5.9 HYDROLOGY AND WATER QUALITY

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential impacts to hydrology and water quality conditions in the City of Banning from implementation of the proposed Rancho San Gorgonio Specific Plan. 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 is water on the surface of the land and includes lakes, rivers, streams, and creeks. Groundwater is below the surface of the earth. The analysis in this section is based, in part, on the following studies:

- *Phase I Environmental Site Assessment for Rancho San Gorgonio Master Planned Community, Banning, CA*, RMA GeoScience, December 11, 2012.
- *Addendum to Phase I Environmental Site Assessment Additional Parcels, Proposed Rancho San Gorgonio Master Planned Community, Banning, CA*, RMA GeoScience, June 20, 2013.
- *Project Specific Conceptual Water Quality Management Plan for: Rancho San Gorgonio*, Madole & Associates, Inc. and Encompass Associates, Inc., January 26, 2015.
- *Master Plan of Drainage, Rancho San Gorgonio Specific Plan*, Madole & Associates, Inc. and Encompass Associates, Inc., February 6, 2015.
- *Water Supply Assessment, Rancho San Gorgonio Specific Plan*, Madole & Associates, Inc. and Encompass Associates, Inc., September 30, 2015.
- *Geotechnical Investigation for Proposed Rancho San Gorgonio Master Planned Community, Banning, CA*, RMA GeoScience, November 8, 2012.
- *Addendum to Geotechnical Investigation – Additional Parcels for Proposed Rancho San Gorgonio Master Planned Community, Banning, CA*, RMA GeoScience, May 31, 2013.
- *Response to Geotechnical Review Letter, Rancho San Gorgonio Specific Plan, Banning, California*, RMA Geoscience, July 14, 2015.

Complete copies of these studies are included in the Technical Appendices to this Draft EIR (Volume II, Appendices G through K).

The Riverside County Flood Control and Water Conservation District (RCFCWCD) and one individual submitted a Notice of Preparation (NOP) comment letter or had verbal comments during the scoping meeting addressing hydrology, flood hazards, and water quality. RCFCWCD stated that the project involves District Master Plan facilities, which must be constructed to District standards and requires District plan check and inspection prior to approval. RCFCWCD also stated the project may require permits or plan approval from the State Water Resources Control Board or Federal Emergency Management Agency if flood plains or natural watercourses are impacted. The NOP comment letter is included in Appendix B.

The individual commenter stated that new findings have shown three wells located along Westward Avenue and one well north of Interstate 10 in northwest Banning are contaminated with Chromium-6. The commenter is concerned about water quality issues as they relate to the proposed project.

5.9.1 Environmental Setting

5.9.1.1 REGULATORY BACKGROUND

Federal

Clean Water Act

The federal Water Pollution Control Act (also known as the Clean Water Act [CWA]) is the principal statute governing water quality. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and gives the US Environmental Protection Agency (EPA) the authority to implement pollution control programs, such as setting wastewater standards for industry. The statute's goal is to end all discharges entirely and to restore, maintain, and preserve the integrity of the nation's waters. The CWA regulates both the direct and indirect discharge of pollutants into the nation's waters. The CWA 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 also funded the construction of sewage treatment plants and recognized the need for planning to address non-point sources of pollution. Section 402 of the CWA requires a permit for all point source discharges (from a discernible, confined, and discrete conveyance, such as a pipe, ditch, or channel) of any pollutant (except dredge or fill material) into waters of the United States.

Storm Water Pollution Prevention Plans

Pursuant to the CWA, in 2012, the State Water Resources Control Board (SWRCB) issued a statewide general National Pollutant Discharge Elimination System (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 are required to either obtain individual NPDES permits for stormwater discharges or be covered by the General Permit. Coverage by the General Permit is accomplished by completing and filing a Notice of Intent with the SWRCB and developing and implementing a Storm Water Pollution Prevention Plan (SWPPP). Each applicant under the General Construction Activity Permit must ensure that a SWPPP is prepared prior to grading and is implemented during construction. A SWPPP includes assessments of site sediment risk and receiving-water risk. The SWPPP must list best management practices (BMPs) implemented on the construction site to protect stormwater runoff and must contain a visual monitoring program, a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs, and a monitoring plan if the site discharges directly to a water body listed on the state's 303(d) list of impaired waters.

National Pollutant Discharge Elimination System

Under the NPDES program promulgated under Section 402 of the CWA, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a NPDES permit. The term pollutant broadly includes any type of industrial, municipal, or agricultural waste discharged into water. Point sources are discharges from publicly owned treatment works (POTWs), from industrial facilities, and associated with urban runoff. The NPDES program addresses certain specific types of agricultural activities, but the majority of agricultural facilities are defined as non-point sources and are exempt from NPDES regulation. Pollutant contributors come from direct and indirect sources. 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 to direct point source discharges. The National Pretreatment Program addresses industrial and commercial indirect dischargers. Municipal sources are POTWs that receive primarily domestic sewage from residential and commercial customers. Specific NPDES program areas applicable to municipal sources are the National Pretreatment Program, the Municipal Sewage Sludge Program, Combined Sewer Overflows, and the Municipal Storm Water Program. Nonmunicipal sources include industrial and commercial facilities. Specific NPDES program areas applicable to these industrial/commercial sources are: Process Wastewater Discharges, Non-process Wastewater Discharges, and the Industrial Storm Water Program. 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).

The NPDES has a variety of measures designed to minimize and reduce pollutant discharges. All counties with storm drain systems that serve a population of 50,000 or more, as well as construction sites of one acre or more, must file for and obtain an NPDES permit. Another measure for minimizing and reducing pollutant discharges to a publicly owned conveyance or system of conveyances (including roadways, catch basins, curbs, gutters, ditches, man-made channels, and storm drains, designed or used for collecting and conveying stormwater) is the EPA's Storm Water Phase II Final Rule. The Phase II Final Rule requires an operator (such as a City) of a regulated small municipal separate storm sewer system (MS4) to develop, implement, and enforce a program (e.g., BMPs, ordinances, or other regulatory mechanisms) to reduce pollutants in post-construction runoff to the City's storm drain system from new development and redevelopment projects that result in the land disturbance of greater than or equal to one acre. The MS4 Permit for portions of the Whitewater River Watershed, encompassing parts of the Coachella Valley and San Gorgonio Pass Region including the project site, Order No. R7-2013-0011, was issued by the Colorado River Basin Regional Water Quality Control Board in 2013. The Whitewater River Watershed MS4 Permit boundary is shown in Figure 5.9-1, *Whitewater River Watershed MS4 Permit Boundary*. The City of Banning Public Works Department is the local enforcing agency of the MS4 NPDES permit.

National Flood Insurance Program

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 mandate the Federal Emergency Management Agency (FEMA) to evaluate flood hazards. FEMA provides Flood Insurance Rate Maps (FIRMs) for local and regional planners to promote sound land use and floodplain development, identifying potential flood areas based on the current conditions. To delineate a FIRM, FEMA

conducts engineering studies referred to as Flood Insurance Studies (FISs). The most recent FIS and FIRM were completed and published for the City on August 28, 2008. Using information gathered in these studies, FEMA engineers and cartographers delineate Special Flood Hazard Areas (SFHAs) on FIRMs.

The Flood Disaster Protection Act (FDPA) requires owners of all structures in identified SFHAs to purchase and maintain flood insurance as a condition of receiving federal or federally related financial assistance, such as mortgage loans from federally insured lending institutions. Community members within designated areas are able to participate in the National Flood Insurance Program (NFIP) afforded by FEMA. The NFIP is required to offer federally subsidized flood insurance to property owners in those communities that adopt and enforce floodplain management ordinances that meet minimum criteria established by FEMA. The National Flood Insurance Reform Act of 1994 further strengthened the NFIP by providing a grant program for state and community flood mitigation projects. The act also established the Community Rating System, a system for crediting communities that implement measures to protect the natural and beneficial functions of their floodplains, as well as managing erosion hazards.

The City of Banning, under NFIP, has created standards and policies to ensure flood protection. These policies address development and redevelopment, compatibility of uses, required predevelopment drainage studies, compliance with discharge permits, enhancement of existing waterways, cooperation with the U.S. Army Corps of Engineers (Corps) and the San Bernardino Flood Control District for updating and method consistency with the Regional Water Quality Control Board (RWQCB) and proposed BMPs.

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 ultimate control over state water rights and water quality policy. In California, the EPA has delegated authority to issue NPDES permits to the SWRCB. The state is divided into nine regions related to water quality and quantity characteristics. The SWRCB, through its nine RWQCBs, carries out the regulation, protection, and administration of water quality in each region. Each regional board is required to adopt a water quality control plan or basin plan that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water quality conditions and problems. The City of Banning is in the Colorado River Basin, Region 7, in the Whitewater River Watershed. The water quality control plan for the Colorado River Basin was last issued with amendments dated 2014. This basin plan gives direction on the beneficial uses of the state waters in Region 7; describes the water quality that must be maintained to support such uses; and provides programs, projects, and other actions necessary to achieve the standards established in the basin plan.

Local

City of Banning Municipal Code

The following provision from the City's Municipal Code help minimize stormwater impacts associated with new development projects and are relevant to the proposed project.

- **Section 13.24.110 (Construction sites and onsite storage and infiltration of stormwater).** Requires that any construction in the City comply with the provisions of Chapter 13.24 (Stormwater Management System) and the Uniform Building Code, latest edition, for erosion and sediment control. Construction activities shall also comply with City of Banning Ordinance 1388, which requires, at a minimum, that all development will make provisions to store runoff from rainfall events up to and including the one-hundred-year, three-hour duration event, and post-development peak urban runoff discharge rates shall not exceed pre-development peak urban runoff discharge rates. Development of all land within the city must include provisions for the management of stormwater runoff from the property which is to be developed, including volumetric or flow based treatment control BMP design criteria, and/or exceptions to these requirements, and methodologies used to ensure proper management of stormwater runoff post-construction. This management shall consist of constructing storage and/or infiltration facilities, which includes basins.

5.9.1.2 EXISTING CONDITIONS

Regional Drainage

The project site is in the Whitewater River Watershed that spans 1,499 square miles in Riverside and San Bernardino counties, including the Coachella Valley and portions of several surrounding mountain ranges. The Whitewater River is the major stream in the watershed and extends 54 miles from the San Bernardino Mountains to the Salton Sea (see Figure 5.9-2, *Whitewater River Watershed*).

The project site is in the San Gorgonio River section of the Whitewater River Watershed; the San Gorgonio River section spans 202 square miles, including San Gorgonio Pass and parts of the San Bernardino and San Jacinto mountains. The San Gorgonio River extends 27 miles from the San Bernardino Mountains north of the project site to the Community of Whitewater to the east, where it flows into the Whitewater River. A segment of the Whitewater River in the Coachella Valley extending to the Salton Sea is developed as an engineered channel, the Coachella Valley Storm Water Channel.

Local Surface Waters and Drainage

Four main creeks run through or adjacent to the project site, as shown on Figure 3-3, *Aerial Photograph*. Pershing Creek runs northwest to southeast through the majority of the site; Montgomery Creek runs northwest to southeast through the eastern half of the site; and Gilman Home Channel runs south adjacent to the eastern boundary along Banning High School and the KOA Campground. All three drainage channels are tributary to the larger drainage, Smith Creek, which flows in southwest to northeast in the southeastern portion of the site. All creeks are unimproved and in their natural states within the boundaries of the project site. Smith Creek discharges into the San Gorgonio River about 3.8 miles east of the site. A few other minor

water courses are onsite, mainly discharging small existing drainages from north of Westward Avenue. The entire site is undeveloped and pervious.

The area tributary to the project site is about 22.7 square miles, most of which extends north about seven miles into the foothills above Banning. Approximately one square mile of the tributary area is tributary to Smith Creek from foothills south of the property (see Figure 5.9-3, *Tributary Watershed*). Approximate sizes of each stream's tributary area are listed in Table 5.9-1.

Existing Peak Flow

Existing peak flows in cubic feet per second in the four streams passing through the project site are shown in Table 5.9-1. These values reflect the 100-year, 6-hour storm, which typically produces the highest peak flow.[1] In addition, to account for potential debris flow, upstream off-site runoff has been increased by 25 percent. A debris flow into a stream is a flood that carries heavy loads of sediment (up to 50 percent by volume), including coarse debris. Debris flows typically occur in drainage channels and on alluvial fans next to mountainous areas, though they may also occur on floodplains (Wright 2007). Hydraulic modeling of the creeks uses the bulked flow rates.

Table 5.9-1 Existing Peak Runoff in Cubic Feet per Second

		Smith Creek	Pershing Creek	Montgomery Creek	Gilman Home Channel
Upstream of Project Site	Peak Flow	6,960	3,210	1,743	2,727
	Bulked Flow	8,701	4,013	2,173	3,665
	Square Miles	12.24	2.54	2.40	4.10
Downstream End[1]	Peak Flow	15,452	3,300	1,985	2,896
	Bulked Flow	17,192	4,103	2,415	3,834
	Square Miles	24.04	3.30	2.68	4.28

Source: Madole & Associates and Encompass Associates 2015.
[1] The downstream end of Smith Creek is the eastern site boundary. The downstream ends of Pershing Creek, Montgomery Creek, and Gilman Home Channel are at their respective confluences with Smith Creek.

Surface Water Quality

Receiving waters of site runoff are, in order, Smith Creek, San Gorgonio River, Whitewater River, and the Coachella Valley Storm Water Channel. The Coachella Valley Storm Water Channel is listed on the 2010 Clean Water Act Section 303(d) List of Water Quality Limited Segments for pathogens and toxaphene, an insecticide. No Section 303(d) List impairments are designated for Smith Creek, the San Gorgonio River, or the Whitewater River.

[1] The frequency and intensity of a storm in a given watershed is described as the storm's *recurrence interval*. For instance, if there is a one in 100 chance that five inches of rain will fall in the Whitewater River watershed in a 24-hour period in any given year, then the recurrence interval of five inches of rainfall in 24 hours in that watershed is said to be 100 years. Such storm is then described as a 100-year, 24-hour storm. Streamflow and flooding, by comparison, are described in terms of size of annual peak flow only – that is, a certain volume of streamflow (or a certain flood height) has a recurrence interval of 100 years (USGS 2015).

Groundwater

Most of the site is above the San Gorgonio Pass subbasin of the Coachella Valley Groundwater Basin, except part of the southeastern portion of the site is not above a groundwater basin (see Figure 5.9-4, *Groundwater Basin*). The San Gorgonio Pass subbasin spans 60 square miles, extending from near the western boundary of Banning in the west to the western portion of the Community of Whitewater in unincorporated Riverside County in the east, and north to several canyons in the southern foothills of the San Bernardino Mountains. Groundwater flows toward the east.

The San Gorgonio Pass subbasin is naturally recharged by local precipitation and from streams—including the San Gorgonio River—passing over the subbasin. In addition, San Gorgonio River water is intentionally recharged into the subbasin in spreading ponds in Banning Canyon about 3.5 miles north of Interstate 10.

Existing Infiltration

Existing infiltration into soil within the project area from a 100-year, six-hour storm is estimated to be approximately 123 acre-feet.

Groundwater Quality

Water quality in the portions of the San Gorgonio Pass subbasin from which the City of Banning draws part of its water supply is excellent (Geoscience 2011). The City has 8 active production wells that are in exceedance of California's new Chromium-6 standard of 10 parts per billion. The City is also currently in the process of developing a plan (i.e., treatment facilities) to remain compliant with the new standard (Vela 2016). No groundwater contamination was documented in the regulatory database search – of the project site and a one-mile radius surrounding site – conducted as part of the Phase I Environmental Site Assessment in 2012.

Flood Hazards

FEMA has designated 100-year flood zones onsite along Pershing Creek, Smith Creek, Montgomery Creek, and Gilman Home Channel (see Figure 5.9-5, *Existing Flood Zones*).

Mudflows

A mudflow is a landslide composed of saturated rock debris and soil with a consistency of wet cement. Most of the site consists of gently rolling terrain vegetated with grasses and is unlikely to generate a mudflow. However, steep slopes south of the southeast site boundary may be capable of generating mudflows.

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HYDROLOGY AND WATER QUALITY

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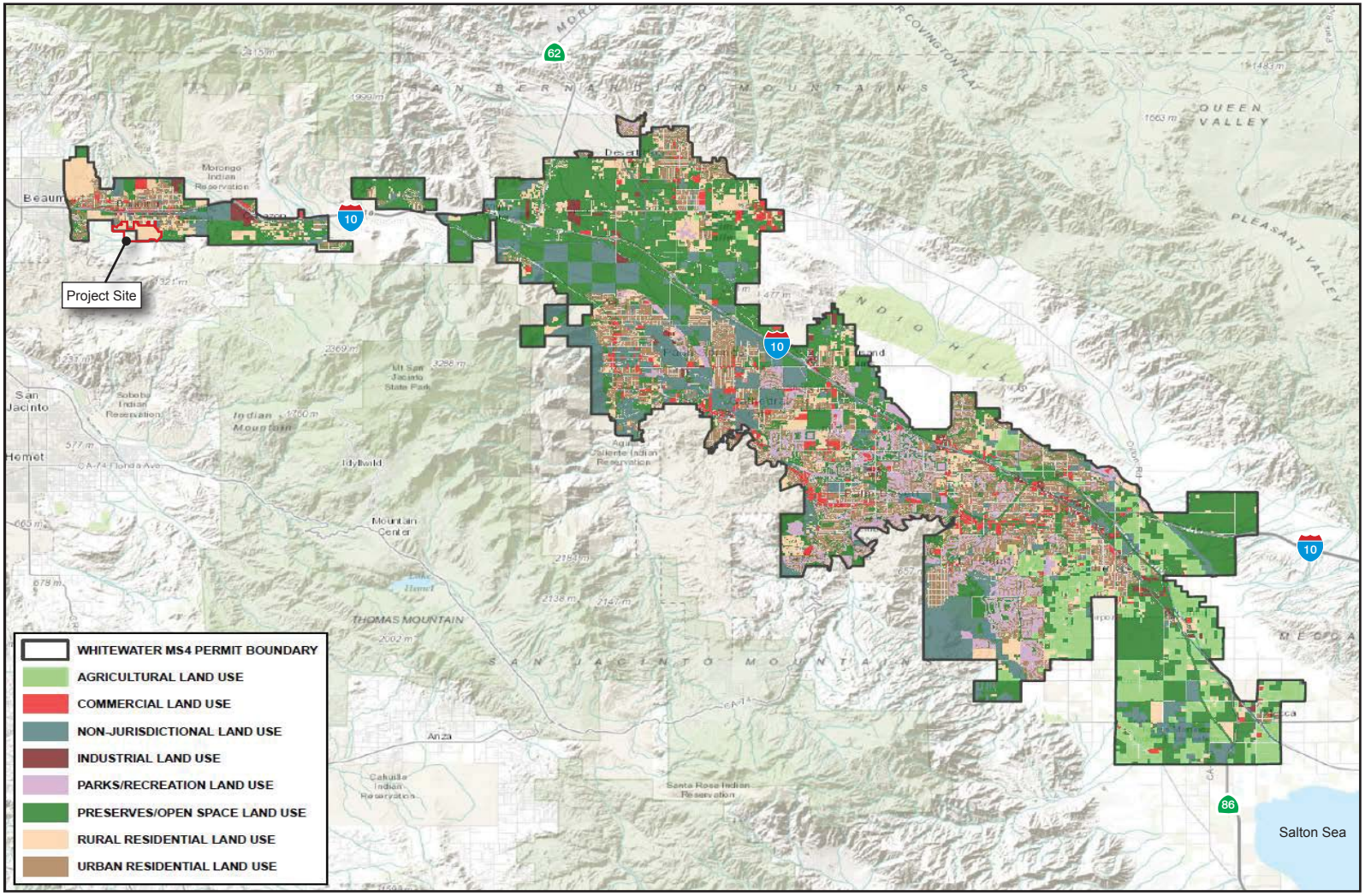
Figure 5.9-1 - Whitewater River Watershed MS4 Permit Boundary

5. Environmental Analysis



Base Map Source: RCFCWCD, 2014

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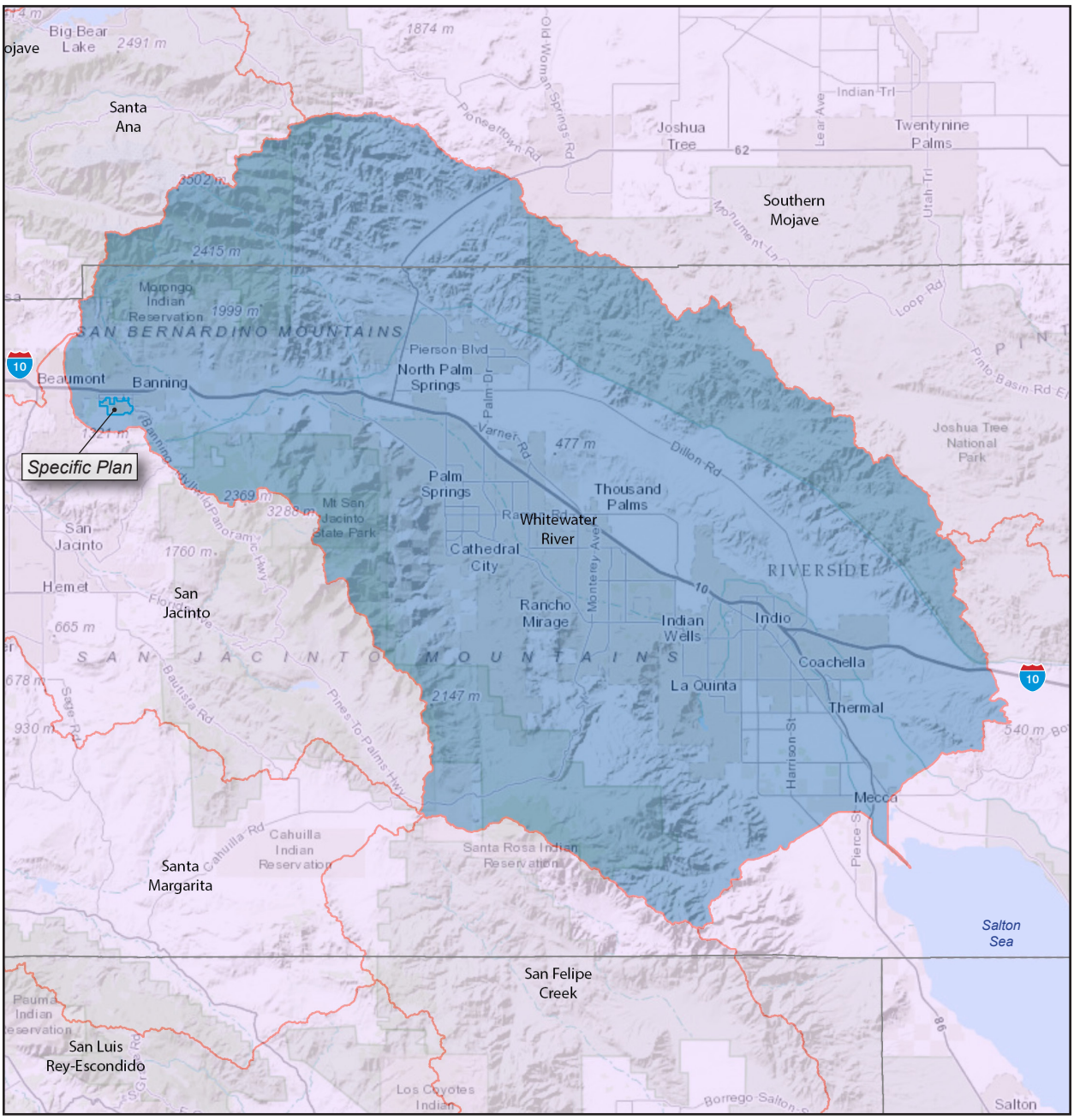
Figure 5.9-2 - Whitewater River Watershed

5. Environmental Analysis



Specific Plan

Whitewater River Watershed

Other Watersheds

0 12

Scale (Miles)

Base Map Source: USGS, 2014

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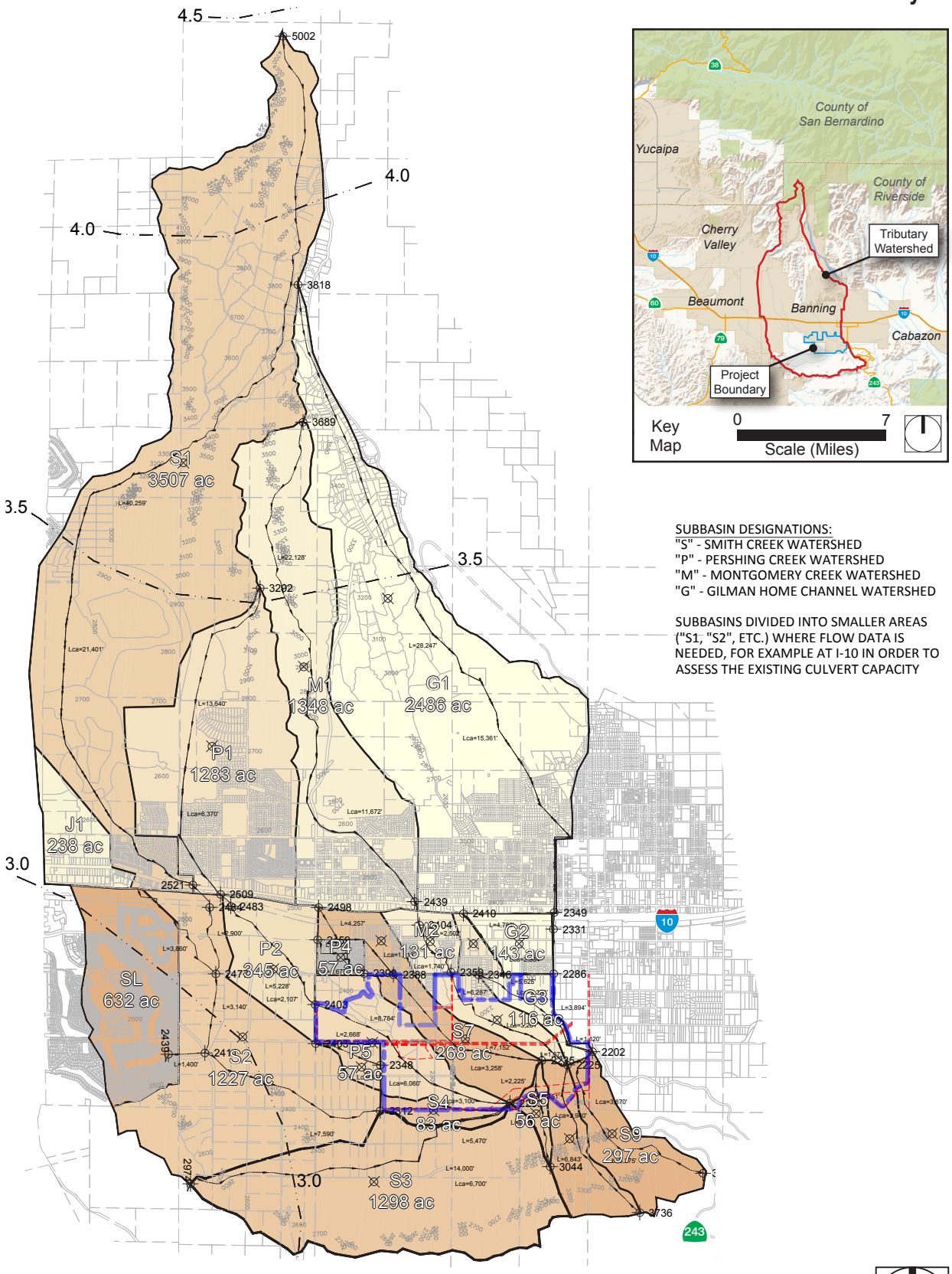
Figure 5.9-3 - Tributary Watershed

5. Environmental Analysis



Base Map Source: Madole Associates and Encompass Associates, 2015.

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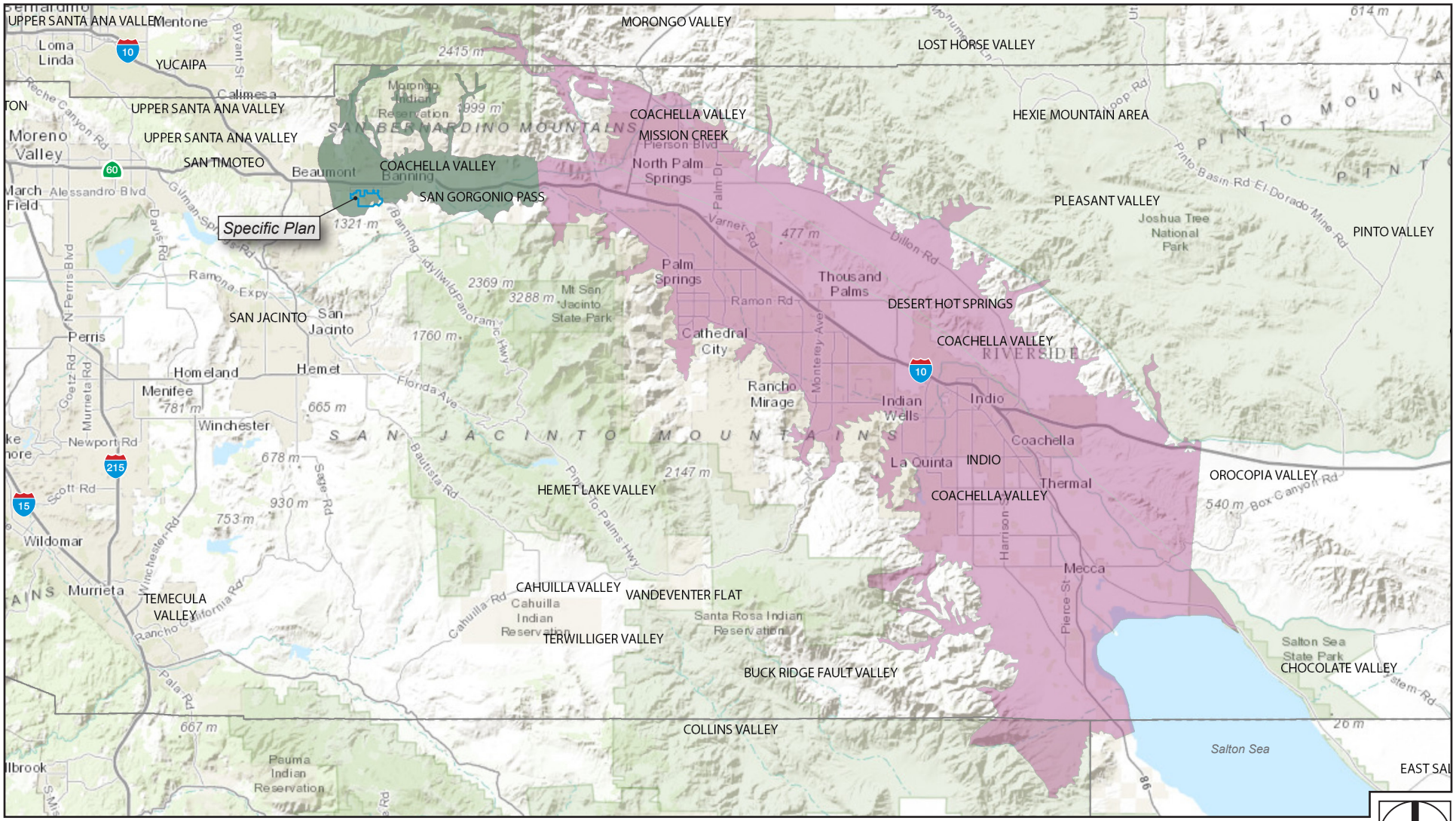
Figure 5.9-4 - Groundwater Basin

5. Environmental Analysis



Base Map Source: DWR, 2014

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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.

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.

The Initial Study, included as Appendix A, substantiates that impacts associated with the following threshold would be less than significant:

- Threshold HYD-9

This impact will not be addressed in the following analysis.

5.9.3 Environmental Impacts

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

Impact 5.9-1:	Development pursuant to the proposed project would increase the amount of impervious surfaces on the site, which could increase runoff and alter existing drainage patterns. [Thresholds HYD-3, HYD-4 and HYD-5]

Impact Analysis: It is estimated that 44 percent of the project site would be impervious at project completion.

Drainage Requirements for the Proposed Project

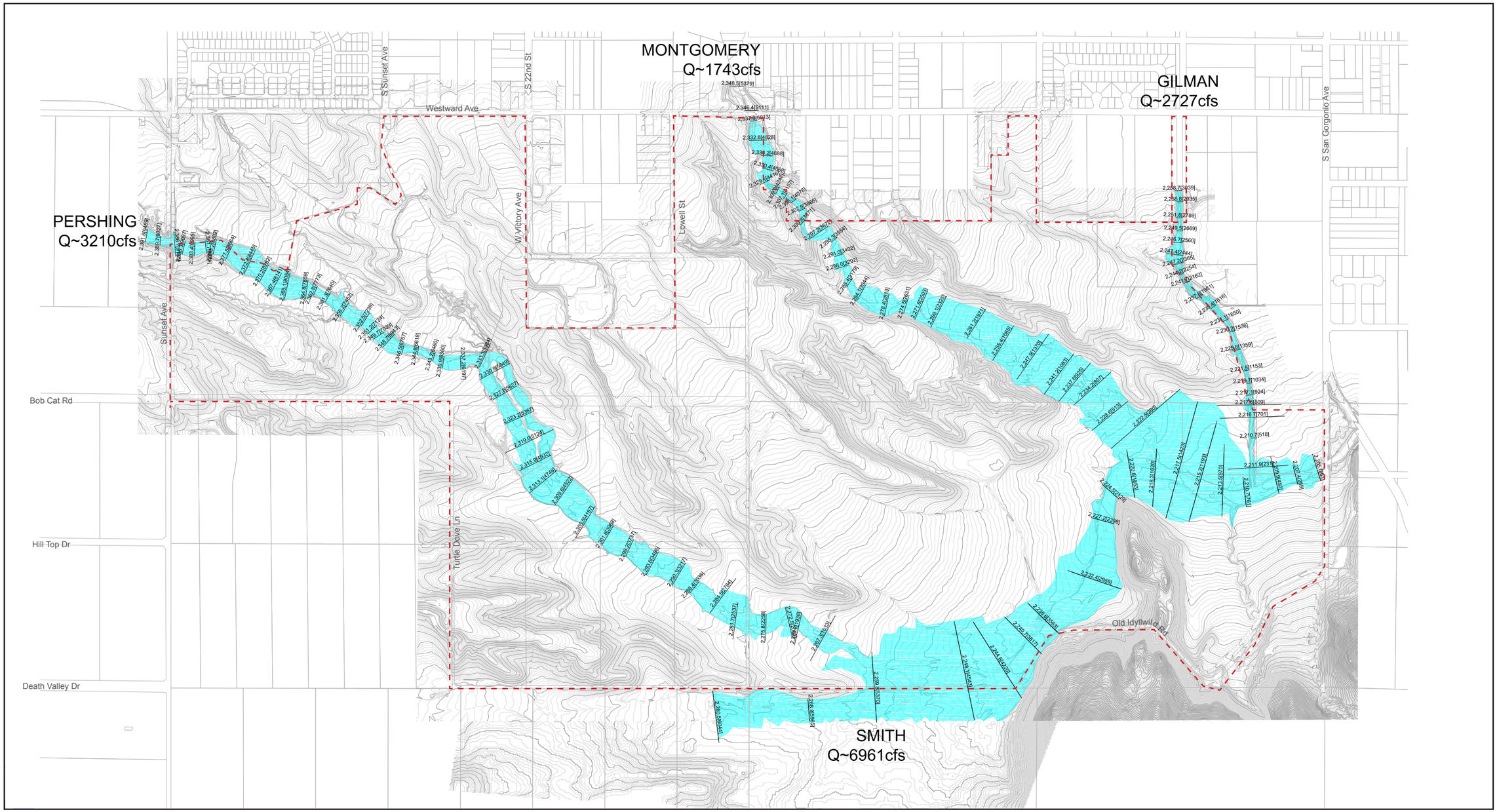
Per Section 13.24.110 of the City's municipal code, the City of Banning has two primary drainage requirements applicable to the proposed project: 1) the project shall retain a 100-year, 3-hour storm, and 2) the project shall not discharge more storm runoff than occurs in existing conditions.

A 100-foot setback from the limits of the 100-year, six-hour storm event determined for Smith and Pershing creeks was established during site planning. Streets and residential improvements are excluded from the creek and 100-foot setback areas, except where creek crossings have been established. The limit of the 100-year flood has been established in some places based on proposed improvements in order to achieve a better interface between development and streambed protection.

The City of Banning participates in FEMA's National Flood Insurance Program. Therefore, the project will need to demonstrate that residential improvements are maintained at least one foot above the 100-year flood limits and that any increase in base flood elevation does not negatively impact other properties.

A general requirement for development is that the 100-year storm runoff be maintained within the right-of-way throughout the project. A network of storm drains is proposed on-site, but the location of additional storm drains and catch basin inlets will be determined during final design that will accompany construction plans.

Figure 5.9-5 - Existing Flood Zones
5. Environmental Analysis



Project Boundary

2,227.2[2398] 100-year flood elevation in feet [distance from Smith Creek at east site boundary in feet]

0 1,300
Scale (Feet)

Base Map Source: Madole Associates and Encompass Associates, 2015

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New developments in the Whitewater River Watershed MS4 Permit region are currently required to capture and infiltrate storm runoff, based roughly on a 2-year storm.

Proposed Site Drainage

The existing drainage pattern, generally broken up into the four creek watersheds, would be maintained for the developed condition. Spreading out discharge points would emulate existing flow condition better than establishing concentrated flows. Montgomery Creek would be conveyed through the site in an underground storm drain from the northern site boundary to a confluence basin immediately north of Smith Creek. A segment of Gilman Home Channel—from the channel's confluence into Smith Creek northward about 700 feet—would be conveyed in an underground storm drain. The balance of Gilman Home Channel, as well as Smith Creek and Pershing Creek, would be left in their existing conditions.

Low-impact development techniques would be used to minimize stormwater quality impacts. These are anticipated to include pervious pavements, increased landscaping (e.g., parks and green belts), and infiltration basins (e.g., joint use park, infiltration and detention basins).

Specific Plan buildout would involve construction of a system of drainage improvements consisting of storm drains and retention-detention basins. Residential lots would drain surface water to adjacent streets, with catch basins at critical locations and low points. Underground storm drains would convey runoff from catch basins to retention-detention basins.

Retention basins capture and infiltrate runoff, and detention basins release runoff downstream at a lower rate than is generated upstream. Most such basins would be located in various planning areas (PAs), and several of them would be within 100-foot setback areas from creeks (see Figure 3-10, *Drainage Master Plan*).

Proposed Storm Drains

Flows from PAs directly adjacent to one of the four creeks would be routed to the closest retention basin prior to draining into the adjacent creek. PAs not situated next to a creek would also first route flows to the closest retention basin prior to flowing into one of the master planned storm drain lines. Additionally, there are various points of concentrated flows from off-site, upstream areas that would require conveyance through the project. Other areas of surface flow and minor points of concentrated runoff from off-site properties would need to be addressed at a local level within the affected PAs at final design.

Proposed storm drains are mapped on Figure 3-10, *Drainage Master Plan*, and would be sized to accommodate a 100-year, 6-hour storm. Table 5.9-2 provides preliminary pipe size estimates, which are subject to change during final design.

An NOP comment from the RCFCWCD regarding District Master Plan facilities noted that such facilities must be constructed to District standards and requires District plan check and inspection, and payment of District administrative fees, prior to approval. Proposed Line A conveying a segment of Gilman Home Channel underground is such a Master Plan facility. Planning for Line A would comply with the aforementioned requirements. Additionally, an encroachment permit shall be obtained for any construction-related activities occurring within District right-of-way or facilities.

Table 5.9-2 Proposed Storm Drains

Storm Drain	Drainage Area; Location (origin to discharge)	Size
A	Conveys Gilman Home Channel southward about 700 feet, mostly in B Street, to Smith Creek	Double 12-foot by 8-foot reinforced concrete box (RCB)
B	Conveys Montgomery Creek from north site boundary southeastward, through north and central parts of site, to confluence basin	11-foot by 8-foot RCB
B-1	Conveys drainage from PAs 5-C and PA 6-B east to Line B	36-inch reinforced concrete pipe (RCP)
B-2	Conveys drainage from offsite area—north of site and east of 12th Street—south, partly through PA 7-B and partly in Rancho San Gorgonio Parkway, to Line B	48-inch RCP
B-3	Conveys offsite drainage from 12th Street north of site south to Line B	36-inch RCP
C	Conveys drainage from PAs 4-B and 3-B east, partly in Rancho San Gorgonio Parkway, to one of the confluence basins	36-inch RCP
D	Conveys drainage from about 65 acres north of site (including Dysart Park), as well as part of PA 7-A, southeast and then southwest to Pershing Creek	60-inch RCP
E	Convey off-site flows from about 70 acres southwest of the site south and southeast through PA 2-A and discharge into Pershing Creek.	48-inch RCP
F	Convey offsite flows from northwest of the site—including the Mount San Jacinto Community College campus—east and south, discharging into Pershing Creek.	78-inch RCP
F-1	Conveys drainage from PA 9 south, in 22nd Street, to Line F	60-inch RCP
G	Conveys offsite flows north in Sunset Avenue to Pershing Creek	48-inch RCP

Source: Madole and Associates and Encompass Associates 2015.

Proposed Retention-Detention Basins

Typical retention-detention basins would have three feet of retention storage depth and be sized to retain a 100-year, 3-hour storm. A spillway would be built at that elevation, sized to pass the mitigated 100-year, 6-hour storm with an additional foot of depth. One foot of additional slope height is assumed, for a total depth of five feet. The conceptual basin footprint size is established accounting for an infiltration rate of one inch per hour and using a 4:1 (horizontal:vertical) slope. Spillway outlets would be connected to proposed storm drains or to adjacent creeks. The footprint to accommodate a 100-year, 3-hour storm is larger than that needed to capture and infiltrate storm runoff from a 2-year storm; thus, the basins would meet water runoff requirements. Distributing runoff into numerous retention-detention basins serves to reduce peak runoff—peak runoff increases as concentration time decreases, and concentrated flows tend to decrease concentration time. Basins would be used as parks in addition to their infiltration, detention, and water quality uses.

The conceptual retention-detention basin plan includes 33 basins to be located in most of the PAs (mostly one basin per PA, except PAs 2-B and 7-A would each have two basins); 9 linear basins within the 100-foot setback areas from Smith Creek and Pershing Creek; and 3 confluence basins in Confluence Park in the eastern part of the site (see Figure 3-10, *Drainage Master Plan*).

Peak Runoff Rates at Specific Plan Buildout

Peak runoff rates at the downstream end of each of the four streams passing through the project site during a 100-year 6-hour storm (highest peak flow) are shown in Table 5.9-3 for existing conditions and post-development conditions.

Table 5.9-3 Existing and Post-development Peak Runoff Conditions, Downstream End

		Smith Creek	Pershing Creek	Montgomery Creek	Gilman Home Channel
Existing Conditions	Peak Flow	15,452	3,300	1,985	2,896
	Bulked Flow	17,192	4,103	2,415	3,834
Post-Development Conditions	Peak Flow	15,154	3,254	2,165	2,762
	Bulked Flow	16,894	4,082	2,600	3,665
Difference	Peak Flow	-298	-46	180	-134
	Bulked Flow	-298	-21	185	-169

Source: Madole & Associates and Encompass Associates 2015.
Notes: Flows are expressed in cubic feet per second.
The downstream end of Smith Creek is the eastern site boundary. The downstream ends of Pershing Creek, Montgomery Creek and Gilman Home Channel are at their respective confluences with Smith Creek.

Summary

As shown in Table 5.9-3, Specific Plan buildout would increase peak runoff rates in Montgomery Creek only. Runoff rates in Pershing Creek, Gilman Home Channel, and Smith Creek would be less than existing conditions. Therefore, runoff discharge from the site would not exceed existing conditions, and no new or expanded drainage improvements downstream of the site would be required. Impacts would be less than significant.

Impact 5.9-2: Development pursuant to the Specific Plan would not adversely impact groundwater recharge in the project area. [Threshold HYD-2]

Impact Analysis: The project site is currently undeveloped and completely pervious; however, it is not used for intentional groundwater recharge. At Specific Plan buildout, approximately 44 percent of the site would be impervious. Per Section 13.24.110 of the City's municipal code, proposed retention-detention basins shall be sized to infiltrate a 100-year, 3-hour storm. The project is proposing to implement various measures – including infiltration basins, bioswales, and porous pavement – that would increase recharge onsite, which at a minimum would limit the decrease in percolation due to development. By comparison, natural percolation from large storm events is generally not very high in relation to the volume of runoff. An estimate of the average volume of runoff that could be recharged is provided below.

Rainfall exceeds evapotranspiration in Banning for three months of the year—January, February, and December. The total average rainfall during those three months is 8.5 inches, and the total average evapotranspiration during the same months is 5.62 inches. It is assumed that the balance of rainfall, 2.88 inches, infiltrates into soil. Thus, recharge volume on the site is 2.88 inches x 830.8 acres, or 199 acre-feet per year.

Therefore, development of the Specific Plan is expected to increase groundwater recharge, and would not substantially reduce recharge. Impacts would be less than significant.

Impact 5.9-3: Portions of the project site proposed for development are within a 100-year flood zone; however, they would not be susceptible to flood hazards. [Thresholds HYD-7 and HYD-8]

Impact Analysis: Existing 100-year flood zones onsite are shown on Figure 5.9-5, *Existing Flood Zones*. Proposed changes to the creeks onsite would result in the following changes to these 100-year flood zones:

- The existing 100-year flood zone along Montgomery Creek would be removed due to the proposed undergrounding of the creek.
- The existing 100-year flood zone along a segment of Gilman Home Channel extending north about 700 feet from Smith Creek would be removed due to the proposed undergrounding of that channel segment.
- The aforementioned proposed changes to Montgomery Creek and Gilman Home Channel would result in minor changes to 100-year flood zones on Smith Creek. Floodwater height during a 100-year flood is estimated to rise by two inches on a small stretch of Smith Creek.

RCFCWCD stated in an NOP comment that the project may require permits or plan approval from the SWRCB or Federal Emergency Management Agency if flood plains or natural watercourses are impacted. A Letter of Map Revision (LOMR) filed with FEMA would be required to address these changes in flood zone mapping. Upon issuance of an LOMR, National Flood Insurance Program floodplain management standards and mandatory flood insurance purchase requirements would no longer be required for the areas outside of the 100-year flood zones.

At Specific Plan buildout and upon approval of the aforementioned LOMR by FEMA, 100-year flood zones onsite would slightly decrease, as illustrated on Figure 5.9-6, *Proposed 100-Year Flood Zones*. Additionally, the Specific Plan includes 100-foot setbacks for residences and streets from 100-year flood zones, except for streets at creek crossings ("B" Street, see Figure 3-5, *Proposed Site Plan*). Considering the proposed drainage improvements described above in Impact 5.9-1, including proposed storm drains for conveying offsite drainage through the site to Pershing Creek and the confluence basins; the reduction in 100-year flood zones onsite from proposed undergrounding of Montgomery Creek and Gilman Home Channel; and the 100-foot setbacks, Specific Plan buildout would not cause a substantial hazard to people or structures from 100-year flood zones. Impacts would be less than significant.

Figure 5.9-6 - Proposed 100-Year Flood Zones

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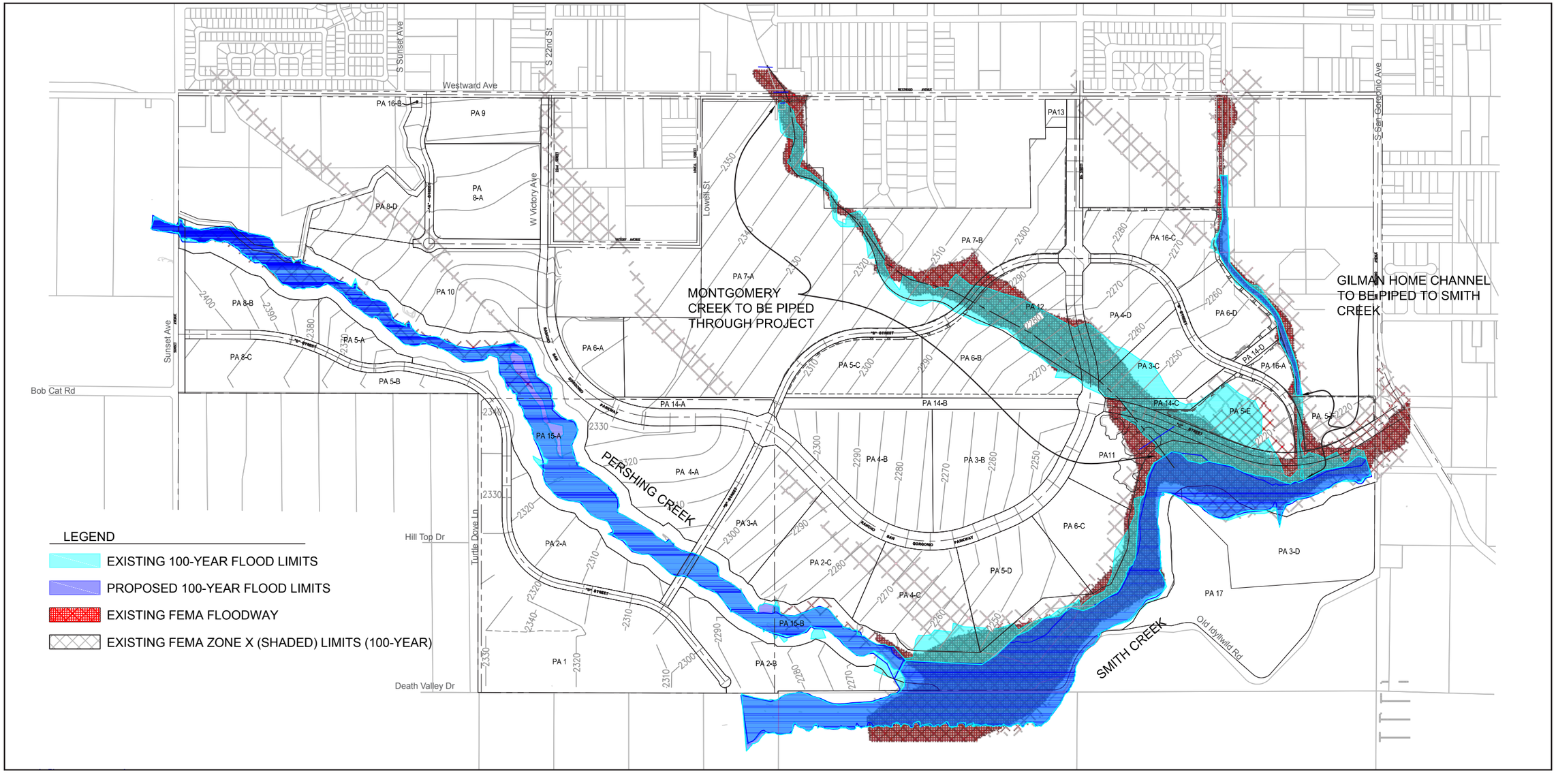

Base Map Source: FEMA, 2014

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Impact 5.9-4:	During the construction and operation phases of the proposed project, there is the potential for short-term increases in pollutant concentrations from the site and altered stormwater quality. [Thresholds HYD-1 and HYD-6]

Impact Analysis:

Potential Pollutants from Specific Plan Buildout

Bacteria and Viruses

Bacteria and viruses are microorganisms that thrive under certain environmental conditions. Water contamination by animal or human fecal wastes and contamination by excess organic wastes are common causes of proliferation of these microorganisms. Water containing excessive bacteria and viruses can alter the aquatic habitat and harm humans and aquatic life.

Metals

Metals of concern as water contaminants include cadmium, chromium, copper, lead, mercury, and zinc. Lead and chromium have been used as corrosion inhibitors; metals are also raw materials used in nonmetal products such as fuels, adhesives, and paints. At the low concentrations naturally occurring in soil, metals may not be toxic. However, certain metals at higher concentrations can be harmful to aquatic life and to humans. Humans can be impacted from groundwater contaminated with metals. Metals can become concentrated in fish and shellfish and can subsequently harm humans who consume those animals. Environmental concerns have already led to restrictions on some uses of metals.

Nutrients

Nutrients are inorganic substances such as nitrogen and phosphorous; the primary sources of these substances in urban runoff are fertilizers and eroded soils. Excessive discharge of nutrients to water bodies and streams causes overgrowth of aquatic plants and algae, which can lead to excessive decay of organic matter in the water, loss of oxygen in the water, and eventual death of aquatic organisms.

Pesticides

Relatively low concentrations of the active ingredients in pesticides can be toxic in water. Excessive or improper use of pesticides can cause toxic contamination in runoff.

Organic Compounds

Organic compounds are carbon based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons. Organic compounds at certain concentrations can be hazardous to life or health. Toxic levels of solvents and cleaning compounds can be discharged to storm drains during cleaning and rinsing operations.

Sediments

Sediments are solid materials that erode from the land surface. Sediments can increase the turbidity (cloudiness) of water, clog fish gills, reduce spawning habitat, lower survival rates of young aquatic organisms, smother bottom-dwelling organisms, and suppress aquatic vegetation growth.

Trash and Debris

Trash and debris such as paper, plastic, polystyrene foam, aluminum, and biodegradable organic matter (e.g., leaves, grass cuttings, and food waste) may significantly impair aquatic habitat and the recreational vale of a water body. In addition, trash impacts water quality by increasing biochemical oxygen demand.

Oxygen-Demanding Substances

Microbial biodegradation of organic compounds such as proteins, carbohydrates, and fats causes increased oxygen demand in water. A second category of oxygen-demanding substances is chemicals, such as ammonia and hydrogen sulfide that react with dissolved oxygen in water to form other compounds. The oxygen demand of a substance can deplete dissolved oxygen in a water body and possibly result in septic conditions. A reduction of dissolved oxygen is harmful to aquatic life and can generate hazardous compounds such as hydrogen sulfides.

Oil and Grease

Oil and grease in water bodies decrease their aesthetic value as well as water quality; one of the most important sources of oil and grease is leakage from motor vehicles.

Pollutants of Concern Impairing Receiving Waters

The Coachella Valley Storm Water Channel is listed on the 2010 Clean Water Act Section 303(d) List of Water Quality Limited Segments for pathogens and for toxaphene, an insecticide.

Water Quality Management Plan

A conceptual water quality management plan (WQMP) was prepared for the Specific Plan. Final WQMPs would be prepared and implemented by each project developed pursuant to the Specific Plan. WQMPs use a combination of three strategies to minimize water pollution from proposed projects.

- **Site Design Best Management Practices (BMPs):** Minimize runoff through site design, such as minimizing impervious areas by including infiltration basins and detention or retention basins in project designs.

- **Source Control BMPs:** Reduce the potential for pollutants to enter runoff through source control BMPs, including roof runoff controls, protection of slopes and channels, efficient irrigation, storm drain system signs, education of owners and employees, and activity restrictions. Structural source control

BMPs are incorporated into the project design, while nonstructural source controls are used during project operation.

- **Treatment Control BMPs:** Treat contaminated stormwater with treatment control BMPs, such as biofiltration or filters before the water is discharged offsite.

Applicable site design, source control, and treatment control BMPs for the proposed project are reproduced below from the conceptual WQMP.

Site Design BMPs

Minimize Urban Runoff, Minimize Impervious Footprint, and Conserve Natural Areas

- Conserve natural areas by concentrating or cluster development on the least environmentally sensitive portions of a site while leaving the remaining land in a natural, undisturbed condition.
- Conserve natural areas by incorporating the goals of the Multi-Species Habitat Conservation Plan or other natural resource plans.
- Preserve natural drainage features and natural depressional storage areas on the site.
- Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.
- Use natural drainage systems.
- Increase the building floor area ratio (i.e., number of stories above or below ground).
- Construct streets, sidewalks and parking lot aisles to minimum widths necessary, provided that public safety and a walkable environment for pedestrians is not compromised.
- Reduce widths of streets where off-street parking is available while maintaining street widths at city-required minimums.
- Minimize the use of impervious surfaces, such as decorative concrete, in the landscape design.

Minimize Directly Connected Impervious Areas

- Residential and commercial sites must be designed to contain and infiltrate roof runoff, or direct roof runoff to vegetative swales, buffer areas and/or landscaped areas.
- Drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping and/or infiltration basins.
- Incorporate landscaped buffer areas or parkways between sidewalks and streets.

- Uncovered temporary or guest parking on residential lots paved with a permeable surface, or designed to drain into landscaping.
- Urban curb/swale system: street slopes to curb; periodic swale inlets drain to vegetated swale or biofilter.
- Maximize the permeable area by constructing walkways, trails, patios, overflow parking, alleys, driveways, low-traffic streets, and other low- traffic areas with open-jointed paving materials or permeable surfaces such as pervious concrete, porous asphalt, unit pavers, and granular materials.
- Use vegetated drainage swales in lieu of underground piping or imperviously lined swales where feasible.
- Construct onsite infiltration BMPs such as dry wells, infiltration trenches, and infiltration basins consistent with vector control objectives.
- Construct onsite ponding areas or detention facilities to increase opportunities for infiltration consistent with vector control objectives.
- Incorporate tree well filters, flow-through planters, and/or bioretention areas into landscaping and drainage plans.

Source Control BMPs

Non-structural Source Control BMPs

- Education for property owners, operators, tenants, occupants, or employees.
- Activity Restrictions (to be specified in Final WQMP).
- Irrigation System and Landscape Maintenance
- Common Area Litter Control.
- Street Sweeping Private Streets and Parking Lots.
- Drainage Facility Inspection and Maintenance.

Structural Source Control BMPs

- **Catch Basin Stenciling and Signage:** The catch basins would be stenciled (prior to acceptance by city) with "NO DUMPING: DRAINS TO RIVER".
- **Landscape and Irrigation System Design:** Initial landscape design would include drought-tolerant species requiring limited irrigation. Irrigation systems would be designated as water-conservation type.

- **Protect Slopes and Channels:** Smith Creek, Pershing Creek, and most of Gilman Home Channel would be left in their existing conditions, with developments set back 100 feet from 100-year flood zones along those streams.

- Properly design trash storage areas

Treatment Control BMPs

The proposed retention-detention/infiltration basins would serve as treatment control BMPs. Of the two pollutants of concern causing receiving water impairments, the infiltration basins would address pathogens (bacteria and viruses). Infiltration basins have high to moderate effectiveness at removing pathogens.

Summary

Implementation of the aforementioned BMPs and future BMPs to be specified by a final WQMP for each project developed in accordance with the Specific Plan would reduce water quality impacts from operations of such projects to less than significant levels.

An NOP comment suggested that recent studies found that four wells in Banning, including three wells along Westward Avenue and one well in Northwest Banning, were contaminated with Chromium-6. Hazardous materials sites posing potential water quality concerns are mapped on the GeoTracker website maintained by the State Water Resources Control Board. According to GeoTracker, two school sites were investigated along Westward Avenue near the site boundary—one for the proposed elementary school onsite and the other for an expansion of Banning High School. A Preliminary Environmental Assessment of the elementary school site completed by Earth Systems Southwest on November 11, 2015 found no evidence of a hazardous material release, or of a naturally occurring hazardous material, which would pose a threat to public health or the environment. The DTSC determined that no further investigation of the site was required, and closed the case, on December 24, 2015 (DTSC 2015a). A Phase I Environmental Site Assessment of the high school expansion site completed by Earth Systems Southwest on September 29, 2014 found no evidence of a hazardous material release or a naturally occurring hazardous material which would pose a threat to public health or the environment. The DTSC determined that no further investigation of the site was needed, and closed the case, on January 15, 2015 (DTSC 2015b). Additionally, no groundwater contamination with Chromium-6 is documented in northwest Banning (west of Sunset Avenue) on the GeoTracker website (SWRCB 2016).

Moreover, by implementing the project's WQMP and associated BMPs, the proposed project would not generate significant amounts of pollutants, including Chromium-6 and other metal pollutants, which may impact existing water wells. Site design BMPs, source control (e.g., structural and non-structural) and treatment control BMPs would all minimize water quality impacts of the proposed project and would not exacerbate any existing water quality issues.

Stormwater Pollution Prevention Plans

In addition to a final WQMP, each project developed pursuant to the Specific Plan is required to prepare and implement a SWPPP specifying BMPs for minimizing water pollution from construction activities. Categories of BMPs included in SWPPPs are described in Table 5.9-4. Implementation of construction BMPs and other SWPPP requirements by such projects would reduce water quality impacts from construction to less than significant levels.

Table 5.9-4 Construction BMPs

Category	Purpose	Examples
Erosion Controls and Wind Erosion Controls	Cover and/or bind soil surface, to prevent soil particles from being detached and transported by water or wind	Mulch, geotextiles, mats, hydroseeding, earth dikes, swales
Sediment Controls	Filter out soil particles that have been detached and transported in water.	Barriers such as straw bales, sandbags, fiber rolls, and gravel bag berms; desilting basin; cleaning measures such as street sweeping
Tracking Controls	Minimize the tracking of soil offsite by vehicles	Stabilized construction roadways and construction entrances/exits; 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.	BMPs specifying methods for: paving and grinding operations; cleaning, fueling, and maintenance of vehicles and equipment; concrete curing; concrete finishing.
Waste Management and Controls (i.e., good housekeeping practices)	Management of materials and wastes to avoid contamination of stormwater.	Spill prevention and control, stockpile management, and management of solid wastes and hazardous wastes.

Overall, construction and operational activities associated with the proposed Specific Plan would not adversely impact water quality. Impacts would be less than significant.

Impact 5.9-5: Specific Plan buildout would not place people or structures at substantial risk from flooding due to seiche, tsunami, or mudflow. [Threshold HYD-10]

Impact Analysis: There are no inland bodies of water close enough to the City of Banning or the project site to pose a flood threat to the site due to a seiche or tsunami. However, steep slopes south of the southeast project boundary and in a hill in the southeast portion of the site may be capable of generating mudflows.

The hill in the southeast part of the site has its long axis aligned north to south and has a peak elevation of approximately 2,344 feet above mean sea level. The west face of the hill faces Smith Creek and thus would not pose a mudflow hazard to developed land uses built pursuant to the Specific Plan. The east face of the hill faces PA 3-D, proposed for low-density residential use. The east base of the hill is at an elevation of about 2,240 feet; thus, the hilltop is about 100 feet above the surrounding terrain. The east face of the hill

spans a horizontal distance of about 400 feet. The west boundary of PA 3-D is at the base of the hill. Considering the small size and height of the east face of the hill, it is unlikely that development of the proposed residential uses in PA 3-D would pose substantial flood hazards to people or structures due to potential hillside mudflow.

The portion of the south site boundary abutted by steep slopes is adjacent to a boundary segment of PA 17 and PA 15-B. The nearest proposed developed land uses to these slopes are in PAs 6-C and 5-D. Smith Creek and part of PA 17, which are proposed as open space, provide a buffer between PAs 17 and 15-B and the slopes. A mudflow from those slopes would be stopped by the north bank of Smith Creek and would not flow northward into the proposed residential land uses. Thus, impacts would be less than significant.

5.9.4 Cumulative Impacts

The area considered for cumulative hydrology and water quality impacts is the Whitewater River Watershed.

Drainage

Future projects in the Whitewater River Watershed would increase impervious areas and would thus increase local runoff from those project sites. Other projects in the region would be required to capture and infiltrate runoff from a 2-year storm, and many other projects in the region would be required to limit postproject runoff discharges to no greater than preproject runoff rates, in accordance with the Whitewater River Watershed MS4 Permit. Thus, no significant cumulative drainage impact would occur, and project drainage impacts would not be cumulatively considerable.

Flood Hazards

Portions of the Whitewater River watershed are within 100-year flood zones. As with the proposed project, other projects in the region would be required to show that residential improvements are maintained at least one foot above 100-year-flood elevations in accordance with National Flood Insurance Program requirements. Therefore, no cumulative flood hazard impacts would occur.

Water Quality

Other projects would generate pollutants during project construction and operation. Although the specific pollutants would vary by land use category, the types of pollutants that would be generated by the proposed project are common to a range of developed land uses. Other construction projects of one acre or more in the area would be required to prepare and implement SWPPPs in order to obtain coverage under the Statewide General Construction Permit. Other projects in the Whitewater River Watershed MS4 Region would also be required to prepare and implement water quality management plans specifying BMPs that would be used during project design and project operation to minimize water pollution from project operation. Thus, no significant cumulative water quality impact would occur, and project water quality impacts would not be cumulatively considerable.

5.9.5 Existing Regulations

Federal

- United States Code, Title 33, Sections 1251 et seq.: Clean Water Act
- Code of Federal Regulations Title 40 Parts 122 et seq.: National Pollutant Discharge Elimination System
- Code of Federal Regulations Title 33 Parts 320-332: Regulatory Program Regulations

State

- California Water Code Sections 13000 et seq.: Porter-Cologne Water Quality Act
- Statewide General Construction Permit

Local

- Whitewater River Watershed MS4 Permit
- City of Banning Municipal Code Section 13.24.110 (Construction sites and onsite storage and infiltration of stormwater)

5.9.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.9-1, 5.9-2, 5.9-3, 5.9-4, and 5.9-5.

5.9.7 Mitigation Measures

No mitigation measures are required.

5.9.8 Level of Significance After Mitigation

Impacts would be less than significant.

5.9.9 References

Department of Toxic Substances Control (DTSC). 2015a, December 24. Approval of Preliminary Environmental Assessment Report, Banning Unified School District, Proposed San Gorgonio School, Parcel 1, 778 West Westward Avenue, Banning, Riverside County. http://www.envirostor.dtsc.ca.gov/regulators/deliverable_documents/8544924676/ApprovalofPreliminaryEnvironmentalAssessmentReport_ProposedSanGorgonioSchoolParcel1_12.24.2015.pdf.

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