5.8 Hydrology and Water Quality

5.8.1 Introduction

Information and recommendations presented in this section were taken from the original East Lake Specific Plan Environmental Impact Report (EIR) [State Clearinghouse No. 92092027] (Draft Supplemental Environmental Impact Report, Eastlake Specific Plan No. 93-3 I Amendment No. 8), and where appropriate, updated and/or augmented with information provided in the City's General Plan Update Program EIR and General Plan that are herein incorporated by reference. These base documents were utilized to analyze the proposed Project land use changes and backbone infrastructure improvements in the Infrastructure Improvements Areas (IIAs) at a programmatic level. Future development proposed as part of a future implementing development project would require additional analysis for consistency with the findings and determinations made in this EIR and may require additional project-level CEQA review, consistent with ELSPA No. 11 Section 10.7.

5.8.2 Environmental Setting

Hydrology

The Project site lies within the San Jacinto River watershed that encompasses approximately 765 square miles within western Riverside County. The watershed originates in the San Jacinto Mountains, drains westerly into Canyon Lake and terminates in the Lake (Lake Elsinore). The watershed elevation varies from over 10,000 feet at its eastern boundary to approximately 1,240 feet at the Lake (Lake Elsinore). Precipitation varies significantly across the watershed.

The San Jacinto River is a major tributary of the Lake (Lake Elsinore). Since construction of Railroad Canyon Dam, river flow has been regulated and is minor to nonexistent most of the year. The projected 100-year flow is completely contained within the existing river channel between the dam and Interstate 15 (I-15). With the improvement of the channel-type inlet to the Lake Management Project (discussed below), the 100-year San Jacinto River flow between Lakeshore Drive Bridge and the I-15 is also contained completely within the channel.

Lake Elsinore Lake Management Project

Throughout its history, the Lake (Lake Elsinore) has been subject to flooding or drying, depending on runoff amounts. The Lake Elsinore Lake Management Project, completed in 1995, was designed to ease extreme flooding and evaporation loss in the Lake (Lake Elsinore). Features of the Lake Management Project are shown in Figure 5.8-1 Lake Management Features. The main feature is a 17,800 foot-long, rolled-earth fill levee. Other improvements include an operations island, wells, overflow weir, lake-type inlet channel, and wetlands habitat. As shown, during normal operation, natural runoff from the San Jacinto River reaches the lake-type inlet and water circulates between the Lake (Lake Elsinore) and wetlands through a 48-inch gated conduit in the levee. For flood conditions, an overflow weir will divert water above an elevation of 1,262 feet from the lake inlet into the Back Basin for temporary storage.

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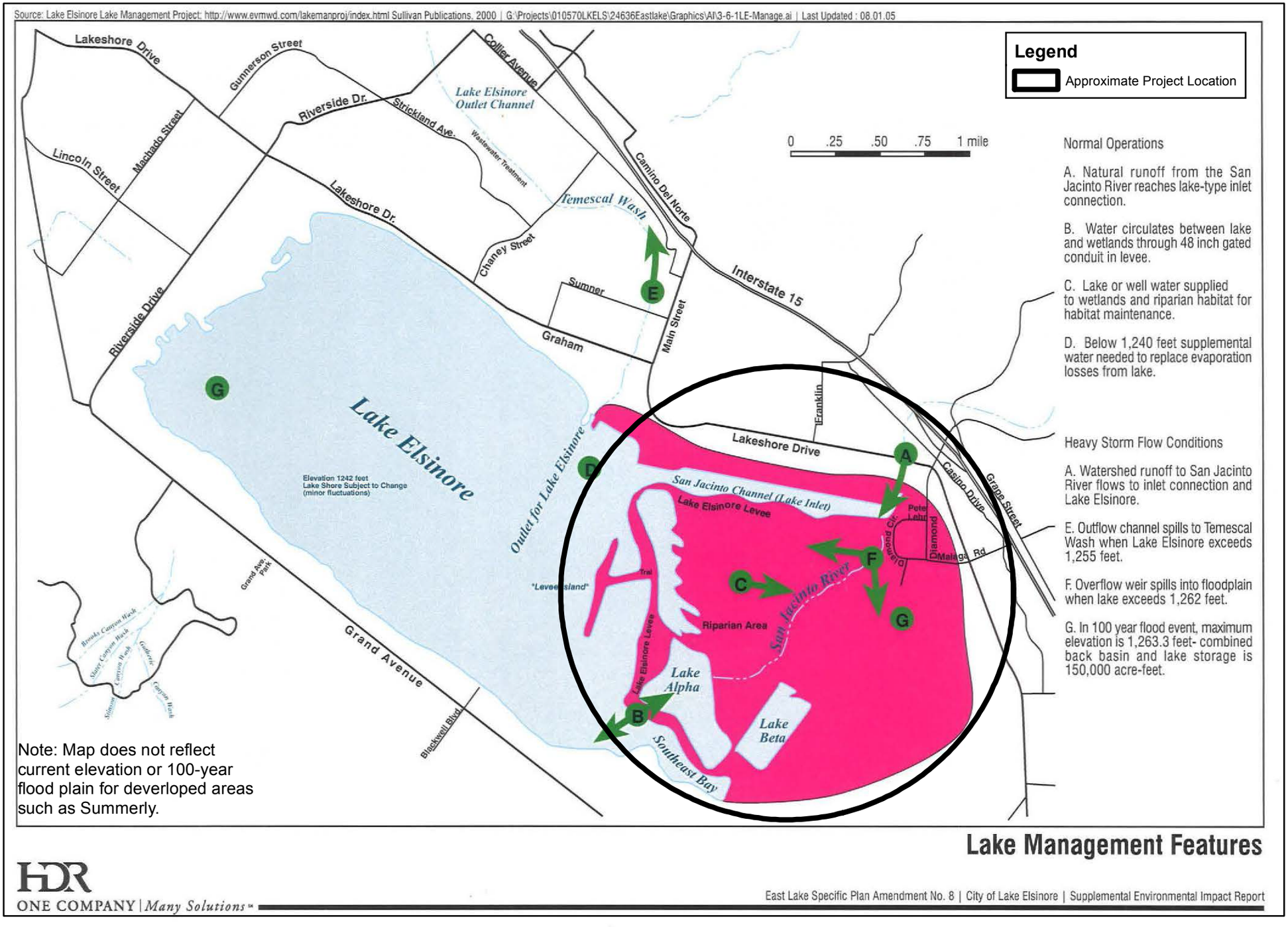

Source: Figure 3.6-1, City of Lake Elsinore ELSPA No. 8 Supplemental EIR

Lake Mangement Features, Figure 5.8-1

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Flood protection is currently controlled by regulations and conditions of existing permits issued by the U.S. Army Corps of Engineers (USACE), the Riverside County Flood Control and Water Conservation District, and the City. The flood level was lowered to 1263.3 feet as a result of the implementation of the Lake Management Plan. Under the USACE Lake Management 404 Permit (No. 88-00215-RRS), development projects within the Back Basin of the Lake (Lake Elsinore) at elevations of 1,260 feet or below must demonstrate that such development does not adversely impact flood storage capacity. Existing permits also require that the project grading plans demonstrate that hydrology is sustained to maintain an existing, offsite 356-acre wetland area in the Back Basin.

The Project site is subject to drainage flows from areas offsite. The principal developed area which is tributary to the Project site is the Sedco area. The Sedco Master Drainage Plan include six storm drain facilities into the East Lake development area. These outlets are located at Sylvester Street, Elberta Road, Sedco Boulevard, 400 feet southwest of the intersection of Mission Trail and Corydon, and 2,~~-~~800 feet southwest of the intersection of Mission Trail and Corydon and "Line D" at Vine Street.

Water Quality

Regionally, the proposed Project lies within the basin of the Santa Ana River that is comprised of several tributary watersheds including the Upper and Lower Santa Ana River Watersheds and the San Jacinto River Watershed (Figure 5.8-2 Hydrologic Resources). Also within the San Jacinto River Watershed, 16 groundwater subbasins have been identified by the Regional Water Quality Control Board (RWQCB, 1984). The Project site lies within the Elsinore groundwater subbasin (Figure 5.8-3 Groundwater Management Zones).

The Federal Clean Water Act (CWA) requires that a list (Section 303(d) list) of water quality limited segments be developed to identify those water bodies that do not meet water quality standards even after point sources of pollution have installed the minimum required levels of pollution control technology. The Lake, which includes the San Jacinto River inlet channel, was identified on the list as impaired for the following pollutants:

- Nutrients – Unknown Nonpoint Source;
- Organic Enrichment/Low Dissolved Oxygen – Unknown Nonpoint Source;
- PCBs (Polychlorinated biphenyls) – Source Unknown;
- Sediment Toxicity – Source Unknown; and
- Unknown Toxicity – Source Unknown.

The City of Lake Elsinore lists the following potential sources of these pollutants:

- discharges from wastewater treatment facilities;
- runoff from homes, forested lands, agriculture, and streets or highways;
- contaminated soils/sediments, legacy contaminants such as DDT and PCBs;
- on-site septic systems; and deposits from the air.

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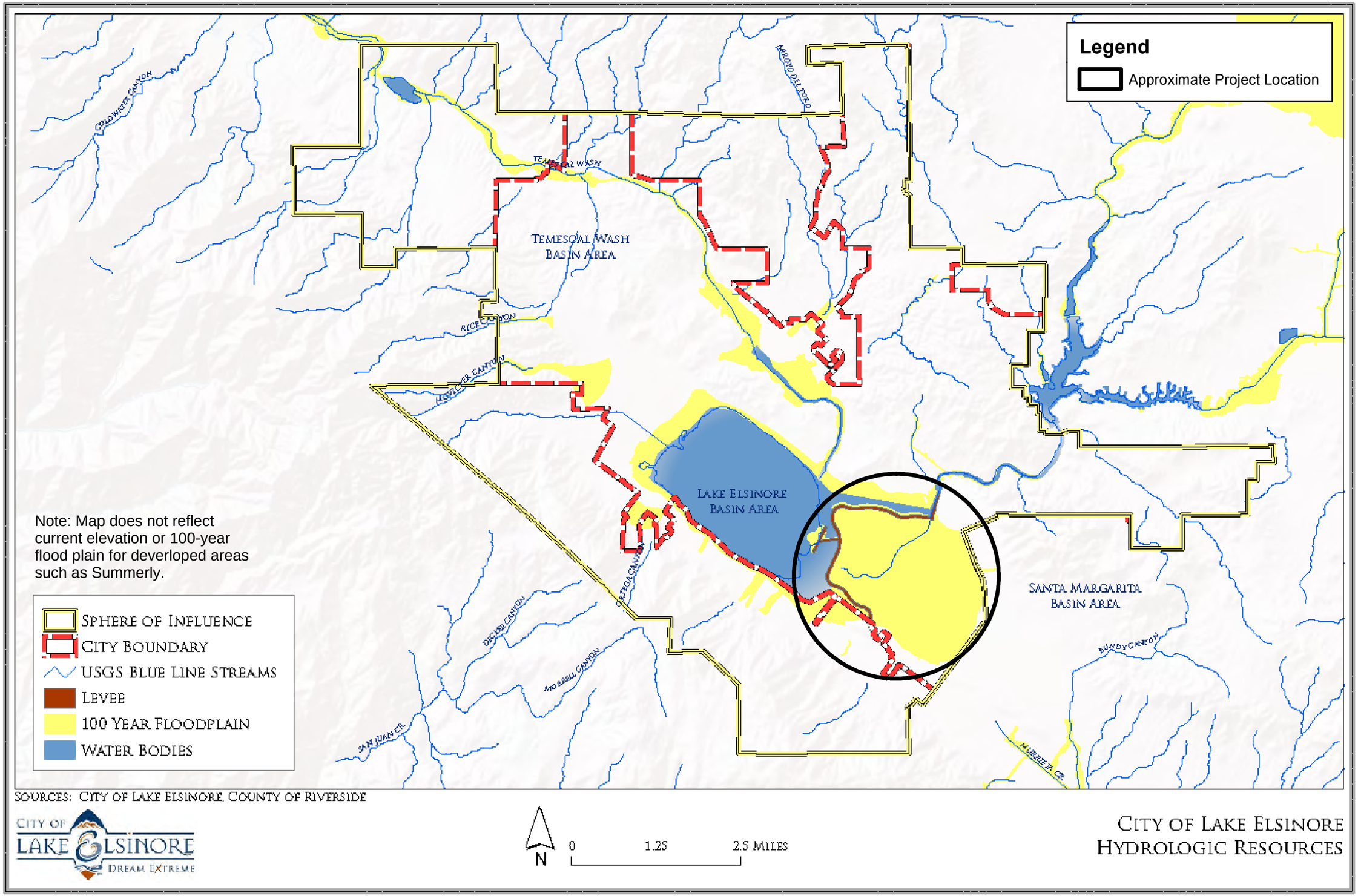

Source: Figure 3.9-1, City of Lake Elsinore General Plan EIR

Hydrologic Resources, Figure 5.8-2

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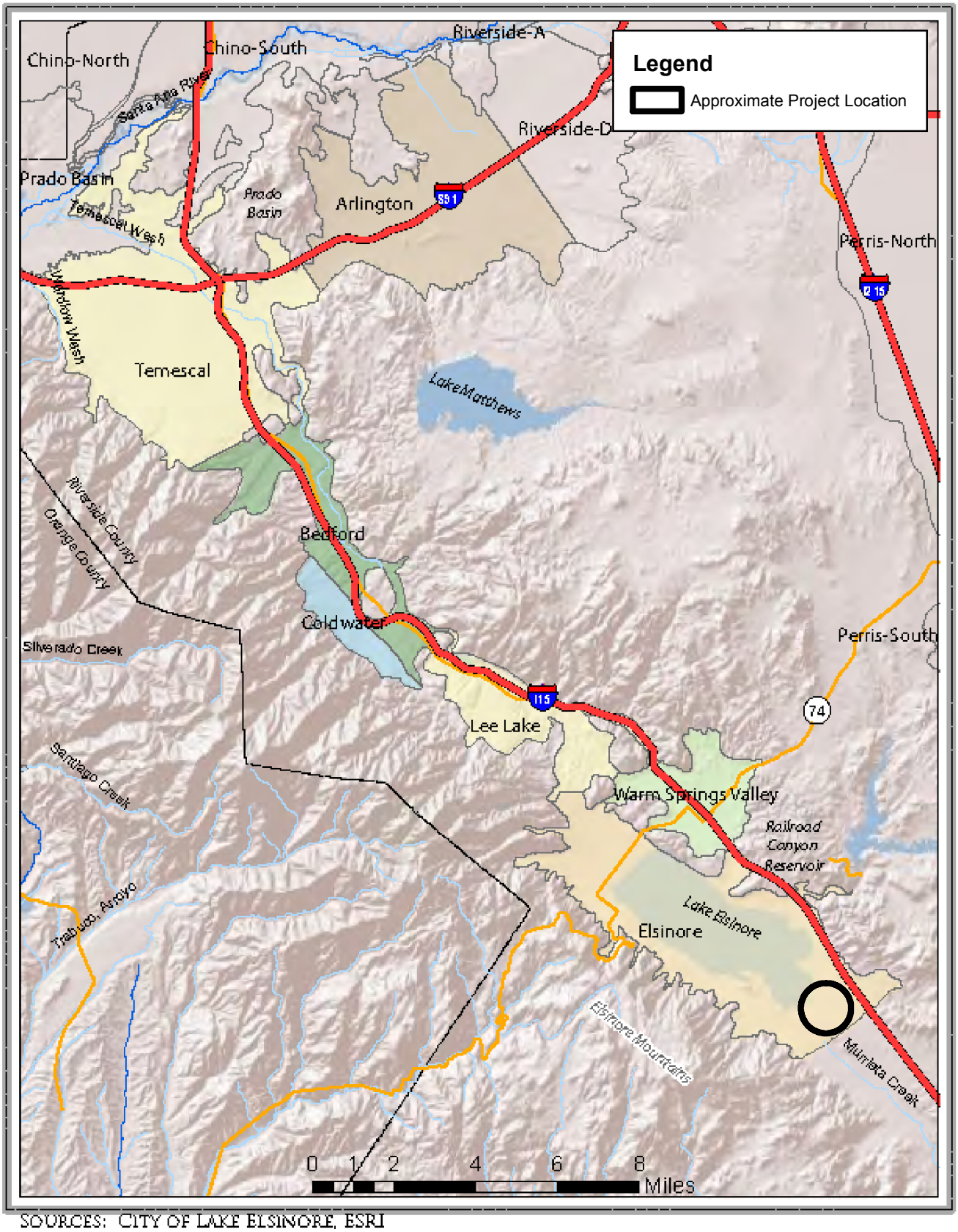

SOURCES: CITY OF LAKE ELSINORE, ESRI

CITY OF LAKE ELSINORE
GROUNDWATER MANAGEMENT ZONES

Source: Figure 3.9-2, City of Lake Elsinore General Plan EIR

Groundwater Management Zones, Figure 5.8-3

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The SARWQCB sets water quality standards for all surface and ground 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. Four (4) of these beneficial uses have been designated for surface water bodies and three (3) for groundwater in the vicinity of the Project site as shown in Table 5.8-1. Relevant listed water quality objectives governing water quality in inland surface waters were evaluated for potential impacts from future implementing development projects of the proposed Project as listed in Table 5.8-2, Table 5.8-3, and Table 5.8-4 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 standard permitting, such that water quality standards are effectively attained.

Table 5.8-1. Beneficial Uses for Water Bodies with in the Project Site

Water Body	Beneficial Uses
~~*Surface Water Body*~~*Lakes and Reservoirs*	
Lake Elsinore	REC1, REC2, WARM, WILD
Inland Surface Streams	
San Jacinto River – Reach 1	MUN, AGR, GWR, REC1, REC2, WARM, WILD
Groundwater Management Zone	
Elsinore	MUN, AGR, PROC
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.
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 (REC2) 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 warm water 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.
Source: Santa Ana Region Basin Plan, Chapter 3, Table 3-1 (February 2016)	

Table 5.8-2. Water Quality Objectives for Water Bodies within the Project Site

Water Quality Objectives (MG/L)	*Surface Water Body*	*Groundwater Management Zone*
	Lake Elsinore[1]	Elsinore
TDS	2000	480
Hardness	--	--
Sodium	--	--
Chloride	--	--
Total Inorganic Nitrogen	1.5	1.0
Sulfate	--	--
Chemical Oxygen Demand	--	--
Source: Santa Ana Region Basin Plan, Chapter 4, Table 4-1 (February 2016) [1] Lake volume and quality highly variable		

Table 5.8-3. 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.	*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 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.	*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.*
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: Santa Ana Region Basin Plan, Chapter 4 (February 2016)	

Table 5.8-4. 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. Their 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 and 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 CaCO3) 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.*
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 (MgSO4) 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: Santa Ana Region Basin Plan, Chapter 4 (February 2016)	

5.8.3 Regulatory Context

The City and all future implementing development projects in the Back Basin 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 the 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 program and development with several agencies, including FEMA, Federal Flood and Insurance Program, Riverside County Flood Control and Water Conservation District, 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.

The poor water quality in the regional area of the City, Riverside County, has been related to inadequate subsurface sewage disposal, waste disposal management of the Santa Ana River watershed, agricultural runoff, sediment from construction-related erosion, and urban stormwater runoff. The California Regional Water Quality Control Board (CRWQCB) regions provide State-level water quality policy for Riverside County. The Federal National Pollutant Discharge Elimination System (NPDES) also serves to minimize adverse effects on water quality.

Federal Regulations

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 sub-sections provide additional details on the specifics of the CWA.

Clean Water Act (CWA) 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 Unites States must obtain certification from the State where 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 may 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.

Clean Water Act (CWA) Section 402(p)

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.

Stormwater Discharge

Municipal Separate Storm Sewer System Permit (MS4)

The City 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 Agency's (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. R8-2010-0033, NPDES NO. CA 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 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); and,
- Basin Plan.

Clean Water Act (CWA) Section 404

CWA Section 404 regulates the discharge of dredged and fill materials into 'Waters of the United States', that include oceans, bays, rivers, streams, lakes, ponds, and wetlands. Project proponents must obtain a permit from the United States Army Corps of Engineers (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 site encompasses wetlands or other 'Waters of the United States' that qualify for CWA protection.

Under the USACE Lake Management 404 Permit (No. 88-00215-RRS), development projects within the Back Basin of the Lake (Lake Elsinore) at elevations of 1,260 feet or below must demonstrate that such development does not adversely impact flood storage capacity. Existing permits also require that the project grading plans demonstrate that hydrology is sustained to maintain an existing, offsite 356-acre wetland area in the Back Basin. Land in the Back Basin below 1246' is considered jurisdictional as "Waters of the U.S." and requires a 404 permit(s) for fill activities.

Clean Water Act (CWA) Section 303(d)

Section 303(d) of the 1972 CWA defines water quality standards as consisting of both the uses of surface waters (beneficial uses) and the water quality criteria applied to protect those uses (water quality objectives). State and regional water quality control boards have been charged with ensuring that beneficial uses and water quality objectives are established for all 'Waters of the State'. 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.

The following beneficial uses have been identified for the Project site, which is within the San Jacinto River Basin and tributary to the Lake (Lake Elsinore):

- *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; however, the Basin Plan indicates the Lake (Lake Elsinore) has been specifically exempted from the MUN designation in accordance with the criteria specified in the "Sources of Drinking Water Policy."
- *Water Contact Recreation (REC1):* Waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible;
- *Non-Contact Water Recreation (REC2):* 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;
- *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.*
- *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.

The Federal CWA further requires that a list of water quality limited segments be developed to identify those water bodies that do not meet water quality standards even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that action plans, referred to as Total Maximum Daily Loads (TMDLs), be developed by regulatory agencies to improve water quality for these limited segments. On October 11, 2011, the USEPA gave final approval to California's 2010 Section 303(d) list of Water Quality Limited Segments and TMDLs priority schedule. The Lake (Lake Elsinore) was identified as impaired for Organic Enrichment/Low Dissolved Oxygen, Polychlorinated biphenyls (PCBs), Sediment Toxicity and Unknown Toxicity. Downstream receiving waters identified as impaired for the following pollutant contributors include: Nutrients, Organic Enrichment/Low Dissolved Oxygen, Polychlorinated biphenyls (PCBs) and Unknown Toxicity.

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 incomplete floodplain development, be consistent with the standards and criteria of the NFIP, and restore and preserve natural and beneficial floodplain values.

State Regulations

California Water Code, Division 7 (Porter-Cologne 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 Project site is within the jurisdiction of the SARWQCB.

California Toxics Rule

The United States Environmental Protection Agency (USEPA) has promulgated numeric water quality criteria for priority criteria toxic pollutants and other provisions for water quality standards to be applied to waters in the State of California. The USEPA promulgated the California Toxics Rule (CTR) based on the 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 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.

CDFW 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 the California Department of Fish and Wildlife (CDFW) 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. In the Back Basin, CDFW asserts jurisdiction of the historic lakebed to elevation 1265'. Projects within this elevation must obtain a Section 1602 Agreement prior to construction.

Local Regulations

Local agencies entrusted with regulation of water resource issues include: The Lake Elsinore and San Jacinto Watershed Authority (LESJWA), the Elsinore Valley Municipal Water District, and, the City.

Lake Elsinore and San Jacinto Watershed 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 known as Proposition 13) and entrusted with State and Federal 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 the Lake (Lake Elsinore). Members of LESJWA include the EVMWD, the cities of Lake Elsinore and Canyon Lake, the County of Riverside, and SAWPA.

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. The Riverside County Flood Control and Water Conservation District is also the co-permittee with the City for the Water Quality Management Plan. The City refers to the County for guidelines and design criteria for water quality BMPs.

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 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 is a sub-agency of the Western Municipal Water District, a member agency of the Metropolitan Water District of Southern California (Metropolitan).

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 residents 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) - Title 15, Chapter 15.64

The purpose of this 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 that are dangerous to health, safety, and property due to water or erosion hazards, or that result in damaging increases in erosion or flood heights or velocities;
- Require that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;
- Control the alteration of natural floodplains, stream channels, and natural protection barriers that help accommodate or channel floodwaters;
- Control filling, grading, dredging, and other development that may increase flood damage; and,
- Prevent or regulate the construction of flood barriers that will unnaturally divert floodwaters or that 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 purpose 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 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 in any drainage district designated in the master plan of drainage that were not previously paid, the developer is required to pay or cause to be paid the established drainage fees (Section 16.72.020).

General Plan

The City of Lake Elsinore General Plan Update addresses Hydrology and Water Quality in Chapter 3.0 - Public Safety and Welfare (Section 3.5 - Flooding and Floodplains) and in Chapter 4.0 - Resources and Preservation (Section 4.4 - Water Resources). A detailed analysis of the proposed Project's consistency with the General Plan related to Hydrology and Water Quality is provided below.

5.8.4 Thresholds of Significance

The following indicate that a project may be deemed to have a significant effect on the environment if the Project is likely to:

Threshold HWQ-A *Violate any water quality standards, waste discharge requirements.*

Threshold HWQ-B *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 HWQ-C *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;*

Threshold HWQ-D *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 HWQ-E *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 HWQ-F *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 HWQ-G *Otherwise substantially degrade water quality.*

Threshold HWQ-H *Place within a 100-year flood hazard area structures that would impede or redirect flood flows.*

Threshold HWQ-I *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 HWQ-J *Result in inundation by seiche, tsunami, or mudflow.*

5.8.5 Evaluation of Potential Impacts

Threshold HWQ-A *Violate any water quality standards, waste discharge requirements.*

Threshold HWQ-C *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 substantial erosion or siltation on- or off-site.*

Threshold HWQ-E *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 HWQ-F *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 HWQ-G *Otherwise substantially degrade water quality.*

Future implementing development projects within the Project site 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 Project site 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, action sports, active recreation and supporting uses typically include 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 the Lake (Lake Elsinore). The increased pollutants carried in runoff into the Lake (Lake Elsinore) is a potentially significant indirect impact, resulting from future implementing development projects and construction of storm water drainage facilities within the Project site, to the designated beneficial uses for surface and ground waters.

Implementation of the proposed Project would also indirectly result in increased vehicle traffic on roads within the Project vicinity, 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, with the exception of those removed by street cleaning.

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 Project site is largely undeveloped, it is likely that changes in existing recharge systems or pathways of contamination would occur from future implementing development projects under the proposed Project; however, due to the geographic proximity of the Project site within the Back Basin and "sink" of the Lake (Lake ~~,~~ these changes are anticipated to be localized to the Lake the latest subbasin boundaries (determined Elsinore), as a part of a 2004 update of the Basin Plan and now referred to as Groundwater Management Zones (GMZ)s). Federal, state and local laws including General Plan polices would be required of all future implementing projects to reduce or minimize the pollutant loads that ultimately travel to the Lake (Lake Elsniore) and Elsinore GMZ.

Per the General Plan, Water Resources Policies 4.1, and 4.2 require development projects to obtain an NPDES permit and implement BMPs to reduce the amount of pollutants being discharged into the drainage system and Biological Resources Policies 1.1 through 1.4 call for implementation of the MSHCP to preserve wetlands and natural drainages. In addition, project level assessment must be prepared for any future development for hydrology or groundwater and surface water quality impacts to ensure runoff is adequately retained and treated for pollutants prior to release into the storm water system. Future implementing development projects under the proposed Project would be required to implement an appropriate combination of BMP methods from those listed below based on proposed actions and requirements as described in their project-specific SWPPP and WQMP.

Construction BMPs

- Erosion control – e.g. scheduling work activities; preservation of vegetation; stabilization paths by applying erosion control blankets, check dams, erosion control seeding or alternate methods;
- Sediment Control – e.g. silt fencing, fiber rolls, street sweeping/vacuuming, sand bag barriers, storm drain inlet protection;
- Tracking Control – e.g. street sweeping and vacuuming, stabilized construction entrance;
- Wind Erosion – e.g. high wind work restrictions, watering, soil stabilizers, covers; and/or
- Waste management and materials pollution – e.g. waste management, material management, stockpiles, vehicle storage and maintenance.

Operational BMPs

- Biofilters – e.g. grass swales, grass strips, wetland vegetation swales, and bioretention;
- Detention Basins – e.g. extended/dry detention basins with grass lining and extended/dry detention basins with impervious lining;
- Infiltration BMPs – e.g. infiltration basins, infiltration trenches, and porous pavements;
- Wet Ponds or Wetlands – e.g. permanent pool wet ponds and constructed wetlands;
- Filtration Systems – e.g. sand filters and media filters;

- Water Quality Inlets – e.g. hydrodynamic devices, baffle boxes, swirl concentrators, or cyclone separators;
- Hydrodynamic Separator Systems – e.g. hydrodynamic devices, baffle boxes, swirl concentrators, or cyclone separators; and/or
- Manufactured or Proprietary Devices – e.g. proprietary stormwater treatment devices as listed in the CASQA Stormwater Best Management Practices Handbooks, other stormwater treatment BMPs not specifically listed in this WQMP, or newly developed/emerging storm water treatment technologies.

Groundwater subbasin boundaries are included in the RWQCB Basin Plan. 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. The Elsinore GMZ surrounds the City and the Project site. The RWQCB identifies three (3) beneficial uses for the Elsinore GMZ as shown in Table 5.8-1, which include Municipal, Agriculture and Industrial Process Supply. Groundwater water quality objectives for TDS and Nitrogen levels for the Elsinore GMZ are identified in Table 5.8-2 and Table 5.8-4, above.

Per the General Plan, Water Resources Policy 4.1 requires the City 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 would be required to account for potential impacts to beneficial uses during environmental review of future implementing development projects within the Project site. With implementation of the policies of the General Plan, future projects would be required by the City to address degradation of surface and groundwater hydrology and incorporate measures necessary to minimize impacts to receiving waters to the extent required by Federal NPDES requirements and those required by the Open Space and Biological Resources preservation policies of the General Plan.

Lastly, potential impacts to the water quality of the Lake (Lake Elsinore) could occur if future lake dredging occurs for purposes of obtaining fill material and/or increasing lake depth. Lake dredging would have the potential to increase sedimentation and/or release toxic materials in the Lake (Lake Elsinore) without proper testing and abatement measures.

In summary, future implementing development projects consistent with the proposed Project could result in increased non-point source and point source contamination. This pollution could have a potentially significant impact on surface and groundwater quality; therefore, mitigation measures **MM HWQ-1** through **MM HWQ-5** are required to ensure future implementing development projects within the Project site is consistent with current Federal, State and local water quality laws and regulations. ***Implementation of these mitigation measures would reduce potential impacts to less than significant levels***.

Impact HWQ- 1 *Future implementing development projects consistent with the proposed Project would result in increased non-point source and point source contamination from common urban sources, construction activity, vehicle use and/or dredging. This*

pollution could have a potentially significant impact on surface and groundwater quality if not properly retained, treated and/or abated prior to release into the storm water system.

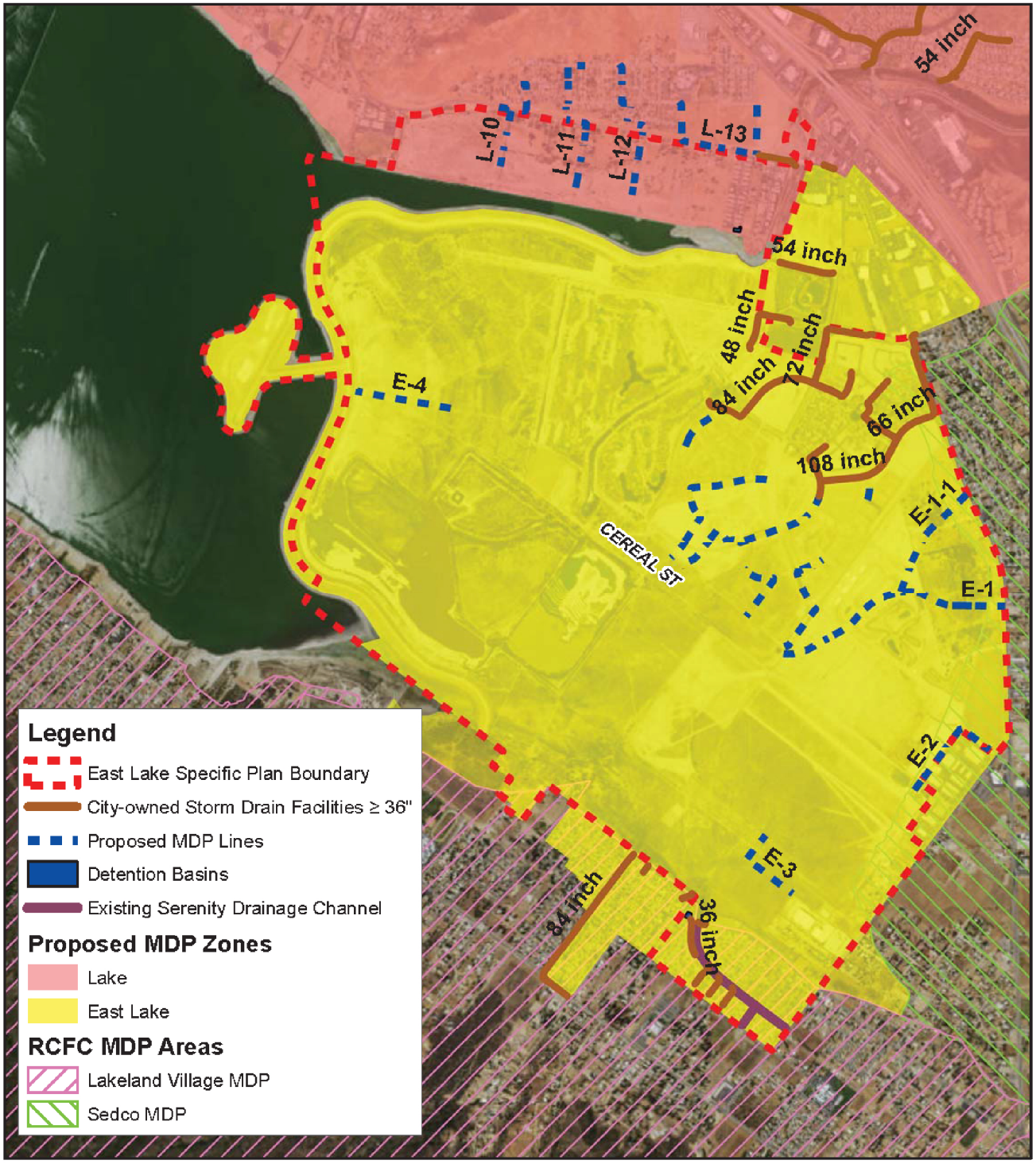
Erosion and Siltation

The main water course within the Project site is the south end of the San Jacinto River inlet, located in proposed Planning Area (PA) 7 and a portion of proposed PA 1, and designated as Preservation/Mitigation Areas under the proposed Project. Figure 3-4 Land Use Plan, shows that the hydrology of the San Jacinto River would not be altered with future Action Sports, Tourism, Commercial, Recreation or Residential uses due to the river's function as a floodway. Smaller water courses in the form of ephemeral drainages may be impacted by future implementing development projects in the Project site. Potential erosion and siltation impacts resulting from alteration of such drainages would be less than significant with compliance with NPDES permits and BMPs during construction and operation of new development.

The proposed Project would indirectly increase the amount of future development on currently vacant land. Because of the nature of the predominantly flat topography of the Project site, there is a negligible potential for increased erosion due to altered drainage patterns through development of these areas; however, grading and other earthmoving activities would be a greater potential source of erosion if standard requirements and BMPs are not implemented. As discussed above, future implementing development projects within the Project site would require compliance with NPDES permits and BMPs during construction and operation of new development. ***Compliance with these permits and implementation of BMPs would ensure potential erosion and siltation impacts on water quality would be less than significant***.

Storm Water Drainage Systems and Facilities

Future development within the Project site would result in the conversion of vacant land into developed land that would increase the amount of impervious surface area. Although this increase could be substantially less than the current Specific Plan because the new proposed land uses related to action sports are expected to result in greater pervious surfaces. An increase in impervious surface area would allow for less water to percolate into the ground; thus, generating more surface runoff and the need for new and expanded storm water drainage systems and facilities. This additional surface runoff would be collected by a combination of onsite facilities and local and regional drainage facilities designed in accordance with federal, state and local laws and regulations. Onsite facilities would be designed based on the site-specific conditions of each new implementing development project. Local drainage systems would be designed, sized for capacity and constructed and/or connected to existing systems to service new development. ***Therefore, impacts would be less than significant***. A Conceptual East Lake Master Drainage Plan showing the configuration of local drainage systems is provided on Figure 5.8-4 - Conceptual Master Drainage Plan.



CONCEPTUAL EAST LAKE MASTER DRAINAGE PLAN

Prepared by:
City of Lake Elsinore GIS
January 12, 2017
Data Sources:
County of Riverside GIS
City of Lake Elsinore GIS
Stateplane NAD 83

Source: City of Lake Elsinore, ELSPA No. 11

Conceptual Master Draiange Plan, Figure 5.8-4

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Threshold HWQ-B *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.*

Groundwater Recharge and Supply

As discussed in Section 5.15 (Utilities) of this DEIR, local groundwater pumped from Elsinore Valley Municipal Water District's twelve District-owned wells accounted for approximately 33 percent of the District's water supply from 1992 to 2015. (page 5.15-5). Additionally, "[a]lthough the groundwater wells have a total capacity of 20,808 acre-ft/yr, a safe yield from the Elsinore Basin is 5,500 acre-ft/yr, and therefore the projected groundwater volume from the Elsinore Basin will remain at 5,500 acre-ft/yr."

~~Per Section 6.2 of the ELSPA No. 11, untreated water from the Lake (Lake Elsinore) could be used for sports track and field watering, irrigation of the golf course, parks, streetscapes and other landscaped areas. This concept effectively conserves fresh water supplies for domestic use while serving to replenish the groundwater supply.~~ Future development within the Project site would increase the amount of impervious pavement and building surfaces. At the same time, groundwater infiltration at the site would be reduced. The area of the project site is not particularly suited for groundwater recharge due to the presence of a semipermeable clay layer at depth. ***Consequently, the potential loss of infiltration and recharge or supply from the increase in impervious surface area would be less than significant***.

Threshold HWQ-D *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 on- or off-site.*

Threshold HWQ-H *Place within a 100-year flood hazard area structures that would impede or redirect flood flows.*

Flooding and Flood Flows

Most of the Project site, with the exception of existing residential developments at Summerly (proposed PA 1) and Serenity (proposed PA 4), is located within the 100-year floodplain and would be subject to a potential 100-year flood event[1] based on current site elevations (Figures 5.8-1 Lake Management

[1] The volume of water generated during storm events ranges in various degrees of severity commonly described as the 2-year, 10-year, 25-year and 100-year storm events, with the 2-year being the least severe and the 100-year the most severe. Statistically, the chance of one or more of these storm events occurring in any given year is as follows: 2-year (50%), 10-year (10%), 25-year (4%) and 100-year (1%).

Features and 5.8-2 Hydrologic Resources). Future development within the 100-year floodplain could be subject to ~~pose~~ potentially significant on-site flooding impacts as an indirect result from Project implementation; however, the following General Plan policies would avoid exposing people or property to flooding: Flooding and Floodplains Policies 5.1–5.2. These policies require that new construction conforms to~~future implementing development projects to be constructed above the 100-year base flood elevation, in conformance with~~ all applicable provisions of the National Flood Insurance Program in order to protect buildings and property from flooding 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 would be subject to floodplain policies as well as local and federal regulations. Nonetheless, future implementing development projects would potentially result in significant alteration of the drainage patterns by altering or extending grading within the Project site in order to raise building pads for inhabitable structures above the projected 100-year inundation level. Any development that does not include habitable structures within the 100-year floodplain would be subject to potentially significant flooding impacts. Therefore, mitigation measures **MM HWQ-6** through **MM HWQ-8** ***would be required of all future development to ensure potential flood hazard impacts are less than significant***.

Lake Management Project and Flood Storage Requirements

The most important relationship between future development at the Project site and hydrology is its potential impacts associated with the existing Lake Management Project flood storage volume requirements. Because portions of the Project site behind the levee are designed to inundate under 100-year flood conditions, any future development at the Project site would have a significant adverse impact if such flood flows cannot be effectively accommodated. Currently, several areas of the Back Basin have been designed to accommodate floodwaters. These areas include the San Jacinto River Inlet in PA 7, The Links at Summerly Golf Course and Summerly preservation/mitigation area in PA 1, and the 356-acre wetlands in PA 5 as shown on Figure 3-4, Land Use Plan.

It is estimated that the total water storage volume of the Back Basin and the Lake (Lake Elsinore) is 150,000 acre-feet. Other portions of the Project site proposing habitable structures would require use of fill material to raise the development pad to an elevation above the projected 100-year inundation level (an elevation of approximately 1,263.3 feet) along with meeting certain freeboard requirements.

Previous computer simulations using the HEC-5 reservoir routing computer model, considering site grading and other key operational parameters of the Lake Management Project, were done to determine whether the drainage concept could accommodate sufficient flood flow and could be determined feasible from an operational standpoint. The results of the HEC-5 modelling indicated that with the starting water surface elevation in the Lake (Lake Elsinore) equal to 1,249 feet, there would be sufficient capacity within the East Lake Drainage Plan to function properly and there would not be a significant adverse impact on Lake Management operations. These background simulations used to

study the greater Project site utilized base assumptions to run the model for the Back Basin and greater Lake; therefore, it is known and anticipated that additional computer evaluation of the proposed storm water detention storage and routing system would be required during subsequent project development, if such development is to occur at 1,260 feet per the USACE Lake Management 404 Permit (No. 88-00215-RRS). Under this permit, development projects within the Back Basin of the Lake (Lake Elsinore) at elevations of 1,260 feet or below must demonstrate that such development does not adversely impact flood storage capacity. Consequently, the impact is considered potentially significant and mitigation in the form of design drainage studies would be required. Therefore, mitigation measures **MM HWQ-6** through **MM HWQ-8** ***would be required of all future development to ensure potential flood hazard impacts are less than significant***.

Impact HWQ-2 *Future development within the Project site and at elevations of 1,260 mean sea level (MSL) or below has the potential to alter flood storage volume capacity required by United States Army Corps of Engineers Lake Management 404 Permit (No. 88-00215-RRS), potentially resulting in on-site flooding and off-site flooding during periods of high lake levels.*

Threshold HWQ-I *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 HWQ-J *Result in inundation by seiche, tsunami, or mudflow.*

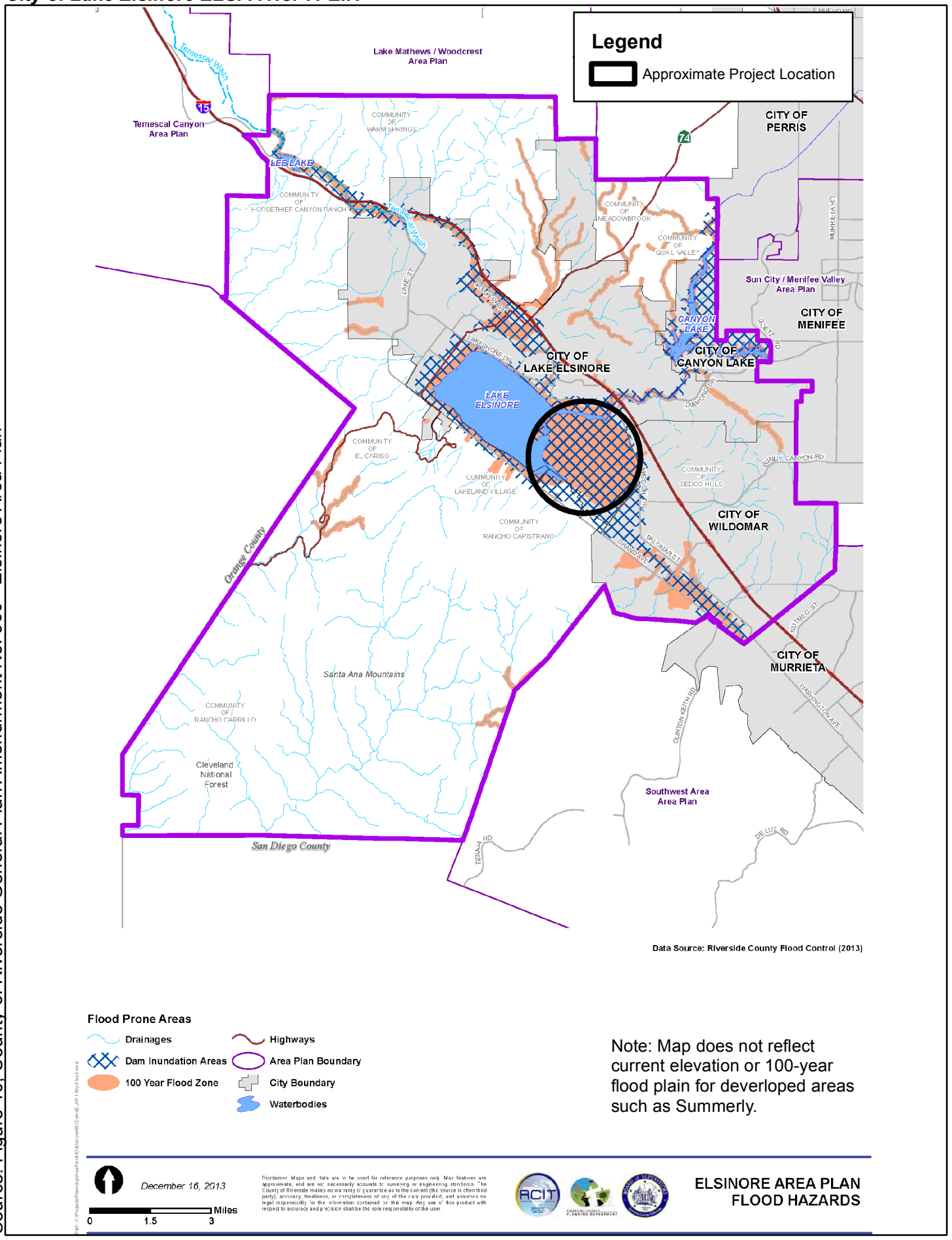
Inundation from Dam Failure

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. Potential causes include 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 Project site is located within the high inundation zone of the Railroad Canyon Dam, which is located northwesterly of the site at Canyon Lake (Figure 5.8-5 Dam Inundation Area). Railroad Canyon Dam is 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 the Lake (Lake Elsinore), potentially flooding the Project site. The extent of the dam inundation zone corresponds with the boundary of the 100-year floodplain.

According to the 1991 Dam Break Analysis for Railroad Canyon Dam, the surface elevation of the Lake (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.



Source: Figure 10, County of Riverside General Plan Amendment No. 960 - Elsinore Area Plan

Dam Inundation Area, Figure 5.8-5

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During a worst-case scenario (catastrophic failure of the dam), if 12,000 acre-feet of water were discharged into the Lake (Lake Elsinore) when it is at its highest level of 1,260 feet AMSL with no discharge out of the Lake (Lake Elsinore) and no discharge into the Back Basin, the water surface would reach 1263.4 feet AMSL. As discussed above, all habitable structures are required to be constructed outside of the floodplain and each future development would be required to demonstrate no impact to the Lake Management Plan's flood storage volume requirements.

According to the U.S. Army Corps of Engineer's National Inventory of Dams, the report on the Railroad Canyon Dam indicates the dam was last inspected on November 19, 2014 and it currently has no Emergency Action Plan. The California agency that regulates dams is the California Department of Water Resource's Division of Safety of Dams. According to the Division of Safety of Dams, the condition assessment of the Railroad Canyon Dam is "satisfactory"; which means that no existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the applicable regulatory criteria or tolerable risk guidelines.

Future development within the project site would indirectly allow for 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, the Project site would potentially 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 5.7 (Hazards and Hazardous Materials) of this EIR, the proposed Project would 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 would 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 the Lake (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. the Lake (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 (Lake Elsinore). 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/or other materials overlying bedrock with water or air. Whether this material would 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 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 increases 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 Project site does not contain areas subject to high potential for mudflows based on the general flat topography. Areas of the project site with more susceptibility would include the San Jacinto River channel inlet to the Lake (Lake Elsinore). Implementation of the proposed Project would indirectly result in the increase in the number of persons residing and the amount of construction within Project site; however, standard grading and construction requirements would be required for proper setbacks and slope stability. ***In addition, building methods are followed that ensure potential impacts would be less than significant***.

5.8.6 General Plan Consistency Impacts

The City of Lake Elsinore Community Development Element includes various policies related to hydrology and water quality. The applicable policies within this section and project analysis are discussed in Table 5.8-5.

Table 5.8-5. Hydrology and Water Quality General Plan Consistency Analysis

Goal/Policy #	Goal/Policy Text	Consistency Analysis
Goal RP 4	Improve water quality and ensure the water supply is not degraded as a result of urbanization of the City.	**CONSISTENT.** The ELSPA No. 11 provides standards that aid in water conservation and the prevention of water pollution. The Project would be required to employ best management practices (BMPs) to protect water quality. Additionally, the ELSPA No. 11 calls for drought tolerant landscaping and other water conserving measures to reduce the water demand associated with the project.
RP 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.	**CONSISTENT.** Prior to the approval of a development project, a Water Quality Management Plans shall be designed, submitted for review and approved, to address pollutant discharge generated by the project.

Goal/Policy #	Goal/Policy Text	Consistency Analysis
RP 4.2	Support public education and awareness programs to reduce pollutant discharges into the drainage system.	**CONSISTENT.** The Project would cooperate with the City to distribute education materials when available. The Project's WQMP would incorporate educational materials regarding water quality that would be provided to commercial tenants and residential owners.
RP 4.3	Require Best Management Practices through project conditions of approval for development to meet the federal NPDES permit requirements.	**CONSISTENT.** The Project would be required to employ best management practices (BMPs) to protect water quality.
Goal PS 5	Minimize the risk of injury to residents and visitors and of property damage due to flooding.	**CONSISTENT.** Potential flooding hazards are evaluated in the Project's EIR. The renovation of existing berms along the southern boundary of PA 6 is proposed to protect properties against the 25-year storm event. Land uses proposed in areas subject to flooding are reviewed to prevent injury to residents and visitors.
PS 5.1	Continue to ensure that new construction conforms to all applicable provisions of the National Flood Insurance Program in order to protect buildings and property from flooding.	**CONSISTENT.** The Project would conform to all applicable provisions of the National Flood Insurance Program. See consistency discussion for Goal PS 6.
PS 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.	**CONSISTENT.** The City has prepared a Draft Master Drainage Program that includes the Project vicinity. Costs of improvements and maintenance are proposed to be borne by the CIP as well as development project fees.

Based on the analysis provided in Table 5.8-5., ***the Project is consistent with the General Plan and no additional mitigation is required***.

5.8.7 Cumulative Impacts

Cumulative impacts related to hydrology and water quality are addressed in the General Plan EIR, which is incorporated by reference into this EIR. Future development within the region would increase the

total surface area covered by impervious surfaces, thereby reducing groundwater recharge and increasing the potential for flooding onsite and in downstream areas. Cumulative development in the Project vicinity could result in a general increase in flow rates. Future development could also increase impacts to water quality due to the pollutants associated with urban development runoff. These potential impacts would be mitigated on a project-by-project basis through compliance with NPDES permit regulations enforced by the RWQCB, which requires all new development to treat runoff for pollutants and manage flow rates prior to being released into the stormwater system.

Additional project-level assessment conducted for future implementing development projects would be required to address goals and policies of the General Plan relating to hydrology and water quality, as well as related biological resources policies. Compliance with USACE, EPA, RWQCB, and City regulations as well as implementation of BMPs would improve water quality and control potential flooding and erosion caused by future construction and development. Through compliance with existing regulatory requirements, compliance with goals, policies and implementation programs of the General Plan, potential cumulative impacts related to hydrology and water quality would be ***less than significant and no additional mitigation measures are required***.

5.8.8 Impacts and Mitigation Measures

Impact HWQ- 1 *Future development consistent with the proposed Project would result in increased non-point source and point source contamination from common urban sources, construction activity, vehicle use and/or dredging. This pollution could have a potentially significant impact on surface and groundwater quality if not properly retained, treated and/or abated prior to release into the storm water system.*

MM HWQ-1 Future implementing development projects requiring 401 Water Quality Certification and NPDES construction and stormwater permits, United States Army Corps of Engineers Section 404 permit, and California Department of Fish and Wildlife Section 1602 Streambed Alteration Agreement, shall obtain such permits prior to the issuance of City grading permits.

MM HWQ-2 Prior to conducting any dredging in the Lake (Lake Elsinore) associated with future implementing development projects within the Project site, standard toxicity tests shall be conducted of sediments in potential dredge locations. Only locations that pass standard toxicity tests shall be dredged unless otherwise abated utilizing additional measures as approved by the United States Army Corps of Engineers.

MM HWQ-3 Prior to conducting any dredging in the Lake (Lake Elsinore) associated with future implementing development projects within the Project site, measures (including the use of silt curtains around dredge equipment) shall be taken to reduce turbidity impacts. The city shall review and approve any turbidity abatement measures developed by the Applicant and the United States Army Corps of Engineers prior to initiation of dredging.

MM HWQ-4 Prior to conducting any dredging in the Lake (Lake Elsinore) associated with future implementing development projects within the Project site, measures shall be taken to prevent any release of hydrocarbons into the Lake during routine dredging operations as well as uncontrolled accidental spillage of petroleum products into the Lake from dredging machinery. Such measures shall include the use of floating oil booms to collect any petroleum hydrocarbons that might escape and to develop a dredging petroleum spill avoidance and contingency plan.

MM HWQ-5 All drainage facilities shall conform to the requirements and standards of the City of Lake Elsinore and the Riverside County Flood Control and Water Conservation District.

Impact HWQ-2 *Future development within the Project site and at elevations of 1,260 mean sea level (MSL) or below has the potential to alter flood storage volume capacity required by United States Army Corps of Engineers Lake Management 404 Permit (No. 88-00215-RRS), potentially resulting in on-site flooding and off-site flooding during periods of high lake levels.*

MM HWQ-6 Prior to issuance of a grading permit for future implementing development projects proposing fill at elevation 1,260 MSL or below in the Project site, consistency shall be demonstrated with the HEC-5 analysis of the Outlet Channel design with a maximum of 100-year flood elevation of I,263.3 feet MSL, an overflow weir height of 1,261 MSL and an operating Lake level of I,240 MSL. Documentation showing consistency with the HEC-5 analysis shall be submitted to the USACE, EVMWD, RCFCD and WCD, and these agencies shall provide written approval of the adequacy of such documentation.

MM HWQ-7 Prior to issuance of a grading permit for future implementing development projects proposing fill at elevation 1,260 MSL or below in the Project site, a copy of the grading plans shall be submitted to the USACE, the Bureau of Reclamation (as applicable), EVMWD, RCFCD and WCD for review and approval. The grading plans must demonstrate that 1) the flood storage capacity of 30,735 acre-feet is maintained, 2) adequate conveyance of the 45-100 year flood events is maintained, and 3) the hydrology necessary to sustain the 365-acre Wetlands Mitigation Area and the Wetland Areas are maintained pursuant to the specification of the Lake Management Plan, as applicable.

MM HWQ-8 Prior to the issuance of a grading permit for projects below elevation 1260, approval shall be secured from the USACE that the Proposed Project complies with the conditions of Permit No. 88-00215-RRS and amendments thereto. Project shall also comply with SARWQCB requirements as applicable.

5.8.9 Level of Significance after Mitigation

Implementation of mitigation measures **MM HWQ-1** through **MM HWQ-5** would ensure indirect impacts to water quality associated with future development in the Project site would be reduced to less than significant levels. Implementation of mitigation measures **MM HWQ-6** through **MM HWQ-8** would ensure indirect impacts to hydrology associated with future development in the Project site would also be reduced to ***less than significant levels***.