

5. Environmental Analysis

5.9 HYDROLOGY AND WATER QUALITY

This section of the draft program environmental impact report (PEIR) evaluates the potential impacts of the proposed Countywide Plan to hydrology and water quality conditions in San Bernardino County. Hydrology deals with the distribution and circulation of water, both on land and underground. Water quality deals with the quality of surface- and groundwater. Surface water includes lakes, rivers, streams, and creeks; groundwater is under the earth's surface. The analysis in this section is based in part on the following technical report(s):

- *County of San Bernardino General Plan Water, Wastewater, and Hydrology Existing Conditions*, Dudek and PlaceWorks, May 2017.

A complete copy of this study is included in the Technical Appendices to this Draft PEIR (Appendix H).

5.9.1 Environmental Setting

5.9.1.1 REGULATORY BACKGROUND

Federal

Clean Water Act

The federal Water Pollution Control Act (or Clean Water Act [CWA]) (33 USC section 1251 et seq.) is the principal statute governing water quality and regulating discharges of pollutants into the waters of the United States. It gives the US Environmental Protection Agency (EPA) authority to implement pollution control programs, such as setting wastewater standards for industry. The statute's goal is to regulate discharges and to restore, maintain, and preserve the integrity of the nation's waters. The CWA regulates direct and indirect discharge of pollutants; sets water quality standards for all contaminants in surface waters; and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit is obtained under its provisions. The CWA mandates permits for wastewater and stormwater discharges; requires states to establish site-specific water quality standards for navigable bodies of water; and regulates other activities that affect water quality, such as dredging and the filling of wetlands. The CWA funds the construction of sewage treatment plants and recognizes the need for planning to address nonpoint sources of pollution. Section 402 of the CWA requires a permit for all point source (a discernible, confined, and discrete conveyance, such as a pipe, ditch, or channel) discharges of any pollutant (except dredge or fill material) into waters of the United States.¹

National Pollutant Discharge Elimination System

Under the National Pollutant Discharge Elimination System (NPDES) program (under Section 402 of the CWA), all facilities that discharge pollutants from any point source into waters of the United States must have a NPDES permit. The term "pollutant" broadly applies to any type of industrial, commercial, residential,

¹ Waters of the U.S. include waters that are or have been used, or could be used, in interstate or foreign commerce; interstate waters including interstate wetlands; tributaries of the aforementioned categories of waters; territorial seas; and wetlands adjacent to the aforementioned categories of waters.

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

municipal, and agricultural waste discharged into water. Point sources can be publicly owned treatment works (POTWs), industrial facilities, and urban runoff. (The NPDES program addresses certain agricultural activities, but the majority are considered nonpoint sources and are exempt from NPDES regulation.) Direct sources discharge directly to receiving waters, and indirect sources discharge to POTWs, which in turn discharge to receiving waters. Under the national program, NPDES permits are issued only for direct point-source discharges. NPDES issues two basic permit types: individual and general. Also, the EPA has recently focused on integrating the NPDES program further into watershed planning and permitting (USEPA 2012).

All construction sites one acre or more in size, must file for and obtain an NPDES permit. Another measure, Phase I Final Rule, requires an operator (such as a city) of a regulated municipal separate storm sewer system (MS4) to develop, implement, and enforce a program to reduce pollutants in post-construction runoff. The San Bernardino County Public Works Department enforces conditions of the MS4 NPDES permit on development and redevelopment projects in the County's jurisdiction.

State

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Act (Water Code sections 13000 et seq.) is the basic water quality control law for California. Under this Act, the State Water Resources Control Board (SWRCB) has primary responsibility for coordination and control of water quality, and the EPA has delegated authority to issue NPDES permits to the SWRCB. The state is divided into nine Regional Water Quality Control Boards (RWQCBs) who, with the SWRCB, regulate, protect, and administer water quality in each region. Each regional board adopts a Water Quality Control Plan or Basin Plan that includes the differences in water quality throughout the region, the beneficial uses of specific ground and surface waters, and local water quality conditions and problems. San Bernardino County spans portions of three RWQCB regions: Santa Ana, South Lahontan, and Colorado River (see Figure 5.18-2, *Regional Water Quality Control Board Jurisdictional Areas*). The water quality control plan for the Santa Ana River Basin was updated in 2016; the plan for the South Lahontan Region was issued in 1995 and included amendments through 2016; and the plan for the Colorado River Basin was updated in 2019.

Regional

Construction General Permit

Pursuant to the CWA, in 2009, the SWRCB issued a statewide general NPDES Permit for stormwater discharges from construction sites (NPDES No. CAS000002). Under this permit, discharges of stormwater from construction sites with a disturbed area of one or more acres must obtain individual NPDES permits or be covered by the General Permit—i.e., by filing a Notice of Intent with the SWRCB and developing and implementing a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must list BMPs implemented on the construction site to protect/retain stormwater runoff, and must contain a visual monitoring program, a sampling, analysis and monitoring requirement for "non-visible" pollutants, and a monitoring plan if the site discharges directly to a water body listed on the state's 303(d) list of impaired waters.

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

Industrial General Permit

The Industrial General Permit (NPDES No. CAS000001) regulates industrial storm water discharges and authorized non-storm water discharges from industrial facilities in California. The Industrial General Permit is called a general permit because many industrial facilities are covered by the same permit but comply with its requirements at their individual industrial facilities. The SWRCB and RWQCBs implement and enforce the Industrial General Permit.

Industrial facilities such as manufacturers, landfills, mining, steam generating electricity, hazardous waste facilities, transportation with vehicle maintenance, larger sewage and wastewater plants, recycling facilities, and oil and gas facilities are typically required to obtain Industrial General Permit coverage.

Santa Ana RWQCB

The Santa Ana RWQCB issued a Municipal Stormwater (MS4) Permit for the part of the Santa Ana Basin in San Bernardino County in 2010 (Order No. R8-2010-0036). The principal permittee of the MS4 Permit is the San Bernardino County Flood Control District. Priority projects—generally, redevelopment projects that add or replace 5,000 or more square feet of impervious surfaces, and new development projects that create 10,000 or more square feet of impervious surfaces—must implement LID BMPs to the maximum extent practicable.

The MS4 Permit requires individual priority projects to prepare and implement a water quality management plan (WQMPs) that may include source control BMPs, mitigation measures, and treatment control BMPs.

Lahontan RWQCB

Projects in the Lahontan RWQCB region creating and/or replacing 2,500 square feet or more of impervious surfaces are subject to the Statewide Small MS4 Permit described above.

San Bernardino County is a permittee on the Statewide Small MS4 Permit, Order No. 2013-0001-DWQ, issued by the SWRCB in 2013. Regulated projects under the Small MS4 Permit must implement best management practices (BMPs) from the following categories:

- **Source Control BMPs** reduce the potential for pollutants to enter runoff. They include non-structural and structural practices that prevent or reduce pollutants from entering stormwater. They also include activity restrictions—such as vehicle and equipment cleaning, pesticide use, parking area maintenance, and outdoor cooking.
- **Low-Impact Development BMPs** combine hydrologically functional site design with pollution prevention measures to compensate for land development impacts of hydrology and water quality. Low Impact Development (LID) techniques mimic the site pre-development hydrology by using site design techniques that store, infiltrate, evapotranspire, biofilter, or detain runoff close to its source.
- **Treatment Control BMPs** remove pollutants from urban runoff through engineered systems designed and constructed to do so. Pollutant removal is achieved by simple gravity settling of particulate pollutants, filtration biological uptake, media adsorption, or any other physical, biological, or chemical process.

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

Colorado River Basin RWQCB Area

There are no regulated municipal separate storm sewer systems in the unincorporated County areas in the Colorado River Basin RWQCB. Development within this area is not subject to any MS4 permits but do need to meet the requirements of the Industrial General Permit and the Construction General Permit.

San Bernardino County Code of Ordinances

Chapter 85.07, Floodplain Hazard Development Reviews, requires a Floodplain Development Standards Review before the approval of a land use application or issuance of a development permit in specified flood areas or where required by the Director of Public Works or the Building Official. The first floor elevation and basement must be 1) One foot above the base flood elevation on the FEMA map, as determined from drainage study, or two feet or more above the natural highest adjacent grade when the base flood elevations are not shown in any area designated as a 100-year floodplain; or 2) One foot above the natural highest adjacent grade in any area designated as a 100 to 500-year floodplain.

5.9.1.2 EXISTING CONDITIONS

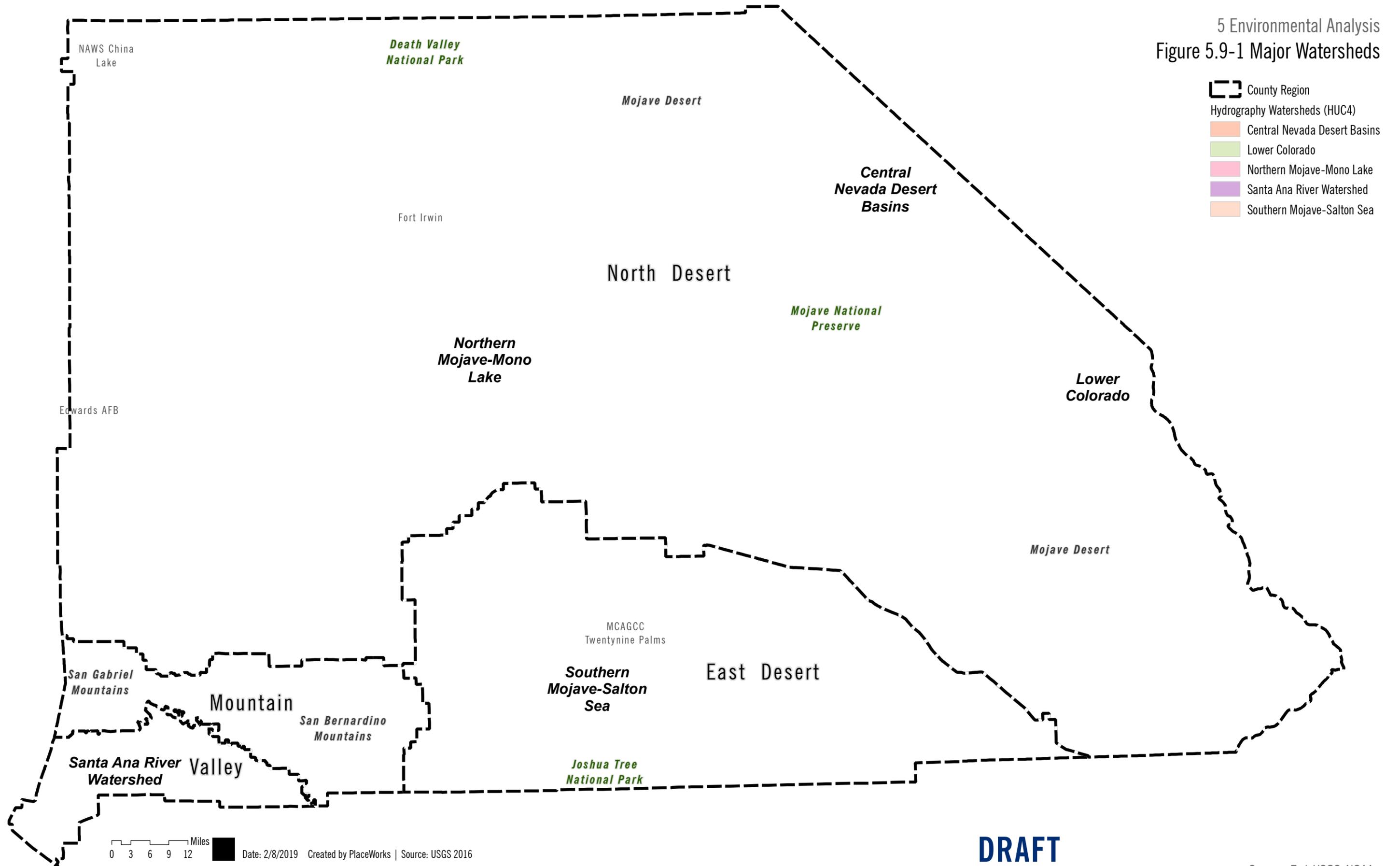
Regional Drainage

Watersheds are typically land areas that drain all the streams and rainfall to a common outlet such as a river mouth or a lake. Drainage in some of the desert watersheds flows into lakebeds in numerous desert basins rather than to one outlet. Watersheds are mapped on Figure 5.9-1, *Major Watersheds*, and described by county region.

Valley Region

The Valley Region is situated at the base of the San Gabriel and San Bernardino mountains to the north, the Los Angeles County line to the west, Yucaipa and the Mountain Region to the east, and Riverside County to the south. Drainage is mainly via creeks, streams, and washes descending from mountains and foothills. Many of these features drain into the Santa Ana River, and the Valley Region is in the Southern California Coastal Watershed (specifically the Santa Ana subwatershed). The river channel transects the watershed from the San Bernardino National Forest to the ocean at Huntington Beach. The Upper Santa Ana River basin covers the Valley Region and much of the Mountain Region; the remainder of the Santa Ana River basin is in other counties.

5 Environmental Analysis
 Figure 5.9-1 Major Watersheds



DRAFT

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

This page intentionally left blank.

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

Major Drainage and Flood Control Facilities

There are numerous debris basins and detention basins in the Valley Region; some of the larger facilities are:

- San Antonio Dam north of the City of Upland
- Etiwanda Debris Basin in the City of Rancho Cucamonga
- San Sevaine Basin in the City of Rancho Cucamonga
- Devil Canyon Dam and Basins in the City of San Bernardino
- Waterman Basins in the City of San Bernardino
- Seven Oaks Dam in the San Bernardino Mountains
- Diversion dams in the Santa Ana River

Some of the major drainage channels include, from west to east, San Antonio Creek, Chino Creek, Day Creek, Lytle Creek, Cajon Wash, City Creek, Mill Creek, and Yucaipa Creek.

Mountain Region

Runoff from the mountains provides the main water source for the Santa Ana and Mojave rivers. Drainage in the Mountain Region is mainly through a series of creeks, streams, and rivers that drain into mountain lakes, the valleys, and deserts.

The Mountain Region includes portions of major watersheds in the county: Southern California Coastal Watershed (specifically the Santa Ana subwatershed), Northern Mojave, and Southern Mojave- Salton Sea. See Figure 5.9-1.

Flood Control Facilities

Seven Oaks Dam, on the Santa Ana River north of the City of Highland, is part of the Santa Ana River Mainstem Project designed to improve flood control in San Bernardino, Riverside, and Orange counties (OCPW 2018).

Desert Regions

The prominent drainage feature in the Desert regions is the Mojave River, a 120-mile long river that is dry most of the year and terminates at Silver Dry Lake north of Baker. However, there are areas of year-round surface flows, where groundwater is forced to the surface in areas with impermeable bedrock (e.g., near Victorville and in the Afton Canyon area). Morongo Valley Creek, which is dry most of the year, drains into Whitewater River, and ultimately into the Salton Sea. Several drainages in Needles drain to the Colorado River. Other drainages and washes from the low mountain ranges terminate in dry lakes or on the desert floor.

The East Desert Region is in the South Mojave and Salton Sea watersheds. The North Desert Region consists of most of the Northern Mojave Watershed and part of the Southern Mojave Watershed; the northeastern North Desert Region is in the Central Nevada Desert Basins Watershed; and the easternmost part of the North Desert Region is in the Lower Colorado Watershed, which flows to the Colorado River and to the Gulf of California in Mexico .

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

Flood Control Facilities

Flood control facilities in the North Desert Region include the Mojave River Forks Dam east of the City of Hesperia; levees along segments of the Mojave River in and near the City of Barstow; and several detention basins in the City of Needles. Facilities in the East Desert Region include the Old Woman Springs Basin, Long Canyon Basin, and levees along portions of Yucca Creek, all in the Town of Yucca Valley.

Regional Water Quality Control Boards

The Northern Mojave and Central Nevada Desert Basins watersheds are under the jurisdiction of the Lahontan RWQCB; the Southern Mojave and Lower Colorado watersheds are under the jurisdiction of the Colorado River Basin RWQCB; and the Santa Ana subwatershed is in the jurisdiction of the Santa Ana RWQCB (see Figure 5.18-2).

Groundwater

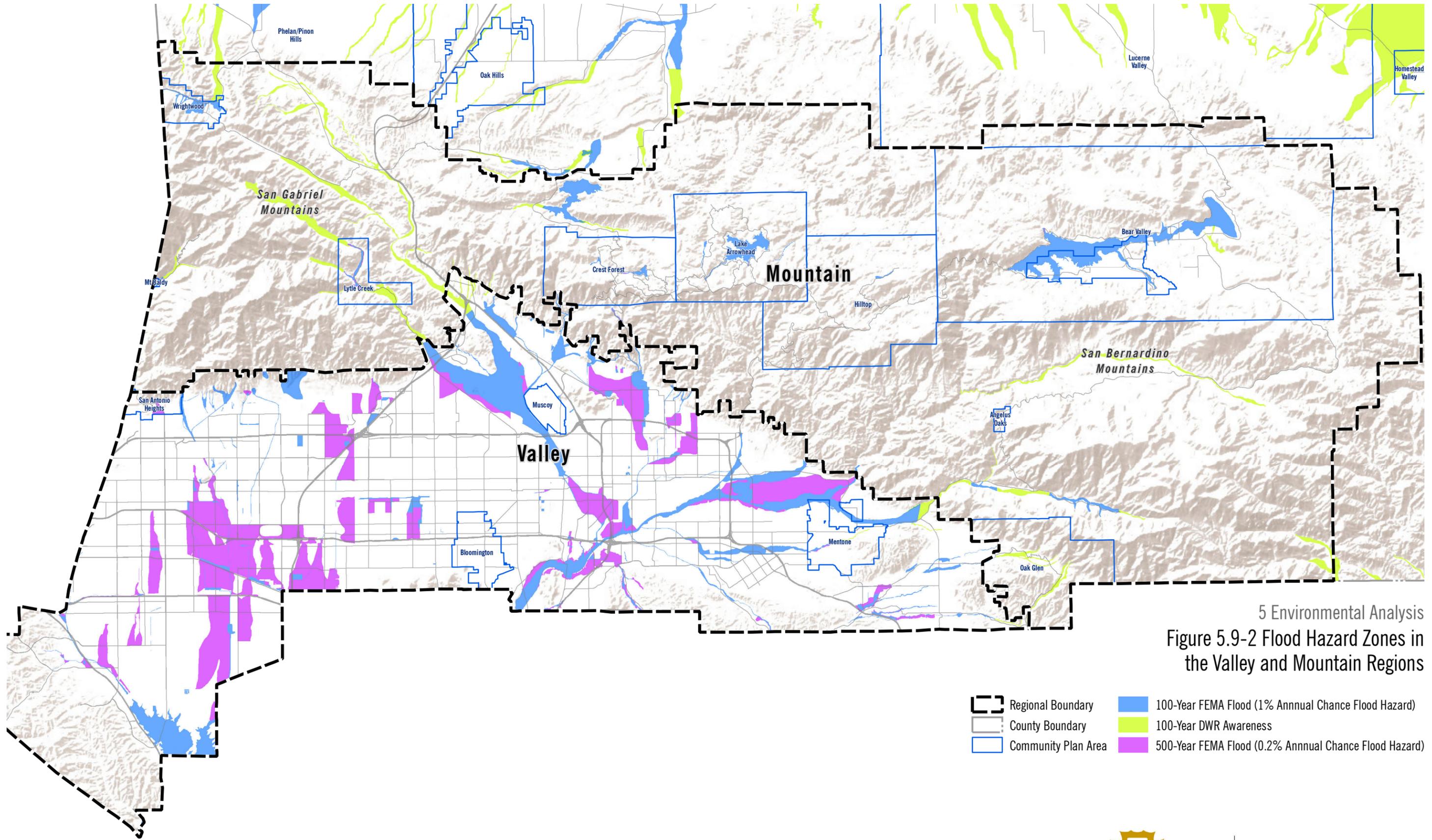
Most of the Valley Region is underlain by the Upper Santa Ana River Valley Groundwater Basin. Portions of the Mountain Region are underlain by the Bear Valley, Big Meadows Valley, and Seven Oaks Valley groundwater basins.

The North Desert and East Desert regions are underlain by numerous groundwater basins. For instance, the Mojave River passes over five groundwater basins: the Upper Mojave River Valley, Middle Mojave River Valley, Lower Mojave River Valley, Caves Canyon Valley, and Soda Lake Valley basins (DWR 2019).

Flood Hazards

Designated Flood Zones

In the Valley Region, 100-year FEMA flood zones are along the Santa Ana River, Cajon Wash, and Lytle Creek Wash and in the Prado Basin (see Figure 5.9-2). In the Mountain Region, 100-year flood zones are mainly in lake basins and reservoir basins—Big Bear Lake, Lake Arrowhead, and Lake Silverwood (see Figure 5.9-2). In the North Desert Region, 100-year zones are along the Mojave River, in Soda Dry Lake and Silver Dry Lake, and in washes north of the San Gabriel Mountains near the west County boundary. In the East Desert Region, 100-year zones are in and near Yucca Creek and Coyote Lake, in and near the City of Twentynine Palms, in Dale Dry Lake east of the City of Twentynine Palms, and in the Morongo Valley in the west end of the Morongo Basin (see Figure 5.9-3).



5 Environmental Analysis
 Figure 5.9-2 Flood Hazard Zones in
 the Valley and Mountain Regions

- Regional Boundary
- County Boundary
- Community Plan Area
- 100-Year FEMA Flood (1% Annual Chance Flood Hazard)
- 100-Year DWR Awareness
- 500-Year FEMA Flood (0.2% Annual Chance Flood Hazard)

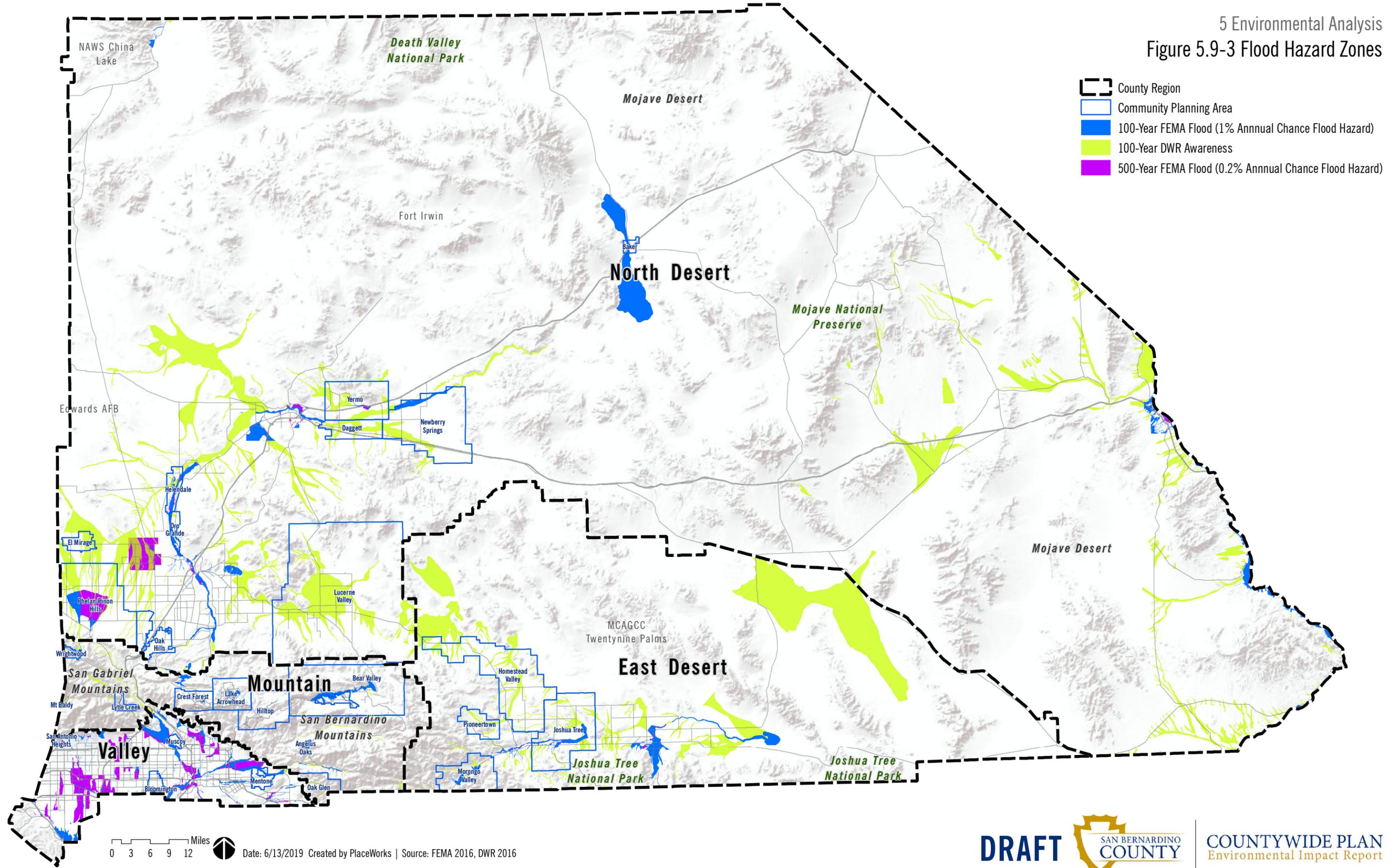
0 2 4 6 8 Miles

Date: 6/13/2019 Created by PlaceWorks | Source: FEMA 2016, DWR 2016

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

This page intentionally left blank.

5 Environmental Analysis
 Figure 5.9-3 Flood Hazard Zones



- County Region
- Community Planning Area
- 100-Year FEMA Flood (1% Annual Chance Flood Hazard)
- 100-Year DWR Awareness
- 500-Year FEMA Flood (0.2% Annual Chance Flood Hazard)

0 3 6 9 12 Miles
 Date: 6/13/2019 Created by PlaceWorks | Source: FEMA 2016, DWR 2016

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

This page intentionally left blank.

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

Seismically Induced Dam Inundation

The largest dam inundation area in the county is in the North Desert Region along the Mojave River and includes Soda Dry Lake and Silver Dry Lake, downstream from Cedar Springs Dam, which impounds Lake Silverwood. Cedar Springs Dam was completed in 1971; Lake Silverwood, a reservoir, is part of the State Water Project. The dam is inspected annually by the Division of Safety of Dams; thus, the potential for dam failure is considered low.

The two largest dam inundation areas in the Valley Region are along the Santa Ana River downstream from Seven Oaks Dam, and in the northwest corner of the Valley Region downstream from San Antonio Dam. Seven Oaks Dam is a flood control dam that usually impounds little water to maintain capacity to control flood flows on the Santa Ana River. The dam is designed to resist earthquakes up to magnitude 8.0 (OCPW 2018). Thus, the potential for dam failure is low.

No dam inundation areas are mapped in the East Desert or Mountain regions.

Seiches

A seiche is a surface wave created when an inland water body is shaken, usually by an earthquake. Most of the largest inland water bodies in the county that could generate local flooding due to a seiche are reservoirs and flood control basins impounded by dams.

Tsunamis

There is no tsunami hazard since the county boundary is about 22 miles inland from the Pacific Ocean.

Mudflows and Debris Flows

A mudflow is a landslide composed of saturated rock debris and soil with a consistency of wet cement. Areas of San Bernardino County that are susceptible to mudflows include canyon areas and areas along the bases of mountain slopes. Mudflow hazard increases dramatically in burned areas after major wildfires. There are slopes that could generate mudflows in all four county regions.

5.9.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

- HYD-1 Violate any water quality standards or waste discharge requirements.
- HYD-2 Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

- HYD-3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial erosion or siltation on- or off-site.
- HYD-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- HYD-5 Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.
- HYD-6 Otherwise substantially degrade water quality.
- HYD-7 Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- HYD-8 Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- HYD-9 Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- HYD-10 Be subject to inundation by seiche, tsunami, or mudflow.

5.9.3 Regulatory Requirements and General Plan Policies

5.9.3.1 REGULATORY REQUIREMENTS

- RR HYD-1 **National Pollutant Discharge Elimination System (NPDES):** Projects will be constructed in accordance with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, NPDES No. CAS000002. Compliance requires a risk assessment, a SWPPP, and associated BMPs.
- RR HYD-2 **Statewide Small MS4 Permit:** Projects in the Lahontan RWQCB region creating and/or replacing 2,500 square feet or more of impervious surfaces will be constructed and operated in accordance with the Statewide Small MS4 Permit, Order No. 2013-0001-DWQ, issued by the State Water Resources Control Board in 2013.
- RR HYD-3 **Santa Ana RWQCB MS4 Permit:** Projects will be constructed and operated in accordance with the Santa Ana RWQCB Municipal Stormwater (MS4) Permit for the part of the Santa Ana Basin in San Bernardino County in 2010 (Order No. R8-2010-0036). The MS4 Permit requires new development and redevelopment projects to adopt a WQMP to:
- Control contaminants into storm drain systems
 - Educate the public about stormwater impacts
 - Detect and eliminate illicit discharges

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

- Control runoff from construction sites
- Implement BMPs and site-specific runoff controls and treatments

RR HYD-4 **San Bernardino County Code of Ordinances:** In specified areas, or where required by the Director of Public Works or the Building Official, projects shall complete a Floodplain Development Standards Review before the approval of a land use application or issuance of a development permit. The review authority must confirm that the first-floor elevation is either:

- One foot above the base flood elevation when the FEMA map base flood elevations are shown, as determined from drainage study, or two feet or more above the highest adjacent grade when the base flood elevations are not shown in any area designated as a 100-year floodplain; or
- One foot above the natural highest adjacent grade in any area designated as a 100 to 500-year floodplain.

5.9.3.2 POLICY PLAN

Stormwater Drainage

The Infrastructure and Utilities Element of the proposed Countywide Plan includes the following policies pertaining to stormwater drainage:

Goal IU-3 Stormwater Drainage. A regional stormwater drainage backbone and local stormwater facilities in unincorporated areas that reduce the risk of flooding.

Policy IU-3.1 Regional flood control. We maintain a regional flood control system and regularly evaluate the need for and implement upgrades based on changing land coverage and hydrologic conditions in order to manage and reduce flood risk. We require any public and private projects proposed anywhere in the county to address and mitigate any adverse impacts on the carrying capacity and stormwater velocity of regional stormwater drainage systems.

Policy IU-3.2 Local flood control. We require new development to install and maintain stormwater management facilities that maintain predevelopment hydrology and hydraulic conditions.

Policy IU-3.3 Recreational use. We prefer that stormwater facilities be designed and maintained to allow for regional open space and safe recreation use without compromising the ability to provide flood risk reduction.

Policy IU-3.4 Natural floodways. We retain existing natural floodways and watercourses on County-controlled floodways, including natural channel bottoms, unless hardening and channelization is the only feasible way to manage flood risk. On floodways not

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

controlled by the County, we encourage the retention of natural floodways and watercourses. Our priority is to reduce flood risk, but we also strive to protect wildlife corridors, prevent loss of critical habitat, and improve the amount and quality of surface water and groundwater resources.

Policy IU-3.5 **Fair share requirements.** We require new development to pay its fair share of capital costs to maintain adequate capacity of the County’s regional flood control systems.

Groundwater

Goal IU-1 **Water Supply.** Water supply and infrastructure are sufficient for the needs of residents and businesses and resilient to drought.

Policy IU-1.7 **Areas vital for groundwater recharge.** We allow new development on areas vital for groundwater recharge when stormwater management facilities are installed onsite and maintained to infiltrate predevelopment levels of stormwater into the ground.

Policy IU-1.8 **Groundwater management coordination.** We collaborate with water masters, groundwater sustainability agencies, water purveyors, and other government agencies to ensure groundwater basins are being sustainably managed. We discourage new development when it would create or aggravate groundwater overdraft conditions, land subsidence, or other “undesirable results” as defined in the California Water Code. We require safe yields for groundwater sources covered by the Desert Groundwater Management Ordinance.

Flood Hazards

The Hazards Element of the proposed Countywide Plan includes the following policies for minimizing flooding risks:

Goal HZ-1 **Natural Environmental Hazards.** Minimized risk of injury, loss of life, property damage, and economic and social disruption caused by natural environmental hazards and adaptation to potential changes in climate.

Policy HZ-1.1 **New subdivisions in environmental hazard areas.** We require all lots and parcels created through new subdivisions to have sufficient buildable area outside of the following environmental hazard areas:

- Flood: 100-year flood zone, dam/basin inundation area
- Geologic: Alquist-Priolo earthquake fault zone; County-identified fault zone; rockfall/debris-flow hazard area, existing and County-identified landslide area

Policy HZ-1.2 **New development in environmental hazard areas.** We require all new development to be located outside of the environmental hazard areas listed below.

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

For any lot or parcel that does not have sufficient buildable area outside of such hazard areas, we require adequate mitigation, including designs that allow occupants to shelter in place and to have sufficient time to evacuate during times of extreme weather and natural disasters.

- Flood: 100-year flood zone, dam/basin inundation area
- Geologic: Alquist Priolo earthquake fault zone; County-identified fault zone; rockfall/debris-flow hazard area, medium or high liquefaction area (low to high and localized), existing and County-identified landslide area, moderate to high landslide susceptibility area)
- Fire: high or very high fire hazard severity zone

Policy HZ-1.3 **Floodplain mapping.** We require any new lots or subdivisions partially in, and any new development partially or entirely in 100-year flood zones or 100-year flood awareness areas to provide detail floodplain mapping for 100- and 200-year storm events as part of the development approval process.

Policy HZ-1.4 **500-year flood zone.** We may collaborate with property owners in the Valley region to establish funding and financing mechanisms to mitigate flood hazards in identified 500-year flood zones.

Policy HZ-1.9 **Hazard areas maintained as open space.** We minimize risk associated with flood, geologic, and fire hazard zones or areas by encouraging such areas to be preserved and maintained as open space.

Water Quality

The Natural Resources Element of the proposed Countywide Plan sets forth the following policies for water quality protection:

Goal NR-2 **Water Quality.** Clean and safe water for human consumption and the natural environment.

Policy NR-2.1 **Coordination on water quality.** We collaborate with the state, regional water quality control boards, watermasters, water purveyors, and government agencies at all levels to ensure a safe supply of drinking water and a healthy environment.

Policy NR-2.2 **Water management plans.** We support the development, update, and implementation of ground and surface water quality management plans emphasizing the protection of water quality from point and non-point source pollution.

Policy NR-2.3 **Military coordination on water quality.** We collaborate with the military to avoid or minimize impacts on military training and operations from groundwater contamination and inadequate groundwater supply.

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

Policy NR-2.4 **Wastewater discharge.** We apply federal and state water quality standards for wastewater discharge requirements in the review of development proposals that relate to type, location, and size of the proposed project in order to safeguard public health and shared water resources.

Policy NR-2.5 **Stormwater discharge.** We ensure compliance with the County’s Municipal Stormwater NPDES Permit by requiring new development and significant redevelopment to protect the quality of water and drainage systems through site design, source controls, stormwater treatment, runoff reduction measures, best management practices, low impact development strategies, and technological advances. For existing development, we monitor businesses and coordinate with municipalities.

Policy NR-2.6 **Agricultural waste and biosolids.** We coordinate with regional water quality control boards and other responsible agencies to regulate and control animal waste and biosolids in order to protect groundwater and the natural environment.

5.9.4 Environmental Impacts

The following impact analysis addresses thresholds of significance for which the Notice of Preparation disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

Most population growth due to Countywide Plan buildout would be in two areas: the Bloomington CPA in the Valley Region, and future master planned communities in the Town of Apple Valley SOI in the Desert Region. Employment growth would be focused in the unincorporated portions of the Valley region, particularly in the Fontana SOI, East Valley Area Plan, and Bloomington CPA (see Section 5.0 for further discussion). Thus, impacts are analyzed in some detail for the four areas where most growth would occur, and much more generally for the rest of the unincorporated areas of the county.

Impact 5.9-1: Development pursuant to the Countywide Plan would not increase surface water flows into drainage systems within the watershed. Development would not provide substantial additional sources of polluted runoff. [Thresholds HYD-1, HYD-3, HYD-4 and HYD-5 (part)]

Most development under the Countywide Plan would be in a few limited areas of the county, mostly in the Valley Region.

Valley Region

Developments under the Countywide Plan—most of which would occur in the Bloomington CPA, City of Fontana SOI (west), and East Valley Area Plan area—would increase impervious areas and thus could increase runoff from those development sites.

Proposed developments that discharge urban runoff to the Santa Ana River subwatershed must comply with the requirements of the MS4 Permit (Permit Order No. R8-2010-0036). Priority projects—generally, new

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

developments creating 10,000 square feet or more of impervious area, and redevelopments adding or replacing 5,000 square feet or more of such area—must implement low-impact development (LID) BMPs to the maximum extent practicable in order to reduce the discharge of pollutants to receiving waters. Low-impact development is an approach to land development (or redevelopment) that works with nature to manage stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product. There are many practices that have been used to adhere to these principles, such as bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements. By implementing LID principles and practices, water can be managed in a way that reduces the impact of built areas and promotes the natural movement of water within an ecosystem or watershed. Applied on a broad scale, LID can maintain or restore a watershed's hydrologic and ecological functions.

Individual projects would be required to effectively retain or treat the 85th percentile 24-hour stormwater runoff for pollutants prior to discharge off their properties. Additionally, San Bernardino County Development Code Chapter 83.15 provides requirements to ensure compliance with projects subject to water quality management plans. Developments under the Countywide Plan would not substantially increase surface water flows into drainage systems in the Valley Region, and impacts would be less than significant.

Desert Region

Most of the development in the Desert Region under the Countywide Plan would be in the Town of Apple Valley SOI. San Bernardino County is a permittee on the Statewide Small MS4 Permit, Order No. 2013-0001-DWQ, issued by the State Water Resources Control Board in 2013. Regulated projects under the Small MS4 Permit are those creating and/or replacing 2,000 square feet or more of impervious surfaces. Regulated projects must implement BMPs, including LID BMPs and site design BMPs. After implementation of BMPs under the Small MS4 Permit, developments under the Countywide Plan would not substantially increase surface water flows into drainage systems in the Desert Region, and impacts would be less than significant.

Level of Significance before Mitigation: With implementation of RR HYD-2, RR HYD-3 and Countywide Plan policies IU-3.2 and NR-2.5, Impact 5.9-1 would be less than significant.

Impact 5.9-2: Development pursuant to the proposed Countywide Plan increases the amount of impervious surfaces and could therefore impact opportunities for groundwater recharge. [Threshold HYD-2]

Projects developed under the Countywide Plan would implement BMPs minimizing impervious areas; discharging drainage from impervious areas including rooftops to rain barrels, cisterns, or permeable areas rather than storm drains; and, where applicable, retaining runoff from an 85th-percentile, 24-hour storm (see the analysis of Impact 5.9-1 above). Thus, such projects would not substantially reduce groundwater recharge. Impacts would be less than significant.

Level of Significance before Mitigation: With implementation of RR HYD-2, RR HYD-3, and Countywide Plan policies IU-3.2, IU-1.7, and NR-2.5, Impact 5.9-2 would be less than significant.

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

Impact 5.9-3: Portions of development pursuant to the Countywide Plan are in a 100-year flood hazard area. [Thresholds HYD-7 and HYD-8]

Countywide Analysis

Countywide Plan buildout could involve development of some projects in FEMA 100-year flood zones and in State Department of Water Resources (DWR) 100-Year Flood Awareness areas. DWR 100-Year Flood Awareness areas are identified using approximate assessment procedures. The areas are mapped as flood-prone areas without specific flood depths and other flood hazard data (DWR 2018).

Projects in 100-year flood zones would be subject to Floodplain Development Standards Review under County Code of Ordinances Chapter 85.07. A project applicant can undertake flood protection actions such as grading a development site above the 100-year flood elevation. Affected communities could then request a Letter of Map Revision (LOMR) from FEMA revising the flood zone map. Projects would be subject to proposed Countywide Plan policies, including requirements that proposed structures be built outside of 100-year flood zones and dam inundation areas; or that flood hazards be mitigated such that occupants would have sufficient time to leave in the event of flood or dam failure.

Hazards by Region

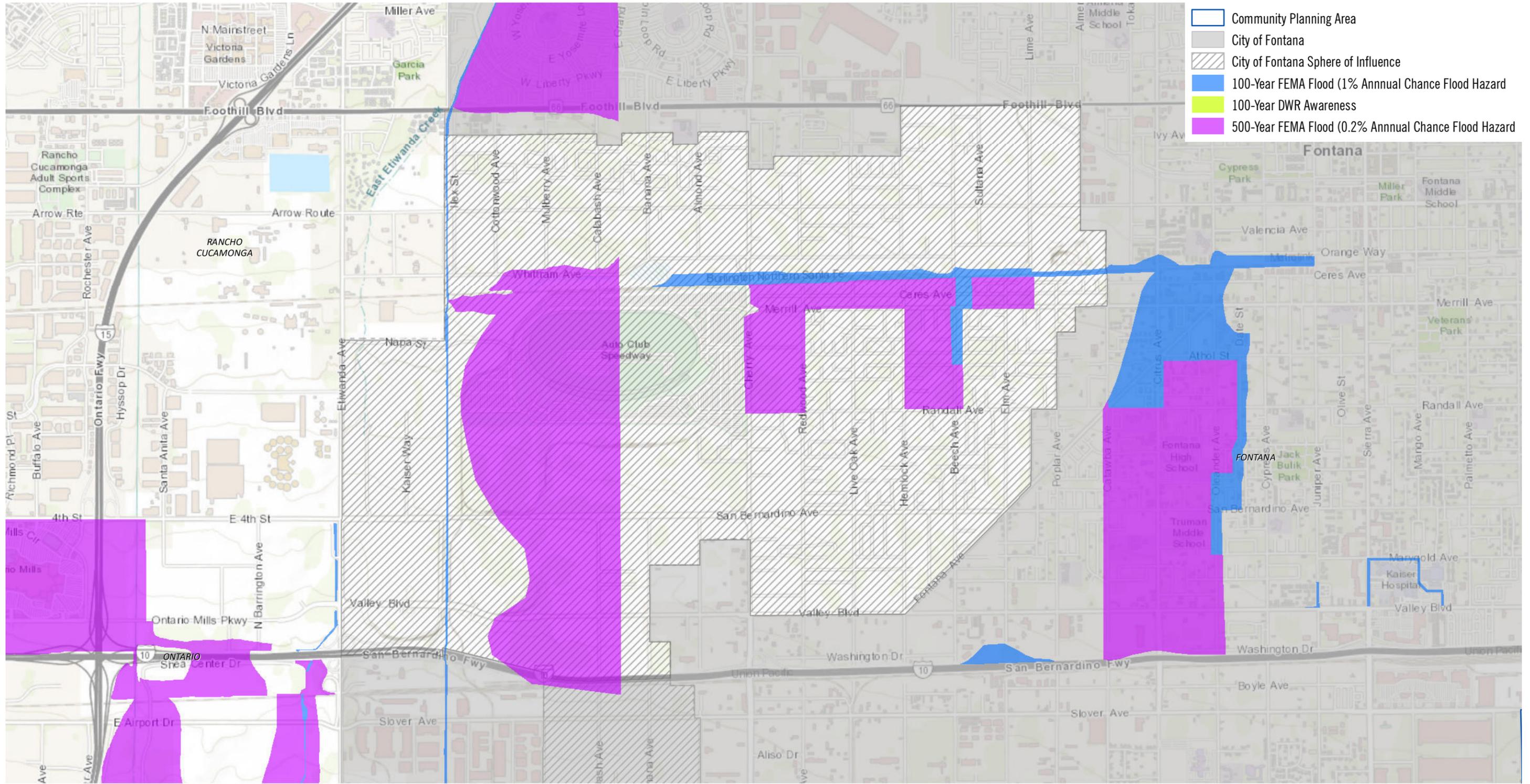
Valley Region

100-year FEMA flood zones in the Valley Region include those along the Santa Ana River, Cajon Wash, and Lytle Creek Wash and in the Prado Basin (see Figure 5.9-3). Portions of the City of Fontana SOI (west) are in 100-year flood zones: specifically, a narrow area just north of the BNSF/MetroLink railroad tracks and a narrow area extending north-south along Beech Avenue (see Figure 5.9-4). The Bloomington CPA and East Valley Area Plan area are outside of 100-year flood zones (see Figure 5.9-3).

Mountain Region

Hundred-year flood zones in the Mountain Region are mainly in lake basins and reservoir basins, including Big Bear Lake, Lake Arrowhead, and Lake Silverwood (see Figure 5.9-3).

Figure 5.9-4 Flood Hazard Zones in the City of Fontana SOI

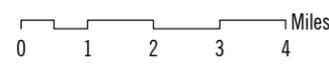
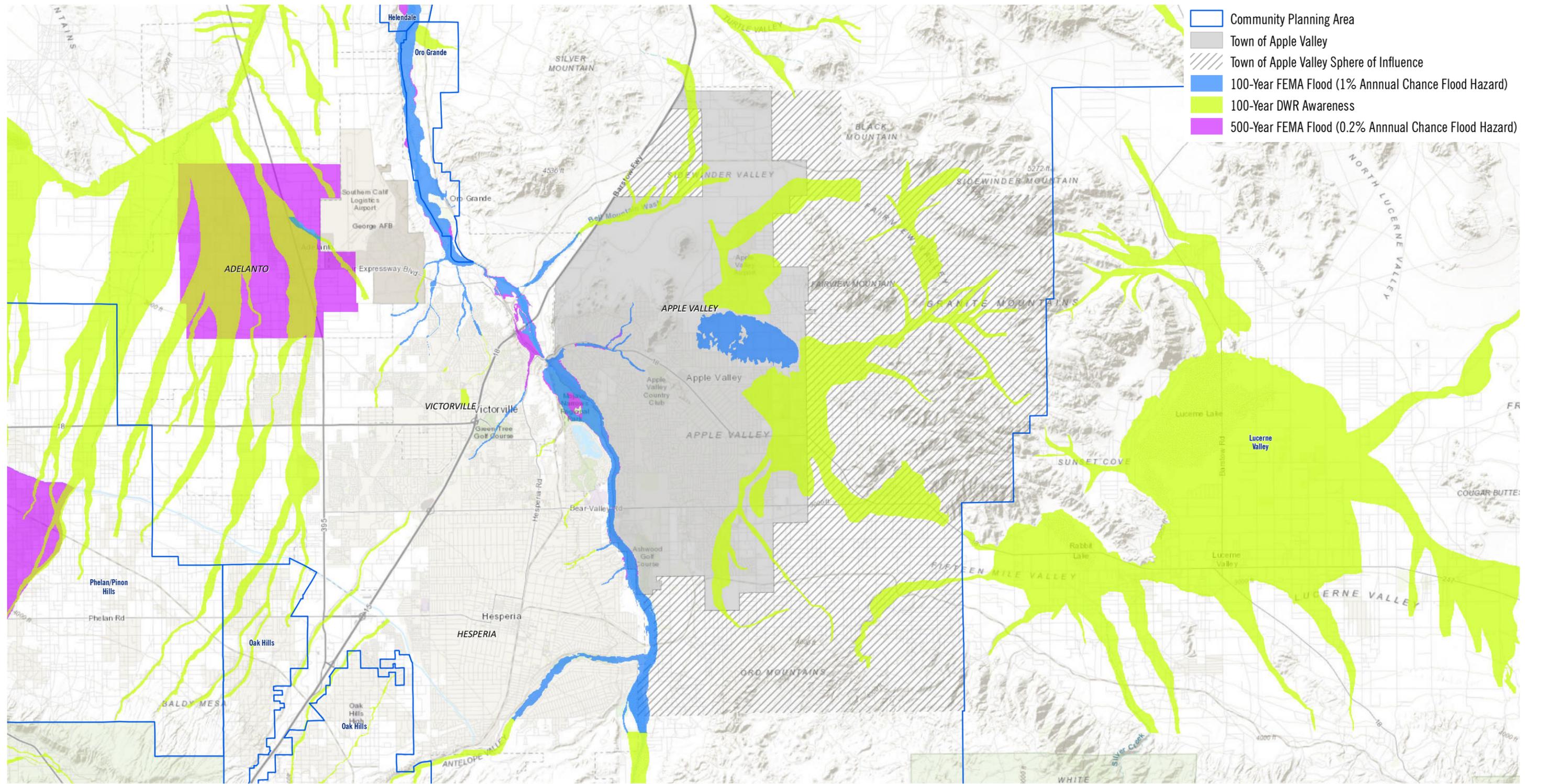


Date: 2/8/2019 Created by PlaceWorks | Source: FEMA 2016, DWR 2016

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

This page intentionally left blank.

Figure 5.9-5 Flood Hazard Zones in Apple Valley SOI



Date: 2/8/2019 Created by PlaceWorks | Source: FEMA 2016, DWR 2016

DRAFT



COUNTYWIDE PLAN
Environmental Impact Report

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

This page intentionally left blank.

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

North Desert Region

In the Town of Apple Valley SOI, portions of both the Potential Annexation Area and the Hacienda Fairview Valley Specific Plan area are in DWR 100-Year Flood Awareness areas (see Figure 5.9-5, *Flood Hazard Zones in Apple Valley SOI*). Neither of those areas are in FEMA 100-year flood zones.

East Desert Region

Little growth is projected for the East Desert Region; what growth would occur would be in the Morongo Basin, Homestead Valley, and Joshua Tree CPAs. There are 100-year flood zones in and near Yucca Creek and Coyote Lake in the Joshua Tree CPA and in the Morongo Valley CPA. There are also DWR 100-Year Flood Awareness Zones in portions of all three of these CPAs (see Figure 5.9-2).

Impacts would be less than significant after compliance with existing regulations regulating development in flood hazard zones, including County Code of Ordinances Chapter 85.07, and Countywide Plan policies.

Level of Significance before Mitigation: With implementation of RR HYD-4 and Countywide Plan policies IU-3.1, IU-3.3, IU-3.4, IU-3.5, HZ-1.1, HZ-1.2, HZ-1.3, and HZ-1.9, Impact 5.9-3 would be less than significant.

Impact 5.9-4: During the construction phase of proposed development pursuant to the Countywide Plan, there is the potential for short-term unquantifiable increases in flow and in pollutant concentrations. After development, the quality of storm runoff (sediment, nutrients, metals, pesticides, pathogens, and hydrocarbons) may be altered. [Thresholds HYD-1, HYD-3, HYD-5 (part), and HYD-6]

Construction water quality impacts are addressed in a single analysis for the entire County, as construction projects one acre or larger are regulated under the Statewide General Construction Permit.

Operational water quality impacts are analyzed separately for the portions of the County within each of the three RWQCB regions:

- The Santa Ana RWQCB area includes the entire Valley Region and the southwestern, southern, and central parts of the Mountain Region.
- The Lahontan RWQCB area includes the central and western parts of the North Desert Region and some northern portions of the Mountain Region.
- The Colorado River Basin RWQCB area includes the entire East Desert Region; the southeast part of the North Desert Region; and the southeast part of the Mountain Region (see Figure 5.18-2, *Regional Water Quality Control Boards*).

Construction

Construction activities related to the buildout of the Countywide Plan would potentially result in soil erosion and temporary adverse impacts to surface water quality from construction materials and wastes. Construction

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

would produce typical pollutants such as metals, nutrients, pesticides, organic compounds, sediments, trash and debris, oxygen-demanding substances, and oil and grease. Clearing, grading, excavation, and other construction activities may impact water quality due to sheet erosion of exposed soils and subsequent depositing of sediment in local drainages. Grading activities in particular lead to exposed areas of loose soil and sediment stockpiles that are susceptible to uncontrolled sheet flow. Although erosion occurs naturally in the environment, primarily from weathering by water and wind, improperly managed construction activities can substantially accelerate erosion, which is detrimental to the environment.

Construction General Permit

Construction projects under the Countywide Plan must provide evidence that the development of projects disturbing one acre or more of soil comply with the most current Statewide General Construction Permit and associated local NPDES regulations to ensure that the potential for soil erosion is minimized. In accordance with the updated General Construction Permit (Order No. 2012-0006-DWQ), the following permit registration documents are to be submitted to the SWRCB prior to commencement of construction activities:

- Notice of Intent
- Risk Assessment (standard or site specific)
- Particle Size Analysis (if site-specific risk assessment is performed)
- Site Map
- Stormwater Pollution Prevention Plan
- Active Treatment System Design Documentation (if determined necessary)
- Annual Fee and Certification

Best Management Practices

In accordance with the existing and updated Construction General Permit, a construction SWPPP must be prepared and implemented at all construction projects with one acre or greater of soil disturbance, and revised as necessary as administrative or physical conditions change. The SWPPP must be made available for review upon request. It must describe construction BMPs that address pollutant source reduction and provide measures/controls necessary to mitigate potential pollutant sources. These measures/controls include, but are not limited to erosion controls, sediment controls, tracking controls, nonstormwater management, materials and waste management, and good housekeeping practices. The BMPs for construction activities are briefly discussed below. Construction BMPs are summarized in Table 5.9-1.

5. Environmental Analysis
HYDROLOGY AND WATER QUALITY

Table 5.9-1 Construction Best Management Practices

Category	Purpose	Examples
Erosion Controls	Consists of using project scheduling and planning to reduce soil or vegetation disturbance (particularly during the rainy season), preventing or reducing erosion potential by diverting or controlling drainage, as well as preparing and stabilizing disturbed soil areas.	Scheduling, preservation of existing vegetation, hydraulic mulch, hydroseeding, soil binders, straw mulch, geotextile and mats, wood mulching, earth dikes and drainage swales, velocity dissipation devices, slope drains, streambank stabilization, compost blankets, soil preparation/roughening, and non-vegetative stabilization
Sediment Controls	Filter out soil particles that have been detached and transported in water.	Silt fence, sediment basin, sediment trap, check dam, fiber rolls, gravel bag berm, street sweeping and vacuuming, sandbag barrier, straw bale barrier, storm drain inlet protection, manufactured linear sediment controls, compost socks and berms, and biofilter bags
Wind Erosion Controls	Consists of applying water or other dust palliatives to prevent or minimize dust nuisance.	Dust control soil binders, chemical dust suppressants, covering stockpiles, permanent vegetation, mulching, watering, temporary gravel construction, synthetic covers, and minimization of disturbed area
Tracking Controls	Minimize the tracking of soil offsite by vehicles	Stabilized construction roadways and construction entrances/exits, and entrance/outlet tire wash.
Non-Storm Water Management Controls	Prohibit discharge of materials other than stormwater, such as discharges from the cleaning, maintenance, and fueling of vehicles and equipment. Conduct various construction operations, including paving, grinding, and concrete curing and finishing, in ways that minimize non-stormwater discharges and contamination of any such discharges.	Water conservation practices, temporary stream crossings, clear water diversions, illicit connection/discharge, potable and irrigation water management, and the proper management of the following operations: paving and grinding, dewatering, vehicle and equipment cleaning, fueling and maintenance, pile driving, concrete curing, concrete finishing, demolition adjacent to water, material over water, and temporary batch plants.
Waste Management and Controls (i.e., good housekeeping practices)	Management of materials and wastes to avoid contamination of stormwater.	Stockpile management, spill prevention and control, solid waste management, hazardous waste management, contaminated soil management, concrete waste management, sanitary/septic waste management, liquid waste management, and management of material delivery storage and use.

Source: CASQA 2012.

Prior to commencement of construction activities, a project-specific SWPPP(s) would be prepared in accordance with the site-specific sediment risk analyses based on the grading plans, with erosion and sediment controls proposed for each phase of construction for the individual project. The phases of construction would

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

define the maximum amount of soil disturbed, the appropriate size for sediment basins, and other control measures to accommodate all active soil disturbance areas and the appropriate monitoring and sampling plans.

SWPPPs would require projects to plan BMPs for four general phases of construction: (1) grading and land development (e.g., mass grade & rough grade), (2) utility and road installation, (3) vertical construction, and (4) final stabilization and landscaping. Therefore, BMP implementation for new construction can be evaluated in this general context. Site-specific details on individual BMPs would be dependent on the scope and breadth of each future project, which are not known at this time.

Both state and local regulations would effectively mitigate construction stormwater runoff impacts from the buildout of the proposed Countywide Plan. The San Bernardino County Development Code Section 85.11.030 requires standard erosion control practices to be implemented for all construction. Additionally, construction sites are required to prepare and implement a SWPPP in accordance with the requirements of the statewide Construction General Permit and are subject to the oversight of the Santa Ana RWQCB. The SWPPP must include BMPs to reduce or eliminate erosion and sedimentation from soil-disturbing activities, as well as proper materials and waste management. Implementation of these state and local requirements would effectively protect projects from violating any water quality standards or waste discharge requirements from construction activities, and impacts would be less than significant.

Operation

Countywide Plan buildout may create new sources for runoff contamination through changing land uses. As a consequence, the implementation of the Countywide Plan may have the potential to increase the post-construction pollutant loadings of certain constituent pollutants associated with the proposed land uses and their associated features. Some common pollutants associated with office, commercial, and residential developments include bacteria/pathogens, metals, nutrients, oil/grease, sediment, organic compounds, trash/debris, oxygen-demanding substances, and pesticides.

Santa Ana RWQCB Area

Proposed developments must comply with the requirements of the MS4 Permit (Order No. R8-2010-0036). Priority projects must implement LID BMPs to the maximum extent practicable (see the introduction to LID above under Impact 5.9-1).

The MS4 Permit requires individual priority projects to prepare and implement water quality management plans (WQMPs), which may include, but not be limited to, the following measures:

- Preventive Measures
 - Front yard landscaping for residential developments
 - Building setback area landscaping for commercial developments
 - Street landscaping
 - Permeable pavement for parking lots

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

- Mitigating Measures
 - Slope planting
 - Infiltration basin and trench
 - Bioretention facilities and extended detention basins
- Structural Source Control BMPs
 - Catch basin stenciling
- Nonstructural Source Control BMPs
 - Public education programs
 - Scheduled street sweeping

Implementation of project-specific water quality management plans for projects developed or redeveloped under the Countywide Plan would not result in operational water quality impacts. Individual projects would be required to effectively retain or treat the 85th percentile 24-hour stormwater runoff for pollutants prior to discharge off their properties. Additionally, Development Code Chapter 83.15 provides requirements to ensure compliance with projects subject to water quality management plans. Impacts would be less than significant.

Lahontan RWQCB Area

Most of the development that would occur under the Countywide Plan within the Lahontan RWQCB area would be in the Town of Apple Valley SOI.

San Bernardino County is a permittee on the Statewide Small MS4 Permit, Order No. 2013-0001-DWQ, issued by the State Water Resources Control Board in 2013. Regulated projects under the Small MS4 Permit are those creating and/or replacing 2,500 square feet or more of impervious surfaces. Regulated projects must implement BMPs from the following categories.

Source Control BMPs

Reduce the potential for pollutants to enter runoff. They include non-structural and structural practices that prevent or reduce pollutants from entering stormwater. They also include activity restrictions—such as vehicle and equipment cleaning, pesticide use, parking area maintenance, and outdoor cooking.

Low-Impact Development BMPs

See the description of low-impact development BMPs under Impact 5.9-1.

Treatment Control BMPs.

Remove pollutants from urban runoff through engineered systems designed and constructed to do so. Pollutant removal is achieved by simple gravity settling of particulate pollutants, filtration biological uptake, media adsorption, or any other physical, biological, or chemical process.

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

Colorado River Basin RWQCB Area

Unincorporated County areas in the Colorado River Basin RWQCB area are not subject to the Small MS4 Permit but do need to abide by the requirements of the General Industrial Permit. Note, however, that minimal if any development would occur under the Countywide Plan in the Colorado River Basin RWQCB Area. Impacts would be less than significant after implementation of BMPs under the Small MS4 Permit and the General Industrial Permit.

Level of Significance before Mitigation: With implementation of RR HYD-1, RR HYD-2, RR HYD-3, and Countywide Plan policy NR-2.2, Impact 5.9-4 would be less than significant.

Impact 5.9-5: Countywide Plan buildout would not exacerbate flood hazards arising from dam failure. [Threshold HYD-9]

Valley Region

The two largest dam inundation areas in the Valley Region are along the Santa Ana River downstream from Seven Oaks Dam, and in the northwest corner of the Valley Region downstream from San Antonio Dam. A development project could exacerbate dam inundation hazards by, for instance, redirecting flood flows within an inundation area. The three areas of the Valley Region where most growth would occur under the Countywide Plan (Bloomington CPA, City of Fontana SOI [west], and East Valley Area Plan area) are all outside of dam inundation areas. The dam inundation area for Seven Oak Dam includes the north edge of the Mentone CPA, and the inundation area for San Antonio Dam includes part of the San Antonio Heights CPA. Considering the small net increases of population and employment in those two CPAs—323 residents and 501 jobs in the Mentone CPA, and 49 residents and 1 job in the San Antonio Heights CPA—Countywide Plan buildout would not redirect flood flows within inundation areas. Impacts would be less than significant.

Mountain Region

The dam inundation areas in the Mountain Region are along the Mojave River and the West Fork of the Mojave River and along the Santa Ana River below Seven Oaks Dam. Those areas are canyons where development is precluded due to flood hazards and steep terrain; they are also within the San Bernardino National Forest, outside of County land use jurisdiction. Countywide Plan implementation would not exacerbate dam inundation hazards in the Mountain Region.

Desert Regions

The largest dam inundation area in the County is in the North Desert Region along the Mojave River, including Soda Dry Lake and Silver Dry Lake, downstream from Cedar Springs Dam, which impounds Lake Silverwood. The dam is inspected annually by the Division of Safety of Dams; thus, the potential for dam failure is considered low. The area of the North Desert Region where most growth would occur under the Countywide Plan, the Town of Apple Valley SOI, is outside of the dam inundation area along the Mojave River. That inundation area passes through the Oro Grande, Helendale, Daggett, Yermo, and Newberry Springs community plan areas. Proposed Countywide Plan Policy HZ-1.2 requires that new developments either be located outside

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

of dam inundation areas, or be located, designed, and built such that occupants would have sufficient time to evacuate out of the dam inundation area in the event of dam failure.

Level of Significance before Mitigation: With the implementation of Countywide Plan policies HZ-1.1, HZ-1.2, and HZ-1.9, Impact 5.9-5 would be less than significant.

Impact 5.9-6: Countywide Plan buildout would not be subject to inundation by seiche, tsunami, or mudflow. [Threshold HYD-10]

Tsunami

There is no tsunami hazard in San Bernardino County, as the County boundary is about 22 miles inland from the Pacific Ocean.

Seiche

A seiche is a surface wave created when an inland water body is shaken, usually by an earthquake. Most of the largest inland water bodies in the County that could generate local flooding due to a seiche are reservoirs and flood control basins impounded by dams; see the analysis of dam inundation impacts above under Impact 5.9-5. The following analysis focuses on the areas where most growth would occur under the Countywide Plan.

Valley Region

There are no inland water bodies in or near the Bloomington CPA or City of Fontana SOI (west) that could cause substantial flooding in those areas due to a seiche. The Santa Ana River passes near the northeast corner of the East Valley Area Plan (EVAP) area. Flows in the Santa Ana River are regulated by Seven Oaks Dam; thus, it is unlikely that during an earthquake flows on the river would be so high as to create a seiche flood hazard to the East Valley Area Plan area. Therefore, it is unlikely that Countywide Plan buildout within the EVAP area would involve development of projects that would place people or structures at substantial risk of flooding due to a seiche. Impacts would be less than significant.

Mountain Region

There are numerous water bodies in the Mountain Region—lakes and reservoirs—that could cause localized flooding next to their shores due to a seiche. The largest seiche ever recorded in San Francisco Bay—a much larger water body than any in the Mountain Region—was four inches high, after the 1906 San Francisco Earthquake (Corps 2000). Thus, the likelihood of a seiche that would pose substantial risk of injuries or major property damage to residents next to lakes and reservoirs in the Mountain Region is considered low.

Desert Region

There are no water bodies in the Town of Apple Valley SOI, near either the Potential Annexation Area or the Hacienda Fairview Valley Specific Plan area, that could pose flood risks to those areas due to a seiche. Countywide Plan buildout in the Town of Apple Valley SOI would not involve development of projects that would place people or structures at risk of flooding due to a seiche, and no impact would occur.

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

Mudflow

A mudflow is a landslide composed of saturated rock debris and soil with a consistency of wet cement. Areas of San Bernardino County that are susceptible to mudflows include canyon areas and areas along the bases of mountain slopes. The following analysis focuses on the four areas of the County where most growth would occur.

Valley Region

Steep slopes are present next to the south end of the Bloomington CPA in the Jurupa Mountains—up to about 800 feet above the elevation of the surrounding valley—that may be capable of generating small mudflows. Countywide Plan implementation in the Bloomington CPA may involve development of projects in areas subject to mudflow hazards. Projects developed in that part of the Bloomington CPA would require independent CEQA processing, including analysis of mudflow hazards. All feasible mitigation measures would be required for any potentially significant impacts identified. New subdivisions and developments must either be built outside of debris flow hazard areas, or debris flow hazards must be mitigated for new developments such that occupants would have adequate time to evacuate the hazard area during times of relatively high debris flow hazard—that is, during and shortly after intense rainstorms—under Countywide Plan Hazard Element policies HZ-1.1 and HZ-1.2.

There are no slopes in or next to the City of Fontana SOI (west) or the East Valley Area Plan area that could generate mudflows.

Desert Region

In the Town of Apple Valley SOI the Hacienda Fairview Valley Specific Plan (HFVSP) area is bounded by the Fairview Mountains to the northwest and the Granite Mountains to the south and southeast. The Fairview Mountains rise to about 1,100 feet and the Granite Mountains about 2,000 feet above the surrounding desert floor. These slopes may be capable of generating mudflows. Countywide Plan buildout in the HFVSP area may involve development of projects in areas subject to mudflow hazards. New subdivisions and developments must either be built outside of debris flow hazard areas, or debris flow hazards must be mitigated for new developments, under Countywide Plan Hazard Element policies HZ-1.1 and HZ-1.2.

There are no slopes in or next to the Potential Annexation Area in the Town of Apple Valley SOI that could generate a mudflow, and Countywide Plan implementation in that area would not expose people or structures to substantial mudflow hazards.

Level of Significance before Mitigation: With the implementation of Countywide Plan policies HZ-1.1 HZ-1.2 and HZ-1.9, Impact 5.9-6 is less than significant.

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

5.9.5 Cumulative Impacts

Cumulative impacts to hydrology, drainage, flooding, and water quality are considered for the watersheds overlapping San Bernardino County: Southern California Coastal (within California), Northern Mojave, Central Nevada Desert Basins (within California), Lower Colorado (within California), and South Mojave- Salton Sea (within California).²

Other projects in these watersheds would develop impervious areas, thus increasing runoff and flows into storm drainage systems. Other projects would be required to comply with MS4 permits applicable in those watersheds: Santa Ana RWQCB permits for portions of three counties in the Santa Ana Basin; and the Statewide Small MS4 Permit in the Northern Mojave, Central Nevada Desert Basins, Lower Colorado, and Southern Mojave-Salton Sea watersheds. Projects in those areas would be required to implement BMPs limiting impervious surfaces and—where feasible—infiltrating, evapotranspiring, harvesting, or reusing certain rates of volumes of runoff. Implementation of such BMPs would reduce cumulative impacts to hydrology and drainage to less than significant.

Some other projects in the watersheds may be proposed within 100-year flood zones. Such projects would be mandated to comply with National Flood Insurance Program requirements. In addition, other jurisdictions within those watersheds regulate development within flood zones, as does San Bernardino County through its Code of Ordinances Chapter 85.07; such regulation would limit cumulative flood hazard impacts. Cumulative impacts to hydrology, drainage, and flooding would be less than significant, and impacts of Countywide Plan buildout would not be cumulatively considerable.

Other projects would generate pollutants that could contaminate stormwater. Requirements of the aforementioned MS4 permits include site design BMPs minimizing postproject runoff; structural and nonstructural source control BMPs reducing the potential for pollutants to enter runoff; and treatment control BMPs removing pollutants from contaminated stormwater. Cumulative water quality impacts would be less than significant after compliance with such permits, and impacts of Countywide Plan implementation would not be cumulatively considerable.

5.9.6 Level of Significance Before Mitigation

With the implementation of Countywide Plan policies HZ-1.1, HZ-1.2, and HZ-1.9, the following impacts would be less than significant:

- **Impact 5.9-5:** The Countywide Plan would not expose people or structures to a significant risk of loss, injury, or death involving flooding, as a result of the failure of a dam.
- **Impact 5.9-6:** The Countywide Plan would not be subject to inundation by seiche, tsunami, or mudflow.

² The area considered for cumulative impacts to hydrology, drainage, and flooding was limited to the portions of watersheds within California to limit the area to within the three RWQCB territories overlapping the County.

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

With implementation of Countywide Plan policies IU-3.2 and NR-2.5, RR HYD-2, and RR HYD-3, the following impacts would be less than significant:

- **Impact 5.9-1:** Development of the Countywide Plan would not substantially alter the existing drainage pattern to result in adverse flooding impacts, and create or contribute runoff water that would exceed the capacity of existing or planned stormwater systems.
- **Impact 5.9-2:** The Countywide Plan would not substantially deplete groundwater supplies, interfere substantially with groundwater recharge, or result in a significant impact to groundwater quality.

With implementation of Countywide Plan policies IU-3.1, IU-3.3, IU-3.4, IU-3.5, HZ-1.1, HZ-1.2, HZ-1.3, and HZ-1.9 and RR HYD-4, the following impact would be less than significant:

- **Impact 5.9-3:** The Countywide Plan would not expose people or structures to a significant risk of loss, injury, or death involving the placement of housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. Plan development would not place housing or structures that would redirect flood flows into a 100-year flood zone.

With implementation of Countywide Plan policy NR-2.2, RR HYD-1, RR HYD-2, and RR HYD-3, the following impacts would be less than significant:

- **Impact 5.9-4:** The Countywide Plan would not violate water quality standards or waste discharge requirements, otherwise degrade water quality, or have a significant impact on water quality due to site discharges.

5.9.7 Mitigation Measures

No mitigation is required.

5.9.8 Level of Significance After Mitigation

Impacts would be less than significant.

5.9.9 References

California Stormwater Quality Association (CASQA), California Construction Best Management Practices Handbook, July 2012.

Department of Water Resources (DWR). 2019, September 2. Groundwater Basin Boundary Assessment Tool. <https://gis.water.ca.gov/app/bbat/>.

OC Public Works (OCPW). 2018, January 5. Seven Oaks Dam. <http://www.ocflood.com/sarp/7oaks>.

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

US Army Corps of Engineers (Corps) 2000, January (original date May 1998). Oakland Harbor Navigation Improvement (-50 Foot) Project SCH No. 97072051 Final Environmental Impact Statement/Report. San Francisco District, Port of Oakland.

US Environmental Protection Agency (USEPA). 2012, September 26. Water Permitting 101.
<http://www.epa.gov/npdes/pubs/101pape.pdf>.

5. Environmental Analysis HYDROLOGY AND WATER QUALITY

This page intentionally left blank.