4.7 | WATER QUALITY + HYDROLOGY

INTRODUCTION

This section describes the existing hydrology and water quality resources within the City Planning Area. It describes the regulatory framework, addresses existing conditions, and impacts for the issues of drainage, flooding, groundwater, as well as surface and groundwater quality.

EXISTING CONDITIONS

ENVIRONMENTAL BASELINE SETTING

GEOGRAPHY

The Planning Area is located within the greater Coachella Valley. The Coachella Valley is flanked by the San Jacinto and Santa Rosa Mountains on the west and the Little San Bernardino Mountains on the east. The Coachella Valley extends to the northwest and southeast of the project area. The Coachella Valley generally slopes to the southeast towards the Salton Sea.

CLIMATE

The Coachella Valley is one of the hottest and driest areas in the United States. The San Bernardino, San Jacinto, and Santa Rosa Mountains isolate the Coachella Valley from the moist, cool ocean air masses from the west. As a result, the region is characterized by a subtropical desert climate with long, hot, dry summers and relatively short, mild winters. Mean annual rainfall ranges from four to six inches per year and mostly occurs as gentle widespread rains from November through March. Localized thunderstorms from August through October can produce short duration, high-intensity rainfall that may result in flash flooding. Temperature extremes range between 28 to 126 degrees Fahrenheit. The humidity ranges from about 34 percent in the summer to about 48 percent in the winter[1].

DRAINAGE FEATURES AND FLOODING

The dominant drainage/surface water feature in the Coachella Valley is the Whitewater River. The Whitewater River watershed is primarily in Riverside County within the Coachella Valley Planning Area

[1] Bureau of Reclamation, Coachella Canal Area Resource Management Plan/Environmental Assessment. September, 2006.

of the Colorado River Regional Water Quality Control Board (RWQCB). The watershed is generally defined by the boundaries of the Whitewater Hydrologic Unit, as described in the Water Quality Control Plan for the Colorado River Basin RWQCB (Basin Plan). Much of the watershed consists of sparsely populated mountains, desert, and agricultural lands. Urbanized areas are principally located on the valley floor between Banning and Indio along Interstate 10, and from Palm Springs to Coachella along State Highway 111[2]. The Whitewater River originates on the slopes of Mount San Gorgonio, in San Bernardino County, and terminates at the Salton Sea. The principal tributaries of the Whitewater River are the San Gorgonio River and the Snow, Chino Canyon, Tahquitz, Palm Canyon, Deep Canyon, Mission, Big Morongo, and Little Morongo Creeks. Some of the larger tributaries are perennial streams in the mountains but quickly percolate into the groundwater supply upon reaching the highly pervious alluvium of the Coachella Valley.

Figure 4.7-1 shows the regional surface water features in the Planning Area. The Whitewater River has perennial flow in the mountains, but because of diversions and percolation into the groundwater basin, the river becomes dry further downstream. The Whitewater River is channelized downstream from Point Happy in La Quinta near State Route 111 and Washington Avenue. The constructed downstream extension of the river channel known as the Coachella Valley Stormwater Channel and serves as drainage for irrigation return flows, treated community wastewater, and storm runoff[3].

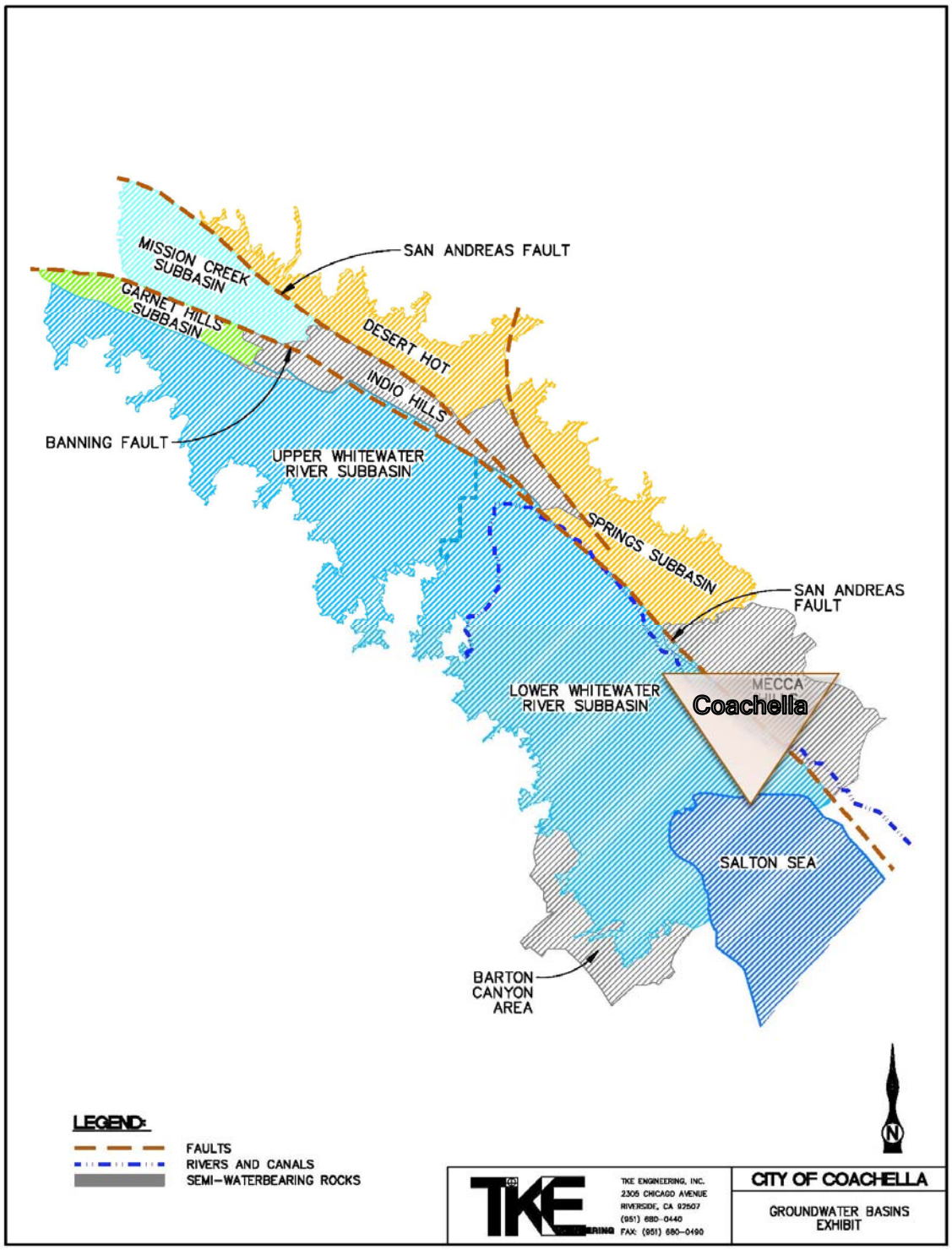
Regional drainage and flood control in the Planning Area are managed primarily by the Coachella Valley Water District (CVWD). The CVWD boundaries cover most of the Coachella Valley from the San Gorgonio Pass to the Salton Sea. The CVWD also maintains an extensive system of agricultural tile drains throughout the Coachella area consisting of 12-foot long sections of clay, perforated concrete, or perforated plastic pipe butted together in a gravel envelope. The major system of conveyance lines is buried eight to 12 feet deep while "on-site" lines that drain private properties and connect to the conveyance system are buried four to seven feet deep. The tile drains are located along section and quarter section lines within a 50-foot wide Federal easement. The tile drain system is designed with two primary functions. First, the tile drains return excess irrigation water to the Coachella Valley storm water channel, and second, they artificially lower Coachella's otherwise high water table, protecting crops from inundations.

In addition to CVWD, the Riverside County Flood Control District (RCFCD) addresses local drainage issues in unincorporated County areas, and the City of Coachella Engineering Department is responsible for local drainage issues within the incorporated City boundary. Channel and levee improvements have been made along most of the Whitewater River channel, limiting the 100-year flood zone primarily within the banks of the channel. The East Side Dike is designed to protect the Coachella branch of the All American Canal, which passes through the northeastern part of the Planning Area. The Bureau of Reclamation provided funds for the East Side Dyke in the 1940's, which was constructed with a series of detention basins to protect the canal from mountain runoff. The flow is directed into diversion channels which convey the runoff to the Coachella Valley Stormwater Channel.

2 CDM, Whitewater River Watershed Municipal Stormwater Program, Stormwater Management Plan 2001-2006.

3 Water Quality Control Plan, Regional Water Quality Control Plan - Colorado River Basin, Region 7. Amended June 2006. (Basin Plan).

Figure 4.7-1: Regional Surface Water Features



Flood History

Although precipitation is low in the Planning Area, drainage problems can occur due to heavy single-event storms in the valley or prolonged precipitation in the surrounding mountains. Flooding generally occurs during the spring months when heavy rains in the surrounding mountains combine with melting of the snow pack resulting in prolonged run off through the valley. Thunderstorms, which generally occur in the warmer months, can result in short bursts of heavy precipitation, resulting in increased runoff that causes flooding.

Damage from floods along the Whitewater River has been recorded as far back as 1916, and historical records indicate that flooding has occurred at least one or more times during every decade since 1825. The largest recorded flood on the Whitewater River occurred in 1938 with a peak discharge of 42,000 cubic feet per second (cfs), resulting in estimated damage of $2,000,000, mainly to roads and bridges, commercial and agricultural properties, and utilities. Given the extent of development and current values, such a flood would cause many times more damage should it occur today.

Other floods causing significant damage have occurred in 1965, 1969, and 1976. With channelization of the Whitewater River, regional flood damage to structures outside the channel has been minimal in recent years. Within the storm water channel itself, however, storm flows cause predictable damage to roads designed as at-grade and low water crossings and erosion of unprotected channel banks.

In addition to regional flood issues, the City of Coachella also experiences periodic localized flooding. In particular, minor flooding has occurred approximately once every two years on downtown streets. The City has developed engineering plans and is seeking funding to construct facilities that will alleviate this condition. Areas of periodic localized flooding also occur within the unincorporated area south of Coachella. However, due to the rural/agricultural character of this area and the fact that flooding serves to complement agricultural irrigation, no known master plans to accommodate urbanization have been developed to date.

100-Year Flood Hazards

The Federal Emergency Management Agency (FEMA) publishes Flood Insurance Rate Maps (FIRMs) to identify areas subject to flooding during different flood events, such as 100-year floods. A 100-year flood has a 1/100 or one percent chance of occurring in any given year. The practice is to avoid or restrict construction within the 100-year flood zones, or to engage in flood proofing techniques such as elevating building pads or by constructing flood walls and levees.

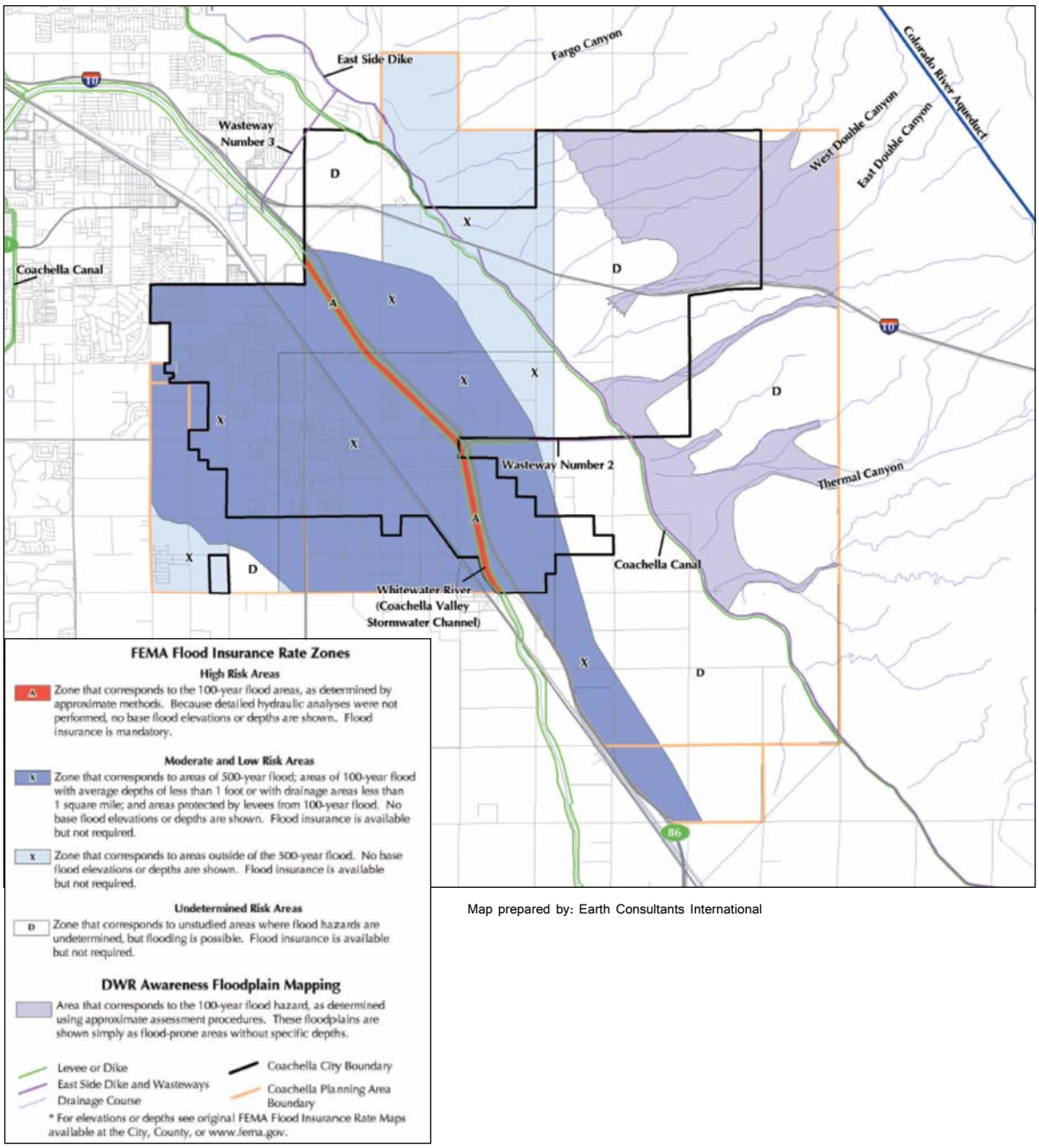
The 2008 FIRM published by FEMA for the Planning Area indicates that the City of Coachella is located beyond the 100-year flood zone.

Within the Planning Area, the west side of the Whitewater River channel has been lined with concrete north of Avenue 50 and extending south to about 1,000 feet past Avenue 52 on the west bank. It has been designed to handle 82,000 cfs or the Standard Project Flood (SPF), which is defined as the largest flood that can occur within a given area. The Standard Project Flood is determined using meteorological data, hydrological data and historical records and is almost twice the amount of flow associated with a 100-year storm event (42,000 cfs).[4] Channel improvements to the Coachella Valley

4 Smith, Peroni & Fox Planning Consultants, Environmental Impact Analysis Coachella General Plan EIR.

Stormwater Channel, which is designed to carry the Standard Project Flood (82,000 cfs), make it likely that no flood hazard currently exists. Flood zones for the Planning Area can be found in Figure 4.7-2.

Figure 4.7-2: Flood Hazards



Map prepared by: Earth Consultants International

SURFACE WATER QUALITY

The water quality of the regional surface waters is largely dependent upon land uses that affect runoff, such as agriculture, urban development, and industrial land uses. Runoff from storm water and agricultural irrigation can transport pollutants that collect on the ground surface and affect water quality of receiving streams, rivers, and channels.

There are some water quality impairments for receiving waters in the Planning Area: The Coachella Valley Stormwater Channel is the major receiving water body in the Planning Area. This channel is impair for dichlorodiphenyltrichloreothane (DDT), dieldrin, polychlorinated biphenyls (PCBs), toxaphene, and pthogens. Additionally, the Salton Sea is impaired for arsenic, chlorpyrifos, DDT, enterococcus, nutrients, salinity, and selenium.

The Coachella Valley Stormwater Channel is a segment of the Whitewater River that has been lined with concrete to improve flood protection. The Coachella Valley Stormwater Channel drains to the Salton Sea; both the Coachella Valley Stormwater Channel and the Salton Sea have been identified as impaired water bodies by the Colorado River RWQCB. Impaired water bodies do not meet federal or state water quality standards. These impairments are further discussed in the Regulatory Framework section below.

GROUNDWATER

The California Department of Water Resources (DWR) Bulletin 118[5] defines the hydrologic regions (HR), groundwater basins, and groundwater subbasin boundaries and characteristics throughout the State. The Coachella Valley is located in the DWR defined Colorado River HR. This region covers approximately 13 million acres (20,000 square miles) in southeastern California. It is bounded on the east by Nevada and Arizona, the south by the Republic of Mexico, the west by the Laguna, San Jacinto, and San Bernardino mountains, and the north by the New York, Providence, Granite, Old Dad, Bristol, Rodman, and Ord Mountain ranges. Average annual precipitation of 5.5 inches and average annual runoff of only 200,000 acre-feet (af) makes this the most arid HR of California.

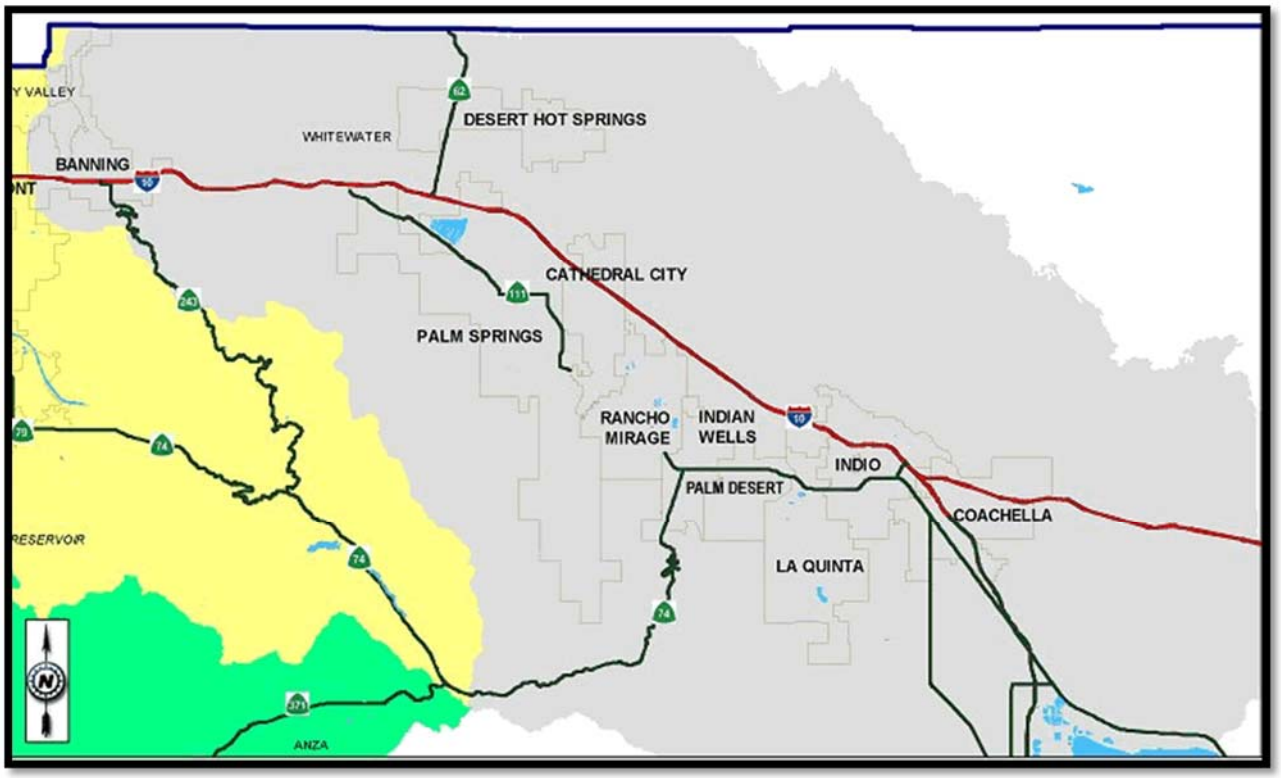
The Colorado River HR is divided into smaller more distinct groundwater basins. The Coachella Valley is located over the Coachella Valley Groundwater Basin. This basin is further defined into four interrelated water bearing subbasins which are delineated by fault barriers that restrict lateral movement of groundwater. The Planning Area is located over the Indio Subbasin. **Figure 4.7-3** shows the regional groundwater subbasins.

The Indio Subbasin has a surface area of about 336,000 acres (525 square miles) and covers portions of Riverside, San Diego, and Imperial Counties. The DWR Bulletin 118 Individual Basin Description for the Indo Subbasin (updated February 27, 2004) includes an estimate from a past DWR study which estimates the Indio Subbasin to have a groundwater storage capacity of nearly 30 million af of water. It is also states that prior to 1949, water levels steadily declined because of pumping. Between 1949 and the early 1980s, water levels in the central and southern subbasin area rose as imported Colorado River water begin to recharge parts of the subbasin; and elsewhere in the subbasin during this time, water levels continued to decline. Since the 1980s, water levels in the central and southern areas have declined despite Colorado River imports. The CVWD manages water supplies and

5 Department of Water Resources, California's Groundwater Bulletin 118, updated 2003.

water resources in the Coachella Valley and states in their 2010-2011 annual report that the groundwater subbasins under the Coachella Valley are in a state of overdraft, although more water was added through recharge than was withdrawn from the subbasins in 2010[6].

Figure 4.7-3: Regional Groundwater Basins: Whitewater River Basin[7]



6 Coachella Valley Water District, 2010-2011 Annual Review & Water Quality Report.

7 Riverside County http://www.floodcontrol.co.riverside.ca.us/stormwater/content/whitewaterws.htm

The United States Geologic Survey (USGS) completed a study in cooperation with the CVWD in the Coachella Valley that has documented land subsidence as a result of groundwater level declines[8]. At three benchmarks, the drop was less than an inch, while at three others the subsidence was about a foot. At one benchmark, near the intersection of 54th Avenue and Jackson Street near Coachella, the one-foot drop in land surface elevation occurred between 2000 and 2005[9].

The CVWD has active and on-going water conservation programs, groundwater recharge programs, and groundwater management programs to reduce the demand on groundwater resources and provide increased groundwater recharge. With increasing uncertainty on the reliability of imported water (both State Water Project water and Colorado River water) groundwater management in the Coachella Valley is becoming increasingly important.

GROUNDWATER QUALITY

The DWR Bulletin 118 Individual Basin Description states that native groundwater in Indio Subbasin has a predominantly calcium bicarbonate character with a total dissolved solids (TDS) content of 300 milligrams per liter (mg/l). Colorado River water is recharged into the subbasin at the Whitewater River spreading grounds and this water fluctuates between sodium sulfate and calcium sulfate in character. Groundwater mixing occurs adjacent to the Garnet Hill fault and near the southeast end of the Banning fault. This mixing suggests that the faults are less effective barriers to groundwater flow in the southeast than they are in the north.

DWR Bulletin 118 also states that a plume of high nitrate concentration groundwater (45 mg/L or greater) was noted extending southeasterly from near Cathedral City toward the City of La Quinta. The nitrate plume is a potential threat to deeper underlying groundwater via improperly constructed, sealed, or abandoned wells. The net salt addition from Colorado River Aqueduct water to the subbasin is currently 265,000 tons per year. Groundwater near major faults, such as the Banning and San Andreas faults, contains elevated levels of fluoride.

The City's Water Master Plan states that the City's source of potable water is groundwater from the Coachella Valley Groundwater Basin[10]. The water from this basin is generally of excellent quality, and does not require any type of treatment. It is noted, however, that groundwater recently extracted from areas east of the Coachella Valley Storm Channel has tested high for Fluoride levels, and there is potential for arsenic in water supply in the Coachella Valley.

GROUNDWATER RECHARGE

Groundwater recharge is the term applied to the replacement of water into the groundwater aquifer by both natural and artificial means. Within the Coachella Valley, groundwater replenishment through direct precipitation is negligible due to the small amount of annual rainfall on the valley floor. Direct precipitation averages about 5 inches per year in contrast with an average evaporation rate of approximately 75 inches per year in the same area. Percolation of water from stream flows, which originate in the adjacent mountain areas, serves as the largest natural source of groundwater

8 USGS, Detection and Measurement of Land Subsidence Using Global Positioning System Surveying and Interferometric Synthetic Aperture Radar, Coachella Valley, California, 1996–2005-Scientific Investigations Report 2007–5251.

9 Coachella Valley Water District, 2010-2011 Annual Review & Water Quality Report.

10 Dudek & Associates, Inc. City of Coachella Water Master Plan Update. September, 2005.

replenishment in the Lower Coachella Valley. These stream flows develop from rain and snowmelt and are transported to the Lower Coachella Valley, including the Planning Area, primarily by the Whitewater River and surrounding canyons. In addition to these naturally occurring drainages, percolation from the All American Canal serves as another source of groundwater replenishment.

Supplementing these natural processes, artificial recharge serves as a further source of groundwater replenishment. The Desert Water Agency (DWA) and CVWD manage replenishment programs. In the early 1970s, the Coachella Valley Water District and the DWA began managing overdraft in the upper Coachella Valley Groundwater Basin via a well monitoring and replenishment fee program. The upper and lower portions are the northern and southern parts of the groundwater basin, roughly divided at Washington Street. The replenishment program recharges imported water at spreading facilities located near Windy Point north of Palm Springs. The water is imported through the State Water Project (SWP) via the Metropolitan Water District (MWD) aqueduct. The CVWD and MWD are State Water Contractors and have a total allocation of 194,000 acre-feet.

The imported water is delivered to a turnout point on the Whitewater River and flows through the natural channel of the river to the spreading basins. Currently, this program results in direct recharge only to the upper basin while the lower basin benefits indirectly through underground seepage from the upper basin. The CVWD has been operating a pilot recharge facility at Dike 4 since the mid 1990's and its operating capacity has been expanded to 40,000 af per year (afy).

REGULATORY SETTING

FEDERAL

Clean Water Act

The U.S. Clean Water Act (CWA) established the basic structure for regulating discharges of pollutants into the waters of the United States and gave the U.S. Environmental Protection Agency (USEPA) the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA sets water quality standards for all contaminants in surface waters. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.

Section 401

The U.S. Army Corps of Engineers (USACE) has jurisdiction over all waters of the U.S. including, but not limited to, perennial and intermittent streams, lakes, and ponds, as well as wetlands in marshes, wet meadows, and side hill seeps. Under Section 401 of the CWA, every applicant for a federal permit or license for any activity which may result in a discharge to waters of the U.S. must obtain State Water Quality Certification that the proposed activity will comply with state water quality standards.

Section 404

Section 404 of the CWA established a program to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. The USACE has primary Federal responsibility for administering Section 404. Activities in waters of the U.S. regulated under this program include the placement of fill for development, water resource, infrastructure, and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the U.S.

Section 402

Section 402 of the CWA established the National Pollution Discharge Elimination System (NPDES) to regulate discharges into waters of the United States. The USEPA has delegated authority for implementing the NPDES program to individual states; in California, the State Water Resources Control Board (SWRCB) issues NPDES permits through its nine regional boards. The Colorado River Basin Regional Water Quality Control Board (Colorado River RWQCB) is responsible for regulating water quality in the Planning Area and implementing the NPDES program.

Section 303(d)

Section 303 of the CWA requires states to establish water quality standards consisting of designated beneficial uses of water bodies and water quality standards to protect those uses for all waters of the U.S. Under Section 303(d) of the CWA, states, territories and authorized tribes are required to develop lists of impaired waters. Impaired waters are waters that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for water on the lists and develop action plans to improve water quality. This process includes development of Total Maximum Daily Loads (TMDLs) that set discharge limits for the pollutant causing the condition of impairment. The TMDL is the quantity of a pollutant that can be safely assimilated by a water body without violating water quality standards. Listing of a water body as impaired does not necessarily suggest that the pollutants are at levels considered hazardous to humans or aquatic life or that the water body segment cannot support the beneficial uses. The intent of the 303(d) list is to identify the water body as requiring future development of a TMDL to maintain water quality and reduce the potential for continued water quality degradation.

In California, the SWRCB has identified approximately 500 impaired water bodies or segments. The SWRCB is required to post the 303(d) list and to provide an estimated completion date for each TMDL. The list is administered by the regional boards, in this case, the Colorado River RWQCB. The Coachella Valley Stormwater Channel and the Salton Sea are included in the 2006 California 303(d) List of Impaired Water Bodies (CRRWQCB, 2006) **(Table 4.7-2)**.

Table 4.7-1: 2006 CWA Section 101 (D) List of Water Quality Limited Segments in the Planning Area

Name	Pollutant/Stressor	Source	TMDL Completion Date
Coachella Valley Storm Water Channel	Pathogens[a]	Unknown	2006
	Toxaphene[b]	Unknown	2019
Salton Sea	Nutrients	Major Industrial Point Source Agricultural Return Flows Out-of-State Sources	2006
	Salinity	Agricultural Return Flows Out-of-State Sources Point Source	Not Applicable [c]
	Salenium	Agricultural Return Flows	2019

a This listing for pathogens only applies to a 17 miles area of the Coachella Valley Storm Water Channel from Dillion Road to the Salton Sea.
b This listing for toxaphene only applies to a two mile area of the Coachella Valley Storm Water Channel from Lincoln Street to the Salton Sea.
c TMDL development will not be effective in addressing this problem, which will require an engineering solution with federal, local, and State cooperation

SOURCE: Colorado River Basin Regional Water Quality Control Board (CRRWQCB). 2006. *CWA Section 303(d) List of Water Quality Limited Segments*. USEPA Approval Date: June 28, 2007

NPDES Program

The NPDES program established by Section 402 of the CWA regulates both point source discharges (a municipal or industrial discharge at a specific location or pipe) and nonpoint source discharges (diffuse runoff of water from adjacent land uses) to surface waters of the U.S. The NPDES program consists of (1) characterizing receiving water quality, (2) identifying harmful constituents, (3) targeting potential sources of pollutants, and (4) implementing a comprehensive Stormwater Management Program.

For point source discharges, each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. For nonpoint source discharges, the NPDES program establishes a comprehensive storm water quality program to manage urban storm water and minimize pollution of the environment to the maximum extent practicable (MEP). For nonpoint source discharges, NPDES permits require implementation of best management practices (BMPs) to reduce pollutants in urban storm water discharge to the MEP. BMPs typically used to manage runoff water quality include controlling roadway and parking lot contaminants by installing oil and grease separators at storm drain inlets, cleaning parking lots on a regular basis, incorporating peak-flow reduction and infiltration features, such as grass swales, infiltration trenches, and grass filter strips into landscaping, and implementing educational programs.

NPDES Phase I

Phase I of the NPDES Program addresses ten categories of industrial activities; construction activities disturbing five acres of land or greater; and storm water runoff from "medium" and "large" municipal separate storm sewer systems (MS4s) generally serving populations of 100,000 or greater. The operation of MS4s in the Whitewater River Basin, including the City of Coachella, are permitted under NPDES Permit No. CAS617002 (Board Order No. R7-2013-0011, superseding Order No. 01-77, May 21, 2008). The permit requires preparation of a Storm Water Management Plan to provide a basis for reducing the discharge of pollutants into MS4s to the maximum extent practical. The permit establishes BMPs to reduce pollutants, water quality monitoring and sampling standards to evaluate ambient water quality and the effectiveness of BMPs in reducing pollutants. This NPDES permit is set to expire on June 19, 2018.

For construction activities disturbing five acres of land or greater, the SWRCB issued one statewide General Construction Activity Storm Water Permit (on August 20, 1992) to apply to all construction activities. Within the Planning Area, landowners are responsible for obtaining and complying with this permit but may delegate specific duties to developers and contractors by mutual consent. For construction activities, the permit requires landowners, or their designated agent, to:

Eliminate or reduce non-storm water discharges to storm water systems and other waters of the United States,

Develop and implement a Storm Water Pollution Prevention Plan (SWPPP), and

Perform inspections of storm water control structures and pollution prevention measures.

A SWPPP prepared in compliance with the General Permit describes the site, erosion and sediment controls, runoff water quality monitoring, means of waste disposal, implementation of approved local plans, control of post-construction sediment and erosion control measures and maintenance responsibilities, and non-storm water management controls. Dischargers are also required to inspect construction sites before and after storms to identify storm water discharge from construction activity, and to identify and implement controls where necessary.

NPDES Phase II

NPDES Phase II regulations were finalized and issued by the EPA in January 2000 in an effort to further preserve, protect, and improve the nation's water resources from polluted storm water runoff. The new regulations were designed to implement programs to control urban storm water runoff from additional MS4s in urbanized areas and the operations of small construction sites (one acre or larger) that were not already covered by Phase I NPDES permits. The main objectives of the Phase II regulations were to reduce the amount of pollutants being discharged to the MEP and protect the quality of the receiving waters.

To meet this goal, the permittee must implement a Stormwater Management Program that addresses six minimum control measures, including: 1) public education and outreach; 2) public participation/involvement; 3) illicit discharge detection and elimination; 4) construction site storm water runoff control for sites greater than one acre; 5) post-construction storm water management in new development and redevelopment; and 6) pollution prevention/good housekeeping for municipal operations. These control measures may typically be addressed by developing BMPs.

National Flood Insurance Program

Under Executive Order 11988, the Federal Emergency Management Agency (FEMA) is responsible for the management and mapping of areas subject to flooding during a 100-year flood event (i.e., one percent chance of occurring in a given year). FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain.

STATE

Porter-Cologne Water Quality Control Act

The SWRCB is governed by the Porter-Cologne Act (Division 7 of the California Water Code), which establishes the legal framework for water quality regulation within California. The intent of the Porter-Cologne Act is to regulate factors that may affect the quality of waters of the State to attain the highest quality that is reasonable, considering a full range of demands and values. The Porter-Cologne Act requires the SWRCB to establish water quality objectives, while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. The SWRCB delegates its responsibilities for implementing the Porter-Cologne Act to its nine regional boards. The Colorado River RWQCB is responsible for the protection of water quality and beneficial uses in the Planning Area.

Regional Water Quality Control Plans

The SWRCB and the RWQCB share the responsibility, under the Porter-Cologne Act, to formulate and adopt water policies and plans and to adopt and implement measures to fulfill CWA requirements. The Colorado RWQCB has prepared the Colorado River Basin Water Quality Control Plan (Basin Plan) (2006) that establishes beneficial water uses to be protected, water quality objectives needed to protect designated beneficial uses, and implementation programs to meet the stated objectives. **Table 5.9-3** identifies beneficial uses designated in the Basin Plan in the Planning Area, and **Table 5.9-2** (on the following page) defines the beneficial uses.

Beneficial uses, together with the corresponding water quality objectives, are defined as standards, per Federal regulations. Therefore, the regional plans form the regulatory references for meeting State and Federal requirements for water quality control. Changes in water quality are only allowed if the change is consistent with the maximum beneficial use of the State, does not unreasonably affect the present or anticipated beneficial uses, and does not result in water quality less than that prescribed in the water quality control plans.

Table 4.7-2:

Definitions of Beneficial Uses of Surface Water

Beneficial Use	Description
Municipal and Domestic Supply (MUN)	Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Agricultural Supply (AGR)	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
Aquaculture (AQUA)	Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.
Freshwater Replenishment (FRESH)	Uses of water for natural or artificial maintenance of surface water quantity or quality.
Industrial Service Supply (IND)	Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and or oil well repressurization.
Groundwater Recharge (GWR)	Uses of water for natural or artificial recharge or groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
Water Contact Recreation (REC 1)	Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white-water activities, fishing, or use of natural hot springs.
Non-Contact Water Recreation (REC 2)	Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Warm Freshwater Habitat (WARM)	Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Cold Freshwater Habitat (COLD)	Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Wildlife Habitat (WILD)	Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
Hydropower Generation (POW)	Uses of water for hydropower generation.
Rare, Threatened, or Endangered Species (RARE)	Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal laws as rare, threatened, or endangered.

SOURCE: Water Quality Control Plan, Regional Water Quality Control Plan - Colorado River Basin, Region 7. Amended June 2006. (Basin Plan)

Table 4.7-3:

Whitewater hydrologic Unit Beneficial uses[A]

Waterbody	MUN	AGR	AQUA	FRSH	IND	GWR	REC 1	REC 2	WARM	COLD	WILD	POW	RARE
Coachella Valley Stormwater Channel				E			E[b]	E[b]	E		E		E[c]
Salton Sea			E		P		E	E	E		E		E

E = existing beneficial use
P = potential beneficial use

[a] Refer to Table 5.9-2, below, for definition of abbreviations

b Unauthorized Use

c Rare, endangered, or threatened wildlife exists in or utilizes some of these waterway(s). If the RARE beneficial use may be affected by a water quality control decision, responsibility for substantiation of the existence of rare, endangered, or threatened species on a case-by- case basis is upon the California Department of Fish and Game on its own initiative and/or at the request of the Regional Board; and such substantiation must be provided within a reasonable time frame as approved by the Regional Board.

SOURCE: Water Quality Control Plan, Regional Water Quality Control Plan - Colorado River Basin, Region 7. Amended June 2006. (Basin Plan).

Streambed Alteration Agreements

Sections 1601-1616 of the California Fish and Game Code apply to any state or local government agency or any public utility that proposes to "…*substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake*."

Sections 1601-1616 require application to the California Department of Fish and Game (CDFG) to obtain a Streambed Alteration Agreement (SAA) if a project is expected to affect a river, stream or lake as described. This agreement is not considered a discretionary permit subject to CEQA; instead, it is a negotiated agreement between CDFG and the applicant. The agreement may contain mitigation measures, such as erosion control, intended to reduce the effect of the activity on fish and wildlife resources. The agreement may also be provisional and include a long-term monitoring condition to assess the effectiveness of the proposed mitigation(s) related to the activity.

Safe Drinking Water Act (1976)

California enacted its own Safe Drinking Water Act (SDWA). The California Department of Public Health (CDPH, formerly California Department of Health Services - DHS) has been granted primary enforcement responsibility for the SDWA. Title 22 of the California Administrative Code establishes CDPH authority and stipulates drinking water quality and monitoring standards. These standards are equal to or more stringent than the federal standards.

Recycled Water Regulations

Within the State of California, recycled water is regulated by the U.S. EPA, the SWRCB, RWQCBs, and CDPH. In accordance with California Water Code Sections 13510-13515, the SWRCB policy is to encourage development of recycled water facilities and to provide funding for water reclamation projects that do not impair water rights or beneficial uses. In accordance with California Water Code Sections 13521-13524, the RWQCBs issue waste discharge requirements (WDRs) and/or water reclamation requirements (WRRs) to suppliers and distributors of recycled water to ensure recycled water quality in accordance with standards established by CDPH. The RWQCBs must consult with and seek the recommendations of CDPH before issuing WDRs or WRRs. As mandated by California Water Code Section 13521, the CDPH has established "uniform statewide recycling criteria" for various uses of recycled water. These health-based water quality standards and treatment reliability criteria are found in Title 22 of the California Codes of Regulations. Title 22 establishes the recycled water uses allowed in the State, and designates the level of treatment (i.e., undisinfected secondary, disinfected secondary, or disinfected tertiary) required for each of these designated uses.

ENVIRONMENTAL IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

The following thresholds for determining the significance of impacts related to hydrology and water and quality are contained in the environmental checklist form contained in Appendix G of the most recent update of the CEQA Guidelines. Impacts related to hydrology and water quality are considered significant if implementation of the project would:

- Violate any water quality standards or waste discharge requirements;
- 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);
- Substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or sedimentation on- or off-site;
- Substantially alter the existing drainage pattern of a 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;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Substantially degrade water quality;
- 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;

- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

- 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; or

- Result in inundation by seiche, tsunami, or mudflow.

WATER QUALITY STANDARDS

Impact 4.7-1: Would the Project violate any water quality standards or waste discharge requirements?

Significance: Less than significant.

Federal, state, and local water quality regulations are currently in place to monitor water quality and prevent degredation of water quality from various activities. Violating any water quality standards or requirements could place populations at risk of poor or unhealthy water quality outlined by regulation standards and may result in irreversible impacts on future water supply within the Planning Area. Poor water quality can cause negative environmental effects on population health and the health of the natural environment as it limits the availability of clean, pure, unpolluted, or non-toxic water that environments depend on to thrive. Responsible planning and development can ensure compliance with existing regulations and standards.

The existing regulatory framework, most notably the Clean Water Act, is in place to prohibit activity that would impair or impact water quality. Development under the CGPU will result in the growth of the Planning Area from a small town to a mid-sized city increasing both development and supporting infrastructure that could cause existing waterways to be negatively affected by direct or indirect impacts from additional activity within the Planning Area. With the existing regulations in place, development will be monitored and allowed only upon demonstrated compliance with current federal, state, and local regulations and standards. The following supporting policies of the Sustainability + Natural Environment element of the CGPU propose development requirements to comply with existing regulations, and prevent negative impacts on water quality.

7.1 **Pollution prevention.** Limit the amount and concentration of pollutants released into the City's waterways.

7.4 **Water quality.** Ensure water quality in the City's waterways meets applicable state and federal standards.

As the Planning Area continues to grow, compliance with the existing regulations address any potential impacts created to water quality. Development under the CGPU would have to comply with the Clean Water Act, Porter-Cologne Water Quality Control Act, Regional Water Quality Control Plans, Safe Drinking Water Act (1976) and recycled water regulations, laws that are structured to preserve and protect water quality within the Planning Area in order to be granted permits for development or activity. Also, violation of any regulations after permits have been granted, would also result in the requirement to stop activities that are seen as violating any water quality stands. The supporting policies of the CGPU help ensure development under the CGPU complies with these regulations by limiting the pollutants that can be discharged to water bodies and regularly monitoring standards for water quality.

Based on the existing regulatory requirements, impacts on violating state or federal regulations or standards from development under the CGPU is considered to be less than significant.

Mitigation Measures

No mitigation measures are necessary.

GROUNDWATER SUPPLIES

Impact 4.7-2: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Significance: Less than significant.

Loss of aquifer volumes or lowering of ground water tables occurs from pumping more water from the supply than is replenished in any given year. Continuing to overdraft, or pull more water from groundwater than what will be replenished, creates a net deficit groundwater supply within the basin. Negative environmental impacts from net groundwater deficit include poor water quality and saltwater intrusion to remaining water supply, reduced water in lakes and streams, land subsidence, lower water table levels, and higher cost of water. All potential impacts can be significant and irreversible without proper mitigation or strategic development.

The Planning Area ground water supply comes from the Whitewater River Basin, and currently holds 9,116 AF[10]. The Lower Whitewater River Basin water is pulled by the Coachella Valley Water District and allocated to various jurisdictions including Coachella.

As the Planning Area pulls from a groundwater source, the potential for water overdraft and significant groundwater depletion is possible. Water overdraft, without equivalent recharge, could create long term impacts on regional water supply. In recent years, groundwater overdraft has caused a consistent decrease in ground water supply level. 1999 Lower Whitewater River Basin levels showed 168,300 AF[10], and 2011 levels dropped to 145,000[(3)] AF. The Coachella Valley Urban Water Management Plan (CVUWMP) 2010 has planned strategies to conserve water and incorporate ground water recharge efforts to maintain and increase water supply within the basin.

Potential environmental impacts from groundwater overdraft would effect, and limit, the ability for development to continue to grow within the region, lack of water supply for sensitive habitat species, and a shift in the existing eco-system that relies on water supply to thrive in the arid climate of the Planning Area. Irreversible impacts from groundwater loss could eventually cause the Planning Area, or region, to become inhabitable as water is a foundation of life and human activity.

2010 water demands for the Planning Area equated to 2,838 Million Gallons (8709.5 acre feet), with a per capita use of 191 gallons per day (gpd). 2035 water demand projections calculate to 8,878 million gallons per year, with a per capita water demand of 181 gpcd. 2012 well production was 2,604.4 MG (7,993 AFY). Current water demands are met through groundwater supplies and wells throughout the Planning Area.

As the Planning Area population grows, additional water supply will be necessary to maintain adequate level of activity and development. The CVUWMP 2010 has outlined several strategies to increase and

diversify water supply to meet future demands. From increasing water supply from the Colorado River Watershed Basin and the State Water Project (which CVWD is allocated 23,100 AFY, and DWA is allotted 38,100 AFY), water conservation, water recycling programs, and groundwater recharge. (*Water supply proposals and amounts can be found in Water Supply Assessment 10.16Table 4.16-10*)

In addition to the region efforts by water districts, the CGPU proposes the following policies addressing water supply and conservation.

Land Use + Community Character

2.6 **Climate-appropriate design.** Require architecture, building materials and landscape design to respect and relate to the local climate, topography, history, and building practices.

5.15 **Shaded Streets.** Strive to design and build neighborhoods to provide shade over at least 30 percent of the length of sidewalks on streets within the project. Trees must provide shade within 10 years of landscape installation and should be as water efficient as possible.

14.1 **Sustainable Development Leadership.** Establish City as a regional leader in sustainable development and encourage compact, higher-density development that conserves land resources, protects habitat, supports transit, reduces vehicle trips, improves air quality, conserves energy and water and diversifies the housing stock in the Coachella Valley.

14.4 **Regional Governance.** Plan an active role in the Coachella Valley Association of Governments, the Southern California Association of Governments and other regional agencies to protect and promote the interests of the City.

Sustainability + Natural Environments

1.17 **Reduced Water Supplies.** When reviewing development proposals, consider the possibility of constrained future water supplies and require enhanced water conservation measures.

1.19 **Designing for Changing Precipitation Patterns.** Periodically evaluate stormwater control strategies and systems for sensitivity to changes in precipitation regimes and consider adjusting those strategies to accommodate future precipitation regimes.

3.1 **Conservation Performance Targets – New Construction.** Require new construction to exceed the state's Green Building Code for water conservation by an additional 10 percent.

3.2 **Water Conservation Technologies.** Advocate and promote indoor and outdoor water conservation and reuse practices including water recycling, grey water (also known as on-site water recycling).

3.3 **Grey-Water.** Support the use of greywater and establish criteria and standards to permit the safe and effective use of grey water (also known as on-site water recycling).

3.4 **Low Impact Development.** Require the use of low impact development strategies to minimize urban run-off, increase site infiltration, manage stormwater, and recharge groundwater supplies.

3.5 **Recycled Water.** Use impact fees to set up tertiary water treatment infrastructure to use recycled water for "non-potable" uses.

3.6 **Education.** Support and expand programs to educate and incentivize the community on water conservation practices for landscaping.

3.7 **Landscape Design.** Encourage the reduction of landscaping water consumption through plant selection and irrigation technology and increase the use of recycled water for landscaping.

3.8 **Groundwater Infiltration.** Encourage the use of above-ground and natural stormwater facilities in new development and redevelopment, such as grassy or vegetated swales, permeable paving, and rain gardens.

5.4 **Water-Efficient Agriculture.** Promote agricultural crops and methods that require limited or no irrigation.

Safety

2.9 **Groundwater resources protection.** Develop partnerships with the Coachella Valley Water District and adjacent communities to manage the groundwater resources of the region, prevent over-drafting of the aquifers and prevent regional subsidence due to excessive water extraction.

Infrastructure + Public Services

2.1 **Water Rights.** Exercise and protect City water rights and entitlements in perpetuity.

2.5 **Water Supply Planning.** Prepare, implement, and maintain long-term, comprehensive water supply plans, like the Urban Water Management Plan.

2.6 **Water Supply for New Development.** Ensure that water supply capacity and infrastructure capacity is in place prior to granting building permits for new development.

2.7 **Expanding Water Supply.** If water supply is not adequate to supply new development, require new water supplies be secured prior to granting building permits for new development.

2.8 **Long-Term Water Supply.** Ensure the provision of water services is consistent with the growth planned for the General Plan area, including the Sphere of Influence.

2.10 **Water Supply Source Protection.** Protect local groundwater resources from localized and regional contamination sources such as septic tanks, underground storage tanks, industrial businesses and urban runoff.

2.12 **Water Conservation.** Implement water conservation programs aimed at reducing demands from new and existing development.

2.13 **Water Conservation Promotion.** Promote water conservation through municipal applications, public education, incentive programs, and standards for new and retrofitted development.

2.14 **Water-Efficient Landscaping.** Require the use of water-efficient landscaping in all new development.

2.15 **Grey-Water.** Strongly encourage new development to utilize on-site water systems.

2.16 **Reclaimed Water.** Expand the use of reclaimed water for irrigation and other applications.

2.17 **Reclaimed Water Infrastructure.** As existing water distribution infrastructure is replaced, consider adding reclaimed water distribution systems to minimize construction costs. To the extent feasible, the replacement should be concurrent with major infrastructure or development projects within the City.

2.18 **Reclaimed Water Use.** To promote water conservation and increase the use of reclaimed water, use reclaimed water in City-owned parks, plazas, landscaped medians and other public spaces and in privately-owned open spaces wherever feasible.

2.19 **Groundwater Replenishment.** Cooperate with CVWD and other agencies to develop groundwater replenishment programs which will ensure viability of the groundwater aquifer in the lower Whitewater basin.

2.20 **Well contamination.** Prepare management plans for wells that have been contaminated for wells that have poor quality water to increase water quality.

The potential environmental impacts from the project place a high demand on water supply The addresses these potential impacts through a suite of proposed policies including grey water use, groundwater recharge, and designing water conscious buildings and landscapes, as well as the Coachella Urban Water Management Plan. The Lower Whitewater River Basin currently meets demands of the Planning Area. Project water demands in a Normal Water Year by 2035 are expected to be 27,276 AFY[11]. This water would be supplied from the sub basin that has a current capacity of 28.8 million acre feet of water, with current level of 25 million acre feet[12]. The annual demands on water supply represent a small proportion of overall groundwater capacity. In addition to low proportional groundwater use, recharge efforts from the CVUWMP plan to replenish groundwater and prevent significant groundwater depletion and any negative environmental impacts.

[11] Coachella General Plan Update Water Supply Assessment. pg 31
[12] Coachella General Plan Update Water Supply Assessment. pg 31

As implementation of the CVUWMP occurs alongside development of the CGPU, water supply and demand would increase as population increases. A continued process of groundwater pumping and recharge efforts would also grow in volume to reduce impact from significant groundwater depletion.

Additionally, the Coachella General Plan Update Water Supply Assessment (Appendix 11.3) concludes the development of the CGPU would have enough water supply to achieve the projected build-out of 135,000 residents. Environmental impacts from the increase demand and water extraction are reduced through policy and water management plans. Based on a multi-organization coordination and policies under the CGPU, water supply is adequate to meet future demands, but may have some impacts on the existing environment. Because of all efforts to conserve water use, recharge groundwater basins, the CGPU impacts on groundwater supplies would be less than significant.

Mitigation Measures

No mitigation measures are necessary.

EROSION

Impact 4.7-3. Would the Project substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or sedimentation on- or off-site?

Significance: Less than significant.

Alteration in existing drainage patterns could move historic water paths into new areas that may or may not be able to handle new flows and could result in landslides, over saturated land, and loss of land from erosion. Impacts on existing environmental conditions that would be affected by erosion could potentially have permanent harm to stable ground surfaces and cause changes in stream or river flow ultimately impacts the ecosystem and structure of the waterway. Conscious development patterns and planning can reduce potential impacts of erosion.

Waterways within the Planning Area include the Whitewater River and the Coachella Canal. These main water ways are not planned to change in existing stream flow. Although there is no intentional planned waterway relocation, Whitewater River is partially channelized and could be subject to impacts from water runoff or erosions from adjacent land use development under the CGPU. Additional erosion could be realized from local changes in runoff or from construction activities that disturb the soil. Potential erosion effects could negatively impact the natural environment for fish and wildlife resources, and expose structures or populations to unexpected erosion. The Clean Water Act and its Streambed Alteration Agreements as describes under sections 16.01-16.16 on page 4.7-14 of this section, prohibit development that would alter waterways from erosion or runoff. The CGPU proposes additional supporting policies to address these potential impacts in the Sustainability + Natural Environment element of the CGPU.

7.3 **Soil erosion.** Require the prevention of water-born soil erosion from sites, especially those undergoing grading and mining activities.

10.6 **Grading and vegetation removal.** Limit grading and vegetation removal of new development activities to the minimum extent necessary to reduce erosion and sedimentation.

Projects seeking permits for development or activity within the Planning Area would need to comply with the Streambed Alternation Agreement provisions of the Clean Water Act, and would not be granted permits if the project would substantially divert and affect the flows of waterways and drainages. In addition the NPDES Program and the Streambed Alteration Agreements that regulates any substantial changes in stream flows that would negatively impact the environment. The channelization of portions of the Whitewater River also help to reduce erosion impacting stream flow. Based upon the existing infrastructure the existing regulatory framework, impacts causing erosion or sedimentation would be less than significant.

Mitigation Measures

No mitigation measures are necessary.

FLOODING

Impact 4.7-4: Would the Project substantially alter the existing drainage pattern of a 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?

Significance: Less than significant.

Changes made in existing drainage patterns, streams or rivers could create new waterways that may or may not be able to properly drain water flow patterns that occur within the Planning Area. Flooding occurrence within the Planning Area from the alteration of any stream or river could create permanent impacts on waterway patterns and habitat, and result in flooding. Flooding exposes structures, habitat, or wildlife exposed to negative impacts of unexpected or reoccurring floods that would cause temporary or permanent damage to property, natural environments, or drainage patterns. Proper planning and development strategies are vital to prevent flooding and impacts from changes in drainage patterns.

Waterways within the Planning Area include the Whitewater River and the Coachella Canal. These main water ways are not planned to change existing stream flow. Although there is no intentional planned waterway relocation or path alteration, Whitewater River is partially channelized and could be subject to impacts from water runoff or flooding due to unintended changes in drainage patterns from CGPU development. The CGPU does not determine site by site development and exact drainage patterns cannot be determined. However, the following policies from the Sustainability + Natural Environment and Infrastructure + Public Services element of the CGPU address potential impacts from drainage patterns.

Sustainability + Natural Environment

7.6 **Waterways as amenities.** When considering development applications and infrastructure improvements, treat waterways as amenities, not hazards, and encourage designs that embrace the waterways.

10.9 **Preservation of natural land features.** Preserve significant natural features and incorporate into all developments. Such features may include ridges, rock outcroppings, natural drainage courses, wetland and riparian areas, steep topography, important or landmark trees and views.

13.12 **Active Recreational Areas.** Prohibit consideration of natural drainages and other sensitive resource areas as active park land.

Infrastructure + Public Services

4.5 **New development.** Require the preparation of drainage studies that evaluate adherence to City stormwater design requirements and incorporate measures to prevent on- or off-site flooding with all new development applications

In addition to these policies, the CGPU does not specifically plan for any changes in drainage patterns that would alter runoff and causing negative impacts from flooding. The CGPU also proposes development to recognize and assess site drainage patterns and for prior to construction as to not disrupt existing drainage patterns and to prevent flood risk. Based on the regulatory framework, project details, and CGPU policies, potential impacts of drainage and runoff is considered less than significant.

Mitigation Measures

No mitigation measures are necessary.

POLLUTED RUNOFF

Impact 4.7-5: Would the Project or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Significance: Less than significant.

Stormwater runoff is created through a combination of human activity, rain, and pollutants including litter or hazardous materials. As human activity increase, so does the amount of litter, acid rain, oil, fertilizers, and other sediments being swept away by a moving water source through rain, flooding, or stormwater drainage systems. When water then reaches a natural waterway, poor or polluted water quality can have harmful impacts on the natural habitat along the water banks as well has degrade water quality enough to make waterways inhabitable, or effect water supply downstream.

Additional development could cause additional potential harm from runoff and pollution of waterways. Existing regulations including the NPDES Program, regulates point sound and non point source pollution. For point source discharges, each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. For nonpoint source discharges, the NPDES program establishes a comprehensive storm water quality program to manage urban storm water and minimize pollution of the environment to the maximum extent practicable (MEP). For nonpoint source discharges, NPDES permits require implementation of best management practices (BMPs) to reduce pollutants in urban storm water discharge to the MEP. Projects within the Planning Area currently, and will continue, to be required to comply with regulations from NPDES Permits and regulate any site runoff so that it would not be a pollutant source into the waterways of the Planning Area, or the region. In addition to the existing regulations that would help decrease negative environmental impact, supporting policies from the CGPU provide additional regulation to reduce negative environmental impacts from runoff pollution. The Land Use, Infrastructure + Public Facilities, and Sustainability + Natural Environment elements of the CGPU has addressed the potential impacts of polluted runoff and stress on the existing drainage system and has outlined the following policies to reduce development impacts of runoff.

Land Use + Community Character Element

2.4 **Natural context.** Retain the City's natural infrastructure and visual character derived from topography, farmlands and waterway corridors.

10.2 **Concurrency.** Prohibit the issuance of precise grading plans and building permits unless the City has made a determination that adequate stormwater facilities, parks, solid waste, water, sewer and transportation facilities are operating to serve each phase of development.

Infrastructure + Public Facilities Element

1.1 **Provision of service.** Continue to provide and maintain adequate water, wastewater and stormwater drainage utility services to areas currently receiving these services from the City. Shall provide and maintain adequate water, wastewater, and stormwater drainage utility services to areas in the City that do not currently receive these services upon funding and construction of the infrastructure necessary to provide these services.

1.6 **Remedying inadequate capacities.** Develop and implement a financing strategy and assess fees to construct needed water, wastewater, stormwater drainage, and solid waste facilities to maintain established service levels and to mitigate development impacts to these systems (e.g., pay capital costs associated with existing infrastructure that has inadequate capacity to serve new development). The City shall also assist developers in identifying funding mechanisms to cover the cost of providing utility services in infill areas.

4.1 **Drainage System Master Plan.** Adopt and maintain a Drainage System Master Plan with defined infrastructure and facilities, capital improvement schedules and funding sources.

4.2 **New stormwater facilities.** Ensure all new drainage facilities are adequately sized and constructed to accommodate stormwater runoff in urbanized areas.

4.3 **Regional stormwater facilities.** Coordinate efforts with Riverside County and other agencies in the development of regional stormwater facilities.

4.4 **Fair-share costs.** Require new development fund fair-share costs associated with the provision of stormwater drainage to ensure all development has adequate stormwater drainage protection.

4.5 **New development.** Require the preparation of drainage studies that evaluate adherence to City stormwater design requirements and incorporate measures to prevent on- or off-site flooding with all new development applications.

4.6 **Stormwater Pollution Prevention.** Cooperate in regional programs to implement the National Pollutant Discharge Elimination System program.

4.7 **Stormdrain monitoring.** Routinely monitor and evaluate the effectiveness of the storm drain system and make adjustments as needed.

4.8 **Agricultural tile lines.** Coordinate with CVWD to identify existing agricultural tile lines to ensure the continued viability of the system.

4.9 **Property dedication.** Require the dedication of real property and improvements of that property when

Sustainability + Natural Environment Element

7.2 **Development impacts.** When considering development applications, require consideration of onsite detainment of stormwater runoff and require the incorporation of appropriate stormwater treatment and control measures.

Though there is potential for runoff to exceed existing drainage system capacity, the current regulatory framework will ensure development and activities follow criteria to reduce runoff impacts on the existing environment by limiting volumes of stromwater discharge and treating stormwater runoff prior to discharge. Additionally, numerous supporting policies proposed by the CGPU address payment, construction, and monitoring of runoff and stormwater drainage systems to ensure new development is built with infrastructure adequate enough to have stormwater discharge and the existing regulatory framework. Based upon these proposed policies policies, impacts would be less than significant.

Mitigation Measures

No mitigation measures are necessary.

WATER QUALITY

Impact 4.7-6: Would the Project substantially degrade water quality?

Significance: Less than significant.

A common impact from development and human activity is degradation of water quality within the area. As water is a vital source in any development, the use, waste treatment, and overall quality of any water supply is important to sustain populations. Impacts on water quality could cause irreversible effects on potable water or degradation of waterways within the Planning Area. From runoff pollution, lack of replenishment, or contamination, water quality could be compromised without conscious planning to reduce potential impacts.

As describes in the Existing Baseline Conditions of this section, water quality within the Planning Area is controlled by the Coachella Valley Water district in conjunction with State Water Resources Control Board (SWRCD) and The Colorado River Basin Regional Water Quality Control Board (SWRCB). Also, the Clean Water Action, including Section 401, regulates any activity which may result in a discharge to waters of the U.S. must obtain State Water Quality Certification that the proposed activity will comply with state water quality standards. Enforced by the US Army Corps of Engineers, developments that would negatively impact water quality standards would not receive a certification and would not be allowed to build or operate activity within the Planning Area.

Development under the CGPU may increase the potential for water quality degradation. However the existing regulatory framework ensures development will comply with federal, state, and local regulations. Though increase in population could increase the activity within the Planning Area that limit the discharge of toxins and pollutants to water bodies increase toxic runoff, dumping, pollution, and accidental hazard contamination, the regulatory framework is supported by the CGPU's proposed policies that address water quality in both the Sustainable + Natural Environments and Safety element, which are listed below.

Sustainability + Natural Environment

3.4 **Low impact development.** Require the use of low-impact development strategies to minimize urban run-off, increase site infiltration, manage stormwater and recharge groundwater supplies.

3.5 **Recycled water.** Use impact fees to set up tertiary water treatment infrastructure to use recycled water for "non-potable" uses.

7.1 **Pollution prevention.** Limit the amount and concentration of pollutants released into the City's waterways.

7.5 **Public access.** Provide regulated public access to the City's waterways for recreation and passive enjoyment of open space.

7.4 **Water quality.** Ensure water quality in the City's waterways meets applicable state and federal standards.

Safety Element

6.15 **Regional air and water quality.** Track and publicly support regional, state and federal efforts that improve air and water quality to protect human and environmental health and minimize disproportionate impacts on sensitive population groups.

Existing regulations are in place to monitor and preserve safe water quality and limit the type and of pollutants that can be discharged to water bodies. Based on the existing regulations outlined earlier in this section and supporting policies under the CGPU that align with regulatory framework, by requiring new development to integrate design features that will limit water pollution, impacts on water quality would be less than significant.

Mitigation Measures

No mitigation measures are necessary.

100-YEAR FLOOD AREA

Impact 4.7-7: Would the Project 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?

Significance: Less than significant.

100-Year floods have a 1% probability to occur within a designated 100-year flood hazard area each year greatly increase the amount of water within a flood hazard area, and add stress on existing drainage patterns to handle the increase water volume. Development of housing within a 100-year flood hazard area would expose houses to flood risks and damage to property in the occurrence of a 100-year flood. 100-year floods are sporadic, can cause devastating impacts to homes and natural habitat located within the flood hazard area, and need proper planning and development strategies and reduce impacts.

Potential flood sources within the Planning Area come from the Whitewater River and its upstream tributaries, the streams entering the valley from the mountains northeast and southwest of the valley

sides and summer monsoons. Areas designated as a solely being a 100-year flood hazard within the Planning Area occur within the banks of the Whitewater River. The CGPU does not plan for housing to be developed within the river banks, though there is residential land use west of the river. Channelization along Whitewater River has allowed the river to handle 82,000 cfs (cubic feet squared) which is considered the largest flood that can occur within the area, this is twice the 42,000 cfs water volume of 100-year floods within the Planning Area.

In addition to this zone, there is a large area of the Planning Area west of the Coachella Canal is located within a 500-year flood zone or 100-year flood zone with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas that are protected by levees from 100-year flood. This flood zone area largely covers existing urban and agriculture development and proposed new development areas under the CGPU. The location of the flood zone within the Planning Area would place housing within a 100-year flood hazard area and place homes at risk of damage from flooding. Most flooding in this area is from the occurrence of summer monsoons that can drop upwards of 25 inches of water in one day.

In response to land located within flood zones, FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain. The development criteria for structures located within a 100-year flood zones are in place to engineer and prevent buildings from being negatively impacts in the event of a 100-year flood. The Floodplain Management Section of the Coachella Valley Water District has implemented Riverside Country Ordinance 458 for projects located within floodplains. Projects requesting to develop in a floodplain will be subject to a plan check in order to receive a Floodplain Permit from the office of Building and Safety. Those projects that not comply with the ordinance requirements would not be allowed to build within the floodplain. This permitting process will help in preventing harm or damage to structures to people from flooding.

Though there is already existing development in the 500-year flood hazard zone and infrastructure is in place to protect housing against flooding, new development under the CGPU would place additional housing in flood zones. To reduce these risks the following supporting policies address monitoring, construction and emergency planning for development within the Planning Area, as outlined in the Safety Element.

3.2 **Flood mitigation in repetitive-flooding areas.** Identify repetitive flood problem areas in existing development, prioritize hydrological studies of areas that flood repeatedly during storms and develop feasible engineering solutions to mitigate these sites.

3.3 **Flood mitigation for both existing and new construction.** Require all new developments and redevelopments in areas susceptible to flooding (such as the 100-year floodplain and areas known to flood during intense or prolonged rainfall events) to incorporate mitigation measures designed to minimize or eliminate flood hazards

3.6 **Floodplain development.** Promote the use of floodplains as parks, nature trails, equestrian parks, golf courses or other types of recreational facilities that can withstand periodic inundation. In the planned build-out of the City, create an atmosphere of working with nature and the natural processes characteristic of the arid environment.

3.11 **Flood damage.** Prohibit any additions or reconstruction of structures damaged by flooding, unless the structure is relocated to a safer area or can be demonstrated the proposed project and its occupants can be protected from future, recurrent flood

damage by implementing mitigation measures not present in the original, damaged structure.

3.12 **Flood Insurance.** Encourage property owners and residents to purchase flood insurance for areas outside of the FEMA-mapped 100-year flood zones, especially in those areas that have experienced flooding in the past. Description of impact occurring in Coachella.

Existing regulations and ordinances regarding development in a 100-year flood plan would ensure development under the CGPU would not place structures or people at risk of severe damage from a 100-year flood. Additionally, under the CGPU, new development is proposed within the 500-year flood area where 100-year floods may occur with water levels not exceeding one foot deep. As shown in figure 4.7-2, the FEMA Flood insurance rate maps consider these to be low and moderate risk areas with low occurrence and the severity of flooding is manageable through site specific design and engineering. The CGPU proposes development in floodplains be used for open space and natural trails, reduce the numbers of structures exposed to flood risks. The CGPU proposes a policy that requires retrofitting existing development that is subject to frequent flooding. Considering the existing infrastructure within the Planning Area, the existing regulations, and the proposed CGPU policies, impacts from flooding would be less than significant.

Mitigation Measures

No mitigation measures are necessary.

STRUCTURES

Impact 4.7-8: Would the Project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Significance: Less than significant.

Development of structures within a 100-year flood hazard area would expose the built environment to flood damage and could also change historic or natural flood flows. Redirection of flood flows can lead to unpredictable flooding in areas not within the flood hazard zone, and structures being negatively and permanently impacted by flooding as new blocks, paths, and other physical constraints occur from development within the flood zone. New development also creates less ground surface for water infiltration, leading to increased flood flow along existing paths.

As discussed above, 100-year flood hazard zones within the Planning Area occur within the banks of the Whitewater River in areas that are adjacent to existing and proposed structures under the build out of the CGPU. In additional to the river banks, the Planning Area has a 500-year flood hazard zone, where 100-year flood could occur with water being less than one-foot deep. This 500-year flood zone covers a majority of the western portion of the Planning Area, which contains existing urban development and would have new development under the build out of the CGPU. Continued development in these areas could potentially impede or redirect flood flows that would create new barriers for natural flood flows without proper infrastructure protection, and could inundate the Planning Area. In response to this potential risk, the Whitewater River has been channelized and can hold twice the amount of the 42,000 cfs volume that would occur in a 100-year flood. This infrastructure will reduce impacts from flood hazards and the associated structures within flood hazard zones and address potential threats from flooding.

It is also important to note that in response to land located within flood zones, FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain. The development criteria for structures located within a 100-year flood zones are in place to engineer and prevent buildings from being negatively impacts in the event of a 100-year flood. The Floodplain Management Section of the Coachella Valley Water District has implemented Riverside Country Ordinance 458 for projects located within floodplains. Projects requesting to develop in a floodplain will be subject to a plan check in order to receive a Floodplain Permit from the office of Building and Safety. Those projects that not comply with the ordinance requirements would not be allowed to build within the floodplain. This permitting process will help in preventing harm or damage to structures to people from flooding.

In addition to the existing conditions of the Planning Area, the following policies from the Land Use + Community Character element and Safety element of the CGPU have outlined development guidelines to help address flooding hazards.

Land Use + Community Character Element

2.18 **Open space conservation.** Establish mechanisms to provide for the conservation of resource land that is not yet conserved if it falls within one of the following categories:

- Flood plain, including Special Flood Hazard Areas.
- Open Space to be acquired.
- Wildlife corridors.
- Legacy farmland.
- Riparian areas.
- Areas of cultural significance.
- Seismic or geological hazard areas.
- Legacy viewsheds.

Safety Element

3.1 **Hydrological studies.** Require new development proposals to include as a condition of approval, hydrological studies prepared by a state-certified engineer with expertise in these kinds of studies, that assess the impact the new development will have on the flooding potential of existing development down-gradient. The studies shall provide mitigation measures to reduce this impact to an acceptable level.

3.2 **Flood mitigation in repetitive-flooding areas.** Identify repetitive flood problem areas in existing development, prioritize hydrological studies of areas that flood repeatedly storms and develop feasible engineering solutions to mitigate these sites.

3.3 **Flood mitigation for both existing and new construction.** Require all new developments and redevelopments in areas susceptible to flooding (such as the 100-year floodplain and areas known to flood during intense or prolonged rainfall events) to incorporate mitigation measures designed to minimize or eliminate flood hazards.

3.4 **Flood hazard enforcement.** Continue to enforce City ordinances for flood hazard reduction, tract drainage and stormwater management for all new developments and existing projects undergoing substantial improvements within the FEMA-designated Special Flood Hazard Areas, other areas identified by the state as susceptible to flooding, hillside areas, and other areas known to flood. Mitigation measures may include (but are not limited to) the design of onsite drainage systems connected to the Coachella Valley Stormwater Channel, keeping surface waters within the project area, grading of the sites so that runoff does not affect adjacent properties, and building structures so they are elevated above the anticipated flood levels.

3.6 **Floodplain development.** Promote the use of floodplains as parks, nature trails, equestrian parks, golf courses or other types of recreational facilities that can withstand periodic inundation. In the planned build-out of the City, create an atmosphere of working with nature and the natural processes characteristic of the arid environment.

3.7 **Disaster response plan.** Require all essential and critical facilities (including but not limited to essential City offices and buildings, medical facilities, schools, childcare centers and nursing homes) in or within 200 feet of Flood Zones A and X, to develop disaster response and evacuation plans that address the actions to be taken in the event of storm flooding or inundation due to catastrophic failure of a water reservoir or other water retention facilities such as the Coachella Canal, the Eastside Dike and levees of the Coachella Valley Stormwater Channel.

3.8 **Hazardous material siting.** New facilities that use or store hazardous materials in Discussion of how impact could be resolved. Discussion of how impact will be addressed and mitigated (or why it cannot be mitigated). Cite GP policies, if appropriate. Explain how existing plans, programs, and regulatory frameworks mitigate impacts, if applicable. Explain how proposed GP policies reduce impacts, if applicable.

3.10 **Smart systems.** Encourage the use of technology to identify flood-prone areas and to warn residents and motorists of impending flood hazards.

3.11 **Flood damage.** Prohibit any additions or reconstruction of structures damaged by flooding, unless the structure is relocated to a safer area or can be demonstrated the proposed project and its occupants can be protected from future, recurrent flood damage by implementing mitigation measures not present in the original, damaged structure.

3.12 **Flood Insurance.** Encourage property owners and residents to purchase flood insurance for areas outside of the FEMA-mapped 100-year flood zones, especially in those areas that have experienced flooding in the past.

8.12 **Flood-preparedness educational programs.** Prepare and distribute informational materials to owners of properties within the flood zones (Zones A and X), as well as potential seismically induced inundation areas, regarding the potential for flooding in their area. It would include the potential for flooding of access routes to and from their neighborhoods. Continue to educate and remind the public of the risks of flooding and the uncertainties inherent in the flood hazard mapping.

Because development under the CGPU would occur within the 500-year flood hazard zone, where 100-year floods could create flooding less than one-foot in depth, there is potential for impact from structures and the redirection of flood flows within the Planning Area. However, given the existing regulatory framework protecting structures located within the 100-year flood zone, and limiting development in these areas, flood flow redirection is greatly reduced. Potential impacts are also reduced by the existing infrastructure along the Whitewater River, from levees and channelized river portions In the event of development within the flood zone, policies within the CGPU support development to incorporate for proper drainage systems, monitor drainage patterns, and prepare for potential flooding emergencies. There is also no new planned infrastructure changes that specifically redirects flood flow within the Planning Area. Though structures would be built in flood hazard zones that are deemed 500-year flood zones by FEMA with low to moderate risk, existing regulations existing flood control infrastructure and the supporting CPGU policies would reduce all impacts. Thus, the impacts would be considered less than significant.

Mitigation Measures

No mitigation measures are necessary.

LEVEE AND DAM FAILURE

Impact 4.7-9: Would the Project 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?

Significance: Less than Significant.

Levees and dams are infrastructure that protect development and populations from natural hazards including flooding and mudslides. Additionally, they sometimes retain large bodies of water. Failure of dams and levees could cause unexpected inundation of water, mud, or similar substances and could result in loss or injury of structures and populations. The failure of levees or dams could also cause damage to structures or natural environment and could result in the need for reconstruction of damaged structures, or relocation of the population and infrastructure that once populated the inundated area.

Currently the two waterways with infrastructure to protect the Planning Area from flooding are the channelization and levees of the Whitewater River and the East Side Dike. The Whitewater River infrastructure is built to hold double the amount of water that would flow in a 100-year flood (42,000 cfs). The East Side Dike protects the north eastern portion of the Planning Area from mudflow from the mountains and directs flow to the Coachella Valley Stormwater Channel. Failure of these structures could potentially result from structural failure or seismic activity that would result in collapse from earthquakes. These structural failures would expose housing, structures, and natural environments within the Planning Area to flooding or mudslides and could result in structure loss, injury, and impacts on natural habitat.

The levee and channelized portions of Whitewater River area managed by the City of Coachella Engineering Department and manages levees, channels, and dikes within the Planning Area. Unincorporated areas of the Planning Area that have levees, channels, and dikes, and managed by the Riverside County Flood Control District (RCFCD). Failure of these levees could potentially occur in flood zones. In response to land located within flood zones, FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain. The development criteria for structures located within a 100-year flood zones are in place to engineer and prevent buildings from

being negatively impacts in the event of a 100-year flood or in the event of levees or damn failure. The Floodplain Management Section of the Coachella Valley Water District has implemented Riverside Country Ordinance 458 for projects located within floodplains. Projects requesting to develop in a floodplain will be subject to a plan check in order to receive a Floodplain Permit from the office of Building and Safety. Those projects that not comply with the ordinance requirements would not be allowed to build within the floodplain. This permitting process will help in preventing harm or damage to structures to people from flooding. In addition to this regulatory framework, CGPU proposes the following supporting policies under the Safety Element, that address flooding, emergency awareness and planning.

3.4 **Flood hazard enforcement.** Continue to enforce City ordinances for flood hazard reduction, tract drainage and stormwater management for all new developments and existing projects undergoing substantial improvements within the FEMA-designated Special Flood Hazard Areas, other areas identified by the state as susceptible to flooding, hillside areas, and other areas known to flood. Mitigation measures may include (but are not limited to) the design of onsite drainage systems connected to the Coachella Valley Stormwater Channel, keeping surface waters within the project area, grading of the sites so that runoff does not affect adjacent properties, and building structures so they are elevated above the anticipated flood levels.

3.5 **Storm drainage facilities.** Maintain, develop and improve where needed, the storm drain facilities (including bridges and other stormwater channel crossings) with an emphasis on those areas in the City that flood repeatedly.

3.6 **Floodplain development.** Promote the use of floodplains as parks, nature trails, equestrian parks, golf courses or other types of recreational facilities that can withstand periodic inundation. In the planned build-out of the City, create an atmosphere of working with nature and the natural processes characteristic of the arid environment.

3.7 **Disaster response plan.** Require all essential and critical facilities (including but not limited to essential City offices and buildings, medical facilities, schools, childcare centers and nursing homes) in or within 200 feet of Flood Zones A and X, to develop disaster response and evacuation plans that address the actions to be taken in the event of storm flooding or inundation due to catastrophic failure of a water reservoir or other water retention facilities such as the Coachella Canal, the Eastside Dike and levees of the Coachella Valley Stormwater Channel.

3.9 **Storm Ready Program.** Participate in the Storm Ready Program with the National Weather Service, including the monitoring of precipitation and snow levels on the mountains, providing storm watches and warnings in real-time and issuing evacuation notices for the potentially affected neighborhoods in a timely manner.

The existing regulatory framework for housing located within floodplains which, are the areas most susceptible to flooding from levee failure, provides an impact reduction strategy from levee or damn failure. In addition, the proposed CGPU policies require the City to carefully monitor and mitigate development in areas that are at risk of being impacts from flooding from possible infrastructure failure and create disaster response plans to protect users of critical facilities. Failure of the East Side Dike could potential place structures at risk of mudflow. However, development cannot occur if projects do not meet regulatory and CGPU requirements. By following strict development and land use standards, impacts from levee or damn failure would be less than significant

Mitigation Measures

No mitigation measures are necessary.

SEICHE, TSUNAMI, OR MUDFLOW

Impact 4.7-10: Would the Project result in inundation by seiche, tsunami, or mudflow?

Significance: Less than significant.

Any unexpected inundation of natural material, mud, or water, creates a number of immediate and long term impacts to the area that is affected. Seiches, tsunamis, or mudflow can cause negative environmental impacts, and irreversible impacts of development of both structures and supporting infrastructure. Seiches occur when a standing or protected body of water creates a large, uncommon, wave caused by ground shaking[13]. Tsunamis are large oceanic wave(s), from large earthquakes or volcano eruptions[14]. Mudflows create a sudden inundation of sediments and soil typically cause by rainfall or flooding[15]. These events tend to occur following seismic earthquakes, shifts in geology or over saturated hillsides that could result in mudflows from landslides, and above average waves from water bodies including ponds, lakes, and oceans. Conscious planning can help reduce impacts of these natural disasters and can prevent harm or injury to those populations at risk.

The closest ocean to the Planning Area is the Pacific Ocean and is over 100 miles away from Coachella, this eliminates any potential impact from tsunamis. The closest large body of water, the Salton Sea, is located over 10 miles away from the Planning Area, which is outside the area that could be affected by seiches. Because of the great distance from seiches potential to the Planning Area, there is very little potential for harmful impacts to occur from this body of water. Minor seiches may occur within the Planning Area in smaller ponds or lakes, however the water level rise is unlikely to exceed 0.5 m (1.6 ft) high.

Mudflows may occur in the areas below the Mecca hills as there is potential for landslides or soil shifts in this area. Under the CGPU subareas 13 and 14 are allocated for development which could expose structures and people to inundation by mudflow. Several policies in the CGPU address mudflow and landslides and require development to analyze soil and mudflow potential prior to permitting and developing on a site and make any engineered structural changes to reduce impacts from mudflow. The following policies are from the Safety Element.

2.1 **Geotechnical investigations.** Require all development proposals in the City to conduct, as a condition of approval, geotechnical and engineering geological investigations, prepared by state-certified professionals (geotechnical engineers and engineering geologists, as appropriate) following the most recent guidelines of the California Geological Survey and similar organizations, that address, as a minimum, the site-specific geologic hazards identified in the Technical Background Report. This includes the hazard of slope failure in, and adjacent to, hillside areas.

[13] http://earthquake.usgs.gov/learn/glossary/?term=seiche
[14] http://environment.about.com/od/environmentalevents/f/what-is-a-tsunami.htm
[15] http://www.merriam-webster.com/dictionary/mudflow

2.2 **Mitigated geologic hazards.** Require all new developments to mitigate the geologic hazards that have the potential to have an impact on habitable structures and other improvements.

2.3 **Slope failure mitigation.** Minimize grading and modifications to the natural topography to prevent potential for man-induced slope failures. Where deemed necessary, erect protective devices such as barriers, rock fences, retaining structures or catchment areas.

2.4 **Field inspections.** Conduct routine field inspections during grading and construction to ensure safety practices are being followed and the site is being graded; and new structures are being built in accordance with the most recent California Building Code adopted by the City, in agreement with the approved plans and specifications.

2.5 **Slope failure map updates.** Maintain an updated map of slope failures in the General Plan area to identify slopes where debris flows, surficial mass wasting events, and rockfalls have occurred, especially during wet winters.

2.6 **Learn from past mistakes.** Monitor the losses caused by geologic hazards to existing development and require studies to specifically address these issues, including implementation of measures designed to mitigate these hazards in all future developments in the General Plan area.

2.7 **Damaged buildings.** Prohibit any additions or reconstruction of habitable structures destroyed or damaged by geologic hazards unless the structure is relocated to a safer area or the applicant proves that the remedial measures proposed will mitigate the unsafe geological conditions so the proposed project and its occupants can be protected from future, recurrent damage.

2.8 **Critical facility siting.** Regulate the location of new essential or critical facilities in areas that could be affected by geologic hazards by comparing, during the project feasibility stage, the location of the proposed facilities with the mapped areas in the Technical Background Report identified as susceptible to natural hazards.

3.7 **Disaster response plan.** Require all essential and critical facilities (including but not limited to essential City offices and buildings, medical facilities, schools, childcare centers and nursing homes) in or within 200 feet of Flood Zones A and X, to develop disaster response and evacuation plans that address the actions to be taken in the event of storm flooding or inundation due to catastrophic failure of a water reservoir or other water retention facilities such as the Coachella Canal, the Eastside Dike and levees of the Coachella Valley Stormwater Channel.

8.1 **Local Hazard Mitigation Plan:** Maintain and update on a regular basis, as mandated by FEMA, a Local Hazard Mitigation Plan. Incorporate an assessment of climate change-related hazards in all future Local Hazard Mitigation Plan updates.

8.2 **Emergency response organization:** Maintain and update the emergency response organization consisting of representatives from all City departments, the Riverside County Fire and Sheriff Departments, local quasi-governmental agencies, private

businesses, citizens, and other community partners involved in emergency relief and/or community-wide emergency-response services.

8.17 **Local preparedness plans:** Continue to support the development of local preparedness plans and multi-jurisdictional cooperation and communication for emergency situations consistent with regional, state (SIMS), and federal standards, guidelines and/or recommendations (NIMS).

Mudflow potential occurs mainly in the eastern portion of the Planning Area, where little development is set to occur as this land is primarily reserved for open space and very low development. However, with the regulatory framework proposed by the CGPU, projects seeking permits would not be allowed to develop unless CGPU criteria have been met and projects are shown to have little potential to impacts from mudflows. Policy strategies include siting potential hazards and infrastructure needs, monitoring slope failures, learning from past geologic hazards, and planning for emergency response and preparedness. With these safety measures, the potential harm from mudflow inundation can be reduced to ensure safety to structures and people within the Planning Area.

The potential for mudflows and seiches within the Planning Area is possible, however the impacts of such events would be minimal due to the designated land use preserves, CGPU policies, and minor water level rise from any potential seiches. Impacts from inundation by seiches, tsunami, or mudflow under the CGPU are considered less than significant.

Mitigation Measures

No mitigation measures are necessary.

CUMULATIVE IMPACTS

Because the proposed project is a General Plan Update, which takes into account existing and potential development over approximately the next twenty years, the analysis of hydrology-related impacts contained within this chapter of the EIR is already cumulative in nature. Considering water is interconnected in the Coachella Valley, changes made in the Planning Area can have an effect on waterways, water quality, and hydrology in areas outside of the planning boundaries. Cumulative impacts of these changes could come in many ways including; poor water quality for those downstream of waterways within the Planning Area, erosion sending sediment downstream, indirect flooding from redirection of flood flow and failure to build levees to protect populations from flood flows creating irreversible environmental impacts.

Though there is potential for impacts from hydrology and water quality, the current regulatory framework guides development to reduce potential environmental impacts. From NPDES to the Clean Water Act, multiple agencies and regulations are in place to ensure development is have minimal environmental impacts. In addition to the regulatory framework, the proposed policies of the CGPU also add a second level of standards to reduce impacts on, and from, hydrology and water quality in the Planning Area. Thus, cumulative impacts are considered less than significant.

SIGNIFICANT AND UNAVOIDABLE IMPACTS

Based on the environmental impact assessment above, there are no significant and unavoidable impacts on water and hydrology expected from the propose CGPU.