5.7 HYDROLOGY/WATER QUALITY

ENVIRONMENTAL SETTING

Drainage

Most of the planning area drains into the San Jacinto River. The northwest portion of the planning area drains to the west into a tributary of the Santa Ana River.

Figure 5.7-1 depicts the established drainage system within the planning area. The Riverside County Flood Control and Water Conservation District (RCFCWCD) is the agency responsible for the regional flood control system. The RCFCWCD has prepared three Master Drainage Plans (Sunnymead Area, West End, and Moreno) each of which covers a different portion of the City. The RCFCWCD presently owns and maintains a number of flood control facilities, while the City controls a number of local facilities. New development is required to build master drainage plan facilities and/or pay fees that are used to build the facilities. Three major storm drains (Sunnymead Stormdrain, Kitching Stormdrain, and the Perris Valley Stormdrain) serve the City. These channels generally flow north to south. These channels drain to the San Jacinto River, Canyon Lake and ultimately to Lake Elsinore.

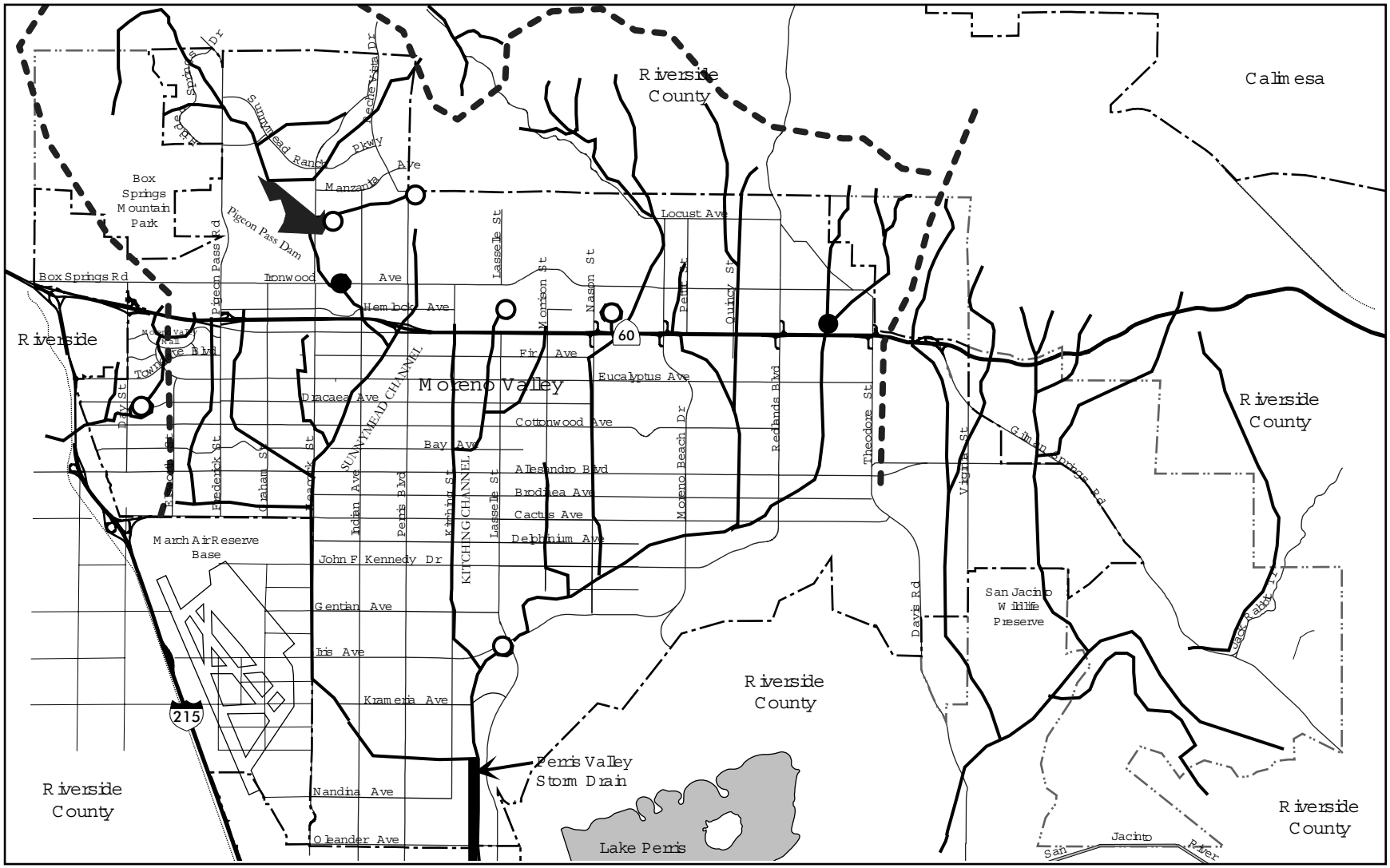
There are a few small ponds and lakes scattered throughout the City. Lake Perris is located south of the City and is a potential source of drainage waters flowing to developed areas.

The planning area's primary watersheds, the Santa Ana River and the San Jacinto River watersheds, are described below.

Santa Ana River. The Santa Ana River is the largest river in the south coast region, with a length of about 100 miles and approximately 2,700 square miles of watershed area. The river exits the San Bernardino Mountains and continues westward to the Prado Dam, through the Santa Ana River Canyon, and then flows to the ocean. In addition to being a major flood control facility, the river also serves as a means by which groundwater basins are recharged and is an important wildlife habitat.

San Jacinto River. The San Jacinto River drains approximately 540 square miles to the Railroad Canyon Reservoir (Canyon Lake) which discharges into Lake Elsinore, which discharges into a tributary of the Santa Ana River. Discharges from the two lakes are very rare.

A minor topographic divide extending southward from the Box Springs Mountains across the western portion of the planning area acts as a drainage divide between the watersheds of the San Jacinto and Santa Ana Rivers. All stormwater runoff east of the topographic



Source: Riverside County

Surface Flow Lines | Drainage Divide | Flood Basin - Existing | Flood Basin - Future

North 0 6,000 12,000 ft

Figure 5.7-1
Storm Water Flows and Major Drainage Facilities

divide generally flows in a southerly direction to the San Jacinto River. Stormwater west of the divide flows in a westerly direction to the Santa Ana River.

Another topographic divide generally located east of Theodore Street diverts stormwater flows to the San Jacinto River in two directions. Runoff east of the divide flows through the San Jacinto Valley. Runoff west of the divide flows to the Perris Valley.

Improved Drainage Channels

Sunnymead Storm Channel

The Sunnymead Storm Channel is a concrete-lined channel that extends from State Route 60 and crosses the planning area in a southwesterly direction. The Channel accepts stormwater runoff from the Box Springs Mountains and areas south of the mountains. The runoff flows into the Sycamore Canyon Watershed. This stormwater runoff eventually flows into the Santa Ana Watershed. **Figure 5.7-1** depicts the location of the Sunnymead Storm Channel.

Kitching Channel

The Kitching Channel is an open channel that averages a 12-foot bottom, 7-foot deep trapezoidal channel. Kitching Channel and its storm drains system constitutes the backbone of the eastern half of the Sunnymead Master Drainage Plan. The Channel drains in a southerly direction approximately from State Route 60 through the central portion of Moreno Valley and into the Perris Valley Stormdrain and ultimately into the San Jacinto River Watershed. **Figure 5.7-1** depicts the location of the Kitching Channel.

Perris Valley Stormdrain

The Perris Valley Stormdrain is an open channel. Lateral A runs west to east between Kramenia Avenue and Nandina Avenue. Lateral A enters the main channel west of Lasselle Street. Eventually, the stormdrain empties into the San Jacinto River Watershed. **Figure 5.7-1** depicts the approximate location of the Perris Valley Stormdrain.

Surface Water Quality

Surface water quality in the planning area is regulated by the Santa Ana Regional Water Quality Control Board (RWQCB) Region 8. The Santa Ana Regional Water Quality Control Board Basin Plan (Basin Plan) establishes water quality standards for all the ground and surface waters of the region. The Santa Ana Region includes the upper and lower Santa Ana River watersheds, the San Jacinto River watershed, and several other small drainage areas.

Santa Ana River Watershed

According to the United States Geological Survey, the quality of surface water in the Santa Ana River Watershed becomes progressively poorer as water moves toward the ocean from the San Bernardino Mountains. Water quality decreases due to a number of factors including runoff from urban and agricultural areas.

San Jacinto River Watershed

Currently, the San Jacinto River itself has not been identified to have serious water quality problems. However, the San Jacinto River drains into Railroad Canyon Reservoir (Canyon Lake) and the Railroad Canyon Reservoir occasionally discharges into Lake Elsinore. Both Canyon Lake and Lake Elsinore have been determined to have water quality problems.

Perris Lake

Runoff from the planning area does not enter or affect Perris Lake.

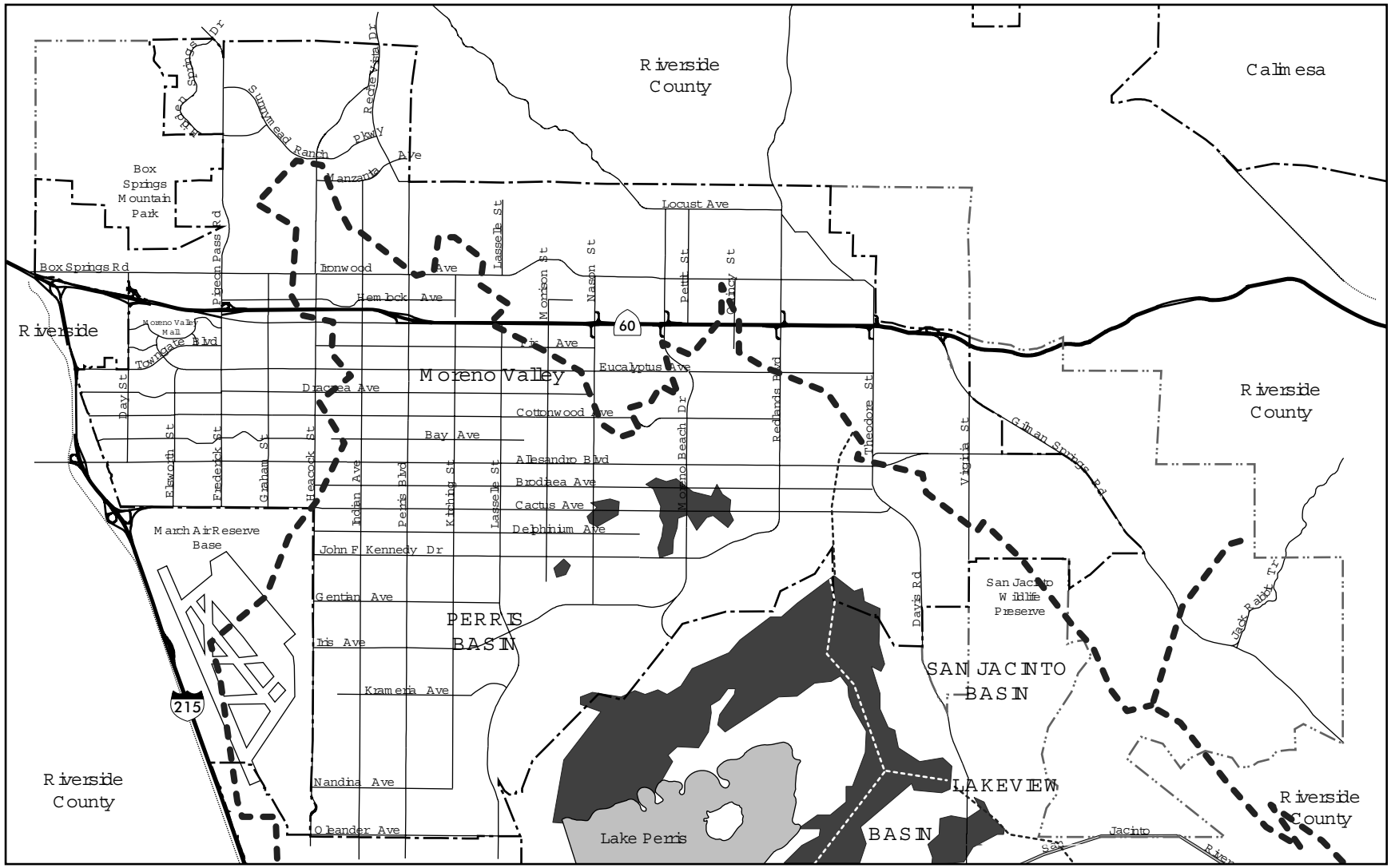
Railroad Canyon Reservoir (Canyon Lake)

The Railroad Corridor Reservoir has high nutrient loading which leads to alga blooms, and high dissolved organic carbon. During storm events, the inflow water carries sediments raising the turbidity of the lake water. The RWQCB is currently assessing the lakes Total Maximum Daily Loads (TDML). The RWQCB has placed the lake on the 303(d) list[1] of pollutant/stressors for pathogens and nutrients.

Lake Elsinore

Lake Elsinore also has high nutrient loading, which causes algae blooms. Due to the shallow depth of the lake, the algae blooms cause significant problems in the lake. The lake experiences occasional fish kills due to low levels of dissolved oxygen. The RWQCB is currently assessing the lakes TDML. The RWQCB has placed the lake on the 303(d) list of pollutant/stressors for sedimentation/siltation, unknown toxicity, nutrients, organic enrichment, and low levels of dissolved oxygen.

[1]The 303(d) list is compiled by the U.S. EPA. The list identifies impaired water bodies in the United States. In California, the list is compiled and updated by the State Water Resources Control Board for the EPA.



Source: Department of Water Resources

Subarea Boundary

Nonwater-Bearing Portion

Basin Boundary

North 0 6,000 12,000 ft

Figure 5.7-2
Groundwater Basins

Beneficial Uses

Beneficial uses of groundwater and surface water have been established for each water body within the RWQCB Region 8. According to the RWQCB Basin Plan:

> Beneficial uses are defined as the uses of water necessary for the survival or well being of man, plants and wildlife. These uses of water serve to promote the tangible and intangible economic, social and environmental goals of mankind. Examples include drinking, swimming, industrial and agricultural water supply, and the support of fresh and saline aquatic habitats.

Table 5.7-1 on the following page depicts the beneficial uses associated with each of the affected watersheds.

Groundwater

The majority of the planning area lies in the Perris North Groundwater Basin and the easternmost portion of the planning area lies within the San Jacinto Groundwater Basin. **Figure 5.7-2** depicts the location of the basins. Groundwater depth ranges from approximately 100 feet to 150 feet below ground surface. The California State Department of Water Resources (DWR) has estimated the groundwater basins in the vicinity of the planning area to have capacity for approximately one million acre-feet of water. It is estimated that the basins store approximately 620,000 acre-feet (AF) of water.

Table 5.7-2 depicts the beneficial uses associated with the Perris North and San Jacinto Canyon groundwater basins.

TABLE 5.7-2
BENEFICIAL USES OF PROJECT
AFFECTED GROUNDWATER BASINS

Beneficial Uses	Perris North	San Jacinto
Municipal and Domestic Supply	+	+
Agricultural Supply	+	+
Industrial Service Supply	+	+
Industrial Process Supply	+	+

Source: California Regional Water Quality Control Board Santa Ana River Basin (Region 8). *Water Quality Control Plan.* 1995.

\+ Indicates an existing beneficial use that was actually attained in the surface or ground water on or after November 28, 1975.

TABLE 5.7-1
BENEFICIAL USES OF PROJECT EFFECTED WATERSHEDS

Beneficial Uses	Santa Ana River (Reaches 3 and 4)	San Jacinto River (Reaches 1, 3, and 4)	Lake Perris	Lake Elsinore	Railroad Canyon Reservoir
Municipal and Domestic Supply	0	Reach 1 - # Reaches 3 and 4 exempted	+	0	+
Agricultural Supply	+	#	+		+
Groundwater Recharge	+	#	+		+
Industrial Service Supply			+		
Industrial Process Supply			+		
Contact Water Recreation	+	#	+	+	+
Non-contact Water Recreation	+	#	+	+	+
Warm Freshwater Habitat	+	#	+	+	+
Cold Freshwater Habitat			+		
Wildlife Habitat	+	#	+	+	+
Rare, Threatened or Endangered Species	+				

\+ Indicates an existing beneficial use that was actually attained in the surface or ground water on or after November 28, 1975.

\# Indicates an intermittent beneficial use.

0 Indicates that the water body has been exempted by the RWQCB from the municipal use designation under the terms and conditions of State Board Resolution No. 88-63, *Sources of Drinking Water Policy.*

There are currently few domestic uses for groundwater in the watershed as the City primarily relies upon imported water from the Eastern Municipal Water District (EMWD). Slightly over 3,000 AF/YR is produced from the Perris and Perris South subbasins and is blended with imported water for use in the western portions of the EMWD service area.

Groundwater management issues in the EMWD are complex. The groundwater basins within the EMWD are among the largest un-adjudicated groundwater systems in Southern California. In the east, groundwater production and use is limited by a stipulated judgment and groundwater levels are in decline due to significant overdraft. In the west, a groundwater management plan (AB 3030) was developed for the desalination of brackish groundwater as a means of controlling rising groundwater levels which threaten adjacent higher quality subbasins and increasing production by blending groundwater with imported water.

There is a documented problem with groundwater quality in the Perris North and the San Jacinto Groundwater Basins. The groundwater salinity problem is partially the result of naturally occurring elements in the soil and partially due to human activity. Groundwater salinity problems in EMWD's service area extend from Menifee northward through Perris and toward Moreno Valley, following the I-215 corridor. This problem appears to be related primarily to saltwater intrusion and high salt content in the water-bearing sediments that were deposited in a marine environment, rather than due to human pollution of the aquifers. The high salt content rises during periods of high groundwater extraction, indicating a strong correlation between groundwater levels and salt content. The high salt content in the basin degrades water quality, requiring blending with imported water or treatment before use.

March Air Reserve Base

According to the RWQCB (Region 8), March Air Reserve Base has in the past contributed pollutants to the surface water and groundwater of the Perris North Subbasin. The pollutants identified by the RWQCB result from: trichloroethylene (TCE); fuel; and landfills. The base is a Superfund listed site. The Air Force operates wells and facilities to clean the contaminated groundwater.

Moreno Valley General Plan

General Plan Conservation Element, Objectives 7.1 and 7.2 and their associated policies, are included in the General Plan to limit potential water quality impacts to surface water and groundwater resources.

Proposed General Plan Policy 7.2.2 requires all projects to comply with the discharge permit requirements of the Regional Water Quality Control Board.

Existing Regulations

Regional Water Quality Control Board Requirements for Septic Systems

All proposed septic systems (subsurface sewage disposal systems) must comply with Regional Water Quality Control Board regulations designed to prevent groundwater contamination from septic system effluent.

Existing Drainage Regulations and Plans

All development within the planning area must comply with Riverside County Flood Control and Water Conservation District, Federal Emergency Management Agency and City requirements. The master planned drainage system and local drainage facilities are engineered to resist erosion and sedimentation. The City's grading regulations ensure that changes in existing drainage patterns associated with new development do not create substantial erosion or sedimentation that is added to the storm drain system.

Santa Ana Watershed Project Authority (SAWPA) - Water Resources Plan

The SAWPA was formed to find a mutually beneficial way of protecting water quality in the Santa Ana Watershed. Orange County Water District, Inland Empire Utilities Agencies, San Bernardino Valley Municipal Water District, Western Municipal Water District, and Eastern Municipal Water District) represent all the major areas of water use in the Santa Ana Watershed formed SAWPA. The Eastern Municipal Water District (EMWD) serves the City of Moreno Valley.

SAWPA operates a desalter that removes contaminants from groundwater to make the water suitable for use. SAWPA also operates the Santa Ana Regional Interceptor (SARI) line that carries desalter brine and industrial waste water to a treatment facility in Orange County. The SARI line does not extend into Moreno Valley at this time.

National Pollutant Discharge Elimination System

Under the authority of the Clean Water Act, the federal Environmental Protection Agency created the National Pollutant Discharge Elimination System (NPDES) to protect water resources and control pollutants in runoff. The program requires communities of a certain size to obtain permits from the Regional Water Quality Control Board. Moreno Valley, Riverside County and 23 other cities and agencies obtained a joint NPDES permit from the RWQCB-Santa Ana Region. As a co-permittee, the City has the following obligations and responsibilities:

- Conduct storm drain system inspections;
- Conduct and coordinate with the County any surveys and characterizations needed to identify the pollutant sources and drainage areas;

- Implement management programs, monitoring programs and implementation plans;

- Enact legislation and ordinances as necessary to establish legal authority;

- Pursue enforcement actions as necessary to ensure compliance with the stormwater management programs and the implementation plans; and

- Respond to emergency situations (e.g., accidental spills, leaks, illegal discharges and illicit connections) to prevent or reduce the discharge of pollutants to storm drain systems and streams.

The City has established a system for controlling activities that could pollute stormwater runoff, such as new residential, commercial and industrial development. Developers must file project-specific water quality management plans (WQMP's) with the City for review. Project-specific water quality management plans must be approved prior to issuance of grading permits or building permits.

THRESHOLD FOR DETERMINING SIGNIFICANCE

For the purposes of this EIR, a significant impact would occur if implementation of General Plan Alternatives 1, 2, or 3 would:

- *Substantially degrade or deplete groundwater supplies;*

- *Substantially degrade water quality;*

- *Violate any water quality standards or waste discharge requirements;*

- *Substantially alter the existing drainage patterns of the City in a manner that would result in substantially erosion or siltation; or*

- *Contribute runoff which would exceed the capacity of existing or planned stormwater drainage systems.*

- *Place housing within a 100-year floodplain as shown on the FEMA Insurance Rate Maps.*

ENVIRONMENTAL IMPACT

Surface Water Quality

General Plan Alternatives 1, 2, and 3

Implementation of the General Plan will result in the development of new residential and non-residential uses such as business park, commercial, industrial, office and public/institutional uses. Additionally, currently developed but under-developed parcels could also be redeveloped with more intensive uses. Based on the General Plan land use map, it is anticipated that approximately 18,800 acres of vacant land will be developed by buildout of the City under each of the alternatives. Although, each alternative would allow a different level of development to occur on the 18,880 acres of vacant land, it is anticipated that a similar amount of this vacant land will be converted to urban, less impervious uses under each of the three alternatives.

Development allowed under the General Plan Alternatives will contribute pollutants to the planning area's surface waters (i.e., Santa Ana River, San Jacinto River, Canyon Lake Reservoir, and Lake Elsinore). Pollutants such as oil, grease, pesticides, fertilizers and detergents will be introduced. In addition, runoff associated with the industrial land uses are potential sources of pollutants that are not normally in runoff from other land uses. Further, grading and construction activity could cause erosion and sedimentation. Therefore, mentioned non-point source pollutants in the runoff will flow into local drainage channels incrementally deteriorating water quality. This is considered a potentially significant impact.

Implementation of Mitigation Measures HW1, HW2, and HW3 will reduce this potential impact to a level less than significant. Mitigation Measure HW1 requires the City to require new development to incorporate Best Management Practices pursuant to the National Pollutant Discharge Elimination System (NPDES) permit. Mitigation Measure HW2 requires the City to provide and maintain a storm system that conforms to the Riverside County Flood Control and Water Conservation District drainage master plans and the requirements of FEMA. Mitigation Measure HW3 requires the City to comply with the provisions of its permits issued by the RWQCB for the protection of water quality pursuant to the National Pollutant Discharge Elimination System. Mitigation Measure HW3 will be a crucial part of the City's participation in local municipal compliance with the Regional Board's pending Total Daily Maximum Loads (TMDL) for nutrients (phosphorous and nitrogen) and pathogens (bacteria) entering Canyon Lake.[2]

Under the NPDES Stormwater Permit required as part of Mitigation Measure HW1, all development and significant redevelopment must be implemented with non-point source pollution control measures known as Best Management Practices (BMPs) both during

[2] July 29, 2005 letter from California Regional Water Quality Control Board (Letter Q in Section 9.0) to Cynthia Kinser.

construction and for the life of the project. Post-construction BMPs must address all pollutant loads carried by dry weather run-off and first-flush storm water runoff from an entire project. Implementation of BMPs in future development projects will significantly reduce water quality impacts from non-point source pollutants. BMPs limit water contamination during and after construction by reducing the amount of runoff, reducing contact between pollutants and runoff or treating runoff that comes in contact with pollutants.

Drainage

General Plan Alternatives 1, 2, and 3

Development of the planned land uses under any of the three General Plan Alternatives will affect the drainage system. New development will result in greater areas of impervious surfaces (such as streets, sidewalks and parking lots). The absorption rate of impervious surfaces is less than the rate for natural lands. Instead of absorbing into the ground, water on impervious surfaces runs-off and drains into the local drainage system, potentially increasing the amount of storm water runoff. The volume of additional runoff could pose a potential flooding hazard during intense rainstorms. A significant impact associated with these issues could occur. Implementation of Mitigation Measure HW2 will reduce this impact to a level less than significant. As part of Mitigation Measure HW2, drainage facilities will be designed and constructed with sufficient capacity to safely convey additional stormwater flows and thereby ensure that no habitable structure will be placed within a 100-year floodplain as shown on the FEMA Insurance Rate Maps. Additionally, development of the planned land uses under any of the three General Plan Alternatives will have the potential to physically alter existing natural drainage courses and wetlands. Mitigation Measure B4 in Section 5.9 shall require an applicant to obtain a Streambed Alteration Agreement and/or permit, or written waiver of the requirement for such an agreement or permit, from all resource agencies with jurisdiction over such areas (CDFG and ACOE), prior to physical disturbance of any natural drainage course or wetland determined to contain riparian vegetation or otherwise qualify as a "jurisdictional" wetland or Non-wetland Water of the U.S.

Groundwater

General Plan Alternatives 1, 2, and 3

Increases in impervious surfaces will result in a reduction in the amounts of rainwater that will infiltrate the soil to the groundwater table. On the other hand, additional groundwater recharge could occur due to infiltration of irrigation water through the soil as well as infiltration of irrigation water runoff as it flows through soft-bottomed channels. This might result in an incremental reduction in groundwater recharge rates over time. The impact of an incremental reduction in groundwater would not be significant as domestic water supplies are not reliant on groundwater as a primary source.

However, development allowed under the proposed General Plan alternatives may result in an increase in the amount of industrial chemicals and urban contaminants infiltrating groundwater supplies. As increasing levels of urban contaminants, such as fertilizers and pesticides enter groundwater aquifers, groundwater quality will decline over time. This is considered a significant impact. Implementation of Mitigation Measures HW1 and HW3 will reduce this impact to a level less than significant.

MITIGATION MEASURES

HW1. The City shall implement National Pollutant Discharge Elimination System Best Management Practices relating to construction of roadways to control runoff contamination from affecting the water resources (**Policy 5.4.2**).

HW2. All components of the City's storm drain system shall conform to Riverside County Flood Control and Water Conservation District master drainage plans and the requirements of the Federal Emergency Management Agency (**Policy 6.2.5**).

HW3. The City shall comply with the provisions of its permit(s) issued by the Regional Water Quality Control Board for the protection of water quality pursuant to the National Pollutant Discharge Elimination System (**Policy 7.2.2**).

IMPACT AFTER MITIGATION

Less than significant.

NOTES AND REFERENCES

1. City of Moreno Valley. General Plan. September 20, 1998.

2. California Regional Water Quality Control Board Santa Ana River Basin (Region 8). *Water Quality Control Plan.* 1995.

3. California Department of Water Resources. DWR website - G*roundwater Level Data Retrieval Map Interface*.

4. Riverside County Flood Control and Water Conservation District. *Master Drainage Plan for the Sunnymead Area.* October 1978.

5. Riverside County Flood Control and Water Conservation District. *Moreno Master Drainage Plan.* April 1991.

6. Riverside County Flood Control and Water Conservation District. *Master Drainage Plan for the City of Moreno Valley West End.* April 1991.

7. California Department of Water Resources. Gary Gilbreath. Telephone conversations and correspondence. March 2001.

8. California Regional Water Quality Control Board Santa Ana River Basin (Region 8). Cindy Li. Telephone conversations and correspondence. March 2001.

9. Eastern Municipal Water District. 2000 Urban Water Management Plan. December 31, 2000.

10. Eastern Municipal Water District. Christy Crother. Telephone conversations and correspondence. March 2001.

11. Eastvale Municipal Water District. Chantal Stapleton. Telephone conversations and correspondence. March 2001.

12. Eastern Municipal Water District. 2002 Annual Report on the Status of the Groundwater Subbasins.