4.9 HYDROLOGY AND WATER QUALITY

INTRODUCTION

This section of the Draft EIR evaluates the impacts related to hydrology and water quality and evaluates flooding and hazards that would result from implementation of the Etiwanda Heights Neighborhood and Conservation Plan (EHNCP). This section incorporates information from the Technical Memorandum-EHNCP, On-site Drainage Analysis for the Neighborhood Area, prepared by Crabtree Group, Inc., dated March 2019, which is included as **Appendix I** to this Draft EIR.

ENVIRONMENTAL SETTING

Regulatory Framework

a. Federal

Clean Water Act

The Clean Water Act (CWA)[1] is intended to restore and maintain the cleanliness of the nation's bodies of water to achieve a level of water quality that provides for recreation in and on the water, as well as for the propagation of fish and wildlife. Section 208 of the CWA and the requirements of the Code of Federal Regulations require local water management plans. Preparation of these water management plans is delegated to individual states by the US Environmental Protection Agency (USEPA), which is charged with implementing the CWA.

In 1972 the CWA, previously known as the Federal Water Pollution Control Act of 1948, was amended to prohibit the discharge of pollutants to waters of the United States unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit.[2] The CWA focused on tracking point sources, primarily from wastewater treatment plants and industrial waste dischargers, and required implementation of control measures to minimize pollutant discharges.

The CWA requires all states to conduct water quality assessments of their water resources to identify water bodies that do not meet water quality standards. The water bodies that do not meet water quality standards are placed on a list of impaired waters pursuant to the requirements of Section 303(d) of the CWA.

1 Federal Water Pollution Control Act (Clean Water Act), 33 US Code (USC) sec. 1251–1387.
2 Clean Water Act, 33 USC sec. 1251–1387, October 18, 1972, as amended.

NPDES

The NPDES is a program created to implement the CWA. In November 1990, the USEPA published final regulations that established requirements for specific categories of industries, including construction projects that encompass greater than or equal to 5 acres of land. The Phase II Rule became final in December 1999, expanding regulated construction sites to those greater than or equal to 1 acre. The regulations require that stormwater and non-stormwater runoff associated with construction activity that discharges either directly to surface waters or indirectly through municipal separate storm sewer systems (MS4) must be regulated by an NPDES permit.

The USEPA has delegated management of California's NPDES program to the State Water Resources Board (SWRCB) and the nine regional water quality control board (RWQCB) offices that grant permits to regulate point-source discharges of industrial and municipal wastewater into the waters of the United States. The NPDES program was established in 1972 to regulate the quality of effluent discharged from easily detected point sources of pollution, such as wastewater treatment plants and industrial discharges. The 1987 amendments to the CWA recognized the need to address non-point-source stormwater runoff pollution and expanded the NPDES program to operators of MS4s, construction projects, and industrial facilities.

b. State

California Porter-Cologne Act

The California Porter-Cologne Act of 1970 is largely responsible for creating the State's extensive regulatory program for water pollution control.[3] As discussed previously, preparation of water quality control plans has been delegated to the individual states by the USEPA. Pursuant to the Porter-Cologne Act, the responsibility for protection of water quality in California rests with the SWRCB. In turn, the SWRCB has delegated the nine RWQCBs to regulate the nine hydrologic basins in the State. The Porter-Cologne Act gives the SWRCB and RWQCB broad powers to protect water quality by regulating waste discharges to water and land and by requiring cleanup of hazardous conditions.

California State Water Quality Control Board

The State of California is required by Section 303(d) of the CWA[4] to provide the USEPA with a list of water bodies considered by the State to be impaired (i.e., not meeting water quality standards and not supporting their beneficial uses). The list also identifies the pollutant or stressor causing impairment, and establishes a schedule for developing a control plan to address the impairment, typically a total maximum daily load (TMDL). The TMDL specifies the amount of the target pollutant that the water body can sustain

3 California Water Code, Cobey-Alquist Flood Plain Management Act, sec. 13000-14958.

4 Clean Water Act, 33 USC sec. 303(d), Water Quality Standard and Implementation Plans (1972).

on a daily or annual basis and is established by amending the Water Quality Control Plan. TMDLs are prepared by the RWQCBs and result in amendments to the Water Quality Control Plan (WQCP), which must be approved by the USEPA. The 303(d) list is used by the USEPA to prepare the biennial federal CWA Section 305(b) *National Water Quality Inventory Report to Congress*.

The SWRCB has jurisdiction throughout California. The SWRCB protects water quality by setting Statewide policy, coordinating and supporting the RWQCBs' efforts, and reviewing petitions that contest RWQCB actions. As noted previously, the nine regional RWQCBs exercise rulemaking and regulatory activities by the nine hydrologic basins.

Government Code Section 65302

Government Code Section 65302(a) requires cities and counties located within the State to review the land use, conservation, and safety elements of their General Plan "for the consideration of flood hazards, flooding, and floodplains" to address flood risks.[5] Any amendment to these elements requires a review of other General Plan elements, including the housing element, for internal consistency.

The code also requires cities and counties in the State to annually review their land use element within "those areas covered by the plan that are subject to flooding identified by floodplain mapping prepared by the Federal Emergency Management Agency (FEMA) or the Department of Water Resources."[6] FEMA's floodplain mapping includes:

- Flood Insurance Rate Maps (FIRMs)
- Digital Flood Insurance Rate Maps (DFIRMs)

DWR's floodplain mapping includes:

- Awareness Floodplain Maps
- Best Available Mapping (BAM)
- Levee Flood Protection Zone (LFPZ) Maps
- Central Valley Floodplain Evaluation and Delineation (CVFED) Maps

5 California Government Code, sec. 65300–65303.4, Authority for and Scope of General Plans.
6 California Government Code, sec. 65302(a), Authority for and Scope of General Plans.

Additionally, a General Plan conservation element shall identify land and natural resources, including rivers, creeks, flood corridors, and riparian habitats, that are used "for purposes of ground-water recharge and storm water management."[7]

Cobey-Alquist Flood Control Act

The Cobey-Alquist Flood Control Act states that a large portion of land resources of the State of California is subject to recurrent flooding.[8] The public interest necessitates sound development of land use because (1) land is a limited, valuable, and irreplaceable resource; and (2) the floodplains of the State are a land resource to be developed in a manner that, in conjunction with economically justified structural measures for flood control, will prevent loss of life and economic loss caused by excessive flooding. The primary responsibility for planning, adoption, and enforcement of land use regulations to accomplish floodplain management rests with local levels of government. It is State of California policy to encourage local levels of government to plan land use regulations to accomplish floodplain management and to provide State assistance and guidance.

California Drainage Law

California drainage law is essentially case law. As such, it is complex, but the courts have established the following general principles, which apply in general to development projects:

- The downstream property owner is obligated to accept and make provision for those waters that are the natural flow from the land above.
- The upstream property owner shall not concentrate water where it was not concentrated before without making proper provision for its disposal without damage to the downstream property owner.
- The upstream property owner may reasonably increase drainage runoff by paving or construction of other impervious surfaces, including buildings, without liability. The upstream property owner may not further increase drainage runoff by diversion of water that previously drained to another area. Reasonableness is often based on prevailing standards of practice in the community or region.
- No property owner shall block, or permit to be blocked, any drainage channel, ditch, or pipe. No property owner shall divert drainage water without properly providing for its disposal.

7 California Government Code, sec. 65302(d)(1), Authority for and Scope of General Plans.

8 California Water Code, Cobey-Alquist Flood Plain Management Act, (1965 as amended), sec. 8400–8401.

c. Regional and Local

WQCP for the Santa Ana River Basin

The Santa Ana RWQCB WQCP for the Santa Ana River Basin (also the Basin Plan for the Santa Ana Region, hereinafter referred to as the "Basin Plan") is designed to preserve and enhance water quality and to protect the beneficial uses of water bodies in the Santa Ana River watershed (Santa Ana RWQCB 1995). The Basin Plan (1) designates beneficial uses for surface and subsurface waters (groundwater); (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and to conform to the State's antidegradation policy; (3) describes the implementation plan to achieve water quality objectives and to protect the beneficial uses of all waters in the region; (4) describes the comprehensive monitoring and assessment program used to evaluate the effectiveness of the Basin Plan; and (5) provides an overview of water resource management studies and projects that are in progress in the region. Additionally, the Basin Plan incorporates by reference all applicable State and Regional Board plans and policies.

NPDES Permit for San Bernardino County

In 2002, the Santa Ana RWQCB issued an NPDES Storm Water Permit and Waste Discharge Requirements (WDRs) (Order No. R8-2002-0012) under the CWA and the Porter-Cologne Act for discharges of storm water runoff, snowmelt runoff, surface runoff, and drainage in the Upper Santa Ana River Watershed in San Bernardino and Riverside Counties. This permit expired on April 27, 2007 and was administratively extended. On January 29, 2010, the RWQCB adopted Order No. R8-2010-0036 (NPDES No. CAS618036), which renewed the NPDES Permit for San Bernardino County. On August 1, 2014, the San Bernardino County Flood Control District submitted a Report of Waste Discharge (ROWD) on behalf of San Bernardino County and 16 incorporated cities within San Bernardino County, which serves as the permit renewal for the NPDES permit.

The City of Rancho Cucamonga is subject to the WDRs of the NPDES Permit for San Bernardino County. The County and incorporated Cities in the County are co-permittees under the NPDES permit and have legal authority to enforce the terms of the permit in their jurisdictions. The ultimate goal of the NPDES Permit and the related urban storm water management program is to protect the beneficial uses of the receiving waters. To implement the requirements of the permit, the County developed guidelines to control and mitigate storm water quality and quantity impacts to receiving waters as a result of new development and redevelopment. The guidelines require individual development projects to prepare and implement Water Quality Management Plans (WQMPs) that identify post-construction Best Management Practices (BMPs) to reduce discharges of pollutants into storm water.

Technical Guidance Document for WQMPs

In compliance with the NPDES Permit for San Bernardino County, the San Bernardino County Areawide Storm Water Program prepared a Technical Guidance Document (TGD) for the preparation of WQMPs by new development and major redevelopment projects of specific land uses and sizes in the County. A WQMP is required as part of the permit process and commits the developer to the implementation of long-term BMPs. Individual WQMPs need to identify pollutants of concern based on the proposed land use and site activities, as well as select applicable site design, source control, and treatment control BMPs that would effectively prohibit non-storm water discharges from entering the storm drain system and that would reduce the discharge of pollutants from storm water conveyance systems to the maximum extent possible. The WQMP also calls for the on-site retention of storm water to prevent hydrologic conditions of concern (HCOC), which refer to flooding, erosion, scour, sedimentation, natural habitat impacts, vegetation stress, slope stability, water quality degradation, and altered flow regime at downstream water channels/bodies that may occur if the storm drainage facilities have not been engineered to their ultimate capacities or if natural conditions are present. However, the TGD also designates "HCOC-Exempted Areas," which are areas where the HCOC analysis is not required if the following occurs: a sump condition; predevelopment runoff would equal post-development runoff; storm water is diverted to a storage area; disturbance is less than 1 acre; or the watershed area is built out (i.e., 90 percent developed). The Plan Area is in the defined HCOC-exempt area on the County's online Stormwater Facility Mapping Tool Local.

Rancho Cucamonga General Plan

The Resource Conservation Chapter guides the preservation, protection, conservation, re-use, replenishment, and efficient use of Rancho Cucamonga's limited natural resources, including water. The Water Resources section of this Chapter of the General Plan addresses water supply and water conservation (discussed in **Section 16: Utilities and Services Systems** of this Draft EIR), and watershed quality (addressed in this section of the Draft EIR). The Plan Area is in the Chino Groundwater Basin and the Cucamonga Groundwater Basin. The Plan Area is also partially in the Day Creek Spreading Grounds. The consistency of the proposed Plan with goals and policies related to hydrology and water quality is discussed in **Section 4.10: Land Use and Planning** of this Draft EIR.

Storm Water and Urban Runoff Management and Discharge Control Ordinance

The City's Storm Water and Urban Runoff Management and Discharge Control Ordinance (Chapter 19.20 of the Municipal Code) was adopted to comply with the CWA, the Porter-Cologne Act, and the City's NPDES MS4 Permit. The ordinance sets regulations to protect and enhance the water quality in water bodies, water courses, and wetlands in the City. The regulations address connections to the City's MS4 system, prohibited discharges, compliance with NPDES permits, implementation of BMPs, spill

containment, required notification of accidental discharges, and property owner responsibility for illegal discharges.

This ordinance includes requirements for the protection of the storm drainage system, non-stormwater and stormwater discharges from construction activities, and the preparation of WQMPs that identify permanent BMPs in new development and major redevelopment projects. With respect to the preparation of WQMPs, prior to the issuance of any grading or building permit, all qualifying land development/redevelopment projects are required to submit a WQMP to the City Engineering Services Director or the Director's designee on a form provided by the City for review and approval by the City.

Existing Conditions

a. Project Site

Surface Water Hydrology and Flooding

The Plan Area is located immediately south of the San Gabriel Mountains within the Cucamonga Creek and East Etiwanda Creek-Santa Ana River sub-watersheds of the Chino Creek and Middle Santa Ana River Watersheds. The Neighborhood Priority Area (NA) and the adjacent portions of the Rural/Conservation Area (RCA) consist of an alluvial fan primarily fed by the flows from Deer Creek and Day Creek. At the base of the foothills, the alluvial fan extended for miles to the south and co-mingled the flows from Deer and Day Creek to create a dynamic system of braided streams. This alluvial fan included diverse assemblages of scrub and chaparral communities that included natural water flows that deposited sediment to create a network of braided channels, alluvial terraces, and benches. As development occurred within the lower plain and valley to the south, there was a need to control floods that flushed timber and boulders from the mountains. A system of berms and storm detention basins was created over time that altered stream course meanderings, and sand deposition. These berms and basins ultimately interrupted the sediment transport system that provided a fresh source of sand to habitat areas. Over the past 40 years, flood control projects within both the Day and Deer Creek watersheds have greatly diminished the amount of flow and sediment feeding into the alluvial fan.

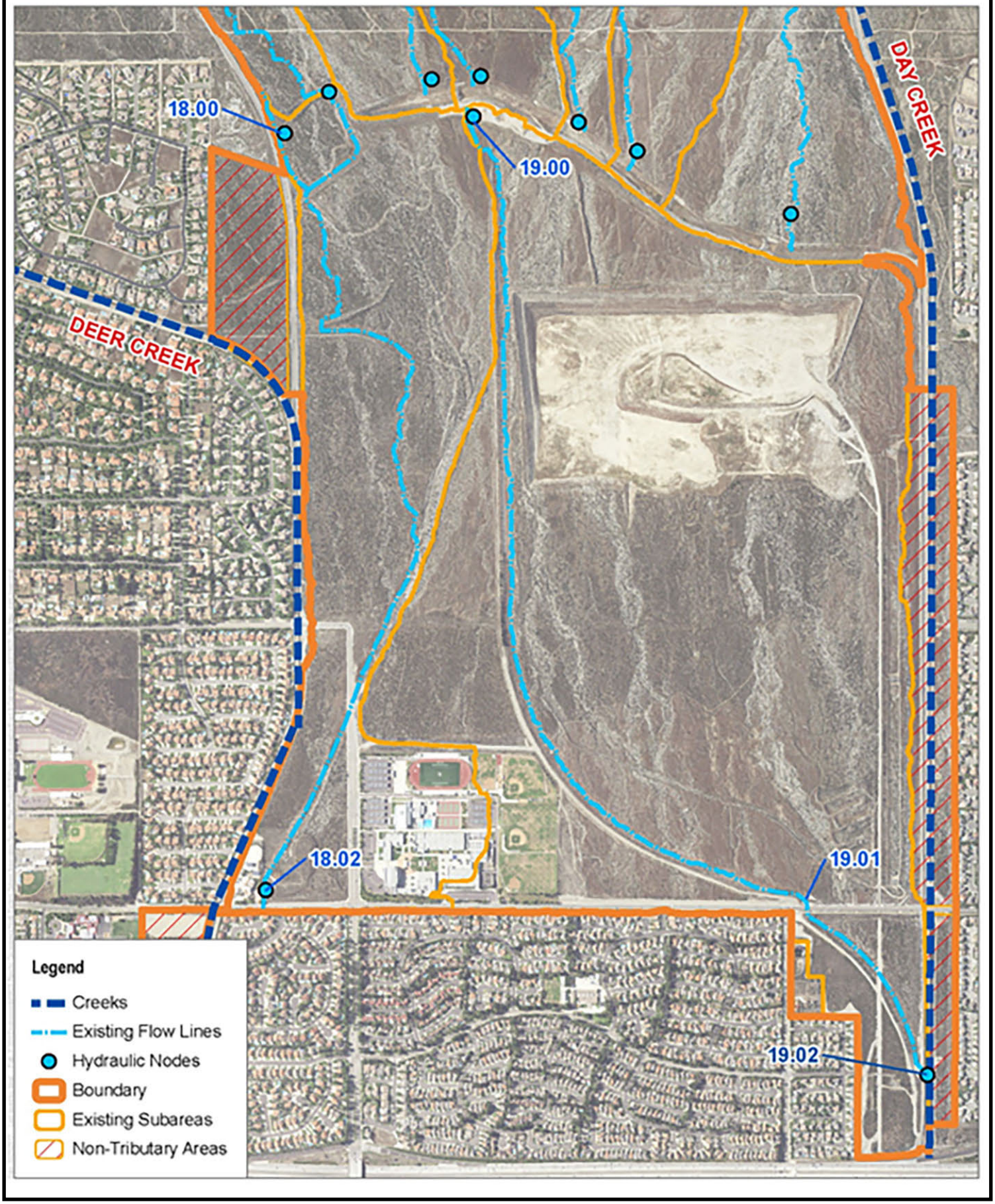
Several flood control projects have been implemented since 1980 that effectively eliminated debris and flood hazards for the protection of the developments downstream. In 1980, the United States Army Corps of Engineers constructed a debris basin and channel system to contain most of the flows within Deer Creek. In 1990, the San Bernardino County Flood Control District (SBCFCD), which provides flood hazard protection for the residents within the County, constructed a debris basin, channel system, and levee within the Day Creek drainage system. The existing structures (i.e. basins, channel, and levee) were constructed to alleviate the flood risks for the downstream properties. The levee system is approximately 5,000 feet downstream of the Day Creek dam and consists of five small in-line debris basins that run along

the upstream side of the levee. Each basin spills over into the next until they reach the Day Creek channel. These improvements cut off the majority of flow and sediment to the existing alluvial fan. The basins are equipped with a 36-inch riser, connected to a 24-inch reinforced concrete outlet pipe. These outlets divert minor flows through the levee, where they proceed south through the Plan Area. These flood control facilities have cut off all flow and debris potential from the lower reach of the alluvial fan (below levee) and most of the flow and debris from the upper reach. The results of the hydrology modeling, conducted specifically for the NA, show that a very small amount of runoff was identified entering the NA below the levee along the west Plan boundary, adjacent to the Deer Creek channel. Almost all of the flow below or south of the levee was a result of direct rainfall (i.e., all flows above the levee were captured by the levee). As a result, the historical fluvial conditions of the Plan Area have been significantly altered.

Surface Drainage

Existing drainage tributary areas within the Plan Area were delineated based on a 5-foot contour topographic data. The on-site outlet points where the peak flows were calculated are shown on the **Figure 4.9-1: Baseline Condition Existing Hydraulic Node Map.** These locations were identified as the most downstream point in the natural drain system where all the flow paths from the studied drainage area come together and exit the site. Approximately 57 acres of area tributary to Deer Creek do not enter the Plan Area.

The hydrologic soil group data for the Plan Area was obtained from the National Resources Conservation Services (NRCS) website. Existing land use information was obtained from field surveys and aerial photographs. Precipitation point values for the 100-year, 24-hour storm event were obtained from the Precipitation Frequency Data Server, NOAA website**. Table 4.9-1: Precipitation Depth in Inches** presents the unadjusted total point precipitation depths used in the analysis.



SOURCE: Crabtree Group, Inc—March 2019

FIGURE **4.9-1**

Meridian Consultants

Baseline Condition Existing Hydraulic Node Map

Table 4.9-1
Precipitation Depth (in Inches)

Duration/Return Period	1-Hour	6-Hour	24-Hour
2-year	0.76	2.28	4.27
5-year	1.00	2.95	5.58
10-year	1.19	3.47	6.60
100-year	1.79	5.08	9.80

Source: Crabtree Group, Inc., Etiwanda Heights Neighborhood and Conservation Plan Technical Memorandum—On-site Drainage Analysis for the NA, March 2019, Table 2, p. 8.

Infiltration rates were determined for soil type and land use condition based on the San Bernardino Hydrology Manual. Antecedent Soil Moisture Conditions (AMC) were assumed for the 100-year return period. AMC are the soil moisture conditions of the watershed at the beginning of a storm. These conditions affect the volume of runoff generated by a storm event. AMC of I represent a low-moisture dry condition, AMC of II represent an average condition, and AMC of III represent a high moisture condition due to heavy rainfall condition. Curve number (CN) represents the parameter used in hydrology for predicting direct runoff or infiltration from rainfall dependent on the quality of ground cover. CN is applied to AMC depending on the conditions of the soil.

Table 4.9-2: Calculated Loss Rate for Existing Conditions (in/hr) presents the calculated loss rates (Fp) for each soil group and land use for existing conditions. In this case it represents the loss rate for AMC III (Fp per AMC III). Average maximum loss rate (Fm) is represented by multiplying the loss rate (Fp) by the average pervious surface. The loss rate calculations aim to estimate how much of the rainfall infiltrates into the soils during the rainfall event. The rainfall that does not infiltrate becomes runoff.

Table 4.9-2
Calculated Loss Rate for Existing Conditions

Hydrologic Soil Group	Land Use	Percent Impervious	CN per AMC II	CN per AMC III	Fp per AMC III	Fm= (Fp*Ap)
A	Chaparral Narrowleaf Poor Conditions	0	71	87.8	0.233	0.233

Source: Crabtree Group, Inc., Etiwanda Heights Neighborhood and Conservation Plan Technical Memorandum—On-site Drainage Analysis for the NA, *March 2019, Table 3, p. 8.*

The rainfall-runoff transformation was determined using the S-graph approach as outlined in the San Bernardino County Hydrology Manual (1986). Calculations for the 100-year 24-hour event are provided in

Appendix I of this EIR and indicate a Q100 of 560 cfs at the Deer Creek outlet (Node 18.02) at Banyan Street, and a Q100 of 1081 cfs at the Day Creek outlet (Node 19.01) at Banyan Street.

Water Quality

Stormwater within Rancho Cucamonga, including the EHNCP Area, is discharged into Cucamonga Creek, Day Creek, and Deer Creek. The Santa Ana RWQCB has identified the following beneficial uses for surface and subsurface (groundwater) in the area:

- ***Municipal and Domestic Supply (MUN):*** Used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.
- ***Agricultural Supply (AGR):*** Used for farming, horticulture or ranching. These uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
- ***Industrial Process Supply (PROC):*** Used for industrial activities that depend primarily on water quality. These uses may include, but are not limited to, processing water supply and all uses of water related to product manufacture or food preparation.
- ***Groundwater Recharge (GWR):*** Used for natural or artificial groundwater recharge for purposes that may include, but are not limited to, future extraction, water quality maintenance, or halting of saltwater intrusion into freshwater aquifers.
- ***Water Contact Recreation (REC 1*):*** Used for recreational activities involving bodily contact with water and where ingestion is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs.
- ***Non-contact Water Recreation (REC 2*):*** Used for recreational activities involving proximity to water, but not normally involving bodily contact with water and where ingestion would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life studying, hunting, sightseeing, and aesthetic enjoyment in conjunction with the aforementioned activities.
- ***Warm Freshwater Habitat (WARM):*** Used to support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, and fish and wildlife, including invertebrates.
- ***Limited Warm Freshwater Habitat (LWRM):*** Used to support warm water ecosystems that are severely limited in diversity and abundance as the result of concrete-lined watercourses and low, shallow, dry weather flows, which result in extreme temperature, pH, and/or dissolved oxygen conditions. Naturally-reproducing finfish populations are not expected to occur in LWRM waters.
- ***Cold Freshwater Habitat (COLD):*** Used to support cold-water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, and fish and wildlife, including invertebrates.

- ***Wildlife Habitat (WILD):*** Used to support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.
- ***Rare, Threatened, or Endangered Species (RARE):*** Used to support the habitat necessary for the survival and successful maintenance of plant or animal species designated under State or Federal law as Rare, Threatened, or Endangered.
- ***Spawning, Reproduction, and Development (SPWN):*** Used to support high quality aquatic habitats necessary for reproduction and early development of fish and wildlife.

The existing, potential, and intermittent beneficial uses for each water body in and downstream of the EHNCP Area are identified in **Table 4.9-3: Beneficial Uses of Receiving Waters.**

Table 4.9-3
Beneficial Uses of Receiving Waters

Water Body	Beneficial Uses											
	MUN	PROC	AGR	GWR	REC1	REC2	WARM	LWARM	COLD	WILD	RARE	SPWN
Day Creek	X	X	–	X	X	X	–		X	X	–	–
Deer Creek	X	X	–	X	X	X	–		X	X	X	–
Cucamonga Creek	–	–	–	X	X	X	–	X	I	I	–	–

Source: Rancho Cucamonga 2010 General Plan Update,
Notes:
X – Present and Potential Beneficial Use
I – Intermittent Beneficial Use

ENVIRONMENTAL IMPACTS

Methodology

The analysis evaluates changes in stormwater runoff conditions that would result from the Plan as proposed to determine potential impacts to local drainage and flood conditions within and downstream of the Plan Area. The analysis also evaluates the potential for the Plan to result in the placement of structures within a 100-year flood hazard area or otherwise result in development that could be subject to flooding or impacts from dam inundation. The analysis is based on information provided in the City's 2010 General Plan and by FEMA, as well as relevant information provided in **Appendix I**.

Thresholds of Significance

To assist in determining whether the Plan would have a significant effect on the environment, the City finds the Plan may be deemed to have a significant impact related to hydrology and water quality if it would:

Threshold HYDRO-1: **Violate any water quality standards or WDRs or otherwise substantially degrade surface or ground-water quality.**

Threshold HYDRO-2: **Substantially decrease ground-water supplies or interfere substantially with ground-water recharge such that the project may impede sustainable ground-water management of the basin.**

Threshold HYDRO-3: **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.**

Threshold HYDRO-4: **Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.**

Threshold HYDRO-5: **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.**

Threshold HYDRO-6: **Impede or redirect flood flows.**

Threshold HYDRO-7: **Result in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.**

Threshold HYDRO-8: **Conflict with or obstruct implementation of a WQCP or sustainable ground-water management plan.**

Project Impact Analysis

Threshold HYDRO-1: Violate any water quality standards or WDRs or otherwise substantially degrade surface or ground-water quality.

Rural/Conservation and Neighborhood Areas

Construction

Land development and building construction activities for the new neighborhoods the Plan would allow in the NA would involve the clearing and grading of the development area, the maintenance/operation of construction equipment, and the handling/storage/disposal of materials that could contribute to pollutant loading in stormwater runoff. Potential construction impacts in the RCA would be limited, because a maximum of 100 homes could be built on privately owned properties and a small area in the RCA where a water reservoir and water pipelines would be constructed. In addition, these homes would be subject to the standards in the City's Hillside Development Ordinance and the Rural Regulating Zone standards in the Plan Area. The basic purpose of the Hillside Development Ordinance is to implement the City's General Plan, to minimize the adverse effects of grading, to avoid grading in environmentally sensitive areas, and to provide for the safety and welfare of the community while allowing for the reasonable development of the land. [9]

Potential impacts to surface water quality associated with construction activities in the Plan Area would include: (1) pollutant discharge relating to the storage, handling, use, and disposal of chemicals, fertilizers, pesticides, adhesives, paint, coatings, lubricants, and fuel; and (2) sediment transport to receiving waters from construction site runoff.

Construction activities disturbing more than 1 acre of soil would be regulated under the NPDES General Construction Activity Permit (SWRCB Order No. 2012-0006-DWQ). This permit would apply to development activities in the NA. Construction activities that may occur over time that would disturb less than 1 acre, which would likely include the development of individual homes on private property in the RCA. These individual homes would comply with applicable City Hillside Development Ordinance and other City requirements at the time of development. In accordance with the NPDES General Construction Activity Permit and City requirements, each individual building tract within the Plan Area would prepare and implement a site-specific Storm Water Pollution Prevention Plan (SWPPP) that meets the regulatory requirements.[10] A variety of construction-related BMPs would be implemented to meet regulatory

9 City of Rancho Cucamonga, *Hillside Development Ordinance Handout*, updated August 8,2017.

10 Multiple SWPPPs may be prepared specific to discrete construction projects, as necessary and as determined at the time of construction.

requirements, including measures to address erosion control, sediment control, waste and materials management, non-stormwater management, training, and education, and maintenance, monitoring, and inspections into each SWPPP prepared in support of the Plan Area development. Examples of these measures include, but are not limited to, inlet protection, gravel bag berms, street sweeping, and stabilization of construction entrances. These construction site management BMPs would be implemented during both the dry and wet seasons, as necessary, depending on the phase of construction and weather conditions to keep pollutants from entering the local drainage system. Compliance with these existing regulatory requirements would result in impact being less than significant because Project construction would not violate any water quality standards or WDRs or otherwise substantially degrade surface or ground-water quality.

Operation

Development within the Plan Area would increase the number of impervious surfaces within the NA, which has the potential to increase runoff from the Plan Area. As is typical of most major urban developments, stormwater runoff from the Plan Area after project buildout has the potential to introduce pollutants into the stormwater system, such as nutrients, pesticides, organic compounds, sediments, oil and grease, suspended solids, metals, gasoline, pathogens, and trash and debris, among other pollutants. Street-side bioswales, park ponds, the central greenway, and detention ponds would be designed in various landscape areas to provide cleansing of stormwater runoff prior to discharge into Deer Creek and Day Creek. Biofilter inserts would be used in curb inlets to capture oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens. The Plan has been designed to incorporate green infrastructure or low impact development (LID) features in the NA to treat runoff from developed areas.

Incorporation of these BMP water quality treatment features in the NA would avoid water quality impacts. These features may include, but are not limited to, catch basin filtration inserts for collection of suspended pollutants and oils from paved areas; screened or enclosed trash container areas; stenciling of on-site storm drain inlets; and structural treatment control devices for increasing filtration and targeted pollution control. The final selection of BMPs would be completed through coordination with the City as part of the standard plan check process for development within the EHNCP Area. Through this process, compliance with the City's Storm Water and Urban Runoff Management and Discharge Control Ordinance would occur and potential impacts to water quality would be less than significant.

Threshold HYDRO-2: Substantially decrease ground-water supplies or interfere substantially with ground-water recharge such that the project may impede sustainable ground-water management of the basin.

Rural/Conservation and Neighborhood Areas

The Plan Area is not subject to a ground-water management plan for the Chino Groundwater Basin. The Plan Area contains the Day Creek Spreading Grounds and is located slightly north of the Upper Day Creek Recharge Basin. A spreading ground is a water conservation facility that retains surface water long enough for it to percolate into the soil. Spreading grounds are located where underlying soils are permeable and connected to a target aquifer. Development associated with the Plan would introduce impervious surface over some portions of the Day Creek Spreading Grounds. Up to 80 percent of annual rainfall will be filtered and contribute to ground-water recharge due to the bioswales and distributed detention basins capturing runoff for infiltration. In addition, the master plan drainage system for the NA has been designed to convey water toward the south into the Upper Day Creek Recharge area via a 42-inch pipeline. If a conservative 50 percent of this 80 percent infiltrates, then ground-water recharge could be in the range of 550 Acre-Feet Year. This proposed design will allow for the Upper Day. Recharge Basin to continue to replenish ground-water in the Chino Ground-water Basin. The Plan would not substantially decrease ground-water supplies or interfere substantially with ground-water recharge such that the project may impede sustainable ground-water management of the basin.

Section 4.16, Utilities and Service Systems includes a detailed analysis of the water demand associated with the uses the Plan would allow, and the potential effect on ground-water supply and recharge. As discussed in that section, the water demand associated with the Plan would not substantially decrease ground-water supplies or interfere substantially with ground-water recharge such that the project may impede ground-water management of the basin.

Threshold HYDRO-3: 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.

Threshold HYDRO-4: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

Threshold HYDRO-5: 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.

Threshold HYDRO-6: Impede or redirect flood flows.

Rural/Conservation and Neighborhood Areas

Construction

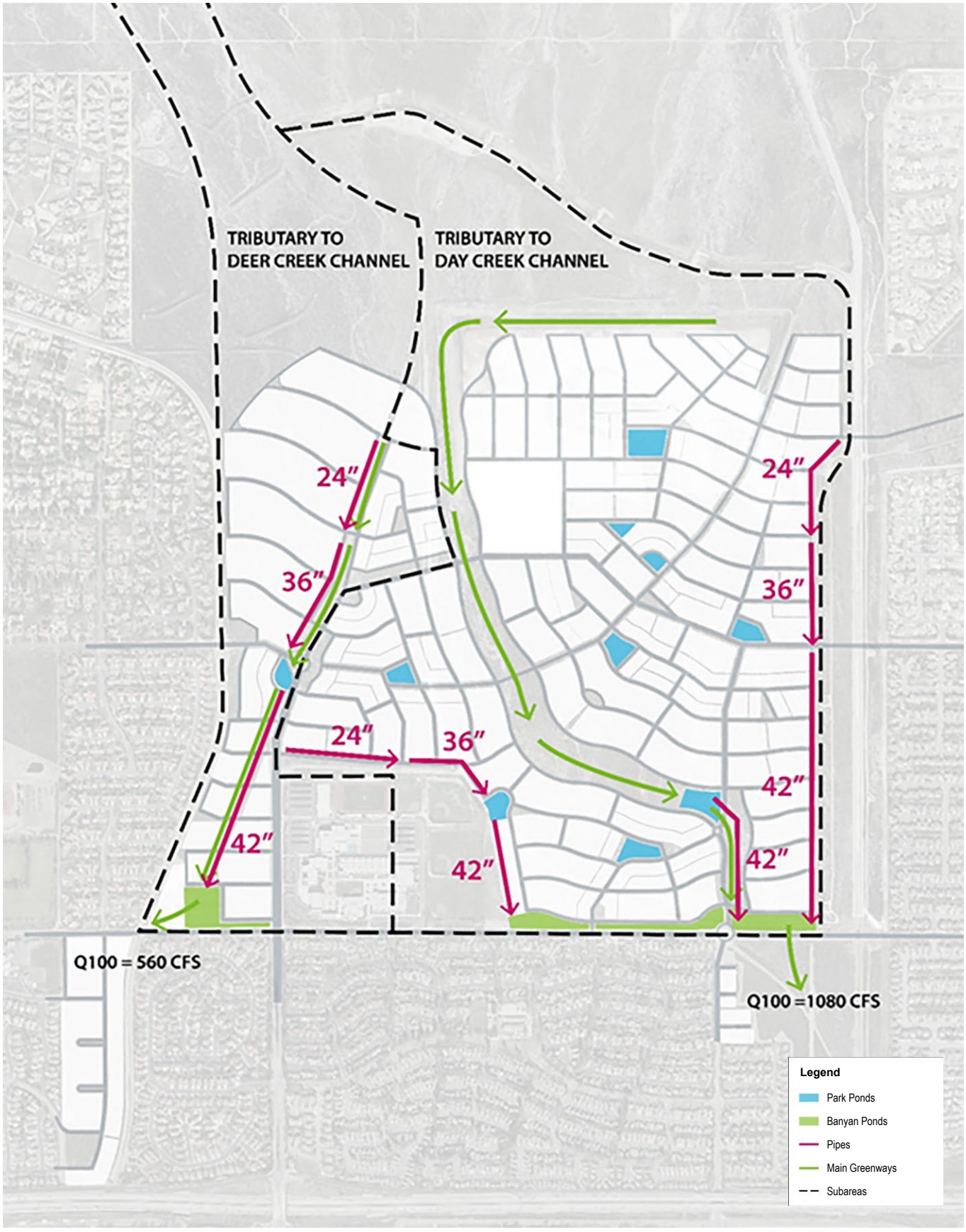
Site-clearing and grading operations have the greatest potential for discharging sediment downstream during storm events. As discussed previously, construction and grading activities would involve earth movement, as well as the use of heavy equipment in the NA area and a small area in the RCA where a water reservoir and water pipelines would be constructed. Peak stormwater runoff could result in short-term sheet erosion with areas of exposed or stockpiled soils. Additionally, the compaction of soils by heavy equipment during construction activities may reduce the infiltration capacity of soils and increase and runoff and erosion potential.

As discussed previously, SWPPPs will be prepared in accordance with the NPDES Program General permits authorized under the CWA for Construction Activities. Adherence to the SWPPP and implementation of standard BMPs during construction would reduce the potential for increased siltation, erosion, and hazardous material spills. Through compliance with the SWPPP and standard BMPs, potential erosion and siltation impacts would be less than significant.

In addition, the compliance with SWPPP and implementation of BMPS would reduce on- and off-site flooding and would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. potential impacts would be less than significant.

Operation

The proposed on-site drainage and flood control features for the NA are illustrated on **Figure 4.9-2: Proposed Conditions Hydrology Map.** The proposed drainage pattern is substantially consistent with existing drainage patterns. The master drainage plan for the NA has been designed to incorporate green infrastructure-LID features, as discussed previously. On-site drainage features would include street-side bioswales, park ponds, and conventional detention ponds which are an effective means to reduce the impacts of frequent events (i.e., 2- to 25-year storm events), as well as on low-frequency events (i.e., 100-year storm event). In addition, street-side bioswales, park ponds, and conventional detention ponds are distributed throughout the Plan Area and sized to safely pass the 100-year, 24-hour storm without exceeding predevelopment Qs.



SOURCE: Crabtree Group, Inc—March 2019

FIGURE **4.9-2**

Meridian Consultants

Proposed Conditions Hydrology Map

072-004-18

For the conventional detention ponds and the park ponds, an emergency spillway would be designed for this purpose at the top of each basins to safely convey the existing condition peak flow rate. The difference in peak flow rate will be detained and allowed to percolate through the subsoils and release at a much lower peak flow than existing with a proposed outlet riser with orifices and grate inlet top. The street-side bioswales will have check dams with low-flow pipes and an emergency spillway that will meter some of the low-flows to be held and infiltrate behind the check dams, and higher flows to pass over the spillway.

Channel grading is proposed in the new Day Creek Greenway so the runoff can safely be routed downstream to the southeast discharge location. Channel modification is proposed in the Deer Creek Greenway so the runoff can safely be routed to the southwest discharge location. Land use information was obtained from the Plan and includes residential (single-family and multifamily), parks, commercial (i.e., retail, office and institutional) urban landscape in good condition. Appropriate CN values were chosen for the land cover mix. As discussed above, CN represent the parameter used in hydrology for predicting direct runoff or infiltration from rainfall dependent on the quality of ground cover. CN are applied to AMC depending on the conditions of the soil.

The rainfall-runoff transformation was conservatively estimated by Autodesk® Storm and Sanitary Analysis 2016-Version 13.0.94, which utilizes SCS TR-55 Unit Hydrograph methodology. Several LID and detention ponds were modeled within the watershed areas and iteratively sized until the post-development Qs approximated the predevelopment Qs. The detention requirements for Deer Creek were approximately 5.8 acre-feet and the detention requirements for Day Creek were approximately 23.8 acre-feet.

Peak flow rates of the on-site development and discharge runoff would be equal to or less than the existing condition peak flow rates and, for this reason, would not result in any substantial erosion, siltation impacts, on- or off-site flooding, or impede or redirect flood flows. Impacts would be less than significant.

The on-site drainage facilities in the NA would be sized to the predevelopment Qs, thus preventing any increased amounts of runoff from the Plan Area. In addition, on-site drainage features would include street-side bioswales, park ponds, greenways, and conventional detention ponds, which would remove pollutants from any on-site runoff. For these reasons, the Plan would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant.

Threshold HYDRO-7: Result in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

Rural/Conservation and Neighborhood Areas

The City is located inland; thus, the Plan Area would not be subject to tsunami hazards. There are no large open water bodies in or near Rancho Cucamonga other than the San Antonio Dam, which is not located within the area of the Plan. Therefore, the chance of a seiche is minimal. The on-site drainage features would include street-side bioswales, park ponds, and conventional detention ponds, which are an effective means to reduce the impacts of frequent storm events. Consequently, the release of pollutants due to project inundation is considered to be less than significant.

The location of the Plan Area along the base of the San Gabriel Mountains also places it in the region's natural hydrologic system, with many creeks flowing south toward Rancho Cucamonga. The western half of the RCA includes portions of the 100-year flood plain. In the RCA, the Plan would allow for the development of up to 100 dwelling units within Sub-Areas 11 and 13 as defined in the Plan. Sub-area 11 includes the portion of the RCA west of the North Etiwanda Preserve and Sub-area 13 includes the portion of the RCA located east of the Preserve. A portion of Sub-area 11 includes the 100-year floodplain. No portions of the NA are contained within a 100-year floodplain and on-site drainage improvements within the NA would allow for the area to remain outside of a floodplain area. The Plan, including the RCA, would not permit the development of homes within the 100-year floodplain. Therefore, potential flood hazard impacts area considered to be less than significant.

Threshold HYDRO-8: Conflict with or obstruct implementation of a WQCP or sustainable ground-water management plan.

Rural/Conservation and Neighborhood Areas

All City of Rancho Cucamonga new development and redevelopment projects are required to comply with the Santa Ana RWQCB WQMP. This Plan requires that all construction and post-construction developments incorporate BMPS to reduce water quality impacts.

The 2014 Sustainable Groundwater Management Act (SGMA) exempts adjudicated ground-water basins that already operate under a court-ordered water management plan from the requirements of designating a Groundwater Sustainability Agency and developing a Groundwater Sustainability Plan. The Chino Basin and Cucamonga Basin are adjudicated basins, managed according to the rights to pump from the basin, and is expressly included in SGMA's list of exempt basins. Because of this, the Chino Basin and Cucamonga Basin do not have a sustainable ground-water sustainability plan.

Construction

The Plan would be required to develop a site-specific SWPPP in accordance with the NPDES Program General permits authorized under the CWA for Construction Activities. Adherence to the SWPPP and implementation of standard BMPs during construction would reduce the potential for increased siltation, erosion, and hazardous material spills. Consequently, the Plan would not conflict with or obstruct implementation of Santa Ana RWQCB WQMP. Impacts would be less than significant.

Because no sustainable ground-water management plan exists, the Plan during construction activities would not conflict with or obstruct implementation of a sustainable ground-water management plan**.** Impacts would be less than significant.

Operation

The Plan incorporates LID BMPs in the form of street-side bioswales and distributed detention basins to capture runoff for infiltration. The distributed system components of detention basins, park ponds, on-street bioswales, and alley French drains that are proposed throughout the NA as an integrated and distributed rainwater treatment and conveyance system will control, detain, and infiltrate rainwater such that no increased runoff will enter the surrounding storm drain systems. As a result, there will be no negative impact to quality of downstream water bodies. Consequently, the Plan would not conflict with or obstruct implementation of Santa Ana RWQCB WQMP. Impacts would be less than significant.

Up to 80 percent of annual rainfall will be filtered and contribute to ground-water recharge due to the bioswales and distributed detention basins capturing runoff for infiltration. In addition, the master plan drainage system for the NA has been designed to convey water toward the south into the Upper Day Creek Recharge area via a 42-inch pipeline. If a conservative 50 percent of this percent infiltrates, then ground-water recharge could be in the range of 550 acre-feet per year. After development occurs with the Plan, the Project would allow for the continued recharge into the Upper Day Creek Recharge Basin. Regardless, because no sustainable ground-water management plan exists, the Plan during operational activities would not conflict with or obstruct implementation of a sustainable ground-water management plan. Impacts would be less than significant.

CUMULATIVE IMPACTS

The cumulative impact analysis in this section considers a list of development projects in the area, as identified in **Section 3.0: Environmental Setting**. With regard to water quality, the related projects would be required to comply with the NPDES General Construction Permit, including implementation of a site-specific SWPPP to prevent polluted runoff from entering local stormwater drainage systems during

construction activities. Additionally, each related project would be subject to NPDES requirements and applicable City of Rancho Cucamonga requirements. Given that each related project would be required to comply with NPDES requirements and local regulations designed to prevent polluted runoff from entering local storm drain systems and receiving water bodies during construction and after development, the cumulative impact to water quality would be less than significant. Furthermore, in compliance with NPDES, the cumulative impact related to erosion and siltation would also be less than significant.

The proposed development, in combination with other long-term cumulative development in the Chino Creek and Middle Santa Ana River Watersheds, would generally increase impermeable surface area throughout the watersheds. Implementation of applicable City's Storm Water and Urban Runoff Management and Discharge Control Ordinance requirements on all new development within the watershed would reduce cumulative impacts to hydrology to a less than significant level. With the implementation of project features such as street-side bioswales, park ponds, and conventional detention ponds, the drainage system for the development site would function to release increased stormwater flows in a non-erosive manner ahead of upper watershed peak flows, thereby minimizing effects to downstream areas. Thus, development buildout would not contribute to increased cumulative flooding potential. Impacts would not be cumulatively considerable.

MITIGATION MEASURES

No mitigation measures are required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Hydrology and water quality impacts would be less than significant.