3.9 HYDROLOGY AND WATER QUALITY

3.9.1 INTRODUCTION

This section of the PEIR addresses potential impacts to water resources, water quality, and drainage in the City of Lake Elsinore and its SOI. The environmental setting includes discussions of existing surface and groundwater resources, water quality issues and drainage and flooding. Analysis of potential impacts that could result from implementing the proposed project and identification of feasible mitigation (general plan policies) to avoid or lessen potential environmental impacts conclude this section. Given the programmatic nature of the PEIR, specific impacts to individual properties or areas are not identified or known at this time.

3.9.2 ENVIRONMENTAL SETTING

The information contained in this Environmental Setting section includes information contained in the City of Lake Elsinore General Plan Background Reports (see Chapter 6 – Water Resources). This document is attached as Appendix B to this PEIR.

HYDROLOGY

The City and SOI are within the Santa Ana regional watershed, which is drained by the Santa Ana River. The primary natural surface water features within the planning area are Lake Elsinore, the San Jacinto River, and Temescal Wash. Railroad Canyon Reservoir—a manmade facility—releases flows to the San Jacinto River. The San Jacinto River flows from northeast to southwest from Canyon Lake into Lake Elsinore, which in turn flows into Temescal Wash during periods of high lake levels. The drainage patterns within the planning area can be divided into three basins: the Temescal, Lake Elsinore, and Santa Margarita Areas. Surface water features and drainage basins are shown in **Figure 3.9-1, Hydrologic Resources**.

Lake Elsinore is a natural lake measuring approximately 5 miles long by 2 miles wide. The lake varies widely in size as it responds to hydrologic conditions, ranging from 6,000 acres in very wet years to a dry lakebed in drought years. In an effort to maintain a more constant lake level, a levee was constructed in 1995; this reduces the lake's surface area and thereby minimizes evaporation. The levee also provides flood protection up to an elevation of 1,262 feet for the southern end of the lake, an area known as the Back Basin.

Lake Elsinore is fed by three primary sources of water: runoff from local tributaries (eight percent of total input to the lake), direct precipitation inputs to the lake surface (20 percent), and inflows from the San Jacinto River (72 percent). The San Jacinto River is by far the largest source of water reaching Lake Elsinore. Groundwater does not play a major role in lake levels due to the presence of a relatively impermeable layer of clay soil beneath the lake's waters.

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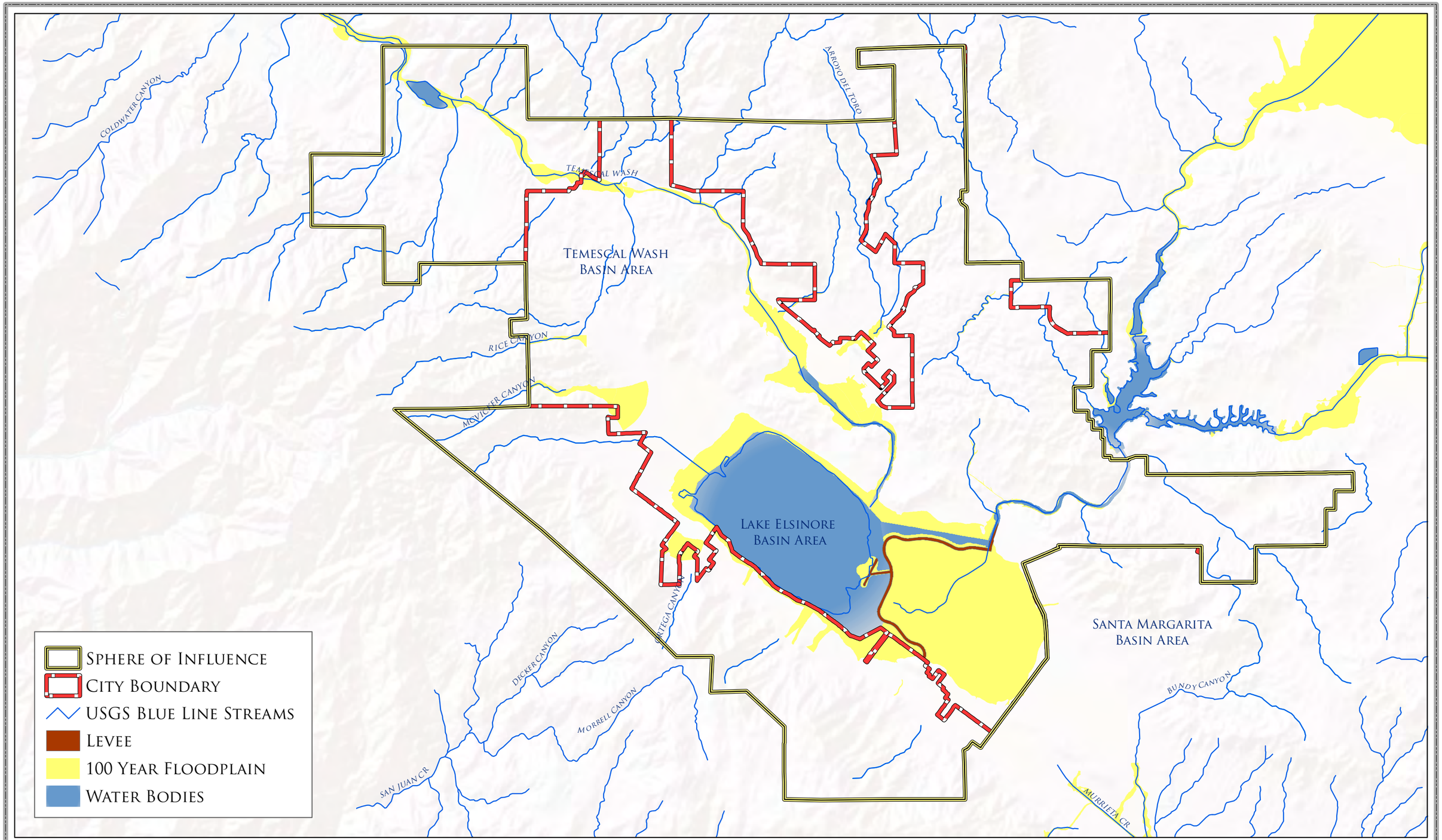

Sources: City of Lake Elsinore, County of Riverside

City of Lake Elsinore — Dream Extreme

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0 1.25 2.5 Miles

City of Lake Elsinore
Hydrologic Resources
Figure 3.9-1

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GROUNDWATER

The Elsinore Groundwater Basin underlies the Elsinore Valley. The basin is bounded on the southwest by the Santa Ana and Elsinore Mountains along the Willard fault, a splay of the active Elsinore Fault. The basin is bounded on the southeast by a shallow bedrock high coincident with a surface water divide that separates the Elsinore Basin from the Temecula-Murrieta Basin further to the south. The basin is bounded on the northwest by the Temescal Valley Basins at a constriction in the Temescal Wash, and on the northeast by non-water bearing rocks of the Peninsular Ranges along the Glen Ivy fault.

The Elsinore groundwater basin is primarily supplied by infiltration of precipitation in the surrounding watershed. Other sources of inflow include infiltration along the San Jacinto River channel upstream of Lake Elsinore and agricultural and residential return flows. Municipal pumping for potable water is the only major outflow from the Elsinore groundwater basin. Some additional groundwater pumping is performed as necessary to maintain the elevation of Lake Elsinore at 1,240 feet above mean sea level.

Under natural conditions, groundwater should generally flows from the northwest to southeast beneath Lake Elsinore. However, because faults cutting the sediments impede groundwater movement, groundwater flow is dominantly contained within fault blocks in the basin. The difference between groundwater levels on the northwest side and the southeast side is more than 300 feet. Depth to water current ranges from about 250 feet in the northwest to more than 600 feet in the southeast.

The Elsinore Valley Municipal Water District (EVMWD) Groundwater Management Plan includes a groundwater budget analysis of the Elsinore basin for 1990–2001. The results of the analysis indicate that the basin experienced an average annual deficit of approximately 1,800-acre ft/yr over the 11-year period studied. Eight of the 11 years analyzed had a deficit, while the remaining 3 years corresponded to above-average annual precipitation totals. In addition, water levels in wells in the southern portion of the basin dropped more than 200 feet in the same 11-year period, providing further evidence of a groundwater overdraft condition. Continuing overdraft may lead to ground subsidence as soils compact over long periods of time, although no clear evidence of subsidence has currently been identified around Lake Elsinore.

FLOODING

FEMA prepared a study in 1980 (revised in 1987) that identified the following potential flood sources in the City: Arroyo del Toro, Channel H, Elsinore Spillway Channel, Lake Elsinore, Leach Canyon Channel, Lime Street Channel, McVicker Canyon, Ortega Wash, Ortega Channel, Rice Canyon, San Jacinto River, Stovepipe Canyon Creek, Temescal Wash, Wash G, Wash I, and Wasson Canyon Creek. The locations of these sources are presented in **Figure 3.9-1, Hydrologic Resources**.

The San Jacinto River is the major watercourse within the region, flowing northeast to southwest from Canyon Lake toward Lake Elsinore. Runoff during a 100-year flood is contained within the riverbed upstream of I-15. Below that point, 100-year flows presently cause flooding over portions of Railroad Canyon Road. In addition, San Jacinto River inflows to Lake Elsinore cause a substantial rise in lake levels, inundating inhabited portions along the southwestern and western lakeshore. Flooding can be exacerbated by the low capacity and high elevation of the Temescal Wash outlet (1,260 feet).

Temescal Wash is a gradually sloped earth ditch with limited flow capacity located north of Lake Elsinore in the center of the planning area. The channel has experienced substantial encroachment from recent residential and commercial development. A 1980 flood of the Temescal Wash caused property damage to residential, commercial, and industrial uses in the downtown area, which led to the condemnation of over 100 homes.

Flooding also occurs from the flow of Wasson Canyon Creek as water flows over Camino del Norte and spreads out due to an irregular flow line and lack of any defined channel banks. Backwater forms behind the railway bridge and extends upstream past the Collier Avenue weir crossing at depths of nearly six feet.

Sheet flow is a flood hazard that exists in developed areas below the mouths of Leach Canyon, McVicker Canyon, and Rice Canyon. Fully improved, 100-year design channels have been constructed for Leach Canyon and other washes to contain this sheet flow. However, these facilities do not provide adequate upstream control at the mouth of the canyons. As a result, the channels pick up only a portion of the floodwaters, and the remaining runoff takes the form of sheet flooding towards the lake with depths of more than 1 foot. In the past, flooding from Rice Canyon has resulted from the failure of an earth berm located at the mouth of the canyon. Failure of the dike allows expansive sheet flooding in a southwest direction into Lake Elsinore at depths of less than 1 foot. Flooding generated in McVicker Canyon results in sheet flow on the alluvial fan below the mouth of the canyon. In the lower reach, these flows can combine with those of Leach and Rice Canyon to create an expansive area of shallow sheet flooding on the western side of the lake. FEMA determined the potential for floodwaters carrying debris from Channel H, Leach Canyon, Lime Street Channel, Ortega Channel, and Rice Canyon to be "high."

Flood conditions can also occur in the Sedco Hills area, east of Mission Trail. Sheet flooding at low levels during rainy periods occurs in many areas of Sedco Hills, washing out streets and flooding property.

Inundation of property and the potential loss of life due to failure of the Railroad Canyon Dam is a hazard in the Railroad Canyon Road area and the eastern floodplain of the lake. Railroad Canyon Reservoir is located in the Canyon Lake Hills development northeast of the city. The reservoir, constructed in 1927, captures waters of the San Jacinto River, which is the primary drainage course of the San Jacinto Mountains. The capacity of the reservoir is approximately

12,000 acre-feet. The city's subdivision code requires that the boundaries of the inundation hazard area be identified and noted on all final maps prior to approval.

Figure 3.9-1 shows the current FEMA 100-year floodplain within the planning area, as delineated in the Lake Elsinore Area Plan of the County General Plan. As shown in the figure, the floodplain for the Lake Elsinore area extends into some areas that are currently developed with urban uses. The Lake Elsinore Area Plan of the County General Plan shows the potential dam inundation area. Inundation associated with Dam Hazard Zones would generally not extend beyond the 100-year floodplain, shown on **Figure 3.9-1**. The extent of the High Dam Hazard Zone in the Elsinore Area Plan actually corresponds with the boundary of the 100-year floodplain for both Lake Elsinore and the San Jacinto River, shown on **Figure 3.9-1**.

WATER QUALITY

Water pollutant sources in the Lake Elsinore area have historically been caused by agricultural operations that use chemicals and fertilizers on their land. The State Water Resources Control Board (SWRCB), in compliance with Clean Water Act Section 303(d), maintains a list of impaired water bodies in the state. Lake Elsinore is included on this list due to the presence of four pollutants or stressors: high nutrient levels from unknown point sources, organic enrichment/low dissolved oxygen from unknown point sources, sedimentation/siltation from local urban runoff and storm sewers, and toxicity from unknown non-point sources. Fluctuating water levels in Lake Elsinore and algal blooms triggered by excess nutrients have also caused significant impairment of the ecology and recreational use of Lake Elsinore. The source of the sedimentation and siltation within the lake is from urban runoff and storm sewers. According to the Santa Ana Water Quality Control Board (SAWQCB), improvement to the water quality in the lake can only be achieved through regional water quality monitoring and restoration programs.

With the help of local stakeholders, a regional monitoring program is being implemented to identify the sources of pollution and to remediate the problem. Further discussion of the programs addressing water quality in Lake Elsinore and its associated watercourses is provided below under the Regulatory Setting heading. The Lake Elsinore and San Jacinto Watersheds Authority (LESJWA) was created in 2000 to address water quality and other water resource issues in the area. Members of LESJWA include the Elsinore Valley Municipal Water District, City of Lake Elsinore, County of Riverside, City of Canyon Lake, and Santa Ana Watershed Project Authority (SAWPA). The LESJWA is planning and implementing projects to improve conditions in the lake by reducing algae blooms, increasing water clarity, increasing dissolved oxygen concentrations throughout the water column, and reducing or eliminating fish kills.

Urban development directly affects surface water quality in several ways. Additional pollutants are introduced to the watershed, such as construction-related sediment and automobile-related hydrocarbons. Urban development increases runoff flows, which in turn increase transport and delivery of constituents, as well as erosion along existing waterways.

The conversion of agricultural land to urban land uses will affect water quality, generally decreasing nutrient load and increasing sediment load.

GROUNDWATER QUALITY

The EVMWD Groundwater Management Plan presents an analysis of groundwater quality at a group of wells within the Lake Elsinore basin. Several key trends were identified based on wells used in the Groundwater Management Plan. Total dissolved solids, nitrates, and sulfates were found in the highest concentrations at the Lincoln Street Well, just northwest of the lake, while the lowest concentrations were found in the Olive Street Well, southeast of the lake. Arsenic concentrations were found to be highest in the deeper wells. Pollutant concentrations could have been caused by the historic agricultural use in the area north of the lake.

There are approximately 4,000 septic systems in use in and around the City, which have the potential to affect groundwater quality. Areas with the highest risk from septic system inputs are north and south of the lake, where groundwater-pumping facilities are located in regions of soils with moderately coarse-grained particles.

LAKE ELSINORE STABILIZATION AND ENHANCEMENT PROJECT

The Lake Elsinore Stabilization and Enhancement Plan is a phased project initiated in the late 1980s to stabilize lake levels during drought and flood years, reduce flooding potential on surrounding properties, and improve the natural habitat surrounding the lake and its feeders. The project's main component was the erection of a 17,800-foot-long earthen levee in the southeastern portion of the lake. A 356-acre wetlands area was created to provide habitat for birds, small mammals, reptiles, and amphibians surrounding the lake. A one-mile linear riparian habitat area was installed along the former bed of the San Jacinto River by planting native trees, shrubs, and grasses. A 50-acre fish-breeding habitat was established in the cove between the south end of the lake's operational facilities island and levee. Other improvements include a connection channel to divert San Jacinto River flows into the lake, a meandering levee, a pumping station and conduit to circulate water between the lake and the surrounding wetlands area, a flood plain to hold water when the lake and outflow channel cannot absorb major storm flows, wetlands wells to provide a continuous supply of water for the riparian and wetlands habitats, an operations island for maintenance purposes, supplemental water wells, an overflow weir, and other features that will allow management of lake levels and water resources throughout the year. The LESJWA became the lead agency for the Lake Elsinore Stabilization and Enhancement Project in 2000.

The benefits of the Lake Elsinore Management Project include conserved water during dry years by reducing evaporation loss and implementing a well system, reduced flood damage, improved water quality by allowing more frequent discharges, improved recreational lake use, and enhanced fish and wildlife habitat. Most of the projects were completed by the early 1990s, but certain components, such as lake replenishment, are still on going.

3.9.3 REGULATORY SETTING

The City as a whole and individual development projects are required to comply with various federal, state, and local laws pertaining to water resources. The main federal laws are the Clean Water Act, the Porter-Cologne Water Quality Control Act, and Executive Order 11988 (Floodplain Management). State laws and regulations include 40 CFR Part 503—Regulations and Sewage Sludge Use and Disposal Rule, the California Toxics Rule (CTR), and the California Fish and Game Code Section 1600 et seq. (Lake or Streambed Alteration Agreement Program). The City must coordinate its programs and development with several agencies, including FEMA, Federal Flood Insurance Program, SAWPA, EVMWD, Lake Elsinore and San Jacinto Watershed Authority, and Santa Ana Regional Water Quality Control Board (SARWQCB). Local plans, such as the County General Plan, Santa Ana River Basin (Basin Plan), Lake Elsinore Advanced Pump Storage (LEAPS), and SAWPA's 2005 Integrated Watershed Plan also maintain relevant policies pertaining to the City's water resource usage and alteration. Specifics regarding these regulations are provided below. Additional plans and regulations related to water resources are discussed in further detail below.

FEDERAL

The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool. The following paragraphs provide additional details on specific sections of the CWA.

Section 404

CWA Section 404 regulates the discharge of dredged and fill materials into "Waters of the United States," which include oceans, bays, rivers, streams, lakes, ponds, and wetlands. Project proponents must obtain a permit from the USACE for all discharges of dredged or fill material into Waters of the United States, including wetlands, before proceeding with a proposed activity. Before any actions that may impact surface waters are carried out, a delineation of jurisdictional Waters of the United States must be completed, following USACE protocols, in order to determine whether the project study area encompasses wetlands or other Waters of the United States that qualify for CWA protection.

Section 404 permits may be issued only for the least environmentally damaging practicable alternative. That is, authorization of a proposed discharge is prohibited if there is a practicable alternative that would have less adverse impacts and lacks other significant adverse consequences.

Section 402

CWA Section 402 regulates discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by the U.S. Environmental

Protection Agency (EPA). In California, the SWRCB is authorized by the EPA to oversee the NPDES program through the Regional Water Quality Control Boards (RWQCBs) (see related discussion under "Porter-Cologne Water Quality Control Act" below). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. Activities covered by Section 402 include the following:

Construction Activities

As of February 2003, the EPA requires that the project owners or contractors apply for an NPDES stormwater permit and develop a stormwater pollution prevention plan (SWPPP) for ground-disturbing activities that would affect one acre or more. The SARWQCB administers the NPDES stormwater-permitting program for construction activities in the region. For the purposes of the NPDES, construction activities are defined as clearing, excavating, grading, or other land disturbing activities. California has been delegated by the EPA to administer this permit, which authorizes stormwater discharges to Waters of the United States under its General Construction Permit. For qualifying projects, the project applicant must submit to the SARWQCB a Notice of Intent to be covered by the General Construction Permit before the beginning of construction.

The SWPPP must include a site map, a description of proposed construction activities, a demonstration of compliance with relevant local ordinances and regulations, and an overview of the BMPs that will be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Permittees are further required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

Dewatering Activities

While small amounts of construction-related dewatering are covered under the General Construction Permit, the SARWQCB has also adopted a General Order for Dewatering and Other Low Threat Discharges to Surface Waters (General Dewatering Permit). This permit applies to various categories of dewatering activities and would likely apply to the proposed study area, if construction required dewatering in greater quantities than that allowed by the General Construction Permit and discharged the effluent to surface waters. The General Dewatering Permit contains waste discharge limitations and prohibitions similar to those in the general construction permit. To obtain coverage, the applicant must submit a Notice of Intent and a pollution prevention and monitoring program (PPMP).

Stormwater Discharge

The Clean Water Act mandates permits for municipal stormwater discharges. The City of Lake Elsinore and Riverside County are co-permittees in holding an NPDES municipal stormwater permit. This permit requires that controls are implemented to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including management practices, control techniques and systems, design and engineering methods, and other measures as appropriate. As part of permit compliance, the City has prepared a Stormwater Management

Plan, which outlines the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. These requirements include multiple measures to control pollutants in stormwater discharge. New development under the proposed action will be required follow the guidance contained in the Stormwater Management Plan.

Section 401

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into Waters of the United States must obtain certification from the state in which the discharge would originate, or, if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and that may affect the quality of the state's waters (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. Section 401 certification or waiver is under the jurisdiction of the SARWQCB.

Federal Flood Insurance Program

FEMA administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA issues flood insurance rate maps (FIRMs) for communities participating in the NFIP. These maps delineate flood hazard zones in the community.

Executive Order 11988

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. It generally requires federal agencies constructing, permitting, or funding projects in or near a flood-prone area to avoid incompatible floodplain development, be consistent with the standards and criteria of the NFIP, and restore and preserve natural and beneficial floodplain values.

STATE

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.), passed in 1969, comports with the federal CWA (see "Clean Water Act" above) and provides the basis for water quality regulation within California. The Act requires a report of waste discharge for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. The Act established the SWRCB and divided the state into nine regions, each overseen by an RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs, which are responsible for implementing CWA Sections 401, 402, and 303(d). In general, the SWRCB manages both water rights and statewide regulation of water quality, while

the RWQCBs focus exclusively on water quality within their regions. The planning area is within the jurisdiction of the SARWQCB.

The SARWQCB is responsible for the protection of "beneficial uses" of water resources within the Santa Ana River Basin region. Beneficial uses are those desired resources, services, and qualities of the aquatic system that are supported by achieving and protecting high water quality. Examples include drinking, swimming, industrial and agricultural water supply, and the support of fresh and saline aquatic habitats. The SARWQCB uses planning, permitting, and enforcement authorities to meet this responsibility, and has adopted the Water Quality Control Plan, Santa Ana River Basin (Basin Plan), (1995) to implement plans, policies, and provisions for water quality management. Basin plans are primarily implemented by using the NPDES permitting system to regulate waste discharges so that water quality objectives are met (see discussion of the NPDES system in the "Clean Water Act" section above).

California Toxics Rule

The USEPA has promulgated numeric water quality criteria for priority toxic pollutants and other provisions for water quality standards to be applied to waters in the State of California. The USEPA promulgated the CTR based on the Administrator's determination that the numeric criteria are necessary in the State of California to protect human health and the environment. The rule fills a gap in California water quality standards that was created in 1994 when a state court overturned the state's water quality control plans containing water quality criteria for priority toxic pollutants. Federal criteria established pursuant to the CTR are legally applicable in the state for inland surface waters, enclosed bays, and estuaries for all purposes and programs under the Clean Water Act. California Toxics Rule standards would apply to any point source discharges associated with the proposed action, but would not apply to stormwater runoff.

CDFG Code Section 1600 et seq. (Lake- or Streambed Alteration Agreement Program)

Under Sections 1600–1616 of the California Fish and Game Code, CDFG regulates projects that affect the flow, channel, or banks of rivers, streams, and lakes. Section 1602 requires public agencies and private individuals respectively to notify and enter into a streambed or lakebed alteration agreement with CDFG before beginning construction of a project that will divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake, or use materials from a streambed.

State Watershed Management Initiative

In 2004, the SWRCB and the Regional Boards developed the Watershed Management Initiative (WMI) to address water quality improvements of impaired water bodies. The WMI is an integrated planning process in part designed to more effectively direct State and Federal funds to the highest priority water quality activities. Its distinguishing feature is the integration of the various regional, State, and United States Environmental Protection Agency (USEPA) programs on a watershed basis. The participating agencies in the WMI are the nine Regional Water

Quality Control Boards (Regional Boards), the State Water Quality Control Board (State Board), and USEPA. The Integrated Plan is composed of individual chapters written by each of the nine Regional Boards, as well as chapters prepared by the State Board and USEPA.

LOCAL

Local agencies entrusted with regulation of water resources issues include the County (through the County General Plan and specific agencies); the LESJWA, which is a joint powers authority entrusted with state and local funds to improve water quality and wildlife habitats in the immediate area; the County of Riverside Flood Control and Water Conservation District, which oversees development of stormwater drainage and water quality programs for participating jurisdictions; and the City (through the City General Plan, City Zoning Ordinance, and actions and programs of the Public Works Department).

County of Riverside General Plan

The County General Plan contains information on potential flooding and dam inundation in the region, including within the planning area, and sets out policies for land use within potential inundation areas.

Riverside County Flood Control and Water Conservation District

Regional flood control planning and facilities construction are within the jurisdiction of the Riverside County Flood Control and Water Conservation District. The district is also responsible for the maintenance and operation of flood control facilities including debris dams, storm channels, and storm drains. The district's facilities may be characterized as the "backbone" system of flood control for the region. The City also owns and maintains certain flood control facilities in the City that are generally constructed as part of the drainage plans for individual projects and are not under the authority of the Riverside County Flood Control and Water Conservation District. The City ensures that the construction of these facilities is consistent with the master plans of the District.

Elsinore Valley Municipal Water District

The EVMWD is a public nonprofit agency that was created on December 23, 1950, under the Municipal Water District Act of 1911. EVMWD provides water, wastewater, and reclaimed water service to the City of Lake Elsinore, the cities of Canyon Lake and Wildomar, portions of the city of Murrieta, and unincorporated portions of Riverside County. EVMWD is a special district, whose powers include provision of public water service, water supply development and planning, wastewater treatment and disposal, and recycling. Currently, EVMWD has more than 35,000 water, wastewater, and agricultural service connections. EVMWD is a subagency of the Western Municipal Water District, a member agency of the Metropolitan Water District of Southern California (Metropolitan).

Lake Elsinore and San Jacinto Watersheds Authority

The LESJWA is a joint powers authority created by the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act of 2000 funding (also know as Proposition 13) and entrusted with state and local funds to improve water quality in the region and satisfy other water resources protection needs. Its jurisdiction covers a 700-square mile area running from the San Jacinto Mountains west through Canyon Lake and ends in Lake Elsinore. Members of LESJWA include EVMWD, the cities of Lake Elsinore and Canyon Lake, the County of Riverside, and SAWPA.

Lake Elsinore Municipal Code (LEMC) – Title 14, Chapter 14.08

Chapter 14.08 of the LEMC is the "City of Lake Elsinore Stormwater/Urban Runoff Management and Discharge Controls Ordinance". The purpose of this chapter is to ensure the future health, safety, and general welfare of City citizens by reducing pollutants in stormwater discharges to the maximum extent practicable, regulating illegal connections and discharges to the storm drain system, and regulating non-stormwater discharges to the storm drain system. The intent of this chapter is to protect and enhance the water quality of City watercourses, water bodies, groundwater, and wetlands in a manner pursuant to and consistent with the Federal Clean Water Act (33 USC 1342). This chapter requires compliance with LEMC erosion and sediment control requirements, the identification of Best Management Practices (BMPs) and compliance with the Municipal NPDES Permit and the NPDES Permit for Industrial/Commercial and Construction Activity.

Lake Elsinore Municipal Code (LEMC) – Chapter 15, Chapter 15.64

The purpose of Chapter 15.64 (Flood Damage Prevention) of the LEMC is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the community to all publicly and privately owned land within flood-prone, mudslide (i.e., mudflow) or flood-related erosion areas. This chapter 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.

Lake Elsinore Municipal Code (LEMC) – Title 16, Chapter 16.34

Section 16.34.060 in Chapter 16.34 (Required Improvements) requires that prior to the issuance of a building permit, the applicant pay fees for the purposes set forth in that section. Paragraph E of Section 16.34.060 describes the City's Storm Drain Improvement Fund and states that "For the purpose of developing a storm drain master plan and a storm drain system in accordance with said master plan; said fees shall be established by a resolution and shall be placed in the fund exclusively for the use specified herein."

Lake Elsinore Municipal Code (LEMC) – Title 16, Chapter 16.72

Chapter 16.72 (Drainage District Fees) requires that prior to the approval of any final subdivision map or parcel map subdividing property within any drainage district designated in the master plan of drainage, the subdivider shall pay or cause to be paid established drainage fees (Section 16.72.010). Additionally, prior to the issuance of a building permit for the development of property within any drainage district designated in the master plan of drainage for which the drainage were not previously paid, the developer is required to pay or cause to be paid the established drainage fees (Section 16.72.020).

Municipal Separate Storm Sewer System Permit (MS4).

The City of Lake Elsinore maintains compliance with the regional storm water National Pollutant Discharge Elimination System (NPDES) Permit and has developed a strategy to effectively implement permit requirements. These requirements include, but are not limited to, conducting inspections of all industrial, commercial, construction and private development Best Management Practices, performing California Environmental Quality Act and General Plan process review, and working with the County on all other requirements.

The NPDES program is regulated by federal, State and local agencies and is a direct result of the Environmental Protection Agencies (EPA) 1972 Clean Water Act and subsequent State of California Porter Cologne Water Quality Control Act. The City is under the jurisdiction of the Santa Ana Region MS4 Permit.

The current MS4 NPDES Permit Order No. R8-2002-0011, NPDES NO. CAS 618033 went into effect on July 1, 2010. It was issued by the Santa Ana Regional Water Quality Control Board and outlines the regulations and programs that the City must implement in order to control pollution to the Maximum Extent Practicable (MEP). The following list highlights requirements, plans and topics of discussion resulting from the MS4 Permit:

- Illegal Discharges
- Allowable Discharges
- Total Maximum Daily Load (TMDL)
- Riverside County Water Quality Management Plan for Urban Runoff
- Drainage Area Management Plan (DAMP)

- Water Quality Management Plan (WQMP)
- Low Impact Development (LID)
- Basin Plan

3.9.4 GENERAL PLAN UPDATE GOALS AND POLICIES

The City of Lake Elsinore General Plan Update addresses Hydrology and Water Quality in Chapter 4.0 (Resource Protection and Preservation) and in various District Plans. The goals, policies and implementation programs listed in **Table 3.9-1, General Plan Hydrology and Water Quality Goals, Policies and Implementation Programs**, apply to these resources. There are no special hydrology and water quality policies in any of the District Plans.

Table 3.9-1, General Plan Hydrology and Water Quality Goals, Policies and Implementation Programs

GENERAL PLAN GOALS, POLICIES AND IMPLEMENTATION PROGRAMS
Chapter 3.0 – Public Safety and Welfare (Section 3.5 - Flooding and Floodplains)
Goal 5 Minimize risk of injury to residents and visitors, and property damage due to flooding.
Policy 5.1 Continue to ensure that new construction in floodways and floodplains conforms to all applicable provisions of the National Flood Insurance Program in order to protect buildings and property from flooding.
Policy 5.2 Utilize the Capital Improvement Program for storm drainage projects and maintenance and improvement of local storm drain systems including channels, pipes, and inlets to ensure capacity for maximum runoff flows.
Implementation Program Through the project review and the CEQA processes the City shall assess new development and reuse applications for potential flood hazards, and shall require compliance with FEMA Special Flood Hazard Areas where appropriate.
Chapter 4.0 – Resources Protection and Preservation (Section 4.2 - Biological Resources)
Goal 1 Identify and conserve important biological habitats where feasible while balancing the economic growth and private property right interests of the City, its residents, and landowners.
Policy 1.1. The City shall continue to participate in the Western Riverside County Multiple Species Habitat Conservation Plan, the LEAPS program, and the Implementing Agreement; with a strategy that focuses on quality assemblage of conservation acreage beginning at the start of the conservation range.
Policy 1.2. Evaluate the installation of barrier fencing or other buffers between MSHCP Conservation Areas and proposed public and private land uses that may be incompatible with the Conservation Areas in order to minimize illegal/unauthorized public access, domestic animal predation, or dumping in the Conservation Areas while not impeding wildlife movement.
Policy 1.3. The City's Conceptual Reserve Design shall be developed in accordance with Section 3.2.3 of the MSHCP as amended, and may rely upon the flexibility permitted by the MSHCP where

GENERAL PLAN GOALS, POLICIES AND IMPLEMENTATION PROGRAMS
appropriate in conducting the Reserve Assembly Accounting set forth in Section 6.7 of the MSHCP.
Policy 1.4. Encourage revegetation with native plants compatible with natural surrounding habitat where soils have been disturbed during construction, and discourage plants identified in the MSHCP as unsuitable for conservation areas.
Policy 2.2 Development or modification shall be discouraged in areas containing riparian habitat of high functions and values or corridors with 80% or more of natural native habitat that link larger patches of natural native habitat containing 80% or more native plant species. Further, development in areas described for conservation, including areas planned for riparian/riverine restoration included in the MSHCP, shall also be discouraged.
Chapter 4.0 – Resource Protection and Preservation (Section 4.4 – Water Resources)
Goal 4 Improve water quality and ensure the water supply is not degraded as a result of urbanization of the City.
Policy 4.1 Encourage developers to provide clean water systems that reduce pollutants being discharged into the drainage system to the maximum extent feasible and meet required federal National Pollutant Discharge Elimination System (NPDES) standards.
Policy 4.2 Support public education and awareness programs to reduce pollutant discharges into the drainage system.
Policy 4.3 Require Best Management Practices through project conditions of approval for development to meet the Federal NPDES permit requirements.
Policy 4.4 The City shall utilize the 1998 North American Vertical Datum to be consistent with the national standard for mean sea level, which would increase the measurement of the mean sea level for Lake Elsinore by approximately 2.4 feet.
Implementation Program The City shall support the implementation of Best Management Practices to protect the City's water resources.

3.9.5 SIGNIFICANCE THRESHOLDS

The City of Lake Elsinore has not established local CEQA significance thresholds as described in Section 15064.7 of the State CEQA Guidelines. However, Appendix G of the State CEQA Guidelines indicates that impacts related to hydrology and water quality may be considered potentially significant if the project would:

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

- substantially alter the existing drainage pattern of the 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 off-site.
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- otherwise substantially degrade water quality.
- place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- result in inundation by seiche, tsunami, or mudflow.

3.9.6 IMPACT ANALYSIS

The proposed project itself will not directly result in any specific development project. However, individual development projects implemented pursuant to the proposed project could be affected issues related to hydrology and water quality. The impacts upon such individual development projects cannot be fully assessed at this time. As planning progresses for each individual project undertaken within the proposed project's boundaries, hydrology and water quality issues will be considered in light of this PEIR and other relevant federal, State, and local regulations in order to determine whether potentially significant impacts may occur.

Threshold: Would the project violate any water quality standards, waste discharge requirements.

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

Threshold: Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Threshold: Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Threshold: Would the project otherwise substantially degrade water quality.

Analysis

GPU and the Land Use Plan

The SARWQCB sets water quality standards for all ground and surface waters within its region. Water quality standards are defined under the Clean Water Act to include both the beneficial uses of specific water bodies and the levels of water quality that must be met and maintained to protect those uses (water quality objectives). The 1995 *Water Quality Control Plan Santa Ana River Basin* documents the water quality standards for all ground and surface waters overseen by the SARWQCB. Beneficial uses consist of all the various ways that water can be used for the benefit of people and/or wildlife. Twenty beneficial uses are recognized within the Santa Ana Region. Nine of these beneficial uses have been designated for surface water bodies and groundwater in the vicinity of the project site (**Table 3.9-2, Beneficial Uses for Water Bodies within City and SOI**). All listed water quality objectives governing water quality in inland surface waters were evaluated for potential impacts from development of the proposed project; however, only those numeric and narrative water quality objectives that are most likely to be relevant to the proposed project are listed in **Table 3.9-3, Water Quality Objectives for Water Bodies within City and SOI** and **Table 3.9-4, Applicable Narrative Surface Water Quality Objectives**, and **Table 3.9-5, Applicable Narrative Groundwater Quality Objectives**, respectively. Water quality standards are attained when designated beneficial uses are achieved and water quality objectives are being met. The regulatory program of the SARWQCB is designed to minimize and control discharges to surface and groundwater within the region, largely through permitting, such that water quality standards are effectively attained.

Development consistent with the GPU could result in increased non–point source and point source contamination from common urban sources, construction activity, and vehicle use. In general, increased development and population growth in the City and SOI may be expected to result in increased generation of urban water contaminants. In addition to increased sediment related to construction activities, development in the City could increase other types of non–point source pollution. Runoff from residential, commercial, and institutional urban uses typically includes sediment, herbicides, pesticides, nutrients from fertilizers, organic debris, coloform, trash, grease, solvents, metals, salts, and other contaminants. Runoff from streets and parking lots contains typical urban pollutants including oil, grease, fuel, rubber, heavy metals, solvents, coloform, and trash. Motor vehicle exhaust also generates lead and particulates that could be picked up by runoff and carried into nearby surface water bodies such as Lake

Elsinore. The increased pollutants carried in runoff into the streams, rivers, and lake in and around the City is a potentially significant impact of the implementation of the GPU.

Table 3.9-2, Beneficial Uses for Water Bodies within City and SOI

WATER BODY	BENEFICIAL USES
Surface Water Body	
Lake Elsinore	REC1, REC2, WARM, WILD
San Jacinto River – Reach 1	MUN, AGR, GWR, REC1, REC2, WARM, WILD
Lee Lake	AGR, IND, GWR, REC1, REC2, WARM, WILD
Temescal Wash – Reaches 4 and 5	AGR, GWR, REC1, REC2, WARM, WILD, RARE
Temescal Wash – Reach 6	GWR, REC1, REC2, WARM, WILD
Groundwater Management Zones	
Elsinore	MUN, AGR, PROC
Lee Lake	MUN, AGR, IND, PROC
Warm Springs Valley	
DEFINITIONS	
MUN - Municipal and Domestic Supply (MUN) waters are used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.	
AGR - Agricultural Supply (AGR) waters are used for farming, horticulture or ranching. These uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.	
IND - Industrial Service Supply (IND) waters are used for industrial activities that do not depend primarily on water quality. These uses may include, but are not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection and oil well repressurization.	
PROC - Industrial Process Supply (PROC) waters are used for industrial activities that depend primarily on water quality. These uses may include, but are not limited to, process water supply and all uses of water related to product manufacture or food preparation.	
GWR - Groundwater Recharge (GWR) waters are used for natural or artificial recharge of groundwater for purposes that may include, but are not limited to, future extraction, maintaining water quality or halting saltwater intrusion into freshwater aquifers.	
REC1 - Water Contact Recreation (REC1) waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing and use of natural hot springs.	
REC2 - Non-contact Water Recreation (REC 2) waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of	

water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing and aesthetic enjoyment in conjunction with the above activities.
WARM - Warm Freshwater Habitat (WARM) waters support warmwater ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish and wildlife, including invertebrates.
WILD - Wildlife Habitat (WILD) waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.
RARE - Rare, Threatened or Endangered Species (RARE) waters support the habitats necessary for the survival and successful maintenance of plant or animal species designated under state or federal law as rare, threatened or endangered.
Source: California Regional Water Quality Control Board, Santa Ana Region, *Water Quality Control Plan Santa Ana River Basin*, 1995, pages 3-2 and 3-3 and Table 3-1.

Table 3.9-3, Water Quality Objectives for Water Bodies within City and SOI

Water Quality Objectives (mg/L)	Surface Water Body				Groundwater Management Zones	
	Lake Elsinore[1]	San Jacinto River – Reach 1	Lee Lake[2]	Temescal Creek – Reaches 4, 5 & 6[2]	Elsinore	Lee Lake[2]
TDS	2000	450	--	--	480	--
Hardness	--	260	--	--	--	--
Sodium	--	50	--	--	--	--
Chloride	--	65	--	--	--	--
Total Inorganic Nitrogen	1.5	3	--	--	1.0[3]	--
Sulfate	--	60	--	--	--	--
Chemical Oxygen Demand	--	15	--	--	--	--

Source: California Regional Water Quality Control Board, Santa Ana Region, *Water Quality Control Plan Santa Ana River Basin*, 1995, Table 4-1.
[1] Lake volume and quality highly variable
[2] Numeric objectives have not been established; narrative objectives apply.
[3] Nitrate as Nitrogen

Table 3.9-4, Applicable Narrative Surface Water Quality Objectives

DESCRIPTION	NARRATIVE OBJECTIVE
ALGAE Excessive growth of algae and/or other aquatic plants can degrade water quality. Algal blooms sometimes occur naturally, but they are often the result of excess nutrients (*i.e.,* nitrogen, phosphorous) from waste discharges or nonpoint sources. These blooms can lead to problems with tastes, odors, color, and increased turbidity and can depress the dissolved oxygen content of the water, leading to fish kills. Floating algal scum and algal mats are also an aesthetically unpleasant nuisance.	*Waste discharges shall not contribute to excessive algal growth in inland surface receiving waters.*
BACTERIA, COLIFORM Fecal bacteria are part of the intestinal flora of warm-blooded animals. Their presence in surface waters is an indicator of pollution. Total coliform is measured in terms of the number of coliform organisms per unit volume. Total coliform numbers can include non-fecal bacteria, so additional testing is often done to confirm the presence and numbers of fecal coliform bacteria. Water quality objectives for numbers of total and fecal coliform vary with the uses of the water.	MUN *Total coliform: less than 100 organisms/100 mL* REC-1 *Fecal coliform: log mean less than 200 organisms/100 mL based on five or more samples/30 day period, and not more than 10% of the samples exceed 400 organisms/100 mL for any 30-day period* REC-2 *Fecal coliform: average less than 2000 organisms/100 mL and not more than 10% of samples exceed 4000 organisms/100 mL for any 30-day period*
CHLORINE, RESIDUAL Wastewater disinfection with chlorine usually produces a chlorine residual. Chlorine and its reaction products are toxic to aquatic life.	*To protect aquatic life, the chlorine residual in wastewater discharged to inland surface waters shall not exceed 0.1 mg/L*
NITRATE High nitrate concentrations in domestic water supplies can be toxic to human life. Infants are particularly susceptible and may develop methemoglobinemia (blue baby syndrome). The primary drinking water standard for nitrate (as NO3) is 45 mg/L or 10 mg/L (as N) in inland surface waters designated MUN as a result of controllable water quality factors.	*Nitrate-nitrogen concentrations shall not exceed 45 mg/L (as NO_) or 10 mg/L (as N) in inland surface waters designated MUN as a result of controllable water quality factors.*
OIL AND GREASE Oil and grease can be present in water as a result of the discharge of treated wastes and the accidental or intentional dumping of wastes into sinks and storm drains. Oils and related materials have a high surface	*Waste discharges shall not result in deposition of oil, grease, wax, or other material in concentrations which result in a visible film or in coating objects in the water, or which cause a nuisance or adversely affect beneficial uses*

DESCRIPTION	NARRATIVE OBJECTIVE
tension and are not soluble in water, therefore forming a film on the water's surface. This film can result in nuisance conditions because of odors and visual impacts. Oil and grease can coat birds and aquatic organisms, adversely affecting respiration and/or thermoregulation.	
SOLIDS, SUSPENDED AND SETTABLE Settleable solids are deleterious to benthic organisms and may cause anaerobic conditions to form. Suspended solids can clog fish gill and interfere with respiration in aquatic fauna. They also screen out light, hindering photosynthesis and normal aquatic plant growth and development.	*Inland surface waters shall not contain suspended or settleable solids in amounts which cause a nuisance or adversely affect beneficial uses as a result of controllable water quality factors*
Source: California Regional Water Quality Control Board, Santa Ana Region, *Water Quality Control Plan Santa Ana River Basin*, 1995, Chapter 4, pages 4-9 through 4-18.	

Table 3.9-5, Applicable Narrative Groundwater Quality Objectives

DESCRIPTION	NARRATIVE OBJECTIVE
ARSENIC	*Arsenic concentrations shall not exceed 0.05 mg/L in groundwater designated MUN as a result of controllable water quality factors.*
BACTERIA, COLIFORM Fecal bacteria are part of the intestinal flora of warm-blooded animals. The presence in groundwater is an indicator of pollution. Total coliform is measured in terms of the number of coliform organisms per unit volume. Total coliform numbers can include non-fecal bacteria, so additional testing is often done to confirm the presence and numbers of fecal coliform bacteria. Water quality objectives for numbers of total fecal coliform vary with the uses of the water.	*Total coliform numbers shall not exceed 2.2 organism/100 mL median over any seven-day period in groundwaters designated MUN as a result of controllable water quality factors.*
HARDNESS (as $CaCO_3$) The major detrimental effect of hardness is economic. Any concentration (reported as mg/L $CaCO_3$) greater than 100mg/L results in the increased use of soap, scale buildup in utensils in domestic uses, and in plumbing. Hardness in industrial cooling waters is generally objectionable above 50 mg/L.	*The hardness of receiving waters used for municipal supply (MUN) shall not be increased as a result of waste discharges to levels that adversely affect beneficial uses.*

DESCRIPTION	NARRATIVE OBJECTIVE
OIL AND GREASE Oil and grease can be present in water as a result of the discharge of treated wastes and the accidental or intentional dumping of wastes into sinks and storm drains. Oils and related materials have a high surface tension and are not soluble in water, therefore forming a film on the water's surface. This film can result in nuisance conditions because of odors and visual impacts.	*Waste discharges shall not result in deposition of oil, grease, wax or other materials in concentrations which cause a nuisance or adversely affect beneficial uses.*
SULFATE Excessive sulfate, particularly magnesium sulfate ($MgSO_4$) in potable waters can lead to laxative effects, but this effect is temporary. There is some taste effect from magnesium sulfate in the range of 400-600mg/L as MgSO4. The secondary drinking water standard for sulfate is 500mg/L (CCR, Division 4, Chapter 15, Article 16, §64449). Sulfate concentrations in waters native to this region are normally low, less than 40mg/L, but imported Colorado River water contains approximately 300mg/L of sulfate.	*Sulfate concentrations shall not exceed 500 mg/L in groundwaters of the region designated MUN as a result of controllable water quality factors.*
TASTE AND ODOR Undesirable tastes and odors in water may be a nuisance and may indicate the presence of a pollutant(s). The secondary drinking water standard for odor (threshold) is 3 odor units.	*The groundwaters of the region shall not contain, as a result of controllable water quality factors, taste- or odor-producing substances at concentrations which cause a nuisance or adversely affect beneficial uses.*
Source: California Regional Water Quality Control Board, Santa Ana Region, *Water Quality Control Plan Santa Ana River Basin*, 1995, Chapter 4, pages 4-18 through 4-23.	

The implementation of the GPU would result in increased vehicle traffic on roads within the City and SOI, which is a substantial source of non–point source contaminant loads in water. Heavy metals are found in streets and dirt, which are assumed to be a principal source of heavy metals in urban stormwater runoff in heavily developed areas. Streets and parking areas also supply substantial loads in runoff of hydrocarbons from leaks of vehicle lubricants and fuels. The patterns of vehicle traffic throughout the City are the basis for widespread contaminant dispersion on roadways. With the exception of those removed by street cleaning, all of the City roads surface contaminants become captured in stormwater runoff discharged into the creeks and Lake Elsinore.

Impacts on surface water quality also affect groundwater quality because groundwater is recharged through percolation in the watercourses and in exposed soils. Contaminated runoff flows into the storm drains and eventually into the watercourses where it percolates into the groundwater. Because the City has a large amount of vacant land, it is likely that substantial

changes in existing recharge systems or pathways of contamination would occur from development under the GPU. However, the following policies are aimed at reducing or minimizing the pollutant loads that ultimately travel to local and regional waterways.

Water Resources Policies 4.1, and 4.2 require development projects to obtain an NPDES permit and implementing BMPs is an effective way to reduce the amount of pollutants being discharged into the drainage system. Biological Resources Policies 1.1 through 1.4 call for implementation of the MSHCP to preserve wetlands and natural drainages which drain into Lake Elsinore, such as the waterways of the San Jacinto River. In addition, project level assessment must be prepared for any future development for hydrology or groundwater and surface water quality impacts.

Groundwater subbasin boundaries are included in the RWQCB Basin Plan. The latest subbasin boundaries were determined as a part of a 2004 update of the Basin Plan. The Groundwater subbasins, now referred to as Groundwater Management Zones (GMZ), located within the City of Elsinore and the surrounding areas are shown in **Figure 3.9-2, Groundwater Management Zones**. As shown in the Figure, the Elsinore GMZ surrounds the Lake and the Warm Springs Valley GMZ extends within the northern portion of the City. The GMZ boundaries were defined on the basis of (1) separation by impervious rock formations or other groundwater barriers; (2) distinct flow systems defined consistent hydraulic gradients that prevent widespread intermixing; and (3) distinct differences in water quality.

Beneficial uses have been identified by the RWQCB for the Elsinore GMZ. Beneficial uses identified in **Table 3.9-2**, above, include Municipal, Agriculture and Industrial Process Supply. Groundwater quality objectives for GMZ's have also been identified by the RWQCB. Water quality objectives for TDS and Nitrogen levels for the Elsinore GMZ are identified in **Table 3.9-3** and **Table 3.9-5**, above.

Groundwater quality management is considered as a part of the General Plan policies. As noted in Water Resources Policy 4.1, the policy of the City is to develop clean water systems to reduce pollutants being discharged into the drainage system to the maximum extent feasible and meet required federal NPDES requirements. As discussed in Water Resources Policy 4.3, the City will also take into account impacts to beneficial uses during environmental review of development projects. With implementation of the policies of the General Plan, future projects will be required by the City to address degradation of surface and groundwater hydrology and incorporate measures necessary to minimize impacts to water courses and receiving waters to the extent required by Federal NPDES requirements and that required by the Open Space and Biological Resources preservation policies of the General Plan.

Development consistent with the GPU could result in increased non-point source and point source contamination from common urban sources, construction activity, and vehicle use. This pollution could have a potentially significant impact on surface and groundwater quality.

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SOURCES: CITY OF LAKE ELSINORE, ESRI

CITY OF LAKE ELSINORE
DREAM EXTREME

CITY OF LAKE ELSINORE
GROUNDWATER MANAGEMENT ZONES
FIGURE 3.9-2

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Effects of Erosion on Water Quality

The GPU proposed an increased amount of development on currently vacant land as well as increased development on hillsides (see Figure 3.3-8, Percent Slope, and Figure 2.0-4, Land Use Plan). This development would potentially result in altered drainage patterns. Because of the nature of the topography of the City, there is a potential for increased erosion due to altered drainage patterns through development of these areas. Therefore, implementation of the GPU would result in a potentially significant erosion impact. Water Resources Policies 4.1 and 4.3 help mitigate erosion impacts on water quality through requiring compliance with NPDES permits and BMPs during construction and operation of new development.

Stormwater Drainage Systems and Facilities

Development consistent with the GPU will result in the conversion of vacant land into developed land. Implementation of the proposed project will add impervious surfaces as a percentage of that portion of the project area that is developed in accordance with the proposed Land Use Plan. By increasing the percentage of impervious surfaces on the site, less water will percolate into the ground and more surface runoff will be generated. This additional surface runoff will be collected by local and regional drainage facilities.

Storm drains located within the City limits are maintained by the City as well as by the Riverside County Flood Control and Water Conservation District. Storm runoff within the City is generally intercepted by a network of City facilities and then conveyed into regional facilities. A portion of the City and its SOI are located within the Riverside County Flood Control District's Sedco and West Elsinore Master Drainage Plans (MDP). Additionally, the Riverside County Flood Control and Water Conservation District is currently developing a new Lakeland Village MDP which, when completed, plan for drainage facilities within an additional portion of the project area. When fully implemented, the facilities proposed in the MDPs would relieve the most serious flooding problems and would provide adequate drainage outlets. Compliance with LEMC, Chapter 16.34 (Required Improvements) and Chapter 16.72 (Drainage District Fees) will assure that future development pursuant to the proposed Land Use Plan will have adequate storm water drainage facilities to address future runoff. Therefore potential impacts upon the capacity of stormwater drainage facilities will be less than significant.

Inasmuch as the potential impacts associated with the construction of individual drainage facilities as shown on the MDPs cannot be quantified without knowing the specifics regarding individual projects in terms of scale, duration and timing any determination as to potential impacts at any point in the future would be speculative and cannot be accurately determined as part of this PEIR. However, analysis of the potential impacts associated with individual drainage facility construction projects will be undertaken pursuant to CEQA at such time as funding sources are identified and project design proceeds.

District Plans

Although the District Plans do not specifically address hydrology and water quality, there are some districts that will have significant impacts on hydrology/water quality with buildout of the GPU land use plan as a result of topography or incompatible land uses. These issues are listed in **Table 3.9-6, Districts with Significant Impacts on Hydrology/Water Quality with Buildout of the GPU Land Use Plan**. See **Figure 3.9-1, Hydrologic Resources**, for the location of water bodies within the City and SOI and **Figure 3.3-8, Percent S**lope, for the topography of area. The following goals and policies of the GPU pertain to these impacts: Flooding and Floodplains Policies 5.1 and 5.2, Biological Resources Policies 1.1–1.8 and 2.2, and Water Resources Policies 4.1 -4.4, as previously discussed in this section.

Table 3.9-6, Districts with Significant Impacts on Hydrology/Water Quality with Buildout of the GPU Land Use Plan

DISTRICT PLANS	HYDROLOGY/WATER QUALITY IMPACTS
East Lake	100-year floodplain of Lake Elsinore and San Jacinto River. Development in proximity to the creek associated with San Jacinto River thereby increasing the extent of impervious surfaces and water quality issues from increased runoff.
Historic	100-year floodplain of Temescal Wash. Development in proximity to Temescal Wash thereby increasing the extent of impervious surfaces and water quality issues from increased runoff. Possible alteration of wash/drainage due to grading.
Riverview	100-year floodplain of Lake Elsinore and San Jacinto River. Development proposed in proximity to San Jacinto River thereby increasing the extent of impervious surfaces and water quality issues from increased runoff.
Ballpark	100-year floodplain of Lake Elsinore and San Jacinto River. Development proposed in proximity to San Jacinto River thereby increasing the extent of impervious surfaces and water quality issues from increased runoff. Possible alteration of drainage due to grading.
Lake Elsinore Hills	Proposed development in proximity to San Jacinto River and small-unnamed creeks thereby increasing the extent of impervious surfaces and water quality issues from increased runoff. Proposed development on slopes and hillsides. Possible alteration of wash/drainage due to grading.
North Peak	None
North Central Sphere	Proposed development on slopes and hillsides. Possible alteration of wash/drainage due to grading.

DISTRICT PLANS	HYDROLOGY/WATER QUALITY IMPACTS
Alberhill	Residential development proposed in proximity of Temescal Wash and several of its tributaries thereby increasing the extent of impervious surfaces and water quality issues from increased runoff. Possible alteration of wash/drainage due to grading.
North West Sphere	Proposed development on slopes and hillsides. 100-year floodplain of Temescal Wash. Possible alteration of wash/drainage due to grading.
Lake View	Proposed development on slopes. 100-year floodplain of Leach Canyon creeks and drainages. Possible alteration of wash/drainage due to grading.
Lake View Sphere	Proposed development on slopes and hillsides. Proposed development in proximity to unnamed drainages of Leach Canyon and Ortega Canyon thereby increasing the extent of impervious surfaces and water quality issues from increased runoff. Possible alteration of wash/drainage due to grading.
Lake Edge	100-year floodplain of Lake Elsinore. Development in proximity of Leach Canyon thereby increasing the extent of impervious surfaces and water quality issues from increased runoff. Possible alteration of wash/drainage due to grading.
Lakeland Village	Proposed development on slopes and hillsides. Development in proximity to unnamed drainages thereby increasing the extent of impervious surfaces and water quality issues from increased runoff. Possible alteration of wash/drainage due to grading.
Business	100-year floodplain of Temescal Wash. Proposed development in proximity to Temescal Wash thereby increasing the extent of impervious surfaces and water quality issues from increased runoff. Possible alteration of wash/drainage due to grading.
Country Club Heights	100-year floodplain of Temescal Wash. Proposed development in proximity to Temescal Wash thereby increasing the extent of impervious surfaces and water quality issues from increased runoff. Possible alteration of wash/drainage due to grading.

DISTRICT PLANS	HYDROLOGY/WATER QUALITY IMPACTS
Meadowbrook Sphere	Proposed development on slopes and hillsides. Proposed development in proximity to unnamed creeks/drainages thereby increasing the extent of impervious surfaces and water quality issues from increased runoff. Possible alteration of wash/drainage due to grading.

3rd Street Annexation

An unnamed stream flows from the north towards Temescal Wash along the border of the 3rd Street Annexation parcel. In addition, riparian vegetation was identified in the southern end of the parcel. Near the stream flowing from the north, the proposed land use designation is residential and business professional. Any grading that would occur in this area would potentially impact natural drainages. In addition, increased development will result in increased impervious surfaces in proximity to this drainage area resulting in potentially significant impacts on water quality flowing into Temescal Wash and ultimately Lake Elsinore.

Biological Resources Policies 1.1–1.4 require the City to adhere to MSHCP policies and encourage barriers between development and MSHCP Conservation Areas. These policies protect the water and hydrology of the San Jacinto River, which is proposed to have a buffer of open space and floodway designation. In addition, Policy 2.2 discourages development in riparian areas, which will help protect the natural drainages from alteration. Water Resources Policies 4.1, 4.2 and 4.3 require treating degraded water and stormwater, compliance with NPDES requirements and implementation of BMPs is an effective way to reduce pollutants being discharged into the drainage system. Project-level assessments must be prepared for any future development for hydrology or groundwater and surface water quality impacts.

Mitigation Measures

MM Hydrology 1: The following goals and policies of the GPU must be implemented as a part of future development to mitigate potential impacts associated with 1) alteration of drainage patterns and associated erosion; 2) development within the 100 year floodplain and 3) water quality:

- Flooding and Floodplains Policies 5.1–5.2
- Water Resources Policies 4.1–4.4
- Biological Resources Policies 1.1–1.8 and 2.1–2.2

Level of Significance

Development consistent with the GPU could result in increased non-point source and point source contamination from common urban sources, construction activity, and vehicle use. This pollution could have a potentially significant impact on surface and groundwater quality.

However, compliance with the goals, policies and implementation programs of the proposed project and implementation of mitigation measure MM Hydrology 1 will reduce potential impacts to less-than-significant-levels.

Threshold: Would the project 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 substantial erosion or siltation on- or off-site.

Analysis

Figure 3.9-1 shows the hydrologic resources throughout the City and SOI, as well as the 100-year floodplain surrounding the rivers, creeks, and lake. A comparison of **Figure 2.0-4, Land Use Plan**, and **Figure 3.9-1, Hydrologic Resources**, shows that the hydrology of the San Jacinto River would not be altered due to the floodway and open space buffer between the river and adjacent proposed residential development. Much of Temescal Wash also has a floodway and open space buffer from residential, commercial, and industrial development. However, where the wash follows I-15 in the northern part of the city through parts of Alberhill District and Northwest Sphere there is no open space buffer. The corridor in this area is proposed to be built out with additional commercial, industrial, and residential development and would result in a significant impact on the hydrology of Temescal Wash due to grading. As seen in **Figure 3.9-1**, there are a large number of blue line streams in the vicinity. In every district, residential and/or commercial development is proposed where these streams and drainage areas are to be found. Therefore, grading for increased development throughout the City and SOI would alter the drainage patterns within any of these streams. Alteration of drainage patterns would result in substantial erosion within the City. Impacts on drainage patterns within the City and SOI can be mitigated by goals and policies of the GPU. The following goals and policies for biological resources, open space, and water quality address the hydrologic resources issues. Biological Resources Policies 1.1–1.4 require the City to adhere to MSHCP policies and encourage barriers between development and areas described for conservation as a part of the MSHCP. These policies protect the water and hydrology of the San Jacinto River, which is proposed to have a buffer of open space and MSHCP land. In addition, Policy 2.2 discourages development in riparian areas, which will help protect the natural drainages from alteration.

Development consistent with the GPU could result in altered drainage patterns, significantly increasing the potential for erosion throughout the City, especially where hillsides are developed with residential uses.

Mitigation Measures

Same as mitigation measure MM Hydrology 1, above:

Level of Significance

Development consistent with the GPU could result in altered drainage patterns, significantly increasing the potential for erosion throughout the City, especially where hillsides are developed with residential uses. However, compliance with the goals, policies and

implementation programs of the proposed project and implementation of mitigation measure MM Hydrology 1 will reduce potential impacts to less-than-significant-levels.

Threshold: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

Threshold: Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows.

Analysis

Portions of future development consistent with the GPU would be subject to 100-year flooding within the City. A comparison of **Figures 3.9-1, Hydrologic Resources**, and **2.0-4, Land Use Plan**, shows that there are several areas designated for urban development that would extend within the 100-year floodplain. Development within the 100-year floodplain would be a potentially significant impact. However, the following GPU policies avoid exposing people or property to flooding: Flooding and Floodplains Policies 5.1–5.2. These policies require new development to be constructed above the 100-year base flood elevation, in conformance with all applicable provisions of the National Flood Insurance Program and that the City utilize the Capital Improvement Program for storm drainage projects and maintenance and improvement of local storm drain systems including channels, pipes, and inlets to ensure capacity for maximum runoff flows. Flooding hazards are required to be evaluated during the environmental review process, including restricting development within designated floodplain areas in accordance with FEMA floodplain zoning recommendations and requirements. Future development will be subject to floodplain policies as well as local and federal regulations.

Increased development throughout the City and SOI would potentially result in significant alteration of the drainage patterns by altering or extending grading within any of these streams. Any development within the 100-year floodplain would be subject to potentially significant flooding impacts.

Mitigation Measures

Same as mitigation measure MM Hydrology 1, above:

Level of Significance

Increased development throughout the City and SOI has the potential to result in alteration of drainage patterns and development within the 100-year floodplain. However, compliance with existing regulatory requirements and implementation of mitigation measure MM Hydrology 1 will reduce potential impacts to less-than-significant levels.

Threshold: Would the project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

Threshold: Would the project result in inundation by seiche, tsunami, or mudflow.

Analysis

Inundation from Dam Failure

A dam failure is the partial or complete collapse of an impoundment, with the associated downstream flooding. Flooding of the area below the dam may occur as the result of structural failure of the dam, overtopping, or a seiche. Dam failures are caused by natural and manmade conditions. This list of causes includes earthquakes, erosion of the face or foundation, improper siting, structural/design flaws, and prolonged rainfall and flooding. The primary danger associated with dam failure is the swift, unpredictable flooding of those areas immediately downstream of the dam.

The Elsinore Area Plan of the Riverside General Plan, shows that a portion of the City of Lake Elsinore is located within the high inundation zone of the Railroad Canyon Dam, which is located northwesterly of the City and its SOI in the city of Canyon Lake. Railroad Canyon Dam in 94 feet high and was constructed in 1928. Its storage capacity is approximately 11,500 acre-feet of water. If a catastrophic failure were to occur at the dam, the 11,500 acre-feet of water would flow into the San Jacinto River and Lake Elsinore, flooding that portion of the City generally located southwest of Lakeshore Drive, southeast of Riverside Drive (SR-74), northeast of Grand Avenue and northwest of Corydon Street. The extent of the dam inundation zone in corresponds with the boundary of the 100-year floodplain for both Lake Elsinore and San Jacinto River shown in **Figure 3.9-1**.

According to the 1991 Dam Break Analysis for Railroad Canyon Dam, the surface elevation of Lake Elsinore varies between 1,240 and 1,260 feet above mean sea level (AMSL). The available storage created by this 20-foot difference in water surface elevation is approximately 95,000 acre-feet, which is more than sufficient to accommodate the 12,000 acre-feet stored in Railroad Canyon Dam should a failure occur. During a worst-case scenario (catastrophic failure of the dam), if 12,000 acre-feet of water were discharged into the lake when it is at its highest level of 1,260 feet AMSL with no discharge out of the lake and no discharge into the back basin, the water surface would reach 1263.4 feet AMSL.

Implementation of the proposed Land Use Plan will result in the increase in the number of persons residing and the amount of construction within the high inundation zone of the Railroad Canyon Dam. Although failure of the Railroad Canyon Dam is an extremely unlikely event, portions of the City would be subject to flooding possibly necessitating evacuation of the area. Such emergency evacuations could preclude injury and loss of life, but not property damage. As described in more detail in Section 3.10 (Hazards and Hazardous Materials) of this PEIR, the proposed GPU will not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. The feasibility of evacuation

and the improbability of dam failure support the conclusion that impacts associated with potential dam failure will be less than significant.

Inundation by Seiche, Tsunami or Mudflow

Seiches are periodic oscillations of water in confined basins, typically caused by earthquakes. There is the potential for a seiche to occur in Lake Elsinore during an earthquake, although it would take a geologically substantial earthquake to cause a seiche. Seiche potential is highest in large, deep, steep-sided reservoirs or water bodies. Lake Elsinore lacks significant potential for a damaging seiche because it is very shallow, and because of flood control devices constructed by the U.S. Army Corps of Engineers including the berm fill at the southern end of the lake. Additionally, implemented flood control devices lower the potential for a seiche to occur. Therefore, a less than significant impact is anticipated.

The potential for the occurrence of a tsunami is similarly very low because the Pacific Ocean is the closest tsunami-producing open body of water and is located approximately 25 miles from the Specific Plan site; therefore, no impact from tsunami is anticipated.

A mudflow or debris flow is a mixture of soil, rock and/other other materials overlying bedrock with water or air. Whether this material will flow downhill depends upon numerous factors, including soil depth and composition, the kind of vegetation, the size and variety of tree roots, subtle variations in slope shape, the existing of road cuts or drainage pipes, incongruities in underlying bedrock and even the presence of animal burrows. Fine-grained sedimentary rocks are the most susceptible to debris flows. Typically, debris flows occur when a long saturation period is followed by intense bursts of rain, concentrated in just a few hours or days. Water, often traveling beneath the surface from miles away, fills the pores (spaces) in surface materials but not in bedrock or clay, which have far fewer pores and are less permeable. This creates a saturated zone in the surface material. As water fills the pores between solid particles, it increase pore pressure and decreases the friction that holds material to a slope. As some point, gravity causes the mass to break loose and slide along the less permeable surface below. Debris flows, like rockfalls, occur rapidly and without warning. The areas most at risk from debris flows include:

- Canyon bottoms, stream channels, and areas near the outlets of canyons or channels.
- Downslope from swales (depressions). Debris flows commonly begin in swales on steep slopes.
- Road cuts and other altered or excavated areas of slopes. Debris flows and other mass wasting events onto roadways are common during rainstorms, and often occur during milder rainfall conditions than those needed for debris flows on natural slopes.
- Places where surface runoff of water is channelized, such as along roadways and below culverts.

Damaging debris flows also can and often occur on slopes that were recently burned during wildfires due to changes in soil characteristics resulting from intense heat and because there are few roots holding down the soil and the surface is covered with ash and other debris.

Implementation of the proposed Land Use Plan will result in the increase in the number of persons residing and the amount of construction within areas that have the potential for mudflows/debris flows. The proposed GPU will not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Such emergency evacuations could preclude injury and loss of life, but not property damage. The feasibility of evacuation and the improbability of dam failure support the conclusion that the potential for injury from mudflows/debris flows will be less than significant.

Mitigation Measures

No mitigation is required.

Level of Significance

The potential of the proposed project to expose people or structures to a significant risk of loss, injury, or death due to dam failure, seiche, tsunami, or mudflow is less than significant.

3.9.7 LEVEL OF SIGNIFICANCE AFTER MITIGATION

With implementation of GPU goals and policies, any potential impacts would be mitigated to a less-than-significant level.

3.9.8 REFERENCES

In addition to other reference documents, the following references were used in the preparation of this section of the EIR:

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Metropolitan Water District of Southern California, *A Status Report on the Use of Groundwater in the Service Area of the Metropolitan Water District of Southern California*, Report Number 1308, September 2007. (Available at http://www.mwdh2o.com/mwdh2o/pages/yourwater/supply/groundwater/GWAS.html; accessed on August 16, 2011.)

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State Water Resources Control Board, *Order No. 99-08 – DWQ National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002*. (SWRCB) (Available at www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/wqo99.shtml, accessed on August 15, 2011.)

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