

4.9 Hydrology and Water Quality

This section of the EIR describes existing groundwater, surface water, water quality, stormwater, and flooding conditions within the proposed project area and evaluates potential impacts to hydrology and water quality that could result from implementation of the proposed project. This section is based on information provided in the Water Quality Control Plan for the San Diego Basin (SDRWQCB 1994), San Diego Multi-Jurisdictional Hazard Mitigation Plan (URS 2004) and other sources, as cited throughout the document.

A summary of the hydrology and water quality impacts identified in Section 4.9.3, Analysis of Project Impacts and Determination of Significance, is provided below.

Hydrology and Water Quality Summary of Impacts

Issue Number	Issue Topic	Project Direct Impact	Project Cumulative Impact	Impact After Mitigation
1	Water Quality Standards and Requirements	Less than Significant	Less than Significant	Less than Significant
2	Groundwater Supplies and Recharge	Less than Significant	Less than Significant	Less than Significant
3	Erosion or Siltation	Less than Significant	Less than Significant	Less than Significant
4	Flooding	Less than Significant	Less than Significant	Less than Significant
5	Exceed Capacity of Stormwater Systems	Less than Significant	Less than Significant	Less than Significant
6	Housing within a 100-year Flood Hazard Area	Less than Significant	Less than Significant	Less than Significant
7	Impeding or Redirecting Flood Flows	Less than Significant	Less than Significant	Less than Significant
8	Dam Inundation and Flood Hazards	Less than Significant	Less than Significant	Less than Significant
9	Seiche, Tsunami and Mudflow Hazards	Less than Significant	Less than Significant	Less than Significant

4.9.1 Existing Conditions

The following section examines existing groundwater resources, surface water resources, stormwater drainage systems, groundwater quality, surface water quality, and flooding and dam inundation areas within the proposed project area.

4.9.1.1 Groundwater Hydrology

The proposed project is located within the South Coast Groundwater Hydrologic Region as identified in California's Groundwater Bulletin 118, and covers portions of the Escondido Valley Groundwater Basin and the San Pasqual Valley Groundwater Basin (DWR 2004a and 2004b). Characteristics of these groundwater basins are discussed below.

Escondido Valley Groundwater Basin

The Escondido Valley Groundwater Basin underlies the central portion of the proposed project area, primarily within the City of Escondido. This groundwater basin consists of a northeast trending valley drained by Escondido Creek. Average annual precipitation ranges from 11 to 15 inches and primary water-bearing deposits include Quaternary age alluvium and residuum. Quaternary alluvium is confined to the course of Escondido Creek and is not thick enough to be water-bearing. Groundwater production in this basin is largely from residuum, however many wells extract groundwater from fractures in the underlying crystalline rocks. Groundwater is generally found at less than 50 feet in depth and the estimated total storage capacity is 24,000 acre-feet (DWR 2004a).

San Pasqual Groundwater Basin

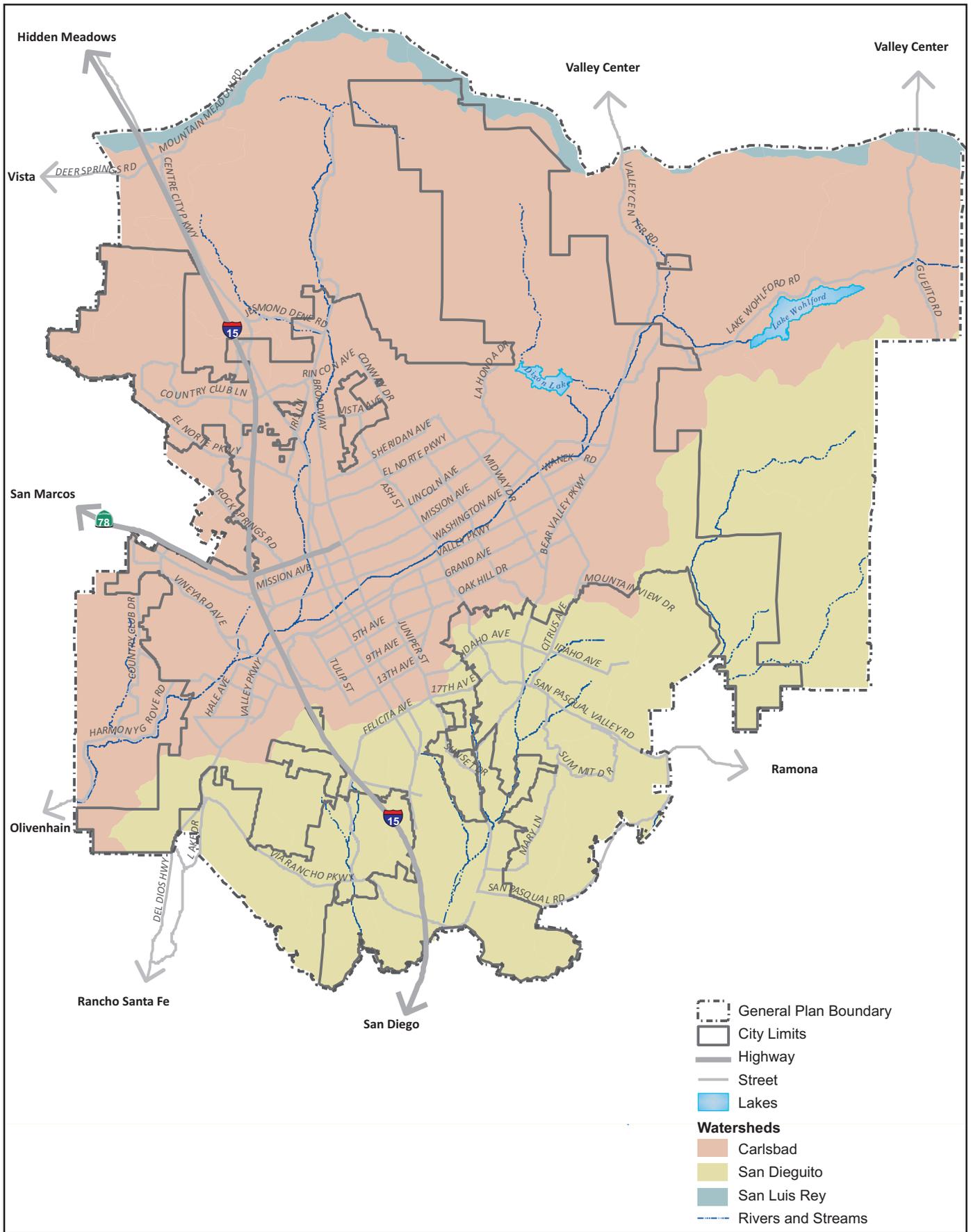
The San Pasqual Groundwater Basin covers portions of the southeastern area of the proposed project area. This groundwater basin underlies San Pasqual Valley and Cloverdale, Rockwood, and Bandy Canyons. The basin is bounded by Lake-Hodges Reservoir on the west and otherwise by nonwater-bearing rocks of the Peninsular Ranges. Average annual precipitation ranges from 11 to 15 inches. Santa Ysabel, Guejito, and Santa Maria Creeks drain San Pasqual Valley and converge to form the San Dieguito River, which flows into Lake-Hodges Reservoir. Groundwater in this basin is unconfined and well yields are approximately 1,700 gallons per minute. Natural recharge of the basin is from infiltration of precipitation to the valley floor and percolation of ephemeral stream flow of the Santa Ysabel, Bach, Guejito, and Santa Maria Creeks. During typical years, no stream flow leaves the valley and all surface runoff becomes groundwater recharge. The total storage capacity is estimated between 63,000 acre feet to 73,000 acre (DWR 2004b).

4.9.1.2 Surface Water Hydrology

Surface water within the proposed project area is governed by the Water Quality Control Plan for the San Diego Basin (Basin Plan). The Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. The San Diego Basin Plan is available online at <http://www.swrcb.ca.gov>. The proposed project is located within the San Diego Hydrologic Region (SDHR) as identified in the Basin Plan. The SDHR contains 11 watersheds. These include San Juan, Santa Margarita, San Luis Rey, Carlsbad, San Dieguito, Penasquitos, San Diego, Pueblo San Diego, Sweetwater, Otay, and Tijuana. As shown in Figure 4.9-1, Watersheds, the proposed project planning area covers three watersheds, including the San Luis Rey Watershed, Carlsbad Watershed and San Dieguito Watershed. A watershed is the land that water flows over or under as it travels to a water body such as a creek, lake, lagoon, river, or ocean.

San Luis Rey Watershed

The San Luis Rey River Watershed, at 359,887 acres, is the third largest watershed within the SDHR. This watershed consists of one hydrologic unit (HU) (San Luis Rey) and three hydrologic areas (HAs), including Lower San Luis Rey, Monserate, and Warner Valley. The watershed contains two major water bodies, Lake Henshaw and the San Luis Rey River. Lake Henshaw is the main reservoir for the San Luis Rey watershed and the third largest in San Diego County while the San Luis Rey River is considered a major stream system. Annual precipitation in the San Luis Rey River watershed is heavier than in other areas of the region, ranging from less than 12 inches near the ocean to 45 inches near Palomar Mountain.



Source: City of Escondido 2011



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**WATERSHEDS
FIGURE 4.9-1**

Land use within the watershed is classified primarily as undeveloped (54 percent) with other uses consisting of agriculture (15 percent), residential (15 percent), parks (9 percent), military (three percent), transportation (two percent), and commercial recreation (one percent). Commercial, industrial, and public facilities land uses make up less than one percent of the land use acreage in this watershed.

Carlsbad Watershed

The Carlsbad Watershed encompasses 135,322 acres and extends from Lake Wohlford on the east to the Pacific Ocean on the west, and from the Cities of Vista and Oceanside on the north to Cardiff-by-the-Sea on the south. The Carlsbad Watershed includes one HU (Carlsbad) and six HAs (Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos, and Escondido Creek). The watershed contains five coastal lagoons including Loma Alta Slough, Buena Vista Lagoon, Agua Hedionda Lagoon, Batiquitos Lagoon, and San Elijo Lagoon. The watershed also includes two small reservoirs, Lake Dixon ~~Lake~~ and Lake Wohlford. The San Marcos Dam controls approximately 53 percent of the San Marcos HA. The area is drained by the Buena Vista, Agua Hedionda, San Marcos and Escondido Creeks. Annual rainfall over the watershed varies from 10.5 inches near the coast to 19.5 inches in the inland areas. The most common land use within the watershed management area is residential (35 percent), followed by undeveloped land (21 percent), parks (14 percent), transportation (12 percent), and agriculture (7 percent). Industrial, commercial, public facilities, commercial recreation, water, and lands under construction make up the remaining 11 percent of land uses within the watershed. The Carlsbad Watershed contains the largest percentage of privately-owned land of any watershed in San Diego County, about 75 percent. The remainder of the watershed is owned by local and state governments. The Carlsbad Watershed is the second most densely populated watershed in the San Diego region.

San Dieguito River Watershed

The San Dieguito River Watershed covers 221,307 acres and includes portions of the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach, as well as some unincorporated areas of San Diego County. The watershed consists of one HU (San Dieguito) and five HAs including Solana Beach, Hodges, San Pasqual, Santa Maria Valley, and Santa Ysabel. The watershed contains the San Dieguito River and its tributaries, along with Santa Ysabel and Santa Maria Creeks. It also contains the following reservoirs: Lake-Hodges Reservoir, Lake Ramona, Lake Poway, Sutherland Reservoir, Olivenhain Reservoir, and the San Dieguito Reservoir. There are several important natural areas within the watershed that sustain a number of threatened and endangered species. Annual precipitation ranges from 13.5 inches near the coast to nearly 35 inches in the eastern portion of the watershed. Land use in the watershed is primarily undeveloped land (42 percent). Other major uses are residential (19 percent), parks (17 percent), and agriculture (15 percent). Transportation, commercial, industrial, public facilities, and water comprise the remaining seven percent of the watershed. Over 60 percent of the watershed is privately owned land. The remaining portions are mostly federally or locally-owned with a small percentage of land being state-owned (DPLU 2010).

4.9.1.3 Stormwater Drainage Systems

The primary purpose of storm drains is to carry rainwater away from developed areas to prevent flooding. Untreated stormwater and the pollutants it carries flow directly into the creeks, lakes, lagoons, and ocean. In recent years, sources of water pollution, such as industrial waters from factories, have

been greatly reduced by the construction of adequate storm drain systems. The majority of water pollution occurs because of typical residential and commercial activities that produce a variety of contaminants: oil from vehicles; fertilizers from farms, lawns, and gardens; waste water from failing septic tanks; wash water from restaurants, residential uses and vehicle washing; and waste from pets (CESWP 2011).

Point Source Discharge

Point source pollution refers to pollutants discharged to surface water through any discernable, confined, and discrete conveyance. In other words, the boundaries of the source of pollution can be easily defined and identified from a single point. Point sources generally discharge predictable concentrations and volumes of pollutants. Examples of point source pollution are sewage treatment plants, landfills, and industrial facilities, all of which may release effluent and sewage or other liquid waste directly into a body of water.

Non-point Source Discharge

Non-point source pollution refers to diffuse, widespread cumulative sources of pollution and is the primary source of surface water and groundwater contamination. In other words, non-point source pollution cannot be traced back to a single point or source. This kind of pollution is caused by rainfall and over-irrigation that washes pollutants into storm drains, streams, rivers, lakes, and oceans. Sources may be large or small, but are generally numerous throughout a watershed. Non-point water pollution is often a byproduct of poor land use practices, which do not incorporate adequate best management practices (BMPs) to reduce the discharge of pollutants, and the collective effects of individual behavior. Common sources of non-point pollution include, but are not limited to, runoff from urban, agricultural, or industrial areas, such as: landscaping, roads and highways, improperly managed construction sites, septic system failures, recreational boating, timber harvesting, mining, and livestock production. Non-point source discharges can also result from physical changes to stream channels and habitat degradation. Typical non-point source contaminants include trash, sediments, pesticides, fertilizers, petroleum-based hydrocarbons, metals, and pathogens. Nonpoint sources of pollution can occur year round, during any time that rainfall, snowmelt, irrigation, or any other source of water runs over land, picks up pollutants and deposits them into surface or groundwater.

4.9.1.4 Water Quality Contaminants

This section defines common water quality contaminants that impact surface and groundwater within the proposed project area.

Metals

Metals can impact surface water quality by accumulating in sediments and fish tissues. This poses risks of toxicity such as lowering the reproductive rates and life spans of aquatic animals and animals up the food chain. Metals can also alter photosynthesis in aquatic plants and form deposits in pipes. Metals in urban runoff can result from automobile use, industrial activities, water supply infrastructure corrosion, mining, or pesticide application. Atmospheric deposition can also contribute metals to water bodies. Groundwater can be contaminated from metals from improper disposal of waste generated from small businesses such as automobile repair shops or metal parts cleaning operations. Once groundwater is contaminated with metals it can be extremely difficult, costly or impossible to remove the pollutant.

Nutrients (Phosphorous and Nitrogen)

High levels of nitrogen and phosphorus in surface waters can produce harmful algal blooms. In turn, these blooms can produce “dead zones” in water bodies where dissolved oxygen levels are so low that most aquatic life cannot survive. Typical sources of nutrients in surface waters are improper fertilizer usage (both agricultural and residential), discharges from failing or improperly maintained septic systems, and accidental sanitary sewer overflows. Nitrate, which is composed of nitrogen and oxygen, occurs naturally in soil and water. Nitrate is an important constituent in fertilizers used for agricultural purposes and is present in human and animal wastes. Typical sources of elevated nitrates in groundwater are failing septic tanks, feed lots, or farming operations. Infants, young livestock, and pets are extremely susceptible to potential health effects from drinking water with nitrates above regulated levels and could become seriously ill. If untreated, the condition can be fatal.

Petroleum Products (Gasoline, Diesel, Oil and Grease)

Gasoline, diesel, oil, and grease are characterized as high molecular weight organic compounds. Primary sources of gasoline, diesel, oil and grease contaminants are motor products from leaking vehicles and underground storage facilities and tanks. Petroleum hydrocarbon products commonly found in gasoline, including benzene, toluene, ethylbenzene, xylene, and methyl tert-butyl ether (MTBE), are considered common petroleum contaminants to surface water and groundwater. Benzene is used as a gasoline additive, industrial solvent and in the production of drugs, plastics, rubber and dyes. Toluene is widely used as an industrial feedstock and as a solvent. Ethylbenzene is used in the production of plastic while xylene is used as a solvent in the printing, rubber and leather industries. MTBE is a gasoline additive that has historically caused groundwater contamination from spills or leaks at gas stations. Introduction of petroleum pollutants to water bodies is typical due to the widespread use and application of these products in municipal, residential, commercial, industrial, and construction areas.

Additional sources of oil and grease include esters, oils, fats, waxes, and high molecular-weight fatty acids. Introduction of these pollutants to water bodies is typical due to the widespread use and application of these products in municipal, residential, commercial, industrial, and construction areas. Elevated oil and grease content can decrease the aesthetic value of a water body, as well as its water quality.

Pathogens (Bacteria and Viruses)

Water contaminated with pathogens such as bacteria and viruses can introduce diseases to humans and animals. This can have significant public health implications, particularly related to water used for drinking and recreational uses such as swimming and fishing. Common sources of pathogens in surface water include wild and domesticated animals, urban and agricultural activities, and accidental sanitary sewer overflows. Elevated bacteria in groundwater occur primarily from human and animal wastes. Sources of bacteriological contamination include septic tanks, natural soil/plant bacteria, feed lots, pastures, and other land areas where animal wastes are deposited. Old wells with large openings, including hand dug wells and wells with inadequate seals, are most susceptible to bacteriological contamination from insects, rodents, or animals entering the well.

Pesticides and Herbicides

Pesticides and herbicides can enter surface water and groundwater from both agricultural and urban areas, including residential lawns and golf courses. Typical impacts include accumulation in sediments and bioaccumulation in the food chain. Pesticides and herbicides can be toxic to both aquatic life and humans.

Sediments

Increased sedimentation, over and above the amount that enters the water system by natural erosion, can cause many adverse impacts on aquatic organisms, water supply, and wetlands. Sedimentation can decrease transmission of light, which affects plant production and leads to loss of food and cover for aquatic organisms. It can change animal behavioral activities (nesting, feeding, mating), and adversely affect respiration, digestion, and reproduction. Contaminants and toxic substances can also be transported in sediments. Sediments can damage water treatment equipment, increasing treatment costs. They can also reduce reservoir volume and flood storage and increase peak discharges.

Total Dissolved Solids

Total dissolved solids (TDS) refer to the total concentration of all minerals, salts, metals, cations or anions that are dissolved in water. TDS is composed of inorganic salts (principally calcium, magnesium, potassium, sodium, bicarbonate, carbonate, chloride and sulfate) and some small amounts of organic matter that are dissolved in water. The primary source of TDS in groundwater is the natural dissolution of rocks and minerals, but septic tanks, agricultural runoff, and stormwater runoff also contribute. Increased salts in regional freshwater resources from mining, urban runoff, and construction can create stressful environments and even destroy habitat and food sources for wetland animals in aquatic and wetland habitats, as well as favoring salt tolerant species; reduce the quality of drinking water; and may cause skin or eye irritations in people. An elevated TDS concentration is not a health hazard; however, it can cause water to have a salty or brackish taste, be corrosive, and result in scale formation on pipes, pumps, water heaters, etc. Because of the seasonal nature of precipitation within the San Diego region, surfacing groundwater and runoff from applied water (agricultural and urban) represent the primary contributors to dry season stream flows. The interchange between surface water and groundwater, and the extreme seasonal variability of flow, evaporation, and water quality all contribute to a wide range of TDS in local surface waters.

4.9.1.5 Surface Water and Groundwater Quality

The following discussion identifies surface water and groundwater quality issues facing the San Luis Rey River Watershed, Carlsbad Watershed, San Dieguito River Watershed, Escondido Valley Groundwater Basin and San Pasqual Groundwater Basin. Additional information on surface water, including beneficial uses, water quality objectives, implementation strategies, plans and policies, and surveillance, monitoring and assessment information, for each of these watersheds can be found by accessing the San Diego Basin Plan, available at the State Water Resources Control Board (SWRCB) website: <http://www.swrcb.ca.gov>.

San Luis Rey Watershed

Major impacts to the San Luis Rey River Watershed include surface water quality degradation, habitat loss, invasive species, and channel bed erosion. Three water bodies in the San Luis Rey Watershed have been placed on the Clean Water Act (CWA) 303(d) List of Impaired Water Bodies (see Table 4.9-1, Water Bodies Identified as Impaired under Section 303d of the Clean Water Act). Constituents of concern for the watershed include bacterial indicators along the Pacific Coast Shoreline at the San Luis Rey River mouth, eutrophic conditions within Guajome Lake, and chloride and total dissolved solids in the lower portion of the San Luis Rey River. Potential sources of these contaminants are varied and include both anthropogenic and natural sources.

Table 4.9-1 Water Bodies Identified as Impaired under Section 303(d) of the Clean Water Act

Watershed Management Area	Water Body Name	Pollutant/Stressor
San Luis Rey	Pacific Ocean Shoreline	Indicator Bacteria
	San Luis Rey River	Chloride, TDS
	Guajome Lake	Eutrophic
Carlsbad	Pacific Ocean Shoreline	Bacterial Indicators
	Loma Alta Slough	Bacterial Indicators, Eutrophic
	Buena Vista Lagoon (202 acres)	Bacterial Indicators, Nutrients, Sedimentation/Siltation
	Buena Vista Creek	Sediment toxicity
	Encinitas Creek	Phosphorus
	Aqua Hedionda Lagoon (7 acres)	Bacterial Indicators, Sedimentation/Siltation
	Agua Hedionda Creek	TDS, Manganese, Selenium, Sulfates
	Lake San Marcos	Ammonia as Nitrogen, Nutrients, Phosphorus
	San Marcos Creek Watershed (Cottonwood Creek)	DDT, Phosphorus, Sediment toxicity
	Buena Creek	DDT, Nitrate, Phosphate
	San Elijo Lagoon	Bacterial Indicators, Eutrophic, Sedimentation/Siltation
	Escondido Creek	DDT, Manganese, Phosphate, Selenium, Sulfates, and TDS
	Reidy Canyon Creek	Phosphorus
San Dieguito	Pacific Ocean Shoreline	Bacterial Indicators
	Green Valley Lake	Sulfates, Chloride, Manganese, PCP
	Lake Hodges Reservoir	Color, Nitrogen, Phosphorus, Turbidity, Manganese, pH
	Kit Carson Creek	TDS, PCP
	Felicita Creek	TDS, Aluminum
	Cloverdale Creek	Phosphorus, TDS
	Sutherland Reservoir	Color, Manganese, pH

Source: SDGPU 2010, CWC 2010; SDEC 2010

Notes: TDS = Total Dissolved Solids; DDT = Dichlorodiphenyltrichloroethane; PCP = Pentachlorophenol.

As of October 2011, the 2010 updated 303(d) list for California had not been made available to the public and the 2006 303(d) List of Impaired Water bodies is considered the current and active list.

Carlsbad Watershed

Major impacts to the Carlsbad Watershed include surface water quality degradation, sewage spills, beach closures, sedimentation, habitat degradation and loss, invasive species, and eutrophication. Thirteen water bodies in the Carlsbad Watershed have been placed on the CWA 303(d) list. These water bodies and their associated pollutants/stressors are identified in Table 4.9-1, Water Bodies Identified as Impaired under Section 303(d) of the Clean Water Act. Pollutant conditions in the watershed include bacterial indicators, eutrophic conditions, nutrients, sediments, sulfates, nitrates and phosphates. The sources of these pollutants are varied and include urban runoff, agricultural runoff, sewage spills, livestock/domestic animals, and other natural sources (CWC URMP 2010).

San Dieguito River Watershed

Major impacts affecting the San Dieguito River watershed include surface water quality degradation, beach closures, sedimentation, habitat degradation and loss, invasive species, and eutrophication. Seven water bodies within this watershed have been placed on the CWA 303(d) list, as shown in Table 4.9-1, Water Bodies Identified as Impaired under Section 303(d) of the Clean Water Act. Pollutants of concern for the watershed include bacterial indicators, sulfates, nitrogen, phosphorus, and TDS. Land use activities, including urban runoff, agricultural runoff, and domestic animals, as well as other natural sources, are the primary sources of water quality impacts in the watershed.

Escondido Valley Groundwater Basin

Local sources of groundwater in this basin are categorized as suitable to inferior for domestic use. Groundwater in this basin is generally salty in nature (high salinity or sodium chloride in type), with subordinate amounts of magnesium, calcium, bicarbonate, and nitrate ions. TDS content ranges from 250 to more than 5,000 milligrams per liter (mg/L). In many cases, the TDS level in the Escondido Valley Groundwater Basin exceeds the EPA's National Secondary Drinking Water Regulations, Secondary Standard for TDS, which is 500 mg/L (EPA 2011). The water categorized as inferior for domestic use typically contains high nitrate, TDS, or sulfate content (DWR 2004a).

San Pasqual Groundwater Basin

Groundwater in this basin is of mixed character. In the eastern part of the valley, groundwater is mainly calcium bicarbonate character (hard water or water with high mineral content) with TDS content mostly less than 500 mg/L. In the western part of the valley, groundwater is dominantly sodium chloride in character with sulfate as a prominent minor anion. Within the San Pasqual Groundwater Basin, primary pollutants include TDS and nitrates. TDS concentration in the basin ranges from 350 to 1,790 mg/L. In some cases, the TDS content level in the San Pasqual Groundwater Basin exceeds the EPA's National Secondary Drinking Water Regulations, Secondary Standard for TDS of 500 mg/L (EPA 2011). Nitrate concentration ranges to 91.7 mg/L and elevated nitrate concentration is widespread (DWR 2004b).

4.9.1.6 Flooding and Dam Inundation Hazards

Flooding is a general or temporary condition of partial or complete inundation of normally dry land areas near water. Flooding can be associated with flash floods and debris flows, urbanization, landform modification, faulty drainage facilities, dam failure, tsunamis and seiches, all of which are discussed below.

Flash Floods and Debris Flows

Debris flows, also known as mudflows, are shallow water-saturated landslides that travel rapidly down slopes carrying rocks, brush, and other debris. Mudflows are a relatively common disaster in San Diego. A mudflow occurs naturally as a result of heavy rainfall on a slope that contains loose soil or debris. Human activity can also induce a slide, such as when soil becomes saturated from a broken water pipe or incorrect diversion of runoff concentrated from developed areas saturates soil.

Mudflows predominantly occur in mountainous areas underlain by geologic formations that produce sandy soils. Weathered gabbroic soils contain large amounts of clay that shrinks and expands with exposure to water, and also have a high potential for instability and sliding. Mudflows can be initiated on slopes as low as 15 degrees, but are more frequently found on slopes as steep as 45 degrees. The path of a mudflow is determined by local topography, and will typically follow existing drainage patterns. The fluidity and depth of the water/soil/debris mixture and the steepness of a channel are all variables that influence the rate of movement of a mudflow. At the foot of a long steep slope, a flow may move at avalanche speed (approximately 40 feet per second or 27 miles per hour) and contain tremendous force capable of destroying buildings and roadways. Flash floods occur within a few minutes or hours of excessive rainfall or a dam or levee failure. Flash floods can roll boulders, tear out trees, destroy buildings and bridges, and scour out new channels. Flash flood-producing rains can also trigger mudflows.

Areas recently burned by wildfires are particularly susceptible to flash floods and debris flows during rainstorms. Just a short period of moderate rainfall on a burn scar can lead to flash floods and debris flows. Rainfall that is normally absorbed or intercepted by vegetation can runoff almost instantly, causing creeks and drainage areas to flood much sooner during a storm, and with more water than normal. Additionally, the soils in a burn scar are highly erodible so flood waters can contain high amounts of mud, boulders, and vegetation. The powerful force of rushing water, soil, and rock, both within the burned area and downstream, can destroy culverts, bridges, roadways, and structures, and place people at risk.

Urbanization

The conversion of undeveloped, natural areas to urbanized uses throughout the San Luis Rey, Carlsbad and San Dieguito Watersheds have contributed to increased potential for flooding, by increasing the rate and amount of runoff in a watershed and altering drainage patterns. Construction of impervious surfaces such as rooftops, roads and driveways reduces the amount of rainfall that can infiltrate the ground surface and move to the subsurface. As a result, the volume of surface water runoff increases within a watershed; subsequently, artificial conveyances such as gutters, storm pipes and natural channel improvements accelerate the rate of flow of water in the watershed. This faster moving, higher volume of surface water runoff within a watershed results in a higher probability and increased severity of flooding, if facilities are not adequately maintained or constructed to carry peak flow capacity.

Landform Modification

Any alteration to natural drainage patterns by modifying landforms that control the conveyance of surface water can increase the potential for flooding. Grading or other modifications, including directly altering the course of a stream or river by excavation or embankment, can increase velocities of floodwaters, which increases the potential for flooding downstream of the modification. A reduction in

the capacity of the watercourse can increase the potential for flooding at the site of the modification as well as upstream from the activity.

Faulty Drainage Facilities

Drainage facilities including storm drains, culverts, inlets, channels or other such structures are designed to prevent flooding by collecting stormwater runoff and directing flows to either the natural drainage course and/or away from urban development. The capacity of a drainage structure can typically be determined by a hydrology and drainage study; however, if drainage facilities are not adequately designed or built, or properly maintained, the facilities can overflow or fail, resulting in flooding. Existing floodplain areas in the proposed project area are primarily the result of insufficient drainage facilities to carry stormwater runoff to the appropriate channels. As a result of insufficient improvements, Escondido Creek has been fully improved as a concrete-lined channel from the east to the west City area and is designed to contain a 100-year flood. Reidy Creek has also been improved to handle a 100-year flood event and extends downstream of Lincoln Avenue south to its junction with Escondido Creek.

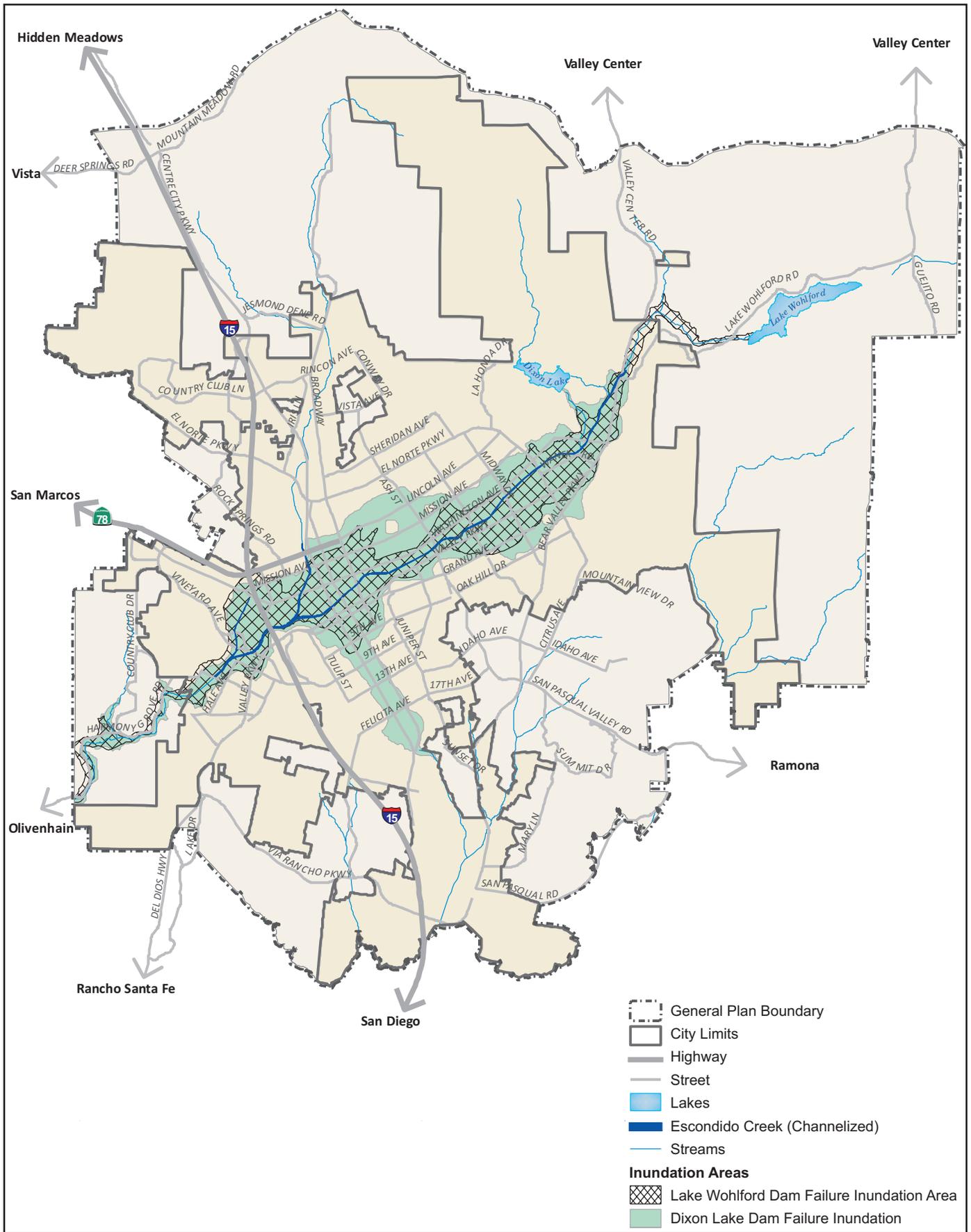
Dam Failure

Dam failure inundation is flooding caused by the release of impounded water from a structural failure or overtopping of a dam. The failure of a dam occurs most commonly as a result of extreme rainfall, poor design, neglect, or structural damage caused by earthquakes. This event is extremely hazardous, as it will typically occur quickly and without warning. Areas directly below the dam are at the greatest risk, and as the water moves farther downstream and reduces in velocity and depth, the magnitude of the damage and potential risk to life and property decreases.

The General Plan Update planning area is at risk of dam inundation from Lake Wohlford and Lake Dixon Lake, as shown in Figure 4.9-2, Dam Inundation Areas. Areas surrounding Escondido Creek, in the downtown area and urban core portion of the City are at greatest risk in the event of dam inundation. The San Diego Multi-Jurisdictional Hazard Mitigation Plan (URS 2004) identifies dam failure risk levels based on dam inundation map data. A dam is considered a high hazard if it stores more than 1,000 acre-feet (AF) of water, is higher than 150 feet tall, and has the potential for downstream property damage and/or downstream evacuation. According to the Multi-Jurisdictional Hazard Mitigation Plan, an estimated total of 86,360 people, 12,393 residential buildings, and 424 commercial buildings in the City of Escondido would be potentially exposed to flood hazards related to dam failure.

Tsunamis

Tsunamis are long-wavelength, long-period sea waves generated by an abrupt movement of large volumes of water. These waves can be caused by underwater earthquakes, landslides, volcanic eruptions, meteoric impacts, or onshore slope failures. In San Diego, wave heights and run-up elevations from tsunamis have historically fallen within the normal range of tides (one to four feet in height). At the most risk for tsunamis is the coast of San Diego. Due to historic record and the location of the General Plan Update area planning away from the coastline, the proposed project area has a low likelihood of being inundated by a tsunami.



Source: City of Escondido 2011



DAM INUNDATION AREAS
FIGURE 4.9-2

Seiche

A seiche is a standing wave in a completely or partially enclosed body of water. Areas located along the shoreline of a lake or reservoir are susceptible to inundation by a seiche. High winds, seismic activity, or changes in atmospheric pressure are typical causes of seiches. The size of a seiche and the affected inundation area is dependent on different factors including size and depth of the water body, elevation, source, and if manmade, the structural condition of the body of water in which the seiche occurs.

4.9.1.7 Flood Prone Areas

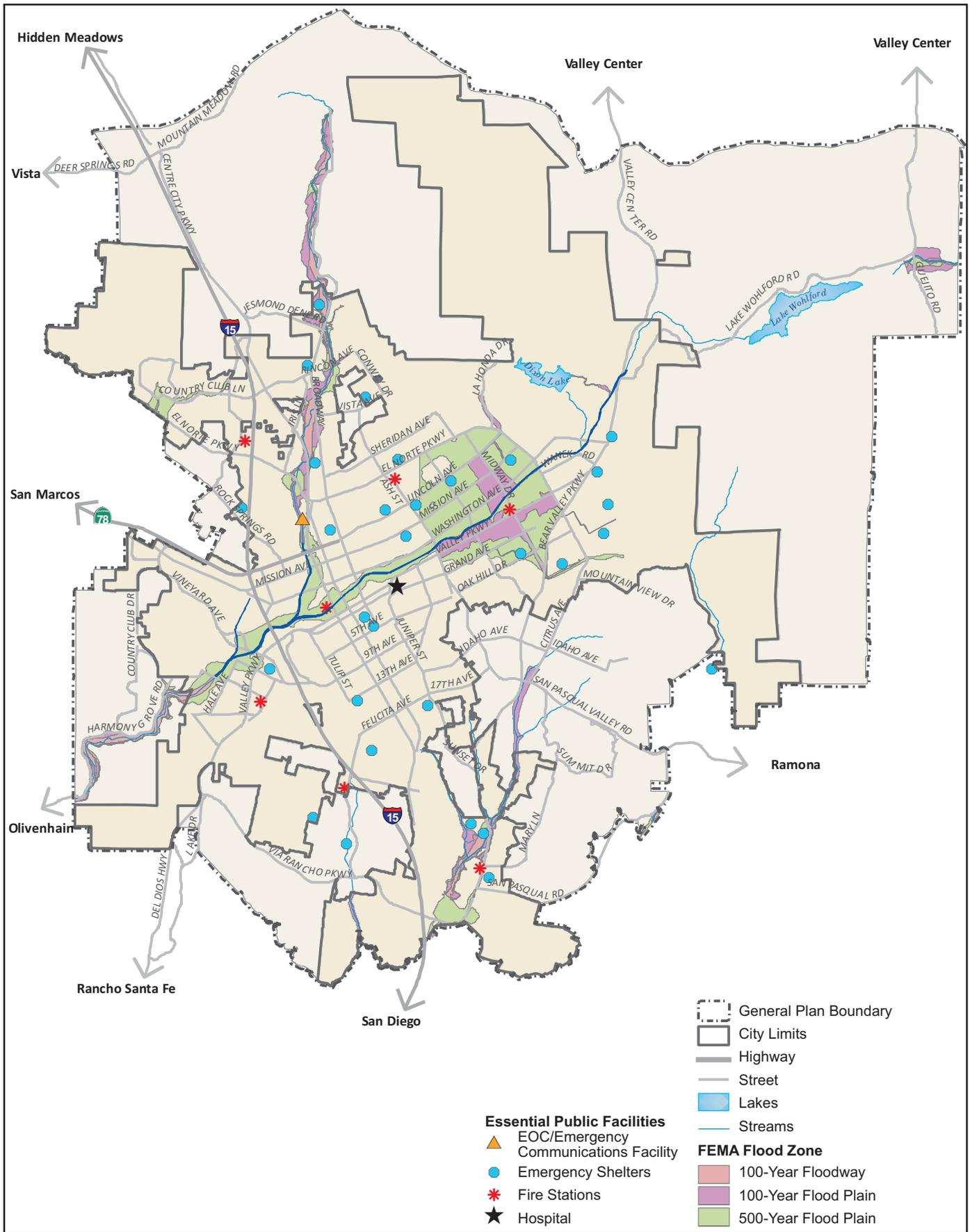
The climate in the General Plan Update planning area is semi-arid and seasonal precipitation is highly variable in frequency, magnitude and location. Infrequent large bursts of rain can rush down steep canyons and flood areas unexpectedly. Flooding most frequently occurs during winter storm events between the months of November and April, and occasionally during the summer when a tropical storm makes landfall in the region. Most flooding events occur over several days, but can also develop within a matter of hours, particularly in narrow valleys that are prone to sheet flow.

According to San Diego's Multi-Jurisdictional Hazard Mitigation Plan (URS 2004), an estimated 11,304 people, 2,654 residential buildings and 61 commercial buildings in the City of Escondido would have the potential to be exposed to flood hazards associated with a 100-year flood event. Approximately 28,792 people, 6,758 residential buildings and 115 commercial buildings in the City of Escondido would have the potential to be exposed to flood hazards associated with a 500-year flood event.

According to the existing Escondido General Plan, areas within the City that would be subject to flooding during an 100-year storm event include: northern portions of Reidy Creek north of Rincon Avenue; an area alongside Escondido Creek west of Hale Avenue; along Kit Carson Park Creek north of Via Rancho Parkway; an area straddling Midway Drive north of the Escondido Creek channel; and an area straddling Valley Parkway between Ash Street and Citrus Avenue.

Flood Mapping

Federal Insurance Rate Maps (FIRMs) are the official maps created and distributed by the Federal Emergency Management Agency (FEMA) and the National Flood Insurance Program (NFIP). FIRMs delineate Special Flood Hazard Areas (SFHAs), which are areas subject to inundation by the base flood, for every city and community that participates in the NFIP. FIRMs contain flood risk information based on historic, meteorological, hydrologic, and hydraulic data, as well as open space conditions, flood control works, and development. It should be noted that alluvial fans are designated as SFHAs on FIRMs. Figure 4.9-3, Development in Flood Zones, shows FEMA floodway and floodplain areas within the proposed project planning area. As shown in this figure, the majority of floodways and floodplains occur along natural waterways within the proposed project area, such as Escondido Creek or Reidy Creek.



Source: City of Escondido 2011



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**DEVELOPMENT IN FLOOD ZONES
FIGURE 4.9-3**

4.9.2 Regulatory Framework

4.9.2.1 Federal

Clean Water Act

The 1972 CWA was designed to restore and maintain the chemical, physical, and biological integrity of the waters of the U.S. The CWA also directs states to establish water quality standards for all waters of the U.S. and to review and update such standards on a triennial basis. The U.S. Environmental Protection Agency (EPA) has delegated responsibility for implementation of portions of the CWA in California to the SWRCB and the regional water quality control boards (RWQCBs). This includes water quality control planning and control programs such as the National Pollutant Discharge Elimination System (NPDES), which seeks to control water pollution through the issuance of permits regulating the discharge of pollutants into waters of the U.S. Section 303 of the CWA requires states to adopt water quality standards for all intrastate waters of the U.S.

National Flood Insurance Act

The National Flood Insurance Act of 1968 established the NFIP in order to provide flood insurance within communities that were willing to adopt floodplain management programs to reduce future flood losses. The Act also required the identification of all floodplain areas within the U.S. and the establishment of flood-risk zones within those areas. FEMA is the primary agency responsible for administering programs and coordinating with communities to establish effective floodplain management standards. FEMA is responsible for preparing FIRMs that delineate the areas of known special flood hazards and their risk applicable to the community.

National Flood Insurance Reform Act

The National Flood Insurance Reform Act of 1994 resulted in major changes in the NFIP. The Act, which amended the Flood Disaster Protection Act of 1973, provided tools to make NFIP more effective in achieving its goals of reducing the risk of flood damage to properties and reducing federal expenditures for uninsured properties that are damaged by flood. The Act required mitigation insurance and established a grant program for state and community flood mitigation planning projects.

4.9.2.2 State

Assembly Bill 3030 - Groundwater Management Act

In 1992, AB 3030 was passed which greatly increased the number of local agencies authorized to develop a groundwater management plan and set forth a common framework for management by local agencies throughout California. These agencies could possess the same authority as a water replenishment district to fix and collect fees and assessments for groundwater management (Water Code Section 10754), provided they receive a majority of votes in favor of the proposal in a local election (Water Code Section 10754.3).

Cobey-Alquist Floodplain Management Act of 1965

Under this Act, local governments are encouraged to plan, adopt and enforce land use regulations for floodplain management, in order to protect people and property from flooding hazards. This Act also identifies requirements that jurisdictions must meet in order to receive state financial assistance for flood control.

California Groundwater Rights

California created a system of appropriating surface water rights through a permitting process in 1913, but groundwater has never had any statewide regulation. Though the regulation of groundwater has been considered on several occasions since 1913, the California Legislature has repeatedly determined that groundwater management should remain a local responsibility. The right to use groundwater in California has evolved through a series of court decisions dating back to the late 1800s. Groundwater rights are usufructuary, meaning the right is not one of absolute ownership, but of the opportunity of use on the overlying land. This use must be reasonable and beneficial.

California Water Code

In the California Water Code there are 22 kinds of districts or local agencies with specific statutory provisions to manage surface water. Many of these agencies have statutory authority to exercise some forms of groundwater management. For example, a Water Replenishment District (Water Code Section 60000 et seq.) is authorized to establish groundwater replenishment programs and collect fees for that service, while a Water Conservation District (Water Code Section 75500 et seq.) can levy groundwater extraction fees.

Construction Stormwater Permits

Stormwater runoff from construction activity that results in soil disturbances of at least one acre of total land area (and projects that meet other specific criteria) is governed by the SWRCB under Water Quality Order ~~99-082009-0009-DWQ, NPDES Permit #CAS000002~~. These regulations prohibit discharges of polluted stormwater from construction projects that disturb one or more acres of soil unless the discharge is in compliance with the general NPDES permit requirements. The nine individual RWQCBs enforce the General Construction Permits for projects within their region. The San Diego RWQCB oversees permits in the proposed project area. It is the responsibility of the landowner to obtain coverage under the General Construction Permit prior to commencement of construction activities. To obtain coverage, the owner must file a Notice of Intention with a vicinity map and the appropriate fee to the SWRCB. The General Permit outlines the requirements for preparation of a Storm Water Pollution Prevention Program (SWPPP).

SWPPPs are prepared and BMPs identified in the SWPPPs are implemented for construction sites greater than one acre, which reduce the likelihood of alterations in drainage to result in these impacts. In compliance with applicable construction permits, the development of future land uses as designated in the proposed project would continue to implement BMPs, such as the following:

- **Minimizing disturbed areas.** Clearing of land is limited to that which will be actively under construction in the near term, new land disturbance during the rainy season is minimized, and disturbance to sensitive areas or areas that would not be affected by construction is minimized.

- **Stabilizing disturbed areas.** Temporary stabilization of disturbed soils is provided whenever active construction is not occurring on a portion of the site, and permanent stabilization is provided by finish grading and permanent landscaping.
- **Protecting slopes and channels.** Outside of the approved grading plan area, disturbance of natural channels is avoided, slopes and crossings are stabilized, and increases in runoff velocity caused by the project is managed to avoid erosion to slopes and channels.
- **Controlling the site perimeter.** Upstream runoff is diverted around or safely conveyed through the project and is kept free of excessive sediment and other constituents.
- **Controlling internal erosion.** Sediment-laden waters from disturbed, active areas within the site are detained.

National Pollution Discharge Elimination System Permits

In California, the SWRCB and its RWQCBs administer the NPDES permit program. The NPDES permit system was established in the CWA to regulate both point source discharges and non-point source discharges to surface waters of the U.S. The NPDES program consists of characterizing receiving water quality, identifying harmful constituents, targeting potential sources of pollutants, and implementing a comprehensive stormwater management program. Construction and industrial activities are typically regulated under statewide general permits that are issued by the SWRCB. The RWQCB also issues Waste Discharge Requirements (WDRs) that serve as NPDES permits under the authority delegated to the RWQCBs under the CWA. In November 1990, under Phase I of the urban runoff management strategy, the EPA published NPDES permit application requirements for municipal, industrial, and construction stormwater discharges. With regard to municipalities, the permit application requirements were directed at jurisdictions owning or operating municipal separate storm sewer systems serving populations of 100,000 or more, or contributing significant pollutants to waters of the U.S. Such municipalities were required to obtain coverage under a NPDES municipal stormwater permit as well as to develop and implement an urban runoff management program to reduce pollutants in urban runoff and stormwater discharges.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, enacted in 1969, authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including both surface and ground waters) and directs the RWQCBs to develop region-specific Basin Plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative. The purpose of these plans is to designate beneficial uses of the region's surface and ground waters, designate water quality objectives for the reasonable protection of those uses, and establish an implementation plan to achieve the objectives.

4.9.2.3 Regional/Local

Carlsbad Watershed Urban Runoff Management Program

The Carlsbad WURMP describes the activities and requirements that the copermitees within the Carlsbad Watershed are implementing to ensure compliance with the waste discharge requirements of the Municipal Storm Water Permit Order 2007-01 and to reduce the impacts of urban activity on

receiving water quality on a watershed basis. The lead copermitee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego. The most recent Carlsbad WURMP was adopted in January 2011 and covers the time period July 1, 2009 – June 30, 2010.

City of Escondido Dam Emergency Action Plans

The City of Escondido Public Works Department maintains Lake Dixon–~~Lake~~ and Lake Wohlford Dam Emergency Action Plans. Emergency plans for dam evacuation are necessary to plan for the loss of life, damage to property, displacement of people, and other ensuing hazards that can occur from dam failure. Dam Emergency Action Plans contain information concerning the physical situation, affected jurisdictions, evacuation routes, unique institutions and event responses. In addition, the plans include inundation maps showing direction of flow; inundation area boundaries; hospitals, schools, multi-purpose staging areas; command posts and sites; and mass care and shelter facilities and sites.

City of Escondido Floodplain Overlay Zone

The purpose of the City’s Floodplain Overlay Zone is to provide land use regulations in areas with properties situated within the designated floodplains of rivers, creeks, streams and water courses to protect public health, safety and welfare and to minimize losses to property and life due to flooding and periodic inundation. Land use regulations include: 1) restricting or prohibiting uses which are dangerous to health, safety or property in times of flood or cause excessive increases in flood heights or velocities; 2) requiring that uses vulnerable to floods, including public facilities which serve such uses, be protected against flood damage at the time of initial construction; and 3) protecting individuals from buying lands which are unsuitable for intended purposes because of a flood hazard.

City of Escondido Grading and Erosion Control Ordinance

Article 55 of the Escondido Municipal Code establishes the grading and erosion control regulations for the City of Escondido. The purpose of this article is to assure that development occurs in a manner which protects the natural and topographic character and identity of the environment, the visual integrity of hillsides and ridgelines, sensitive species and unique geologic/geographic features, and the health, safety, and welfare of the general public. This Article regulates grading on private and public property and provides standards and design criteria to control stormwater and erosion during construction activities. The ordinance sets forth rules and regulations to control excavation, grading, earthwork construction (including fills and embankments), and development on hillsides and along ridgelines; establishes the administrative procedure for issuance of permits; and provides for approval of plans and inspection of grading construction necessary for compliance with stormwater management requirements.

City of Escondido Industrial Waste Program

The City of Escondido Industrial Waste Program requires that any discharger of industrial wastes into the City’s sewerage system obtain a permit from the Industrial Waste Program. Industrial Waste Program permits must be obtained by all non-domestic users whose wastewater contains or may contain pollutants not normally found, or in concentrations in excess of those normally found, in domestic wastewater. Those users requiring permits include the following categories: 1) users whose wastewater contains or may contain any substance which would cause the wastewater to be considered a

prohibited discharge under this article; 2) any user that meets the criteria set forth in 40 CFR 403.3 and is designated as a significant industrial user (SIU); 3) Any other users determined by the director of utilities to require special regulation or source control; 4) Non-domestic discharges of wastewater to the sewer system is prohibited unless the discharger obtains a discharge permit or other authorization to discharge from the City; and 5) Class I, Class II, Class III, Class IV, and Class V dischargers are required to obtain a sewer use permit from the City prior to initiating discharge.

City of Escondido Jurisdictional Urban Runoff Management Plan

San Diego RWQCB Order R9-2007-0001 (Waste Discharge Requirements for Discharges of Urban Runoff from Municipal Separate Storm Sewer Systems) requires each municipality within San Diego County to prepare a Jurisdictional Urban Runoff Management Plan (JURMP) for the area under its jurisdiction. The goal of the 2008 Escondido JURMP is to improve the quality of urban runoff so that local waterbodies (e.g., Escondido Creek, Reidy Creek, and Lake Hodges Reservoir) are better protected. The 2008 JURMP addresses regulatory compliance needs for developing and implementing a HMMP, which will be integrated into the City's Standard Urban Stormwater Mitigation Plan (SUSMP). The 2008 JURMP addresses the following topics: administrative and legal procedures, non-stormwater discharges, development planning, construction, municipal land use pollutant discharges, industrial and commercial land use pollutant discharges, residential land use pollutant discharges, illicit discharge detection and elimination, and education.

City of Escondido Procedures for Floodplain Management

Article 19 of Chapter 6 of the Escondido Municipal Code establishes the procedures for floodplain management within the City. This article includes regulations to: restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities; require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters; control filling, grading, dredging, and other development which may increase flood damage; and, prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

City of Escondido Standard Urban Stormwater Mitigation Plan

Municipal stormwater NPDES Permit Order R9-2007-0001 requires the development and implementation of a program that addresses urban runoff pollution issues in development planning for public and private projects. The City of Escondido SUSMP was adopted in 2008, and updated in January 2011, to meet this permit requirement. The SUSMP provides information for new private and public development projects in the City regarding how to comply with permanent and construction stormwater requirements. The SUSMP includes instructions on project review and permitting; permanent stormwater BMPs; construction stormwater BMP performance standards; and implementation and maintenance requirements.

Chapter 22 of the City of Escondido Municipal Code

Chapter 22 of Escondido's Municipal Code, establishes regulations related to stormwater management and discharge control, harmful waters and wastes, sewer service charges, private sewage disposal

systems, sewer connection fees, sewer connection laterals, and industrial wastewaters. The purpose of the stormwater management and discharge control regulations (Article 2) identified in this ordinance is to ensure the health, safety and general welfare of the citizens of the City of Escondido by controlling non-stormwater discharges to the stormwater conveyance system. This is achieved by eliminating discharges to the stormwater conveyance system from spills, dumping, or disposal of solid or liquid waste other than stormwater and by preventing, eliminating or reducing pollutants in urban stormwater discharges to the maximum extent practicable. Article 2 prohibits the discharge of anything except stormwater into a stormwater conveyance system, prohibits illegal connections to the stormwater drainage system, and requires any person owning or occupying property through which a natural watercourse of a stormwater conveyance system passes to maintain the area free of debris and other obstacles. The purpose of the Industrial Water Regulations (Article 8) is to provide for the maximum possible beneficial public use of the City's wastewater collection and treatment facilities through adequate regulations and permit requirements governing nonresidential discharges, to provide for equitable distribution of the City's costs, and to provide procedures for complying with requirements placed upon the City by other regulatory agencies.

County of San Diego Hydromodification Management Plan

Provision D.1.g of the San Diego RWQCB Permit Order R9-2007-0001 requires copermittees to implement a Hydromodification Management Plan (HMMP) to manage increases in runoff discharge rates and durations from all priority development projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force." To address the permit condition, the San Diego storm water copermittees, representing the County of San Diego and all incorporated cities, developed an HMMP that meets the intent of the Order. The HMMP was adopted in March 2011 and identifies standards to control flows that may result in erosion. Priority development projects are required to implement hydromodification mitigation measures so that post-project runoff flow rates and durations do not exceed pre-project flow rates and durations where such increases would result in an increased potential for erosion or significant impacts to beneficial uses. The HMMP also includes a decision matrix, which leads project applicants through HMMP compliance options.

City of Escondido Hydromodification Management Plan

The City's Hydromodification Management Plan (HMP) was adapted from the Countywide HMMP and adopted in January 2011. The HMP establishes post-project flow requirements for Priority Development Projects. Priority Development Projects are required to implement hydromodification mitigation measures so that post-project runoff flow rates and durations do not exceed pre-project flow rates and durations where such increases would result in an increased potential for erosion or significant impacts to beneficial uses. Hydromodification mitigation can include:

- Demonstration of no post-project increase in impervious area and resultant peak flow rates as compared to pre-project conditions;
- Installation of Low Impact Development (LID) BMPs, such as bioretention facilities, to control runoff flows and durations from new impervious areas;
- Mitigation of flow and durations through implementation of extended detention flow duration control basins;

- Preparation of continuous simulation hydrologic models and comparison of the pre-project and mitigated post-project runoff peaks and durations (with hydromodification flow controls) until compliance is achieved; and
- Implementation of in-stream rehabilitation controls to demonstrate that projected increases in runoff peaks and/or durations would not accelerate erosion to the rehabilitated receiving stream reach.

The HMP includes a decision matrix to lead project applicants through the HMP compliance options.

Municipal Storm Water Permit Order 2007-01

In 2007, the San Diego RWQCB issued Municipal Storm Water Permit Order 2007-01 to control waste discharges in urban runoff from the Municipal Separate Storm Sewer Systems that drain into the watersheds of the County of San Diego, incorporated cities of San Diego County and the San Diego Unified Port District. In part, Municipal Storm Water Permit Order 2007-01 requires that the jurisdictions within a watershed collaborate in the development of a Watershed Urban Runoff Management Program (WURMP) that addresses high priority stormwater quality issues found within the watershed.

San Diego Basin Plan

The Basin Plan for the San Diego Groundwater Basin, most recently amended in 2007, sets forth water quality objectives for constituents that could potentially cause an adverse effect or impact on the beneficial uses of water. Specifically, the Basin Plan is designed to accomplish the following: 1) designate beneficial uses for surface and ground waters; 2) set the narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy; 3) describe mitigation measures to protect the beneficial uses of all waters within the region; and 4) describe surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan. The Basin Plan incorporates by reference all applicable SWRCB and RWQCB plans and policies.

San Diego County Groundwater Ordinance

The County of San Diego currently manages anticipated future groundwater demand within its jurisdiction through the County Groundwater Ordinance. This Ordinance does not limit the number of wells or the amount of groundwater extraction from existing landowners. However, the ordinance does identify specific measures to reduce potential groundwater impacts of projects requiring specified discretionary permits. Existing land uses are not subject to the Ordinance unless a listed discretionary permit is required. Additionally, Major Use Permits or Major Use Permit Modifications which involve construction of agricultural and ranch support facilities or those involving new or expanded agricultural land uses are among the exemptions from the ordinance. However, the agricultural exemption does not supersede or limit the application of any law or regulation, including CEQA.

San Dieguito River Watershed Urban Runoff Management Program

The San Dieguito River WURMP is prepared by the City of Escondido, as lead agency, in collaboration with the Cities of Del Mar, Poway, San Diego, Solana Beach and the County of San Diego. The WURMP meets the requirements of the NPDES Municipal Storm Water Permit for San Diego Order No. 2007-01. The primary goal of the San Dieguito River WURMP is to positively affect the water resources of the San

Dieguito Watershed while balancing economic, social, and environmental constraints. To help reach the identified goals and objectives, the San Dieguito River WURMP identifies and prioritizes water quality related issues within the watershed that can be potentially attributed to discharges from the municipal storm drain systems and may be addressed through a cross-jurisdictional approach. The most recent San Dieguito River WURMP was adopted in January 2011 and covers the time period July 1, 2009 – June 30, 2010.

San Luis Rey Watershed Urban Runoff Management Program

The San Luis Rey WURMP requires annual reporting by the San Luis Rey Watershed copermittees. The San Luis Rey Watershed Copermittees include the City of Oceanside, the City of Vista, and the County of San Diego. The City of Oceanside serves as the Lead Watershed Copermittee for the San Luis Rey Watershed. The 2011 San Luis Rey WURMP describes the plans and efforts to reduce the impacts of urban activity on receiving water quality within the San Luis Rey Watershed to the maximum extent practicable. The most recent San Luis Rey WURMP was adopted in January 2011 and covers the time period July 1, 2009 – June 30, 2010.

City of San Diego Groundwater Management Plan for the San Pasqual Valley

The Groundwater Management Plan (GMP) for the San Pasqual Valley groundwater basin is an adaptive management plan for the basin. The purpose of the GMP is to serve as the initial framework for coordinating the management activities into a cohesive set of basin management objectives (BMOs) and related actions to improve management of the groundwater resource in San Pasqual Valley. The goal of the GMP is to understand and enhance the long-term sustainability and quality of groundwater within the basin, and protect this groundwater resource for beneficial uses including water supply, agriculture, and the environment. This goal is anticipated to be accomplished through five management objectives and five accompanying plan components. The management objectives are: 1) protect and enhance water quality; 2) sustain a safe, reliable, local groundwater supply; 3) reduce dependence on imported water; 4) improve understanding of groundwater elevation, basin yield and hydrogeology; and 5) partner with the agricultural and residential communities to continue to improve implementation of best management practices. The five plan components that are outlined in detail in Chapter 3 of the GMP are stakeholder involvement, a monitoring program, groundwater resources protection, groundwater sustainability, and planning integration. The GMP only applies to the land within the jurisdiction of the City of San Diego; therefore, future development consistent with the Escondido General Plan Update and within the jurisdiction of the City of Escondido would not be subject to this plan.

4.9.3 Analysis of Project Impacts and Determination of Significance

4.9.3.1 Issue 1: Water Quality Standards and Requirements

Guidelines for Determination of Significance

Based on Appendix G of the CEQA Guidelines and existing City policies and regulations, the proposed project would result in a significant impact if it would violate any water quality standards, otherwise degrade water quality or violate any water quality standards or waste discharge requirements. A significant impact would occur if:

- a. Receiving waters would experience an increase in pollutant discharges (considering temperature, dissolved oxygen, turbidity, and other typical stormwater pollutants);
- b. Receiving waters would experience a significant alteration in water quality during or following construction;
- c. An increase in impervious surfaces and associated runoff would occur;
- d. Potentially significant adverse impacts to groundwater quality would occur;
- e. An exceedance of applicable surface or ground water receiving water quality objectives or degradation of beneficial uses would occur or be exacerbated;
- f. An increase in any pollutant for which the water body is already impaired, as listed on the Clean Water Act Section 303(d) list would result;
- g. An impact to surface water quality would occur for marine, fresh, or wetland waters; or
- h. An impact to aquatic, wetland or riparian habitat would occur.

Impact Analysis

Growth under the proposed Downtown Specific Plan Update would be consistent with the growth identified for the General Plan Update; therefore, the following analysis pertains to both the General Plan Update and the Downtown Specific Plan Update. Impacts related to implementation of the E-CAP are discussed separately below.

General Plan Update and Downtown Specific Plan Update

The following section evaluates the potential for the proposed project to violate any water quality standards or otherwise degrade water quality by examining potential surface water and groundwater quality issues. Waste discharge requirements associated with the generation of wastewater are addressed in Section 4.17, Utilities and Service Systems. The following discussion of impacts is organized into two subsections: 1) Impacts from Construction Activities; and 2) Impacts Following Construction.

Impacts from Construction Activities

The development of future land uses as designated in the proposed General Plan Update would have the potential to result in substantial additional sources of polluted runoff which would have short-term impacts on surface water and groundwater quality through activities such as demolition, clearing and grading, excavation of undocumented fill materials, stockpiling of soils and materials, concrete pouring,

painting, and asphalt surfacing. These land altering activities could result in a significant change in local receiving water quality. Typically, construction activities involve various types of equipment such as dozers, scrapers, graders, loaders, compactors, dump trucks, cranes, water trucks, and concrete mixers. Additionally, soils and construction materials are typically stockpiled outdoors. Pollutants associated with these construction activities that would substantially degrade water quality include soils, debris, other materials generated during demolition and clearing, fuels and other fluids associated with construction equipment, paints, other hazardous materials, concrete slurries, and asphalt materials. Construction pollutants would result in receiving waters experiencing an increase in pollutant discharges.

Pollutants associated with construction would degrade water quality if they are washed by stormwater or non-stormwater into surface waters or percolate into groundwater. Sediment is often the most common pollutant associated with construction sites because of the associated earth-moving activities and areas of exposed soil. Sediment that is washed offsite can result in turbidity in surface waters, which can impact aquatic species. In addition, when sediment is deposited into receiving water it can smother species, alter the substrate and habitat, and alter the drainage course. Hydrocarbons such as fuels, asphalt materials, oils, and hazardous materials such as paints and concrete slurries discharged from construction sites could also impact aquatic plants and animals downstream. Debris and trash could be washed into existing storm drainage channels to downstream surface waters and could impact aquatic wildlife, wetland or riparian habitat and aesthetic value.

Under the NPDES permit program, SWPPPs are prepared for construction sites greater than one acre in which BMPs are identified in order to reduce the occurrence of pollutants in surface water. In compliance with applicable construction permits, the development of future land uses as designated in the proposed General Plan Update would continue to implement BMPs that minimize disturbance, protect slopes, reduce erosion, and limit or prevent various pollutants from entering surface water runoff. While these measures help prevent degradation of water quality associated with construction sites greater than one acre, smaller construction activities pursuant to the General Plan Update designations would still have the potential to contribute pollutants such as soils, debris and other materials in quantities that would exceed water quality standards and otherwise significantly degrade water quality.

Impacts Following Construction

Equipment and hazardous materials associated with construction operations would be removed from construction sites after development of proposed land uses is complete, which would reduce the potential for pollutants to be discharged. However, there are multiple constituents that have the potential to degrade surface water quality which are associated with land use operations after development is constructed. These include, but are not limited to, sediment discharge due to construction activities and post-construction areas left bare; nutrients from fertilizers; household hazardous waste that is improperly disposed of, including heavy metals and organic compounds; trash and debris deposited in drain inlets by new residents; oil and grease; byproducts resulting from vehicle use, including heavy metals; bacteria and viruses; and pesticides from landscaping, agriculture or home use. Generally, these constituents can be referred to as non-point source pollutants. Increased runoff from the development of future land uses as designated in the proposed General Plan Update, and an associated increase in impervious surfaces, would result in the contribution of non-point source pollution into surface and groundwater bodies. Although it is not expected that non-point source pollutants, caused from the development of future land uses as designated in the proposed General

Plan Update, would violate water quality standards; these constituents would be expected to otherwise degrade water quality.

The NPDES permit program, as authorized by the CWA, controls water pollution by regulating point sources that discharge pollutants into waters of the U.S. Point sources which require a NPDES permit are discrete conveyances such as pipes or manmade ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. Implementation of the General Plan Update would continue to require NPDES permits for any future projects subject to this regulation. Additionally, processes developed by the SWRCB and RWQCB to improve water quality, such as stormwater permits for new development and construction, would continue to be required for land uses and development implemented under the General Plan Update. For example, the state would continue to require General Construction Storm water Permits, which regulate the discharge of polluted runoff during construction, for all future development greater than one acre in size.

Within the proposed project area, 23 water bodies are in violation of water quality standards. Table 4.9-1, Water Bodies Identified as Impaired under Section 303(d) of the Clean Water Act, identifies watersheds within the proposed project area that contain impaired water bodies as defined in the CWA 303(d) list. This table also shows the major pollutant/stressor for each impaired water body. Generally, pollutants of concern include bacteria, phosphorous, TDS, chloride, nitrate, manganese, sulfates and various other pollutants. Land uses proposed under the General Plan Update, such as residential, commercial, office and industrial uses would result in development that would contribute both point and non-point source pollutants to surface water bodies within the San Luis Rey Watershed, Carlsbad Watershed and San Dieguito Watershed. All of these watersheds contain water bodies listed on the CWA 303(d) impaired water body list (see Table 4.9-1, Water Bodies Identified as Impaired under Section 303(d) of the Clean Water Act). Therefore, the General Plan Update would allow land uses and development that would contribute additional point and non-point source pollutants within watersheds that are in violation of water quality requirements. This would result in the increase of a pollutant for which waterbodies in the project area are already impaired and would result in the exceedance of applicable surface or groundwater receiving water quality objectives, which would be considered a significant impact.

Escondido Climate Action Plan

Some reduction measures identified in the E-CAP encourage the construction or expansion of roadway or transit facilities, including R2-T2, Bicycle Master Plan, and R2-T3, Transit Improvements. Construction of these facilities would have the potential to result in substantial additional sources of polluted runoff which would have short-term impacts on surface water and ground water quality through activities such as demolition, clearing and grading, excavation of undocumented fill materials, stockpiling of soils and materials, concrete pouring, painting, and asphalt surfacing. Further, increased runoff from the development of impervious surfaces would result in the contribution of non-point source pollution into surface and groundwater bodies during operation of these facilities. This would be considered a significant impact.

Federal, State and Local Regulations and Existing Regulatory Processes

Multiple federal, state and local regulations exist that reduce the potential for projects to violate water quality standards. These include, but are not limited to: 1) CWA, which establishes water quality standards for all waters of the U.S.; 2) Porter-Cologne Water Quality Control Act, which requires region-specific basin plans; 3) NPDES, which regulates point source and nonpoint source discharges to surface waters of the U.S.; 4) San Diego Basin Plan, which sets water quality objectives for the San Diego Basin; 5) City of Escondido Stormwater Management and Discharge Control Ordinance, which controls non-stormwater discharges to the stormwater conveyance system; 6) City of Escondido Grading and Erosion Control Ordinance, which establishes regulations to control erosion from excavation, grading and other construction activities; ~~and~~ 7) City of Escondido Jurisdictional Urban Runoff Management Plan, which establishes strategies to improve the quality of urban runoff; and 8) City of Escondido HMP, which establishes requirements for post-project runoff flows. Additionally, any discharger of industrial wastes into the City's sewer or stormwater system is required to obtain a permit from the Industrial Waste Program.

Proposed General Plan Update Policies

The proposed General Plan Update includes policies that would reduce the potential for surface and groundwater quality requirements to be violated. Within the Resource Conservation Element, Water Resources Policies 5.1 and 5.2 encourage the preservation of natural drainages, improved drainages, wetlands and floodways. Water Resources Policy 5.3 requires the implementation of appropriate measures to protect water quality. Water Resources Policies 5.4 and 5.5 restrict development that would impact Lake Wohlford, Lake Dixon, ~~Lake~~ Lake Hodges Reservoir and Escondido's natural creek system. Water Resources Policies 5.6 through 5.9 provide measures that would preserve and restore creeks and groundwater basins within the proposed project area. Within the Mobility and Infrastructure Element, Storm Drainage Policies 12.1 and 12.7 provides stormwater drainage strategies to prevent the pollution of water resources.

Within the Land Use and Community Form Element, Environmental Review Policies 18.1 through 18.4 require project conformance with CEQA, the General Plan, facilities plans, and quality of life standards; mitigation of environmental impacts; and an update of environmental thresholds in sensitive areas.

Proposed Downtown Specific Plan Update Policies

The proposed Downtown Specific Plan Update does not include any policies related to water quality.

Proposed Escondido Climate Action Plan Reduction Measures

The proposed E-CAP does not include any reduction measures related to water quality.

Summary

The development of future land uses as designated in the proposed General Plan Update and Downtown Specific Plan Update would contribute pollutants such as sediments, hydrocarbons and paints in quantities that would otherwise significantly degrade surface water and groundwater quality. It is also anticipated that non-point source pollutants, caused from the development of future land uses as designated in the proposed General Plan Update and Downtown Specific Plan Update, would otherwise degrade surface water and groundwater quality. Additionally, proposed land uses may exacerbate existing groundwater quality impacts. Further, the E-CAP would encourage the construction of transit

and transportation facilities that could result in polluted runoff during construction or operation. However, implementation of the applicable laws and regulations, in addition to the policies proposed under the General Plan Update, would protect water quality. Impacts would be less than significant.

4.9.3.2 Issue 2: Groundwater Supplies and Recharge

Guidelines for Determination of Significance

Based on Appendix G of the CEQA Guidelines and existing City policies and regulations, the proposed project would result in a significant impact if it would 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).

Impact Analysis

Growth under the proposed Downtown Specific Plan Update would be consistent with the growth identified for the General Plan Update; therefore, the following analysis pertains to both the General Plan Update and the Downtown Specific Plan Update. Impacts related to implementation of the E-CAP are discussed separately below.

General Plan Update and Downtown Specific Plan Update

In rare cases, planning area land uses located within the SOI and unincorporated County areas may rely on groundwater wells for private use. However, the County of San Diego Groundwater Ordinance and CEQA Groundwater Guidelines require that projects be reviewed on case-by-case basis when proposing to use groundwater. Pump tests and modeling are typically required to demonstrate a viable water supply. Compliance with these regulations would prevent impacts to groundwater supply and recharge from implementation of the proposed project.

In general, implementation of the General Plan Update would not propose land uses that would utilize groundwater for any purpose, such as for potable water or landscape irrigation. Water service in the proposed project area is currently provided by the City of Escondido Water and Wastewater Division (EWW), Rincon Del Diablo Municipal Water District, Vallecitos Water District, Valley Center Municipal Water District, and Vista Irrigation District (VID), through an existing water infrastructure system. Under the General Plan Update, the proposed project area would continue to be provided water service by these agencies through the existing water infrastructure system and planned improvements. The project would not construct wells or propose other means of extracting groundwater. Therefore, the proposed General Plan Update would not deplete groundwater supplies.

The development of land uses proposed under the General Plan Update would result in an increase in impervious surfaces, which could impact groundwater recharge in the proposed project area. The Escondido Valley Groundwater Basin and San Pasqual Groundwater Basin are located within the proposed project area. In general, groundwater in the proposed project area is not used for municipal or private water service due to inferior water quality. However, on occasion, private landowners may operate wells that utilize groundwater supplies within the proposed project area. Compliance with

existing regulations and implementation of proposed General Plan Update policies would protect these limited resources.

The only potable water supply agencies serving the proposed project area that utilize groundwater include EWWD and VID. EWWD's groundwater supplies are imported from VID, which obtains its groundwater from the Warner Basin aquifer and surface diversion sources such as Lake Henshaw. Neither the Warner Basin aquifer nor Lake Henshaw is located within the proposed project area. Therefore, implementation of the proposed General Plan Update would not result in an increase in impermeable surfaces over either of these groundwater basins, which would result in groundwater recharge interference. Therefore, impacts related to groundwater supply and recharge would be less than significant.

Escondido Climate Action Plan

As discussed above, neither the Warner Basin aquifer nor Lake Henshaw is located within the proposed project area. Therefore, implementation of the E-CAP would not result in an increase in impermeable surfaces over either of these groundwater basins, which would result in groundwater recharge interference. Therefore, E-CAP impacts related to groundwater supply and recharge would be less than significant.

Federal, State and Local Regulations and Existing Regulatory Processes

Multiple federal, state and local regulations exist that reduce impacts to groundwater supplies and recharge. These include, but are not limited to the: Porter-Cologne Water Quality Control Act, which requires region-specific Basin Plans; the San Diego Basin Plan, which sets water quality objectives for the San Diego Basin; the WPO, which protects water resources and improves water quality; and the County Groundwater Ordinance, which is intended to reduce potential groundwater impacts of discretionary projects.

Proposed General Plan Update Policies

The proposed General Plan Update includes policies that promote sustainable groundwater resources within the Resource Conservation Element. Specifically, Water Resources Policy 5.8 strives to protect Escondido's shallow groundwater basin from contamination by prohibiting post-development runoff from containing pollutant loads that violate water quality objectives, or which have not been reduced to the maximum extent practicable. Water Resources Policy 5.9 would implement all federal, state, and local regulations relating to monitoring underground storage tanks containing hazardous materials and septic tank systems in a timely fashion and carefully regulate development in significant groundwater recharge areas (e.g., areas where substantial surface water infiltrates into the groundwater).

Within the Land Use and Community Form Element, Environmental Review Policies 18.1 through 18.4 require project conformance with CEQA, the General Plan, facilities plans, and quality of life standards; mitigation of environmental impacts; and an update of environmental thresholds in sensitive areas.

Proposed Downtown Specific Plan Update Policies

The proposed Downtown Specific Plan Update does not include any policies related to groundwater resources.

Proposed Escondido Climate Action Plan Reduction Measures

Within the E-CAP, reduction measures R2-W1, Energy Efficient Water Treatment Plan; R2-W2, Water Conservation Strategies; R2-W3, Increased Recycled Water Use and R3-W1; Water Efficiency and Conservation Education would reduce potable water usage within the proposed project area which could result in less dependency on groundwater resources for municipal use.

Summary

Implementation of the General Plan Update, Downtown Specific Plan Update and E-CAP would not utilize groundwater for any purpose, such as for potable water or landscape irrigation, and would therefore not deplete groundwater supplies. Additionally, very few groundwater supplies are found throughout the proposed project area and the General Plan Update proposes policies that would protect these limited resources. Other groundwater sources used to serve the proposed project area include the Warner Basin aquifer and Lake Henshaw. Neither of these groundwater sources is located within the proposed project area. Therefore, the proposed project would result in a less than significant impact to groundwater resources.

4.9.3.3 Issue 3: Erosion or Siltation

Guidelines for Determination of Significance

Based on Appendix G of the CEQA Guidelines and existing City policies and regulations, the proposed project would result in a significant impact if it would substantially alter the existing drainage pattern of the planning area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or offsite.

Impact Analysis

Growth under the proposed Downtown Specific Plan Update would be consistent with the growth identified for the General Plan Update; therefore, the following analysis pertains to both the General Plan Update and the Downtown Specific Plan Update. Impacts related to implementation of the E-CAP are discussed separately below.

General Plan Update and Downtown Specific Plan Update

Implementation of the General Plan Update would result in the alteration of drainage patterns during and after construction activities associated with proposed land uses and development consistent with the General Plan Update. The following section describes the potential impacts that would result from these activities that could 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 siltation on or offsite. The following discussion is organized into two subsections: 1) Impacts from Construction Activities; and 2) Impacts Following Construction.

Impacts from Construction Activities

Development of land uses designated in the proposed General Plan Update would result in the construction of residential, commercial, office and industrial structures. Land-disturbing construction activities such as the grading and excavation of land for construction of new building foundations, roads,

driveways, and trenches for utilities, have the potential to directly increase erosion because these activities would result in exposed soils that are more susceptible to erosion by wind or water. Construction activities also have the potential to result in localized temporary or permanent alteration of drainage patterns, or hydromodification. Hydromodification refers to changes in the magnitude and frequency of stream flows as a result of urbanization, and the resulting impacts on the receiving channels in terms of erosion, sedimentation, and degradation of instream habitat. This can lead to indirect effects on communities and sensitive biological resources downstream in the watershed, including the deposition of pollutants and sediment at watershed outlets; an increase in polluted runoff to surface and groundwater receiving bodies, and an increase in the flood potential downstream.

Therefore, implementation of the General Plan Update would result in land disturbing activities during construction of land uses that would alter drainage patterns in a manner that would result in substantial erosion or siltation on or off site.

Impacts Following Construction

Development of land uses designated in the proposed General Plan Update would result in the construction of new buildings, roadways, landscaping, and other features within the proposed project area that are anticipated to result in permanent alterations to existing drainage patterns by converting areas from pervious surfaces to impervious surfaces. Allowing the permanent development of impervious surfaces within the proposed project area would increase runoff and potentially result in new erosion problems or the worsening of existing erosion problems. Development of land uses designated in the proposed General Plan Update would result in alterations to existing drainage patterns in a manner that would result in substantial erosion or siltation on and offsite.

Escondido Climate Action Plan

Some reduction measures identified in the E-CAP encourage the construction or expansion of roadway or transit facilities, including R2-T2, Bicycle Master Plan, and R2-T3, Transit Improvements. Construction of these facilities has the potential to result in the localized temporary of drainage patterns during land-disturbing construction activities such as the grading and excavation of land for construction of new building foundations, roads, driveways, and trenches for utilities. Additionally, the permanent development of impervious surfaces within the proposed project area would increase runoff and potentially result in new erosion and siltation problems or the worsening of existing problems.

Federal, State and Local Regulations and Existing Regulatory Processes

Multiple federal, state and local regulations exist that would reduce onsite and offsite erosion. For example, the NPDES permit requires a SWPPP to be prepared and BMPs to be identified for construction sites greater than one acre. Further, the NPDES municipal separate storm sewer systems permit, requires the development of a HMMP. Additional existing regulations include, but are not limited to, the following: 1) NPDES, which regulates point source and non-point source discharges to surface waters of the U.S.; 2) City of Escondido Grading and Erosion Control Ordinance, which establishes regulations to control erosion from excavation, grading and other construction activities; ~~and~~ 3) Escondido Jurisdictional Urban Runoff Management Plan, which establishes strategies to improve the quality of urban runoff; and 4) City of Escondido HMP, which establishes requirements for post-project runoff flows.

Proposed General Plan Update Policies

The General Plan Update includes policies that would reduce the potential for substantial erosion or siltation to occur onsite or offsite. Within the Community Protection Element, Soils and Seismicity Policy 7.5 requires the avoidance of development in areas susceptible to erosion and sediment loss. Within the Mobility and Infrastructure Element, Storm Drainage Policy 12.6 requires new development to minimize impervious surfaces and maximize low impact development to reduce erosion.

Within the Land Use and Community Form Element, Environmental Review Policies 18.1 through 18.4 require project conformance with CEQA, the General Plan, facilities plans, and quality of life standards; mitigation of environmental impacts; and an update of environmental thresholds in sensitive areas.

Proposed Downtown Specific Plan Update Policies

The proposed Downtown Specific Plan Update does not include any policies related to erosion or siltation.

Proposed Escondido Climate Action Plan Reduction Measures

The proposed E-CAP does not include any reduction measures related to erosion or siltation.

Summary

The development of future land uses as designated in the proposed General Plan Update and Downtown Specific Plan Update would have the potential to result in the alteration of drainage patterns in a manner which would result in substantial erosion or siltation on or offsite. Additionally, the development of roadways or transit facilities, encouraged by the E-CAP, could result in substantial erosion or siltation on or offsite during construction and operational activities. However, new construction and development would continue to implement the NPDES permit program, which requires a SWPPP to be prepared and BMPs to be identified for construction sites greater than one acre. Additionally, all land disturbance activities occurring within the proposed project area would be subject to the discharge prohibitions and additional requirements stated in the City's Jurisdictional Runoff Management Plan. Adherence to existing regulations would reduce erosion by minimizing site disturbance and controlling internal construction erosion. Compliance with the applicable existing regulations and implementation of the proposed General Plan Update policies would reduce impacts associated with excessive erosion or siltation to below a level of significance. Therefore, the proposed project would result in a less than significant impact associated with excessive erosion or siltation.

4.9.3.4 Issue 4: Flooding

Guidelines for Determination of Significance

Based on Appendix G of the CEQA Guidelines and existing City policies and regulations, the proposed project would result in a significant impact if it would substantially alter the existing drainage pattern of the planning 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 offsite.

Impact Analysis

Growth under the proposed Downtown Specific Plan Update would be consistent with the growth identified for the General Plan Update; therefore, the following analysis pertains to both the General Plan Update and the Downtown Specific Plan Update. Impacts related to implementation of the E-CAP are discussed separately below.

General Plan Update and Downtown Specific Plan Update

Implementation of the General Plan Update would result in the alteration of drainage patterns during and after construction activities associated with the development of future land uses as designated in the proposed General Plan Update. The following section describes the potential impacts that would result from these activities that could 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 offsite. The following discussion is organized into two subsections: 1) Impacts from Construction Activities; and 2) Impacts Following Construction.

Impacts from Construction Activities

Land-disturbing construction activities associated with the development of future land uses as designated in the General Plan Update, such as grading and excavation, construction of new building foundations, roads, driveways, and trenches for utilities, would result in the localized alteration of drainage patterns. Temporary ponding and/or flooding could result from such activities, from temporary alterations of the drainage system (reducing its capacity of carrying runoff), or from the temporary creation of a sump condition due to grading.

Implementation of appropriate BMPs, as part of compliance with construction permits for construction sites greater than one acre, would reduce the potential for the development of future land uses as designated in the proposed General Plan Update to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in flooding onsite or offsite. Development projects less than one acre in size would be subject to the City's Grading and Erosion Control Ordinance which would require small development projects to minimize increases in runoff volume or velocity, compared to existing conditions.

Impacts Following Construction

The development of future land uses as designated in the proposed General Plan Update would result in land uses that would convert permeable surfaces to impermeable surfaces, such as houses, buildings, parking lots, and roadways. An increase in impermeable surfaces would substantially alter the existing drainage pattern of a site or area by increasing the amount and rate of surface runoff in a manner which would have the potential to result in flooding on or offsite. Additionally, impermeable surfaces and development would potentially create a diversion from the natural runoff pattern in a manner that would have the potential to result in flooding. In undeveloped areas, rainfall collects and is stored on vegetation, in the soil column, or in surface depressions. When this storage capacity is filled, runoff flows slowly through the soil as subsurface flow. In contrast, developed areas, where much of the land surface is covered by roads and buildings, have less capacity to store rainfall. Impermeable surfaces such as roads, roofs, parking lots, and sidewalks that store little water, reduce infiltration of water into the ground, and accelerate runoff to ditches and streams. Even in suburban areas, where lawns and other permeable landscaping are common, rainfall can saturate thin soils and produce overland flow, which

runs off quickly. As a result of accelerated runoff from development or construction activities, the peak discharge, volume, and frequency of floods would increase in nearby stream channels.

Therefore, development of future land uses as designated in the proposed General Plan Update would increase the rate and amount of surface runoff to streams and rivers in a manner which would result in flooding on or offsite.

Escondido Climate Action Plan

Some reduction measures identified in the E-CAP encourage the construction or expansion of roadway or transit facilities, including R2-T2, Bicycle Master Plan, and R2-T3, Transit Improvements. Construction of these facilities has the potential to result in the alteration of drainage patterns during land-disturbing construction activities such as grading and excavation of land for construction of new building foundations, roads, driveways, and trenches for utilities. This could increase the rate and amount of surface runoff to streams and rivers in a manner which would result in flooding on or offsite.

Federal, State and Local Regulations and Existing Regulatory Processes

Numerous federal, state and local regulations exist that reduce the potential for onsite or offsite flooding from drainage pattern alteration. These include, but are not limited to: 1) National Flood Insurance Act, which establishes flood-risk zones within floodplain areas; 2) National Flood Insurance Reform Act, which reduces the risk of flood damage to properties; 3) Cobey-Alquist Floodplain Management Act, which protects people and property from flooding hazards; 4) City of Escondido Floodplain Overlay Zone, which provides land use regulations in floodplain areas; and 5) City of Escondido Procedures for Floodplain Management, which establishes procedures for floodplain management within the City.

Proposed General Plan Update Policies

The proposed General Plan Update includes policies that would reduce the potential for flooding on or offsite. Within the Resource Conservation Element, Water Resources Policy 5.7 encourages the conservation and restoration of creeks for flood control purposes. Within the Mobility and Infrastructure Element, Storm Drainage Policies 12.1, 12.2, 12.5, 12.6 and 12.7 encourage proper storm drainage facilities to accommodate projected runoff and promote development that would minimize or result in no net increase in stormwater runoff.

Within the Land Use and Community Form Element, Environmental Review Policies 18.1 through 18.4 require project conformance with CEQA, the General Plan, facilities plans, and quality of life standards; mitigation of environmental impacts; and an update of environmental thresholds in sensitive areas.

Proposed Downtown Specific Plan Update Policies

The proposed Downtown Specific Plan Update does not include any policies related to flooding.

Proposed Escondido Climate Action Plan Reduction Measures

The proposed E-CAP does not include any reduction measures related to flooding.

Summary

The development of future land uses as designated in the proposed General Plan Update would have the potential to result in substantial alteration of existing drainage patterns and increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite during after construction activities. Additionally, implementation of the E-CAP could result in the alteration of drainage patterns during and after construction activities associated the development of transit or roadway facilities. However, existing policies and regulations, and implementation of the proposed General Plan Update policies, would reduce any potentially significant impacts associated with flooding to a less than significant level.

4.9.3.5 Issue 5: Exceed Capacity of Stormwater Systems

Guidelines for Determination of Significance

Based on Appendix G of the CEQA Guidelines and existing City policies and regulations, the proposed project would result in a significant impact if it would create or contribute runoff water in volumes that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Impact Analysis

Growth under the proposed Downtown Specific Plan Update would be consistent with the growth identified for the General Plan Update; therefore, the following analysis pertains to both the General Plan Update and the Downtown Specific Plan Update. Impacts related to implementation of the E-CAP are discussed separately below.

General Plan Update and Downtown Specific Plan Update

Drainage facilities including storm drains, culverts, inlets, channels, curbs, roads, or other such structures are designed to prevent flooding by collecting stormwater runoff and directing flows to either the natural drainage course and/or away from urban development. If drainage facilities are not adequately designed, built, or properly maintained, the capacity of the existing facilities can be exceeded resulting in flooding and increased sources of polluted runoff.

Implementation of the proposed General Plan Update would have the potential to substantially alter drainages and hydrology during construction and post-construction activities allowable under the proposed land uses, which would potentially increase runoff in volumes that would exceed the existing stormwater drainage systems in the proposed project area. Land disturbing construction activities associated with development allowable under the land uses proposed in the General Plan Update, such as grading and excavation of project sites, construction of new building foundations, roads, driveways, and trenches for utilities, would result in the localized alteration of drainage patterns. These alterations would have the potential to result in temporarily exceeding the capacity of stormwater facilities if substantial drainage is rerouted.

Implementation of the General Plan Update would result in land uses and development that would increase the amount of impermeable surfaces throughout the proposed project area and potentially result in an excess of polluted runoff that would exceed the capacity of existing drainage facilities.

Stormwater discharges are generated by precipitation and runoff from land, pavement, building rooftops, and other surfaces. Residential, commercial, office and industrial land uses proposed under the General Plan Update would increase the amount of impermeable surfaces within the proposed project area from the development of building rooftops, parking lots, pedestrian paths and sidewalks, roads and driveways associated with these land uses. Substantial increased runoff volumes would have the potential to overload existing drainage facilities and increase flows and velocity which could result in flooding, increased erosion, and impacts to downstream receiving waters and habitat integrity.

In most cases, future development of land uses proposed under the General Plan Update would incorporate swales, ditches, and storm drains where appropriate to convey runoff. In some cases, detention facilities would be proposed to attenuate post-development flows. However, if drainage facilities are not adequately designed, built, or properly maintained, existing stormwater facilities would potentially overflow or fail. Therefore, the construction and post-construction activities involved with the development of the land uses proposed under the General Plan Update would have the potential to increase runoff in volumes that would exceed the existing stormwater drainage systems in the proposed project area.

Escondido Climate Action Plan

Some reduction measures identified in the E-CAP encourage the construction or expansion of roadway or transit facilities, including R2-T2, Bicycle Master Plan, and R2-T3, Transit Improvements. Construction of these transit and roadway facilities has the potential to exceed the capacity of existing stormwater drainage facilities, if drainage facilities for the roadway or transit improvements are not adequately designed, built, or properly maintained.

Federal, State and Local Regulations and Existing Regulatory Processes

The regulations that apply to this issue are the same as those discussed above in Section 4.9.3.1, Issue 1: Water Quality Standards and Requirements; Section 4.8.3.3, Issue 3: Erosion or Siltation; and Section 4.9.3.4, Issue 4: Flooding. Additionally, any discharger of industrial wastes into the City of Escondido sewer or stormwater system is required to obtain a permit from the City's Industrial Waste Program. Under the NPDES permit program, construction activities on sites larger than one acre would be required to prepare SWPPPs and identify BMPs to reduce the likelihood that existing stormwater facilities would be exceeded.

Proposed General Plan Update Policies

Within the Mobility and Infrastructure Element, the proposed General Plan Update contains policies that would reduce the potential for future land uses to exceed stormwater drainage systems. Storm Drainage Policies 12.1 and 12.2 require regular updates of the Master Drainage Plan and correction of identified storm drain deficiencies. Storm Drainage Policies 12.3 and 12.4 require adequate financing of new facilities from levy drainage fees or development fees. Storm Drainage Policy 12.5 requires new development to demonstrate no net increase in stormwater runoff and compliance with adopted stormwater plans. Storm Drainage Policies 12.6 and 12.7 require minimization of impervious surfaces and stormwater runoff contaminants. Storm Drainage Policies 12.8, 12.9, 12.10, 12.11 and 12.12 require the incorporation of appropriate BMPs; consideration of nonstructural flood protection; use of joint stormwater drainage facilities; maintenance of stormwater facilities; and design of storm drain facilities to reduce maintenance needs. Storm Drainage Policy 12.13 requires the design and maintenance of detention facilities that are environmentally sustainable and compatible.

Within the Land Use and Community Form Element, Environmental Review Policies 18.1 through 18.4 require project conformance with CEQA, the General Plan, facilities plans, and quality of life standards; mitigation of environmental impacts; and an update of environmental thresholds in sensitive areas.

Proposed Downtown Specific Plan Update Policies

The proposed Downtown Specific Plan Update does not include any policies related to the exceedance of stormwater drainage facilities.

Proposed Escondido Climate Action Plan Reduction Measures

The proposed E-CAP does not include any reduction measures related to the exceedance of stormwater drainage facilities.

Summary

The development of future land uses as designated in the proposed General Plan Update and Downtown Specific Plan Update, and development of roadway and transit facilities encouraged under the E-CAP, would have the potential to contribute runoff in a manner that would exceed existing stormwater drainage facilities. Compliance with existing policies and regulations, and implementation of the proposed General Plan Update policies, would reduce impacts to stormwater systems to a level below significant. Therefore, the proposed project would result in a less than significant impact associated with the exceedance of stormwater drainage system capacity.

4.9.3.6 Issue 6: Housing within a Flood Hazard Area

Guidelines for Determination of Significance

Based on Appendix G of the CEQA Guidelines, the existing City of Escondido General Plan and existing City policies and regulations, the proposed project would result in a significant impact if it would 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, including the following local areas that have been identified as subject to inundation in the event of a 100-year storm:

- 1) Northern portions of Reidy Creek north of Rincon Avenue;
- 2) The area alongside Escondido Creek west of Hale Avenue;
- 3) The area alongside Kit Carson Park Creek north of Via Rancho Parkway;
- 4) The area straddling Midway Drive north of the Escondido Creek channel; and
- 5) The area straddling Valley Parkway between Ash Street and Citrus Avenue.

Impact Analysis

Growth under the proposed Downtown Specific Plan Update would be consistent with the growth identified for the General Plan Update; therefore, the following analysis pertains to both the General Plan Update and the Downtown Specific Plan Update. Impacts related to implementation of the E-CAP are discussed separately below.

General Plan Update and Downtown Specific Plan Update

Flooding can inundate and cause water damage to structures, bury structures, knock them off their foundations, or completely destroy them by the impact of high velocity water and debris, which can include sizable boulders. Impacts resulting from flooding include the loss of life and/or property; health and safety hazards; disruption of commerce, water, power, and telecommunications services; loss of agricultural lands; and infrastructure damage.

Under existing conditions, the following areas are identified as subject to inundation in the event of a 100-year storm: 1) northern portions of Reidy Creek north of Rincon Avenue; 2) the area alongside Escondido Creek west of Hale Avenue; 3) the area along Kit Carson Park Creek north of Via Rancho Parkway; 4) the area straddling Midway Drive north of the Escondido Channel; and 5) the area straddling Valley Parkway between Ash Street and Citrus Avenue.

Under the proposed General Plan Update, the northern portions of Reidy Creek, north of Rincon Avenue, would be designated with rural and estate land uses. The area alongside Escondido Creek west of Hale Avenue would be designated for light industrial, specific plan area, rural and urban land uses. The area along Kit Carson Park Creek north of Via Rancho Parkway would be designated for public land/open space and estate land uses. The area straddling Midway Drive north of the Escondido Creek channel would be designated with urban and suburban land uses. The area straddling Valley Parkway between Ash Street and Citrus Avenue would be designated with general commercial and urban land uses. Under the proposed General Plan Update, rural, suburban and urban land uses would include housing facilities. Therefore, implementation of the proposed General Plan Update has the potential to place housing within areas identified as subject to inundation due to flooding.

As shown in Figure 4.9-3, Development in Flood Zones, FEMA floodplains and floodways are located primarily along existing drainages within the proposed project area. This figure identifies existing essential public facilities that would be located within FEMA floodplains, under implementation of the proposed General Plan Update. Some essential public facilities, such as a fire station and emergency shelter, are located within a 100-year FEMA flood plain. Essential public facilities that would be subject to flooding are primarily located within the downtown and urban core areas of the proposed planning area. Additionally, under the proposed project, urban land uses would be allowed within areas identified as FEMA floodplains. This would be considered a significant impact.

It should be noted that implementation of the proposed General Plan Update would result in approximately 34 acres of land being re-designated from land uses that allow housing, such as urban and rural, to land uses that would not allow residential housing, such as neighborhood commercial or parks. This would help to offset some of the impacts associated with the location of new housing within the 100-year floodplain in other areas of the proposed planning area. However, because implementation of the proposed General Plan Update would still allow for some housing to be constructed within a floodplain area, including the 100-year floodplain, impacts would be potentially significant.

Escondido Climate Action Plan

Implementation of the reduction measures identified in the E-CAP would not result in the development of any housing. Therefore, the E-CAP would not result in a significant impact related to the placement of housing within a 100-year flood hazard area.

Federal, State and Local Regulations and Existing Regulatory Processes

The federal, state and local regulations that apply to housing within a 100-year floodplain are the same as those discussed above in Section 2.8.3.4, Issue 4: Flooding.

Proposed General Plan Update Policies

The proposed General Plan Update policies that apply to housing within a 100-year floodplain are the same as those discussed above in Section 2.8.3.4, Issue 4: Flooding.

Proposed Downtown Specific Plan Update Policies

The proposed Downtown Specific Plan Update does not include any policies related to the placement of housing in flood hazard areas.

Proposed Escondido Climate Action Plan Reduction Measures

The proposed E-CAP does not include any reduction measures related to the placement of housing in flood hazard areas.

Summary

The development of future land uses as designated in the proposed General Plan Update and Downtown Specific Plan Update would result in the placement of housing within flood hazard areas. However, compliance with existing regulations, and implementation of the proposed General Plan Update policies, would reduce impacts associated with the placement of housing in flood hazard areas to a less than significant level. Further, the measures identified in the E-CAP would not result in the placement of housing within a flood hazard area. Therefore, the proposed project would result in a less than significant impact associated with housing in flood hazard areas.

4.9.3.7 Issue 7: Dam Inundation and Flood Hazards

Guidelines for Determination of Significance

Based on Appendix G of the CEQA Guidelines and existing City policies and regulations, the proposed project would result in a significant impact if it would 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, such as Lake Wohlford-Lake, Lake Dixon-Lake, Lake San Marcos Lake and Lake-Hodges Reservoir.

Impact Analysis

Growth under the proposed Downtown Specific Plan Update would be consistent with the growth identified for the General Plan Update; therefore, the following analysis pertains to both the General Plan Update and the Downtown Specific Plan Update. Impacts related to implementation of the E-CAP are discussed separately below.

General Plan Update and Downtown Specific Plan Update

Dam failures can result in severe flood events. When a dam fails, a large quantity of water is suddenly released with a great potential to cause human casualties, economic loss, lifeline disruption, and

environmental damage. A dam failure is usually the result of age, poor design, or structural damage caused by a major event such as an earthquake or flood.

Lake Wohlford and Lake Dixon are located in the northeastern portion of the General Plan Update planning area and have the potential to impact the proposed project area in the event of dam failure. ~~Lake~~ Hodges Reservoir is located to the southwest of the proposed project area while Lake San Marcos ~~Lake~~ is located to the west of the proposed project area. The proposed project area is not located downstream of either the Lake San Marcos ~~Lake~~ or Lake Hodges Reservoir; therefore, failure of these dams would not impact the proposed project area. Figure 4.9-2, Dam Inundation Areas, identifies dam inundation areas within the proposed project area. A catastrophic dam failure at either Lake Wohlford or Lake Dixon would likely result in extensive downstream flooding along Escondido Creek, which traverses the central portion of the proposed project area, south of Washington Avenue. The areas below both of these dams are zoned for flood hazards on FEMA maps. If one of these facilities fails, properties along Escondido Creek, and a significant portion of the valley floor area including downtown Escondido, could be inundated. Flood waters may move at rates that prohibit a significant number of persons to be evacuated in the wake of the initial flows, and significant property damage would likely result. Unique institutions located or proposed in dam inundation zones could result in a significant loss of life in the event of a dam failure due to the size and nature of the uses and the difficulty with evacuating large concentrations of people. Unique institutions include hospitals, schools, skilled nursing facilities, retirement homes, mental health care facilities, care facilities with patients that have disabilities, adult and childcare facilities, jails/ detention facilities, stadiums, arenas, amphitheatres, or any other use that would involve concentrations of people. The inability to efficiently evacuate unique institutions could cause a significant loss of life.

Under existing conditions, the City contains approximately 86,360 persons, 12,393 residential buildings, 424 commercial buildings and 141 critical facilities that would be significantly impacted in the event of dam failure (URS 2004). Under the proposed General Plan Update, high density urban land uses, which would contain residents occupying residential buildings, and commercial land uses, which would contain workers and patrons occupying commercial buildings, would be located in areas along Escondido Creek. Urban land uses have a higher risk of exposing people or structures to flooding hazards associated with the failure of a levee or dam because they allow for higher density development. Therefore, implementation of the General Plan Update would expose people or structures to a significant risk of loss, injury or death from flooding as a result of the failure of Lake Wohlford ~~Lake~~ and Lake Dixon ~~Lake~~. A potentially significant impact would occur.

Emergency response plans, such as Dam Inundation Maps or the County's Multi-Jurisdictional Hazard Mitigation Plan, are the official documents that describe the procedures to be applied when carrying out emergency operations or rendering mutual aid in the event of a dam inundation emergency. All dam owners within the proposed project area and the County of San Diego have prepared Dam Inundation Maps that delineate dam inundation zones, or the areas at risk in the event of failure, for each dam. The Multi-Jurisdictional Hazard Mitigation Plan identifies dam failure risk levels based on Dam Inundation Map data. A dam is considered to be high hazard if it stores more than 1,000 acre-feet of water, is higher than 150 feet in height, has the potential to cause downstream property damage, and has the potential to require downstream evacuation. Ratings are set by FEMA and confirmed with site visits by engineers. Most of the regions dams are greater than 50 years old, characterized by increased hazard potential due to downstream development, and have increased risk from structural deterioration and

inadequate spillway capacity. The Multi-Jurisdictional Hazard Mitigation Plan identifies both the Lake Wohlford Dam and the Lake Dixon Lake Dam as having a low dam failure risk.

The City of Escondido Public Works Department maintains Lake Dixon Lake and Lake Wohlford Dam Emergency Action Plans. Emergency plans for dam evacuation are necessary to plan for the loss of life, damage to property, displacement of people, and other ensuing hazards that can occur from dam failure. In the event of dam failure, damage control and disaster relief would be required and mass evacuation of the inundation areas would be essential to save lives. Dam evacuation plans contain information concerning the physical situation, affected jurisdictions, evacuation routes, unique institutions and event responses. In addition, the plans include inundation maps showing direction of flow; inundation area boundaries; hospitals, schools, multipurpose staging areas; command posts/sites; and mass care and shelter facilities/sites.

Escondido Climate Action Plan

The E-CAP would not result in the development of any land use that involves human habitation or occupation. Additionally, the E-CAP would not result in the development or construction of facilities beyond that allowed under the proposed General Plan Update and Downtown Specific Plan Update. For this reason, the E-CAP would have no impact related to exposing people or structures to a significant risk of loss, injury or death involving flooding as a result of the failure of a levee or dam.

Federal, State and Local Regulations and Existing Regulatory Processes

The regulations that apply to flooding are the same as those discussed above in Section 4.8.3.4, Issue 4: Flooding. In contrast to minimizing flood hazards, few regulations exist for the protection of dam inundation areas.

Proposed General Plan Update Policies

The proposed General Plan Update policies that apply to dam inundation hazards are the same as those discussed above in Section 2.8.3.4, Issue 4: Flooding.

Proposed Downtown Specific Plan Update Policies

The proposed Downtown Specific Plan Update does not include any policies related to flooding as a result of a levee or dam failure.

Proposed Escondido Climate Action Plan Reduction Measures

The proposed E-CAP does not include any reduction measures related flooding as a result of a levee or dam failure.

Summary

The development of future land uses as designated in the proposed General Plan Update and Downtown Specific Plan Update would result in the potential to expose people or structures to a significant risk of loss, injury or death involving flooding as a result of a levee or dam failure, by placing persons or housing in areas that could experience dam inundation from the failure of Lake Wohlford and Lake Dixon Dams. Implementation of the E-CAP would have no impact related to exposing people or structures to a significant risk of loss, injury or death involving flooding. However, compliance with the

County's Multi-Jurisdictional Hazard Mitigation Plan, the Lake Dixon and Lake Wohlford Dam Emergency Action Plans, and implementation of the policies proposed within the General Plan Update would reduce impacts associated with dam inundation and flood hazards to a less than significant level.

4.9.3.8 Issue 8: Seiche, Tsunami and Mudflow Hazards

Guidelines for Determination of Significance

Based on Appendix G of the CEQA Guidelines and existing City policies and regulations, the proposed project would result in a significant impact if it would expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.

Impact Analysis

Growth under the proposed Downtown Specific Plan Update would be consistent with the growth identified for the General Plan Update; therefore, the following analysis pertains to both the General Plan Update and the Downtown Specific Plan Update. Impacts related to implementation of the E-CAP are discussed separately below.

General Plan Update and Downtown Specific Plan Update

The following section identifies the potential for a tsunami, seiche or mudflow event to occur within the proposed project, and the potential for people or structures to be exposed to significant risk of these hazards under implementation of the proposed General Plan Update.

Tsunami

A tsunami is a very large ocean wave caused by an underwater earthquake or volcanic eruption. Tsunamis can cause flooding to coastlines and inland areas less than 50 feet above sea level and within one mile of the shoreline. The entire proposed project area is located more than one mile inland and would not be susceptible to inundation or flooding due to a tsunami. Therefore, due to the location of the proposed project area, impacts from a tsunami would be less than significant.

Seiche

A seiche is a standing wave in a completely or partially enclosed body of water. Areas located along the shoreline of a lake or reservoirs are susceptible to inundation by a seiche. High winds, seismic activity, or changes in atmospheric pressure are typical causes of seiches. The size of a seiche and the affected inundation area is dependent on different factors including size and depth of the water body, elevation, source, and if manmade, the structural condition of the body of water in which the seiche occurs.

In the proposed project's semi-arid climate, naturally occurring enclosed water bodies are not common. Instead most enclosed water bodies are reservoirs built by local municipalities and water districts to provide water service to local residents and businesses, including Lake Wohlford and Lake Dixon. Typically, all land around a reservoir's shoreline is in public holdings, which restrict private land development and minimize risk of inundation from seiches. Implementation of the General Plan Update would designate land uses surrounding Lake Wohlford and Lake Dixon as public land/open space, and would not allow land uses that would expose people or structures to impacts associated with a seiche. Additionally, Lake-Hodges Reservoir and Lake San Marcos Lake are not located within the General Plan

Update planning area and would not expose land uses within the proposed project area to impacts associated with a seiche. Therefore, the impact from a seiche would be considered less than significant.

Mudflows

Debris flows, also known as mudflows, are shallow water-saturated landslides that travel rapidly down slopes carrying rocks, brush, and other debris. Mudflows are the most common disaster in the San Diego region. A mudflow occurs naturally as a result of heavy rainfall on a slope that contains loose soil or debris. There is a high potential for mudflows to occur in some areas of the General Plan Update planning area as a result of large amounts of precipitation in a relatively small time frame. Areas steeper than 25 percent may be especially prone to mudflows. The proposed project area contains steep slopes and mountainous areas along its periphery that would be subject to mudflows in the event of large amounts of precipitation. Under implementation of the proposed project, areas within the planning area that have steep slopes or are mountainous would generally be designated with low density residential land uses, such as Rural I, Rural II, Estate I and Estate II. Although these residential land uses are low density in nature, they would result in an increased risk of exposing people or structures to hazards associated with mudflows. Additionally, some areas of the eastern portion of the project area have recently been burned by wildland fires, making these areas particularly susceptible to flash floods and debris flows during rainstorms. Under implementation of the General Plan Update, some past areas affected by wildland fires would be designated as residential land uses, which have an increased risk of exposing people or structures to damage in the event of a mudflow. Therefore, this would result in a potentially significant impact.

Escondido Climate Action Plan

The E-CAP would not result in the development of any land use that involves human habitation or occupation. Additionally, the E-CAP would not result in the development or construction of facilities beyond those allowed under the proposed General Plan Update and Downtown Specific Plan Update. For this reason, the E-CAP is concluded to have no impact related to tsunamis, seiches or mudflows.

Federal, State and Local Regulations and Existing Regulatory Processes

Few regulations exist that relate specifically to seiche, tsunami, or mudflow hazards. Mudflows are partially addressed through the flood hazard regulations that are discussed in Section 3.9.3.4, Issue 4: Flooding.

Proposed General Plan Update Policies

Within the Community Protection Element, Soils and Seismicity Policy 7.3 would reduce the potential for significant impacts to occur to people or structures from mudflows. This policy requires that development applications in areas where the potential for geologic and seismic hazards exist, such as slopes of 25 percent or greater, include a site-specific geotechnical analysis prepared by a certified geotechnical engineer to identify potential hazards and recommend measures to avoid or reduce identified hazards.

Within the Land Use Element, Environmental Review Policies 18.1 through 18.4 require project conformance with CEQA, the General Plan, facilities plans, and quality of life standards; mitigation of environmental impacts; and an update of environmental thresholds in sensitive areas.

Proposed Downtown Specific Plan Update Policies

The proposed Downtown Specific Plan Update does not include any policies related to tsunami, seiche or mudflow hazards.

Proposed Escondido Climate Action Plan Reduction Measures

The proposed E-CAP does not include any reduction measures related to tsunami, seiche or mudflow hazards.

Summary

Due to the inland location of the proposed project, implementation of the proposed General Plan Update would not expose people or structures to hazards associated with inundation by a tsunami. Therefore, impacts associated with a tsunami would be less than significant. Additionally, implementation of the General Plan Update would not result in land uses or development within areas subject to inundation from a seiche. Therefore, this would not be considered a significant impact.

Implementation of the General Plan Update would locate land uses and development in areas that would be considered susceptible to mudflows. Therefore, this would be considered a significant impact. However, compliance with existing regulations and implementation of General Plan Update Soils and Seismicity Policy 7.3 would reduce impacts associated with mudflows to a less than significant level.

4.9.4 Cumulative Impact

The geographic scope of cumulative impact analysis for hydrology and water quality includes drainage basins, watersheds, water bodies or groundwater basins, depending on the location of the potential impact and its tributary area.

Issue 1: Water Quality Standards and Requirements

Construction and development associated with cumulative regional land use projects would contribute both point and non-point source pollutants to downstream receiving waters that have the potential to violate water quality standards. However, development and construction proposed under most cumulative projects would be subject to regulations that require compliance with water quality regulations including the CWA, Porter-Cologne Water Quality Control Act, NPDES, applicable basin plans, and local regulations. Compliance with existing regulations would ensure that cumulative projects would not result a significant cumulative impact related to water quality standards and requirements. Therefore, the proposed project, in combination with other cumulative projects, would not contribute to a significant cumulative impact associated with water quality standards and requirements.

Issue 2: Groundwater Supplies and Recharge

Groundwater basins typically serve localized areas and, therefore, any cumulative impacts would generally be localized. The area of cumulative analysis for groundwater supplies and recharge includes the proposed project area and the immediately adjacent jurisdictional areas that share groundwater basins with the proposed project areas. Cumulative projects in the geographic scope of cumulative analysis would be served with water by the EWWD, Rincon Del Diablo Municipal Water District, Vallecitos Water District, Valley Center Municipal Water District, and VID. Of these agencies, only VID

utilizes groundwater resources. Cumulative projects in the VID service area would have the potential to result in new impervious surfaces that may interfere with groundwater recharge. Therefore, groundwater recharge could potentially be impaired by cumulative project development and a cumulatively significant impact would occur.

As discussed above, implementation of the proposed General Plan Update, Downtown Specific Plan Update and E-CAP would not result in a significant impact to groundwater supplies and recharge due to compliance with existing regulations and implementation of the proposed General Plan Update policies. Therefore, the proposed project's contribution to a significant cumulative impact associated with groundwater recharge would not be cumulatively considerable.

Issue 3: Erosion or Siltation

Cumulative projects in the region would result in multiple developments that would potentially alter existing drainage patterns in a manner that would result in substantial erosion or siltation. It is reasonably foreseeable that some cumulative projects would occur simultaneously, which would compound the impacts of erosion and siltation. Cumulative projects would be expected to increase impervious surfaces within the region and, therefore, increase the potential for runoff to occur that would lead to erosion and siltation impacts. While cumulative projects would be expected to follow regulations, such as NPDES or others as applicable, when combined, they would still have the potential to result in a significant cumulative erosion and siltation impact.

As discussed above, implementation of the General Plan Update, Downtown Specific Plan Update and E-CAP has the potential to result in new erosion and siltation impacts or worsen existing erosion and siltation problems. However, compliance with existing regulations and implementation of proposed General Plan Update policies would reduce project impacts to below a level of significance. Therefore, the proposed project's contribution to a significant cumulative impact associated with erosion or siltation would not be cumulatively considerable.

Issue 4: Flooding

Cumulative projects would result in land uses and development that would convert permeable surfaces to impermeable surfaces, such as through the construction of buildings, parking lots, and roadways. Increases in impermeable surfaces would have the potential to alter existing drainage patterns, increase the rate and amount of runoff and potentially increase flooding in the region. Cumulative projects would be subject to regulations that reduce the potential for existing drainages to be altered in such a way which would result in flooding on or offsite. Regulations that would reduce the potential for onsite and offsite flooding include the National Flood Insurance Act, National Flood Insurance Reform Act, Cobey-Alquist Floodplain Management Act, and local ordinances and floodplain management plans. Compliance with required regulations would reduce the potential for cumulative projects to result in flooding impacts to a less than significant level. Therefore, the proposed General Plan Update, Downtown Specific Plan Update and E-CAP, in combination with other cumulative projects, would not result in a significant cumulative impact associated with flooding.

Issue 5: Exceed Capacity of Stormwater Systems

Increases in impermeable surfaces resulting from construction of cumulative projects would have the potential to contribute substantial quantities of runoff which would exceed the capacity of existing

stormwater drainage systems. However, a cumulative project that would exceed the capacity of a stormwater system would be unlikely to contribute to a cumulative impact because the area of exposure would be limited to the immediate surrounding area and/or the storm water drainage system serving that cumulative project area. Additionally, the majority of cumulative projects would be subject to CEQA and/or NEPA review, and local regulations that require development to construct or retrofit stormwater drainage systems so that they would not cause flooding. Compliance with existing regulations would ensure that a regional significant cumulative impact would not occur. Therefore, the proposed project, in combination with other cumulative projects, would not contribute to a significant cumulative impact associated with the capacity of stormwater systems.

Issue 6: Housing within a Flood Hazard Area

Cumulative projects in the region would potentially place housing within a 100-year flood hazard area, as identified on FEMA floodplain maps. However, cumulative projects would be required to conform to applicable regulations, such as National Flood Insurance Act, National Flood Insurance Reform Act, and Cobey-Alquist Floodplain Management Act, which prohibit housing from being placed in floodways. Therefore, due to compliance with existing regulations, a significant regional cumulative impact would not occur. The proposed project, in combination with other cumulative projects, would not result in a significant cumulative impact associated with the placement of housing within a flood hazard area.

Issue 7: Dam Inundation and Flood Hazards

It is reasonably foreseeable that cumulative projects would place housing or structures within dam inundation areas, thereby increasing the potential for a significant risk of loss, injury or death involving flooding. However, multiple regulations exist, such as the National Flood Insurance Act, National Flood Insurance Reform Act, Cobey-Alquist Floodplain Management Act, and local regulations that would be expected to reduce any potential impacts to below a level of significance. Therefore, due to compliance with existing regulations, a significant regional cumulative impact would not occur. The proposed project, in combination with other cumulative projects, would not contribute to a significant cumulative impact associated with dam inundation and flood hazards.

Issue 8: Seiche, Tsunami and Mudflow Hazards

Cumulative projects in surrounding jurisdictions on the coast have the potential to expose people or structures to loss, injury or death involving inundation of a tsunami, due to the inherent risk involved with coastal development. Additionally, cumulative projects would be located in the vicinity of natural water bodies that have the potential to be affected by a seiche, thereby exposing people and structures to flooding from this natural disaster. However, the proposed project would not result in risks associated with a tsunami or seiche, and its contribution to a significant cumulative impact would not be cumulatively considerable.

Mudflows would also potentially affect cumulative projects, especially in surrounding jurisdictions that have been affected by extreme wildfire events in the recent past. However, the majority of cumulative projects would be subject to CEQA and/or NEPA review, in addition to compliance with applicable regulations such as the National Flood Insurance Act, National Flood Insurance Reform Act, Cobey-Alquist Floodplain Management Act and local regulations. , and impacts would be reduced to a level below significant. Therefore, due to compliance with existing regulations, a significant regional

cumulative impact would not occur. The proposed project, in combination with other cumulative projects, would not contribute to a significant cumulative impact associated with mudflow hazards.

4.9.5 Significance of Impact Prior to Mitigation

The proposed General Plan Update, Downtown Specific Plan Update and E-CAP would result in less than significant direct and cumulative impacts related to water quality standards, groundwater supplies, erosion, flooding, stormwater systems, housing within a flood area, dam inundation, and mudflow hazards.

4.9.6 Mitigation

Issue 1: Water Quality Standards and Requirements

Project impacts associated with water quality standards and requirements would be less than significant. No mitigation is required.

Issue 2: Groundwater Supplies and Recharge

Project impacts associated with groundwater supplies and recharge would be less than significant. No mitigation is required.

Issue 3: Erosion or Siltation

Project impacts associated with erosion and siltation would be less than significant. No mitigation is required.

Issue 4: Flooding

Project impacts associated with flooding would be less than significant. No mitigation is required.

Issue 5: Exceed Capacity of Stormwater Systems

Project impacts associated with exceeding the capacity of stormwater systems would be less than significant. No mitigation is required.

Issue 6: Housing within a Flood Hazard Area

Project impacts associated with the placement of housing within a 100-year flood hazard area would be less than significant. No mitigation is required.

Issue 7: Dam Inundation and Flood Hazards

Project impacts associated with dam inundation and flood hazards would be less than significant. No mitigation is required.

Issue 8: Seiche, Tsunami and Mudflow Hazards

Project impacts associated with seiche, tsunami and mudflow hazards would be less than significant. No mitigation is required.

4.9.7 Conclusion

The discussion below provides a synopsis of the conclusion reached in each of the above impact analyses.

Issue 1: Water Quality Standards and Requirements

Implementation of the proposed General Plan Update, Downtown Specific Plan Update and E-CAP would contribute to surface water and ground water quality contaminants, which would result in potentially significant impacts to water quality standards and requirements. However, implementation of the proposed General Plan Update policies, in addition to compliance with applicable regulations, would reduce direct and indirect project impacts to a less than significant level. Additionally, the proposed project's cumulative impact would be less than significant.

Issue 2: Groundwater Supplies and Recharge

Implementation of the General Plan Update, Downtown Specific Plan Update and E-CAP would not utilize groundwater for any purpose, such as for potable water or landscape irrigation and would therefore not deplete groundwater supplies. Additionally, very few groundwater supplies are found throughout the proposed project area and the General Plan Update proposes policies that would protect these limited resources. Therefore, the proposed project would result in less than significant direct and indirect impacts to groundwater resources. Additionally, the proposed project's cumulative impact would be less than significant.

Issue 3: Erosion or Siltation

Implementation of the General Plan Update, Downtown Specific Plan Update and E-CAP would result in increased runoff that has the potential to cause new erosion and siltation impacts or worsen existing erosion and siltation problems. However, implementation of the proposed General Plan Update policies, in addition to compliance with applicable regulations, would reduce the proposed project's direct and indirect impacts to below a level of significance. Additionally, the proposed project's cumulative impact would be less than significant.

Issue 4: Flooding

Implementation of the General Plan Update, Downtown Specific Plan Update and E-CAP would convert permeable surfaces to impermeable surfaces, which would have the potential to result in flooding on or offsite. However, implementation of the proposed General Plan Update policies, in addition to compliance with applicable regulations, would reduce the proposed project's direct and indirect impacts to below a level of significance. Additionally, the proposed project's cumulative impact would be less than significant.

Issue 5: Exceed Capacity of Stormwater Systems

Implementation of the proposed General Plan Update, Downtown Specific Plan Update and E-CAP has the potential to exceed the capacity of existing stormwater drainage facilities. However, implementation of the proposed General Plan Update policies, in addition to compliance with applicable regulations, would reduce the proposed project's direct and indirect impacts to below a level of significance. Additionally, the proposed project's cumulative impact would be less than significant.

Issue 6: Housing within a Flood Hazard Area

Implementation of the proposed General Plan Update and Downtown Specific Plan Update would allow residential land uses to potentially occur within a 100-year floodplain. However, implementation of the proposed General Plan Update policies, in addition to compliance with applicable regulations, would reduce the proposed project's direct and indirect impacts to below a level of significance. Additionally, the proposed project's cumulative impact would be less than significant. The E-CAP does not propose residential housing and would therefore have no impact related to the placement of housing within a 100-year flood hazard area.

Issue 7: Dam Inundation and Flood Hazards

Implementation of the proposed General Plan Update, Downtown Specific Plan Update and E-CAP would result in potential inundation risk associated with dam failure. However, implementation of the proposed General Plan Update policies, in addition to compliance with applicable regulations, would reduce proposed project direct and indirect impacts to below a level of significance. Additionally, the proposed project's cumulative impact would be less than significant.

Issue 8: Seiche, Tsunami and Mudflow Hazards

Implementation of the proposed General Plan Update Downtown Specific Plan Update and E-CAP would result in an increased risk of exposing people or structures to damage in the event of a mudflow. However, implementation of the proposed General Plan Update policies, in addition to compliance with applicable regulations, would reduce proposed project's direct and indirect impacts to below a level of significance. Additionally, the proposed project's cumulative impact would be less than significant.