Quality Control Plan for the Los Angeles Region. This basin plan encompasses all coastal drainages flowing to the Pacific Ocean between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County line, as well as the drainages of five coastal islands (Anacapa, San Nicolas, Santa Barbara, Santa Catalina, and San Clemente). In addition, the Los Angeles region includes all coastal waters within three miles of the continental and island coastlines. As the eastern boundary, formed by the Los Angeles County line, departs somewhat from the hydrologic divide, the Los Angeles and Santa Ana regions share jurisdiction over watersheds along their common border.

Ventura County General Plan

The Ventura County General Plan provides specific goals and policies related to the inventory and monitoring of water quantity and quality to facilitate effective management of the resources. The Ventura County General Plan has identified ten specific programs to support achievement of the goals and policies. The programs include:

- Support of the Seawater Intrusion Abatement Project;
- Enforcement of Chapter 70 (Excavation and Grading) of the Uniform Building Code, as incorporated by reference in and amended by the Ventura County Building Code, to ensure that any proposed grading in a waterway or wetland is adequately investigated and that any development incorporates appropriate design provisions to protect waterways or wetlands;
- Support the Fox Canyon Groundwater Management Agency Plan for both the Upper and Lower Aquifer Systems;
- Continued coordination with water districts and other appropriate agencies to establish a data base on actual available supply, projected use factors for types of land use and development, and threshold limits for development within available water resources;
- Planning Division will continue to promote of the efficient use of water through the Landscape Design Criteria Program;
- Cooperation between the Public Works Agency and the Environmental Health Division, to pursue the use of reclaimed water for agricultural irrigation;
- Continued monitoring, inspection and regulation of underground storage tanks;
- Identification of waste disposal sites and seek to mitigate impacts to water resources; and consideration of the Board of Supervisors of a Countywide water conservation retrofit program to fund the installation of water conservation fixtures) for businesses and residents located within Ventura County.[4]

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4 City of Ventura. *Ventura General Plan*. Available online at: https://docs.vcrma.org/images/pdf/planning/plans /Goals-Policies-and-Programs.pdf, accessed August 27, 2019.

3.9.2.4 Local

City of Moorpark General Plan

The following goals and policies of the City of Moorpark General Plan are applicable to the proposed Project.

Land Use Element

Goal 14: Establish land uses and development intensities which are compatible with scenic and natural resources and which encourage environmental preservation.

Policy 14.3 New development shall not contribute to or cause hazardous conditions of any kind.

Goal 15: Maintain a high quality environment that contributes to and enhances the quality of life and protects public health, safety, and welfare.

Safety Element

Policy 4.1 Continue to participate in the Standardized Emergency Management System and the Ventura County Stormwater Program [local enforcer of the National Pollutant Discharge Elimination System (NPDES) program].

Goal 5: Reduce the risk to the community from hazards related to flooding.

Policy 5.2 Ensure that future projects include mitigation for hydrological impacts. Mitigation can include catch basins, stormwater pipelines, and detention basins.

Policy 5.3 Consider floodway management design that includes areas where stream courses are left natural or as developed open space.

Policy 5.4 Improve flood control structures, including modification of the Walnut Canyon and Gabbert Canyon debris basins, addition of new detention basins, channel reconstruction, and diversion systems.

Goal 7: Improve the ability of the City to respond effectively to natural and human-caused emergencies.

Policy 7.4 Insure that new critical facilities are not permitted in floodplains unless they are elevated above the projected inundation depths and/or otherwise protected.

Open Space, Conservation, and Recreation Element

Policy 3.2 The City shall support conservation and protection of groundwater aquifers and water quality through management programs established by the County of Ventura, the County of Ventura Waterworks District No. 1, the State Water Resources Control Board, the Calleguas and the Regional Water Quality Control Boards. The City shall participate in local efforts to implement regional Storm Water Pollution Prevention programs and the County's Water Conservation Plan. The City shall participate with any future regional water quality and water supply plans proposed by these agencies.

Ventura County Watershed Protection District

The City of Moorpark does not have its own design standards for drainage, as related to large developments like the Project. As such, the City defers to the County of Ventura drainage design manuals for guidance on storm drain design and construction. The *Ventura County Flood Control Design Manual* indicates that minor storm drain system and appurtenant structures that will not be under future jurisdiction of the VCWPD should be designed for the 10-year storm frequency. Channels and basins of regional significance that will be under VCWPD jurisdiction should be designed for the 100-year storm frequency. Typically, in jurisdictions where the storm drain design frequency is less than 100-year, there is an application of a combined design requirement with FEMA guidelines resulting in the ability to surcharge the streets and utilize the roadway section from storm conveyance. However, the development pad of existing and proposed structures must have a 1-foot minimum of freeboard to the 100-year frequency water surface.

3.9.3 THRESHOLDS OF SIGNIFICANCE

In accordance with *State CEQA Guidelines* (Appendix G), the following significance threshold criteria should be used to evaluate the potential hydrologic impacts of projects in the City. The project would have a significant impact related to hydrology if it would:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;

- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

  - Result in substantial erosion or siltation on- or off-site;

  - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

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

  - Impede or redirect flood flows.

- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.9.4 METHODOLOGY

The analysis of water quality impacts identifies the types of pollutants potentially associated with future development as a result of implementation of the Plan and considers their effects on water quality. Consideration is given to BMPs, which would serve to minimize pollutants in stormwater runoff. Further, the Plan's consistency with relevant regulatory permits/requirements is evaluated to demonstrate how compliance would protect water quality.

As summarized in Regulatory Framework, independent of the CEQA process, there is a comprehensive set of regulations implemented at the State and jurisdictional level to impacts related to storm drainage, urban pollutants, and flood hazards. As such, the analysis presented herein assumes future projects would comply with these regulations.

This discussion of hydrology focuses on the Project site and the surrounding areas downstream of the Project site. The impact analysis is based on several factors, including the degree to which existing land uses in the region would change and the thresholds of significance for hydrology and water quality.

3.9.5 PROJECT IMPACTS

The development plan for Hitch Ranch includes a total of four detention basins (refer to **Figure 2.0-3, Specific Plan Land Use Map**) making up approximately 18.21 acres, or approximately 7.2 percent of the Project site. Basins 2A (approximately 3.67 acres), and 2B (approximately 6.30 acres) will be north of North Hills Parkway, and the second regional basin (Basin 2 – approximately 5.94 acres) will be constructed in the arroyo adjacent to Gabbert Road and the Walnut Canyon Channel within the plan area. The last basin will serve as a water quality treatment basin (Lot AC – approximately 2.33 acres) and will be located on the southwestern side of the Project site. There will be four debris basins (DB1A [approximately 0.25 acre], DB1B [approximately 0.05 acre], DB2 [approximately 0.20 acre], and DB3 [approximately 0.15 acre]) located on the northern edge of the Project site within the manufactured slope areas. Refer to **Appendix 3.9-E, Hydrology Study Report 2020 Update**, for detailed information. An additional detention basin (Basin 3 – approximately 12.27 acres) would be included within the approximately 23.44-acre City Donation Parcel, along the southern edge of the parcel.

Impact HYD-1 **Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.**

Less than Significant with Mitigation

Construction

Grading activities associated with the construction of the Project will temporarily increase the amount of suspended solids from surface flows derived from the Plan area during a concurrent storm event due to sheet erosion of exposed soil. Construction activities that disturb more than 1 acre require a NPDES permit to mitigate construction-related water quality impacts. In addition, during excavation and grading, contaminated soils may be exposed and/or disturbed. The exposure of contaminated soils could impact surface water quality through contact during storm events. The applicant is required to satisfy all applicable requirements of the NPDES Program. These requirements include preparation of a Storm Water Pollutant Prevention Plan (SWPPP) containing structural treatment and source control measures appropriate and applicable to the project. The SWPPP will incorporate BMPs by requiring controls of pollutant discharges that utilize best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) to reduce pollutants.

Operation

The stormwater management elements and improvements which were used to form the on-site flood control system can be classified as either conveyance oriented or storage oriented. The proposed system is

composed of improved, stabilized, or restored creeks and streams; underground storm drain conduits (RCPs, RCBs, and culverts); water quality swales; debris basins; detention basins; water quality basins; and multiuse combined storage facilities. Where possible, the stormwater management system has been designed to make use of multiple-use facilities so as to result in the most economical stormwater management system while still achieving optimum performance with regard to flood control and water quality parameters. See **Appendix 3.9-E,** Hydrology Study Report – 2020 Update for the proposed stormwater management system components.

The Plan will convert approximately 277.30 acres of land from the existing undeveloped foothills and canyons with naturally occurring vegetation to a mix of multi-density residential uses, recreational uses, open space, and roadways. The proposed changes in land use will have an impact on the amount of stormwater runoff generated by the land and the amounts of pollutant carried in the runoff. Each type of land use generates characteristic amounts of each pollutant. The Plan consists of a mix of residential, recreational, and open space land uses. Therefore, the stormwater pollutants likely to be generated by the project are typical pollutants found in significant concentrations in stormwater. These pollutants of interest include total suspended solids (TSS), total phosphorus (TP), total nitrogen (TN), copper, lead, zinc, total petroleum hydrocarbons (TPH), oil, grease, and total dissolved solids.

The established NPDES Phase II Stormwater Program in effect for the Project site is in compliance with the mandates of NPDES Permit No. R4-2010-0108. The design and performance requirements of this permit are detailed in the Ventura Countywide Water Quality manual. The permit will require the use of best management practices (BMPs) in order to reduce the spread of the pollutants listed above. The specific performance and design details of each BMP will be described in detail in the project Post Construction Stormwater Management Plan (PCSMP) to be prepared by the applicant. The following discussion provides the parameters of the PCSMP for BMPs that the project may implement:

BMP Design

All BMPs for this project will be designed following the available *Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures* (2011) design standards for BMPs. The treatment runoff volume is calculated based on the treatment volume calculation guidelines provided in the Ventura Countywide Water Quality manual.

The manual provides graphs for the estimation of the stormwater volume that must be captured and treated to provide treatment of 80 percent of the annual runoff and equations for calculation of the stormwater quality design flow (SQDF) for flow-based BMPs. The *California Stormwater Quality Association Best Management Practices Design Manual for New Development and Redevelopment* (*CASQA*

Manual) provides design guidelines that are useful and commonly accepted for design of volume-based and flow-based BMPs. The *CASQA Manual* will be relied upon for design guidance when the design phases of this project are reached.

Infiltration Basin

The Los Angeles Regional Water Quality Control Board's (LARWCB) has established numeric sizing criteria for post-construction BMPs for new development within Ventura County and the incorporated cities under Order No. R4-2010-0108. The proposed numeric sizing criteria is intended to reduce adverse impacts to Los Angeles regional waters caused by new sources of urban pollution and increased volumes of storm water and non-storm water flows resulting from new development. The proposed water quality facilities will comply with the LARWCB water quality permit/order as follows:

1. Site Design Principles and Techniques are a stormwater management strategy that emphasizes conservation and use of existing site features to reduce the amount of runoff and pollutant loading that is generated from a project site.

2. Source Control Measures limit the exposure of materials and activities so that potential sources of pollutants are prevented from making contact with stormwater runoff.

3. Retention BMPs are stormwater BMPs that are designed to retain water onsite, and achieve a greater reduction in surface runoff from a project site than traditional stormwater Treatment Control Measures. The term "Retention BMPs" encompasses infiltration, rainwater harvesting, and evapotranspiration BMPs. Retention BMPs are preferred and shall be selected over biofiltration BMPs and Treatment Control Measures where technically feasible to do so.

4. Biofiltration BMPs are vegetated stormwater BMPs that remove pollutants by filtering stormwater through vegetation and soils.

5. Treatment Control Measures are engineered BMPs that provide a reduction of pollutant loads and concentrations in stormwater runoff.

Applicable projects (Section 1.4) must reduce Effective Impervious Area (EIA) to less than or equal to five percent (≤5%) of the total project area, unless infeasible. Impervious surfaces are rendered "ineffective" if the design storm volume is fully retained onsite using Retention BMPs. Biofiltration BMPs may be used to achieve the 5% EIA standard if Retention BMPs are technically infeasible.

Volumetric BMPs

The acreage of land that is tributary to each of the volumetric BMPs, such as extended detention basins, is calculated based on the site plan for the project. Runoff volume is based on proposed land uses in the watershed area. The volume of stormwater that must be captured to provide 80-percent annual capture is the "design storm" analyzed in this report. The volumetric BMP sizing calculation for basin-type BMPs requires a 48-hour (48 to 72 hour) drawdown time or treatment period for the BMP runoff volume. The proposed extended detention basins were preliminarily sized per Appendix B of the *Ventura Countywide Stormwater Quality Management Program* requirements.

Flow Based BMPs

The flow-rate-based BMPs, such as vegetated swales or water quality creeks, were preliminarily sized to treat 10 percent of the 50-year tributary peak flowrate per SQDF calculation detailed in Appendix E of the *Ventura Countywide Stormwater Quality Management Program* manual.

Stormwater Treatment BMPs

Stormwater BMPs are practices and facilities that are employed to reduce the level of pollutants that occur in stormwater. Stormwater BMPs typically include practices such as public education, proper site design, proper handling of chemicals, and stormwater facilities such as ponds and wetlands. Some BMPs are applied temporarily to a site during construction while others are incorporated as permanent features of the site. This report describes only the structural BMPs that will remain a part of the site following construction. Most of these are permanent parts of the stormwater drainage system while a few will remain in place only until certain later phases of the project are built. The Hitch Ranch PCSMP will describe the proposed BMPs for the project.

The Project will provide permanent stormwater treatment BMPs for runoff from all developed portions of the Project site in accordance with the project PCSMP to be prepared in the future. Several types of stormwater BMP will be used to meet this requirement including man-made basins, vegetated swale or water quality creek, dry extended detention ponds, and other BMPs.

The PCSMP will outline the design requirements, which all project BMPs including the permanent stormwater treatment BMPs described herein, will meet. Additional BMP design guidance is obtained from the *Ventura Countywide Stormwater Quality Management Program* manual and the *CASQA Manual*. In some cases, additional design guidance is obtained from other sources, but in all cases, BMPs are designed to meet or exceed the minimum standards that will be outlined in the PCSMP.

Dry Extended Detention Basin BMPs

Dry extended detention basins are among the most widely used stormwater treatment BMPs, they provide versatility, reliability, and are proven to work. A dry extended detention basin remains empty until a rainfall runoff event occurs. During the runoff event, water entering the basin is detained. This water is released through an engineered outlet structure over the course of approximately 40 to 72 hours. During this time, particulates and other pollutants are removed from the water in the basin by settling, infiltration, and absorption by soils.

In most cases, dry extended detention basins will be designed with gentle side slopes and shallow water depths (when full) for the public's safety and eliminate the need for fencing.

In areas where dry weather flows are anticipated, dry extended detention basins will be equipped with either a permanent micropool or subsurface flow wetland to control dry weather flows. A micropool is a small pool of water typically designed to provide 24 hours of detention for anticipated nuisance flows. The micropool is located in the floor of the dry extended detention basin. Micropools are equipped with small overflow outlets that are intended to prevent water from overtopping the micropool during dry weather. A subsurface-flow wetland is a gravel bed constructed in the floor of a dry extended detention basin or similar facility. Small flows of water entering the basin during dry weather will quickly infiltrate the gravel bed, thereby eliminating surface puddling that can support mosquito reproduction. Water is treated through contact with the gravel and microbes growing on the gravel, settling, filtration, and infiltration. The wetland is sized to provide 24 hours of detention for nuisance flows, and includes an overflow outlet to release excess water before any surface puddling occurs. During wet weather, the subsurface flow wetland provides an alternate low-flow outlet for storm water.

BMP Safety Standards

Water Body Safety Standards

All facilities, which permanently or temporarily can contain a pool of water in excess of 18 inches deep, will be designed to meet safety criteria or fencing will be provided to limit public access to the water's edge. The following safety criteria apply to water bodies:

1. All water basins (water quality, detention, debris) that are not designed for multiple uses with an active use such as soccer/football fields, baseball/softball fields, golf, etc., and have side slopes above and/or below the water surface steeper than 4:1 (H:V) are to be fenced with a minimum 6-foot fence to reduce the likelihood of attractive nuisance accidents associated with children.

2. Side slopes above water level shall be 4:1 (H:V) or flatter (e.g. 5:1).

3. Water depth at water's edge shall be no deeper than 18 inches.

4. Bottom slope (underwater ground slope) shall not exceed 4:1 until water depth exceeds 4 feet.

These conditions provide a safe edge condition that prevents a person from falling into deep water and allows easy egress for anyone who accidentally enters the water. The gentle but distinctly sloping bottom allows anyone who wades into the water to be aware that the water is deeper farther from shore while allowing easy retreat. No water body with public access can be designed to prevent a determined person from entering the water, but the application of these safety principles ensure that the public can remain relatively safe while still enjoying the many benefits of publicly accessible waterways.

Vector Control

Stormwater facilities, like all facilities that contain water, may attract mosquitoes, which may reproduce. Mosquito larvae require standing water to develop. Typically, very shallow, standing water free of predators is required, and water high in nutrients is preferred by most nuisance mosquito species. A period of approximately eight days is required for a mosquito to hatch from an egg, develop through the larval and pupae stages and emerge as an adult during warm weather. During colder weather, maturation takes longer. Standing water that persists longer than a few days thus runs the risk of producing mosquitoes.

The stormwater facilities on the Project site will be designed either to prevent standing water from persisting more than 72 hours, or to permanently hold standing water. Any temporary water that drains within 72 hours will not produce mosquitoes, and the 72-hour drain time helps minimize the risk that sequential storms will combine to create standing water that lasts more than the approximately eight days required for a mosquito to mature under ideal conditions. Alternately, facilities with permanent areas of water can be stocked with mosquito fish or other predators of mosquito larvae that effectively prevent reproduction.

Additional vector control measures that should be incorporated into the design of storm water facilities include:

1. Where permanent bodies of water are planned, the edge slopes at the normal operating water surface elevation must be as steep as possible to a depth of 12 inches below water surface to limit the area of very shallow water along the edge that can support mosquitoes. A vertical edge provides the best limitation to shallow water at the edge.

2. Areas of emergent vegetation will be designed with water depth in excess of 12 inches where possible to eliminate very shallow water that is inaccessible to predators such as fish.

3. In areas where dry weather flows are anticipated include features designed to eliminate puddling of water during dry weather conditions.

Conclusion

The project is constructing three detention and one combination detention/debris basins for the purpose of capturing runoff and will be required to implement BMPs consistent with water discharge requirements, as discussed above. In order to ensure that the project reduces the impact posed to surface and groundwater during project construction or operation, **Mitigation Measures HYD-1** through **HYD-5** will be implemented. With implementation of these measures, the impact will be less than significant.

Impact HYD-2 **Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.**

Less than Significant with Mitigation

According to the Public Policy Institute of California, groundwater overdraft in some agricultural regions averages about 2 million acre-feet annually.[5] In contrast to surface water, groundwater use has largely been unregulated under California law until recently. Many basins have experienced long-term overdraft, and 21 of the state's 515 basins are now considered critically over drafted, including the Santa Clara River Valley and Pleasant Valley basins within Ventura County.

Under natural conditions, vegetation intercepts and retains rainfall before infiltration or runoff occurs. Without hard-surfaced land areas, this hydrology cycle favors groundwater recharge. The project will develop 755 residential units and supporting roadways over approximately 47% of the site, which will increase the total area of impervious surfaces. Hard surfaces significantly decrease groundwater recharge. The magnitude of this effect is reported by studies indicating that the volume of storm water washed off one-acre of roadway is about sixteen times greater than that of a comparably sized meadow. Therefore, the increase in impervious surfaces due to project build out has the potential to affect groundwater recharge rates. The project will implement BMPs and **Mitigation Measure HYD-3** that will support infiltration, or other treatment methods (i.e., biofiltration) will be implemented, in order to treat

5 The Public Policy Institute. 2017. *Just the Facts. Groundwater in California.* May. Available online at: https://www.ppic.org/wp-content/uploads/JTF_GroundwaterJTF.pdf, accessed August 14, 2019.

stormwater, which in turn will increase the recharge to groundwater recharge. Therefore, while the project will increase the amount of impervious surfaces, the site will still retain a high percentage of open space, and includes measures through BMPs and mitigation in an effort to increase groundwater recharge, as a result, the impact is less than significant with the implementation of mitigation.

Impact HYD-3a **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site.**

Less than Significant with Mitigation

Stormwater runoff is influenced by rainfall intensity, ground surface permeability, watershed size and shape, and physical barriers. The introduction of impervious surfaces greatly reduces natural infiltration, allowing for a greater volume of runoff. In addition, paved surfaces and drainage conduits can accelerate the velocity of runoff, concentrating peak flows in downstream areas faster than under natural conditions. Significant increases to runoff and peak flow can overwhelm drainage systems and alter flood elevations in downstream locations.

Construction

Construction and earth-moving activities can be a major source of sediment loading in local waterways. There is significant potential for unprotected soil to erode as stormwater runoff as a result of construction activity. However, state regulation requires that prior to commencement of construction, a SWPPP must be submitted to the SWRCB. SWPPPs identify BMPs used during construction. Development of individual aspects of the Plan will include adopted BMPs appropriate to local conditions and to the proposed construction techniques that will reduce stormwater runoff, these BMPs are discussed under **Impact HYD-1** and implemented in **Mitigation Measure HYD-1** and **HYD-4.**

Operation

In February 2020, Kasraie Consulting prepared the *Hitch Ranch Hydrology Study Report 2020 Update* (refer to Appendix 3.9-E) in order to demonstrate that the Project provides appropriate mitigation measures to meet objectives outlines in the previous Regional Master Plan (2005 Technical Addendum to Walnut and Gabbert Canyon Channel Flood Deficiency Study) through updated hydrologic analysis of the Walnut Canyon watershed. Modeling was completed using VCRAT (Ventura County Rational Method Hydrology Model, version 2.64.0.37) for the 10-year/100-year existing site and 100-year interim/ultimate conditions. The report also includes an initial hydraulic evaluation of the existing and proposed

conditions in order to determine the overall benefit of the proposed system versus existing conditions and to ensure/verify that the proposed system will likely work as intended.

Within the report, an evaluation of the debris production was calculated per VCWPD requirements[6] in order to determine if the five proposed debris basins (DB1A, DB1B, DB2, DB3, and Basin 2B) would be adequate in a 100-year flooding event. For detention basins with tributary watersheds totaling less than five square miles, the volume required for debris storage is 125 percent of the debris volume expected from the 100-year storm. The project includes five debris basins that are anticipated to be adequate to support the sediment yield of a 100-year flood event. Moreover, the proposed facilities, including the detention basins, provide a significant benefit to the overall systems. Under existing conditions, there is a significant amount of flow overtopping the Union Pacific Railroad tracks immediately upstream of Gabbert Road, which could impact the industrial/commercial area to the south. This issue will be completely eliminated under the Interim and Ultimate Conditions.

Therefore, while the project will increase the amount of impervious surfaces on the Project site, the drainage pattern will not be altered in such a way to result in substantial siltation on or off-site. Moreover, the site will still maintain approximately 51% of open space, recreational space, and detention basins, therefore the amount of impervious surface will be limited. **Mitigation Measures HYD-1** to **HYD-4** will implement water quality, erosion control, and BMPs in order to reduce this impact to less than significant levels.

Impact HYD-3b **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of flooding on- or off-site.**

Less than Significant with Mitigation

As discussed in **Impact HYD-3a**, the Project will increase the amount of impervious surface on the Project site which may alter the drainage pattern of the site and lead to flooding. In order to address any potential for flooding, the Plan includes the construction of four (4) of the basins (Basins 2, 2A, 2B, and 3) identified in the approved master plan for this watershed. These facilities will help decrease the flooding risk downstream of the site. These facilities will also mitigate the increase in peak runoff that typically occurs in a watershed due to development.

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6 Scott and Williams, 1974. "Erosion and Sediment Yields in the Mountain Watersheds of the Transverse Ranges, Ventura and Los Angeles Counties, California—Analysis of Rates and Processes".

Construction

The project will be constructed in several phases over approximately 60 months. When all phases are complete, a single interconnected stormwater system will exist. In the interim, the portions of the permanent stormwater system within each phase will be constructed to function in combination with temporary facilities.

All phases will be designed to be fully or mostly self-contained in terms of stormwater treatment capacity. Thus, the land area within each phase will drain toward stormwater BMPs located within the phase, and the BMPs will be sized to treat the flows for the phase. Limited exceptions to this rule may be permitted for areas very near the downstream edge of a phase. For some of these areas, designing the storm drain system to drain back into the phase would require a cumbersome design that would be undesirable for the permanent condition. In these cases temporary stormwater treatment BMPs will be constructed outside the phase boundaries to provide the necessary stormwater treatment. These BMPs will be designed to the same standards as permanent BMPs.

In all phases that are not adjacent to the downstream boundary (Walnut Canyon Channel) of the Project site, temporary facilities to convey stormwater across the unbuilt phases and to detain stormwater to control downstream discharges will be needed. Temporary facilities will be constructed to perform these functions. Temporary facilities will meet the same safety and design standards as permanent facilities, but where feasible will omit concrete, basin linings, and permanent recreational improvements to minimize the costs of rebuilding or removing the facilities.

Operation

The project will be designed to limit downstream discharges to predevelopment levels. This will necessitate the temporary detention of floodwater. Because flood control basins are only infrequently filled with water, they lend themselves to multiple uses. Recreational fields, parks, wildlife habitat, and similar uses may be incorporated into detention basins on the Project site. The detention basins would be designed and constructed to meet or exceed minimum VCWPD design standards. The proposed regional basins would meet the performance and design requirements set forth in the Regional Watershed Master Plan for Walnut and Gabbert Canyons, which were approved and accepted by both the City of Moorpark and VCWPD in 2006.[7]

7 *Gabbert and Walnut Canyon Channels Flood Control Deficiency - Addendum,* dated August 2005.

As stated in **Impact HYD-3a**, *Hitch Ranch Hydrology Study Report 2020 Update* includes an initial hydraulic evaluation of the existing and proposed conditions in order to determine the overall benefit of the proposed system versus existing conditions and to ensure/verify that the proposed system will likely work as intended. The report concludes that the proposed facilities provide a significant benefit to the overall systems. Under existing conditions, there is a significant amount of flow overtopping the Union Pacific Railroad tracks immediately upstream of Gabbert Road, which could impact the industrial/commercial area to the south. This issue will be eliminated under the Interim and Ultimate Conditions, see **Appendix 3.9-E,** Hitch Ranch Hydrology Report – 2020 Update. Therefore, while the project will increase the amount of impervious surfaces on the Project site, with the implementation of **Mitigation Measures HYD-1** to **HYD-4** the drainage pattern will not be altered in such a way to substantially increase the rate or amount of flooding on- or off-site, and impacts will be less than significant.

Impact HYD-3c **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.**

Impact HYD-3d **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows.**

Less than Significant with Mitigation

As discussed in **Impact HYD-3a**, the Project will increase the amount of impervious surface on the Project site which may alter the drainage pattern of the site. However, the project will include BMPs and mitigation to store and treat runoff in order to prevent the pollution of surface and ground water. BMP's to address polluted runoff are discussed in **Impact HYD-1** and include infiltration basins, and extended detention basins to reduce runoff through infiltration, rainwater harvesting, and evapotranspiration. Additionally, **Impact HYD-1** identifies BMPs practices aimed at reducing polluted runoff through treatment controls and bioinfiltration basins. While the Project will increase the amount of impervious surfaces on the Project site, the drainage pattern will not be altered in such a way to substantially increase pollution runoff, or impede or redirect flood flows with the implementation of the BMPs. **Mitigation Measures HYD-1** to **HYD-4** will implement water quality, erosion control, and BMPs to reduce these impacts to less than significant levels.

Impact HYD-4 **In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.**

Less than Significant

The California Department of Conservation prepares Tsunami Inundation Maps for coastline areas within Ventura County. Review of the Project site demonstrates that it is approximately 16.5 miles from the coastline and, as a result, far outside the inundation zone identified in these maps. Therefore, the risk of pollutants being released from tsunami inundation is less than significant.

The Project site is susceptible to impacts from seismic activity. Review of surrounding areas demonstrates that the closest body of water is Bard Lake (also known as the Wood Ranch Reservoir), a 231-acre reservoir. The Project site is approximately 4.5 miles northwest from Bard Lake. Therefore, the risk from a seiche affecting the Project site is minimal and the impact is less than significant.

With regard to flooding, risks are associated with projects that are located in low-lying areas or in proximity to waterways and/or dam inundation zones. However, as stated above, the plan is anticipated to develop four detention basins (Basins 2, 2A, 2B, and 3), which will decrease the risk of flood on and off-site. Review of the *Hitch Ranch Hydrology Study Report - 2020 Update* demonstrates that the detention basins and the designated diversions will provide flow attenuation and time to peak lag which prevent 100-year flows from accumulating beyond the capacity of the downstream system. In addition, proposed Interim Condition 100-year flows are below 10-year existing flows along the Walnut Canyon Channel and, therefore, will meet the regional flood control objectives and local flood requirements from the Regional Management Plan are met with the flood design. As a result, the impact is less than significant.

Impact HYD-5 **Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.**

Less than Significant with Mitigation

The Project site is located within the Los Angeles Regional Water Quality Control Board (Region 4). The RWQCB is responsible for the protection of the beneficial uses of waters within each region. In general, the RWQCB uses its planning, permitting, and enforcement authority to meet this responsibility and adopts a Water Quality Control Plan (basin plan) to implement plans, policies, and provisions for water quality management, see **Section 3.9.2.3 Regional Regulations**. The Los Angeles Regional Board's Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan (i) designates beneficial uses for surface and ground waters; (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated

beneficial uses and conform to the state's antidegradation policy, and (iii) describes implementation programs to protect all waters in the Region.

As discussed under **Impact HYD-2**, development of the project would increase impervious surfaces due to the construction of 755 residential units over previously undeveloped land. An increase in impervious surfaces would increase water runoff and potentially affect groundwater recharge rates and water quality in the basins. However, the project will implement BMPs, as described in **Impact HYD-1**, in an effort to reduce water runoff, increase groundwater recharge, and maintain water quality. The project will include permanent facilities that will treat stormwater before it is released from the site. The BMPs recommended include wet ponds, extended detention basins, vegetated swales, or water quality creeks, and vegetated buffer strips. Runoff from the Project site will flow through standard stormwater infrastructure (curbs, gutters, and underground pipes) into BMPs where it will be treated. After passing through BMPs runoff is discharged from the project.

The Plan is proposed to include extended detention basins as the primary stormwater treatment BMPs. The primary stormwater treatment BMPs will be located in Lot AC. The BMPs will include bioinfiltration and/or biofiltration. Therefore, all stormwater runoff leaving a developed portion of the site will pass through a BMP before being discharged to the downstream channel. The *Hydrology Study Report – 2020 Update* concluded that the plan would not have any significant hydrologic effect on the flood control and water quality system proposed for the Hitch Ranch Specific Plan. Therefore, **Mitigation Measures HYD-1** to **HYD-4** will implement water quality, erosion control, and BMPs to reduce this impact to less than significant levels.

3.9.6 GENRAL PLAN COSISTANCY

The proposed Hitch Ranch Specific Plan project incorporates and/or would be required to provide adequate detention facilities in order to prevent impacts to on-site or off-site storm water runoff and water quality. Implementation of the Specific Plan project is also mandated to comply with all applicable federal, state, and local water quality programs, including the Ventura County Stormwater Program. The published Flood Insurance Rate Maps for the Specific Plan site indicate that there are no existing flood hazards within the boundaries. The project is, therefore, consistent with the applicable goals and policies of the *Moorpark General Plan* Land Use Element; Safety Element; and Open Space, Conservation, and Recreation Element.

3.9.7 CUMULATIVE IMPACTS

3.9.7.1 Surface Water Hydrology

The geographic context for the cumulative impact analysis on surface water hydrology is the Walnut Canyon Watershed. The project, in conjunction with the cumulative growth in the Walnut Canyon Watershed (inclusive of the related projects), would cumulatively increase stormwater runoff flows potentially resulting in cumulative impacts to surface water hydrology. However, as described above, in accordance with City requirements, related projects and other future development projects would be required to implement BMPs, such that post-development peak stormwater runoff discharge rates would not exceed the estimated pre-development rates. Furthermore, VCWPD, and the City of Moorpark Department of Public Works would review each future development project on a case-by-case basis to ensure sufficient local and regional drainage capacity is available to accommodate stormwater runoff Therefore, cumulative impacts on surface water would be less than significant.

3.9.7.2 Surface Water Quality

The geographic context for the cumulative impact analysis on surface water quality is the Walnut Canyon Watershed. As with the project, cumulative growth in the Walnut Canyon Watershed (including related projects) would be subject to NPDES requirements regarding water quality for both construction and operation. In addition, it is anticipated that the related projects and other future development projects would also be subject to VCWPD, SWPPP, and PCSMP requirements and implementation of measures to comply with total maximum daily loads. Additionally, with implementation of the Plan, new BMPs for the treatment of stormwater runoff would be installed, thus improving the surface water quality runoff from the Project site compared to existing conditions. Therefore, with compliance with all applicable laws, rules and regulations, cumulative Impacts to surface water quality would be less than significant.

3.9.7.3 Groundwater Hydrology

Cumulative groundwater hydrology impacts could result from the overall utilization of groundwater basins located in proximity to the Project Site and the related projects. Groundwater basins in Ventura County are managed by Fox Canyon Groundwater Management Agency (FCGMA); the cumulative utilization of groundwater in the region, either as a result of water extraction under the related project or extraction to accommodate the related projects could also adversely affect local and regional groundwater hydrology, including groundwater levels. However, no water supply wells, spreading grounds, or injection wells are located within a 1-mile radius of the Project site. In addition, Plan development would not involve the permanent extraction of groundwater from the site.

Similar to the Plan, development of the related projects could result in changes in impervious surface area within their respective project sites. However, it is anticipated that the related projects, all subject to VCWPD and City of Moorpark approval, would also include measures through BMPs and mitigation in an effort to increase groundwater recharge, as a result, the cumulative impacts to groundwater would be less than significant.

3.9.7.4 Groundwater Quality

As described above, compliance with all applicable existing regulations would prevent the Project from affecting or expanding any potential areas affected by contamination, increasing the level of contamination, or causing regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 16 and the Safe Drinking Water Act. As with the Project, the related projects would be unlikely to cause or increase groundwater contamination because compliance with existing statutes and regulations, and project reviews by VCWPD and the City of Moorpark would prevent the related projects from affecting or expanding any potential areas affected by contamination, or increasing the level of contamination, or causing regulatory water quality standards at an existing production well to be violated. Therefore, cumulative impacts to groundwater quality would be less than significant.

3.9.8 MITIGATION PROGRAM

3.9.8.1 Project Design Features

The project design incorporates five on-site detention basins (2, 2A, 2B, Lot AC and Basin 3) with a total acreage of approximately 30.51 acres.

3.9.8.2 Standard Conditions and Requirements

Prior to the issuance of a grading permit, as well as during grading, the project would be required to comply with the requirements of Ventura County NPDES permit No. CAS004002, Order No. R4-2009-0057.

3.9.8.3 Mitigation Measures

Water Quality and Erosion Control

HYD-1: During site preparation and construction, the contractor shall minimize disturbance of natural groundcover on the Project site until such activity is required for grading and construction purposes. During grading operations, the developer shall employ a full-time

superintendent for National Pollutant Discharge Elimination System (NPDES) compliance. If determined necessary by the City Engineer/Public Works Director, the NPDES superintendent shall be present on the Project site Monday through Friday and on all other days when the probability of rain is 50 percent or higher and prior to the start of and during all grading or clearing operations until the release of grading bonds. The NPDES superintendent shall have full authority to hire personnel, bind the developer in contracts, rent equipment, and purchase materials to the extent needed to effectuate Best Management Practices (BMPs). The NPDES superintendent shall provide proof to the City Engineer/Public Works Director of attendance and satisfactory completion of courses satisfactory to the City Engineer/Public Works Director totaling no less than 8 hours directed specifically to NPDES compliance and effective use of BMPs. Proof of such attendance and completion shall be provided to the City Engineer/Public Works Director prior to employment of the NPDES superintendent.

Timing/Implementation: During site preparation and construction

Enforcement/Monitoring: City of Moorpark Public Works Department

HYD-2: Prior to issuance of the initial grading permit, the applicant shall have prepared a Post Construction Stormwater Management Plan (PCSMP) and include Non-Structural, Source Control, and Structural Best Management Practices (BMPs). A certified erosion and sediment control professional or qualified civil engineer shall prepare the PCSMP. The PCSMP shall be reviewed and approved by the Moorpark Community Development Director and City Engineer/Public Works Director. The development of the PCSMP shall conform to the Ventura County National Pollutant Discharge Elimination System permit, the PCSMP standards, and the Technical Guidance Manual for Storm Water Quality Control Measures. The following are the minimum required mitigation from the *Technical Guidance Manual for Storm Water Quality Control Measures*.

The PCSMP portion of the drainage master plan shall address:

- Storm Drain Message and Signage. The appropriate locations for the signage regarding discharge prohibitions at storm drain inlets and a standard message to be used throughout the specific plan site.

- Outdoor Material Storage Area Design. General design criteria for outdoor material storage area design.

- Outdoor Trash Storage and Waste Handling Area Design. General design criteria for outdoor trash storage and waste handling area design.
- Outdoor Loading/Unloading Dock Area Design. General design criteria for outdoor loading/unloading dock area design.
- Outdoor Repair/Maintenance Bay Design. General design criteria for outdoor repair and maintenance bay design.
- Outdoor Vehicle/Equipment/Accessory Washing Area Design. General design criteria for outdoor vehicle, equipment, and accessory washing area design.
- Fueling Area Design. General design criteria for fueling area design.
- Proof of Control Measure Maintenance. To ensure that maintenance is provided, the City of Moorpark Public Works Department (PWD) will require a maintenance agreement and a maintenance plan, including an Storm Water Operations and Maintenance Manual (O&M Manual), from the owner/operator of the storm water control measures. The PCSMP and O&M Manual shall identify the party(ies) responsible for maintenance of control measures, and shall be submitted to the PDW for review and acceptance. A Stormwater O&M Covenant shall be recorded for the property.

Timing/Implementation: Prior to grading permit issuance

Enforcement/Monitoring: City of Moorpark Public Works Department

Structural/Treatment BMPs

HYD-3: The PCSMP/O&M Manual shall include structural and/or treatment BMPs. The structural BMPs shall focus on meeting potential TMDL and pollutant standards for residential developments. The treatment BMPs shall conform to the *Technical Guidance Manual for Storm Water Control Measures***.** The PCSMP guidelines contained in the *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements* for Ventura County state that structural BMPs are required for all new developments. The structural BMPs shall be sized to comply with one of the following numeric sizing criteria, unless an alternative is considered by the permittees to provide equivalent or better treatment. Groundwater quality must be evaluated based on the amount of water

and the potential pollutants that may be introduced associated with the buildout of the specific plan site.

Volume (SQDV) shall be calculated using the following four allowable methodologies:

a. The 85th percentile 24-hour runoff event determined as the maximized capture stormwater volume for the area using a 48 to 72-hour draw down time, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998); or

b. The volume of annual runoff based on unit basin storage water quality volume to achieve 80 percent or more volume treatment; or

c. The volume of runoff produced from a 0.75 inch storm event; or

d. Eighty (80) percent of the average annual runoff volume using an appropriate public domain continuous flow model [such as Storm Water Management Model (SWMM) or Hydrologic Engineering Center – Hydrologic Simulation Program – Fortran (HEC-HSPF)], using the local rainfall record and relevant BMP sizing and design data.

Volume-based BMPs shall be designed to infiltrate or treat either:

a. The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in the *California Storm Water Best Management Practices Handbook–Industrial/ Commercial* (1993), the *Ventura Countywide Storm Water Quality Management Program Land Development Guidelines***;** or

b. The 85th percentile 24-hour runoff event determined as the maximized capture storm water volume for the area, from the formula recommended in *Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87 (1998)***;** or

c. The volume of runoff produced for a 0.75-inch storm event, prior to its discharge to a storm water conveyance system; or

d. The volume of runoff produced from a historical-record based reference 24-hour rainfall criterion for "treatment" that achieves approximately reduction in pollutant loads achieved by the 85th percentile 24-hour runoff event. The volume of runoff

produced from the 85th percentile 24-hour storm event, as determined from the local historical rainfall record.

Flow-based BMPs shall be designed to infiltrate or treat either

a. Ten percent of the 50-year design flow rate, or

b. A flow that will result in treatment of the same portion of runoff as treated using volumetric standards, or

c. A rain event equal to at least 0.2 inch per hour intensity; or

d. A rain event equal to at least two times the 85th percentile hourly rainfall intensity for Ventura County.

The *Technical Guidance Manual for Storm Water Quality Control Measures* requires that treatment controls measures be used for any new development. The following is a partial list of treatment control measures that may be used by the applicant:

- Grass Strip Filter
- Grass Swale Filter
- Extended Detention Basin
- Wet Detention Basin
- Constructed Wetland
- Detention Basin/Sand Filter
- Porous Pavement Detention
- Porous Landscape Detention
- Infiltration Basin
- Infiltration Trench

The following discussion identifies treatment control measures that are appropriate for use on the Hitch Ranch Specific Plan site:

- Grass Strip and Swales. An appropriate treatment is either vegetative swales, enhanced vegetated swales utilizing check dams and wide depressions, a series of small detention facilities designed similarly to a dry detention basin, or a combination of these treatment methods into a treatment train (a series of Structural

BMPs). It is essential that the PCSMP address treatment for Hitch Ranch to assure that the runoff from the site be treated to the "maximum extent practicable."

In order for the vegetation swales to be effective in the removal of potential pollutants, the swales must be treated as water quality features and must be maintained differently than grass areas. Specifically, pesticides, herbicides, and fertilizers, which may be used on the grass areas, must not be used in the vegetation swales. Anticoagulant rodenticides are not to be used in any areas within the project.

- Infiltration Trenches and Basins. Infiltration trenches and/or basins may be used on site to meet potential future TMDLs for noxious aquatic plants and nutrients. Infiltration trenches and basins treat storm water runoff through filtration. A typical infiltration trench is essentially an excavated trench, which is lined with filter fabric and backfilled with stones. Depth of the infiltration trench ranges from 3 to 8 feet and functions best in areas with permeable soils, and water table and bedrock depth situated well below the bottom of the trench. Trenches should not be used to trap coarse sediments, because large sediment will likely clog the trench. Grass buffers can be installed to capture sediment before it enters the trench to minimize clogging. Infiltration basins are generally used for drainage areas between 5 and 50 acres. Infiltration basins can be either in-line or off-line, and may treat different volumes such as the water quality volume or the 2-year or 10-year storm.

- All structural BMPs shall be included in the Storm Water O&M Manual.

Timing/Implementation: Prior to building permit issuance

Enforcement/Monitoring: City of Moorpark Public Works Departments

HYD-4: Prior to the issuance of the first grading permit and as a part of the project's compliance with the National Pollutant Discharge Elimination System (NPDES) program, the applicant shall file a Notice of Intent (NOI) with the California State Water Resources Control Board providing notification and intent to comply with the State of California general permit. Prior to issuance of the first grading permit, a Storm Water Pollution Prevention Plan (SWPPP) must be completed for on-site and associated off-site construction activities. A copy of the SWPPP must be available and implemented at the construction site at all times. The SWPPP outlines the source control and/or treatment control best management practices (BMPs) that will avoid or mitigate runoff pollutants at the construction site to the "maximum extent practicable." A listing of these BMPs from

the *California Storm Water Best Management Practice Handbook-Construction Activity* is provided below.

- Dewatering Operations. This operation requires the use of sediment controls to prevent or reduce the discharge of pollutant to storm water from dewatering operations.

- Paving Operations. Prevent or reduce the runoff of pollutant from paving operations by proper storage of materials, protecting storm drain facilities during construction, and training employees.

- Structural Construction and Painting. Keep site and area clean and orderly, use erosion control, use proper storage facilities, use safe products, and train employees to prevent and reduce pollutant discharge to storm water facilities from construction and painting.

- Material Delivery and Storage. Minimize the storage of hazardous materials on the site. If stored on site, keep in designated areas, install secondary containment, conduct regular inspections, and train employees.

- Material Use. Prevent and reduce the discharge of pesticides, herbicides, fertilizers, detergents, plaster, petroleum products, and other hazardous materials from entering the storm water.

- Solid Waste Management. This BMP describes the requirements to properly design and maintain trash storage areas. The primary design feature requires the storage of trash in covered areas.

- Hazardous Waste Management. This BMP describes the requirements to properly design and maintain waste areas.

- Concrete Waste Management. Prevent and reduce pollutant discharge to storm water from concrete waste by providing on-site and off-site washouts in designated areas and training employees and consultants regarding their use.

- Sanitary Septic Water Management. Provide convenient, well-maintained facilities, and arrange regular service and disposal of sanitary waste.

- Vehicle and Equipment Cleaning. Use off-site facilities or wash in designated areas to reduce pollutant discharge into the storm drain facilities.
- Vehicle and Equipment Fueling. Use off-site facilities or designated enclosed coverings to reduce pollutant discharge into the storm drain facilities.
- Vehicle and Equipment Maintenance. Use off-site facilities or designated on-site enclosed areas with coverings to reduce pollutant discharge into the storm drain facilities. In addition, run a ″dry site″ to prevent pollution discharge into storm drains.
- Employee and Subcontractor Training. Have training sessions for employees and subcontractors to understand the need for implementation and usage of BMPs and the need and purpose for keeping the site clean.
- Preservation of Existing Vegetation. Minimize the removal of existing trees and shrubs because they serve as erosion control.
- Seeding and Planting. Provide soil stability by planting and seeding grasses, trees, shrubs, vines, and ground cover.
- Mulching. Stabilize cleared or freshly seeded areas with mulch.
- Geotextiles and Mats. Natural or synthetics material can be used for soil stability.
- Dust Control. Reduce wind erosion and dust generated by construction activities by using dust control measures.
- Construction Road Stabilization. All on-site vehicle transport routes should be stabilized immediately after grading and frequently maintained to prevent erosion and control dust.
- Stabilized Construction Entrance. Stabilize the construction entrance area to reduce amount of sediment tracked off the site.
- Earth Dikes. Construct earth dikes of compacted soil to divert runoff or channel water to a desired location.

- Temporary Drains and Swales. Use temporary drains and swales to divert off-site runoff around the construction site, stabilized areas, and direct it into sediment basins or traps.

- Outlet Protection. Use rock or grouted rock at outlet pipes to prevent scouring of soil caused by high velocities.

- Check Dams. Check dams reduce velocities of concentrated flows, thereby reducing erosion, and promoting sedimentation behind the dams. Check dams are small and placed across swales and drainage ditches.

- Silt Fence. Composed of filter fabric, which have been entrenched, attached to support poles, and sometimes backed by wire fence support. Silt fences promote sedimentation behind the fence of sediment-laden water.

- Straw Bale Barrier. Place straw bales end to end in a level contour in a shallow trench and stake them in place. The bales will detain runoff and promote sedimentation.

- Sand Bag Barriers. By stacking sand bags on a level contour, creates a barrier to detain sediment-laden water. The barrier will promote sedimentation.

- Brush or Rock Filter. Made of 0.75-inch to 3-inch diameter rocks place on a level contour or composed of brush wrapped in filter cloth and staked to the toe of the slope will provide a sediment trap.

- Storm Drain Inlet Protection. Devices that remove sediment from sediment laden storm water before entering the storm drain inlet or catch basin.

- Sediment Trap. A sediment trap is a small, excavated, or bermed area where runoff for small drainage areas can pass through allowing sediment to settle out.

Timing/Implementation: Prior to grading permit issuance.

Enforcement/Monitoring: City of Moorpark Public Works Department, and the development team's Qualified SWPPP Designer (QSD) and Qualified SWPPP Practitioner (QSP).

HYD-5: The Hitch Ranch Homeowners Association (HOA) and/or a Community Facilities District (CFD) shall be responsible for the maintenance of the basin embankments and

structures so that it does not become a public liability. This information shall be included in the HOA Covenants, Conditions & Restrictions (CC&Rs).

Timing/Implementation: Review of CC&Rs prior to issuance of first building permit.

Enforcement/Monitoring: City of Moorpark Community Development Department

3.9.10 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The development of the project would have less than significant impacts to hydrology and water quality with implementation of project design features and the mitigation program.