4.10 Hydrology/Water Quality

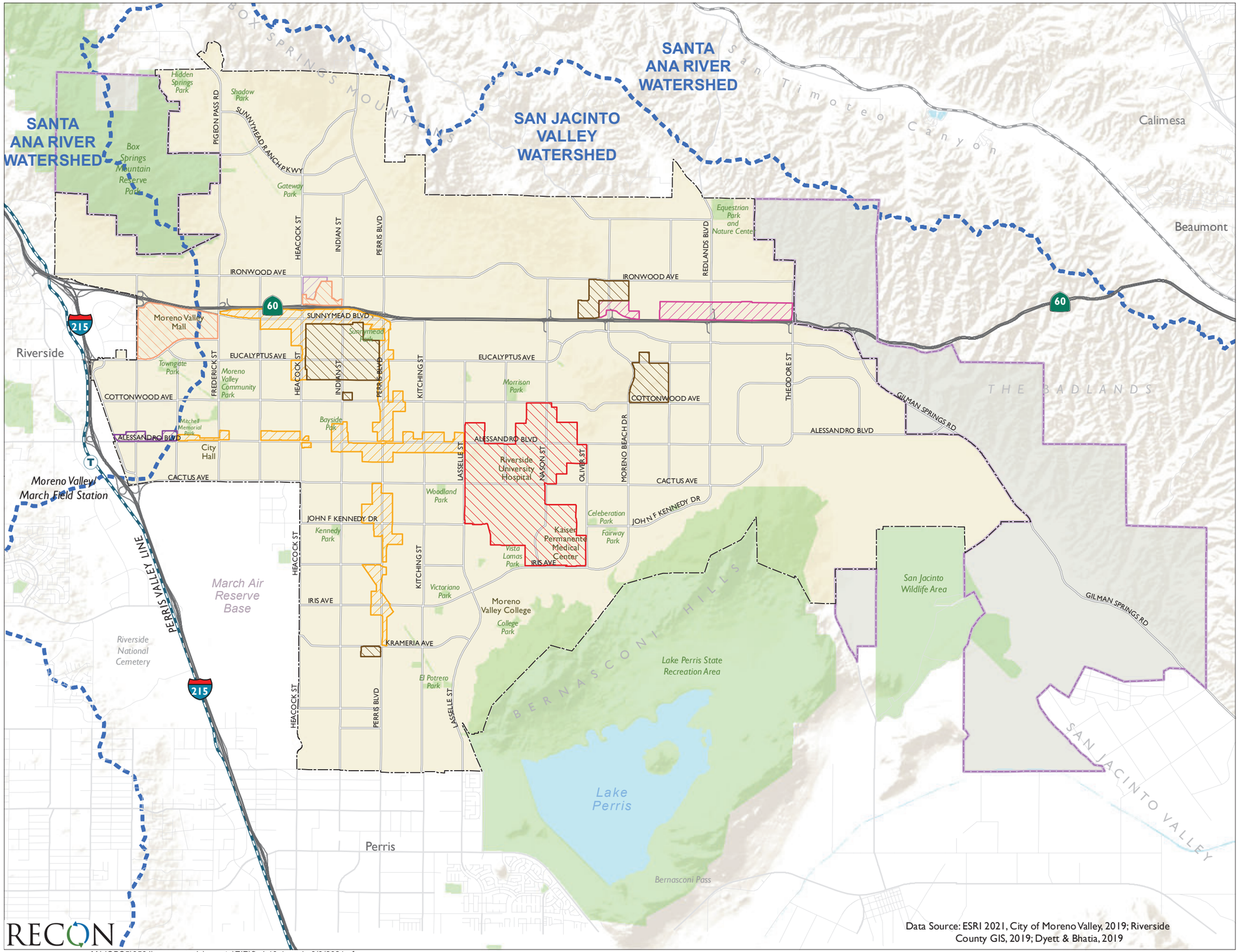
This section analyzes potentially significant impacts related to hydrology and water quality that could result from implementation of the project, which consists of the General Plan Update (GPU), Housing Element Update, and Climate Action Plan (CAP). The analysis area covers the entire city of Moreno Valley (city) and sphere of influence (SOI), which are collectively referred to as the Planning Area. This analysis relies on secondary source information including, but not limited to, watershed, flooding, and hydrological conditions from geographic information systems (GIS) databases. The analysis also considered City programs and plans, and data available from the California Regional Water Quality Control Board (RWQCB) - Santa Ana Region (SAR).

4.10.1 Existing Conditions

4.10.1.1 Watersheds/Water Quality

Surface water quality in the Planning Area is regulated by RWQCB-SAR 8. The RWQCB-SAR Basin Plan (Basin Plan) establishes water quality standards for all the ground and surface waters of the region. As shown in Figure 4.10-1, the SAR includes the upper and lower Santa Ana River watersheds and the San Jacinto River watershed, with several other small drainage areas. Primary waterways within the Planning Area include Santa Ana River, San Jacinto River, Perris Lake, Railroad Canyon Reservoir (Canyon Lake), and Lake Elsinore. Section 303(d) of the federal Clean Water Act (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). Beneficial uses for these waters, which have been assigned in the Basin Plan, include municipal and domestic supply, agricultural supply, groundwater recharge, industrial service supply, industrial process supply, contact water recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, and rare, threatened, or endangered habitat.

Most of the Planning Area drains into the San Jacinto River. 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 Pacific 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.



City of Moreno Valley

Sphere of Influence

Watershed Boundaries

General Plan Concept Areas

Mixed Use

Downtown Center

Center Mixed Use

Corridor Mixed Use

Commercial/Office/Industrial

Highway Office/Commercial

Business Park/Light Industrial

Business Flex

Residential

Residential Density Changes

0 Miles 1

RECON

M:\JOBS5\9504\common_gis\reports\EIR\fig4.10-1.mxd 3/9/2021 fmm

Data Source: ESRI 2021, City of Moreno Valley, 2019; Riverside County GIS, 2019; Dyett & Bhatia, 2019

FIGURE 4.10-1
Watersheds

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 storm water runoff east of the topographic divide generally flows in a southerly direction to the San Jacinto River. Storm water west of the divide flows in a westerly direction to the Santa Ana River. The San Jacinto River drains approximately 540 square miles to the Railroad Canyon Reservoir (Canyon Lake) and the Railroad Canyon Reservoir occasionally discharges into Lake Elsinore. The Santa Ana RWQCB does not identify any water bodies within the Planning Area, or within the area which the Planning Area drains into, as currently listed on the federal CWA 303(d) list.

4.10.1.2 Storm Water Drainage Systems

The local storm water conveyance system is designed to prevent flooding by transporting water away from developed areas. Unfiltered and untreated storm water can contain a number of pollutants that may eventually flow to surface waters. The chief cause of urban storm water pollution is the discharge of inadequately treated waste or pollutants into the natural water system. The existing storm drains located throughout the Planning Area are shown in Figure 4-10.2. The Riverside County Flood Control and Water Conservation District (RCFCWCD) has prepared four master drainage plans (Sunnymead Area, West End, Perris Valley, and Moreno), which address the three main storm channels covering different portions of the city.

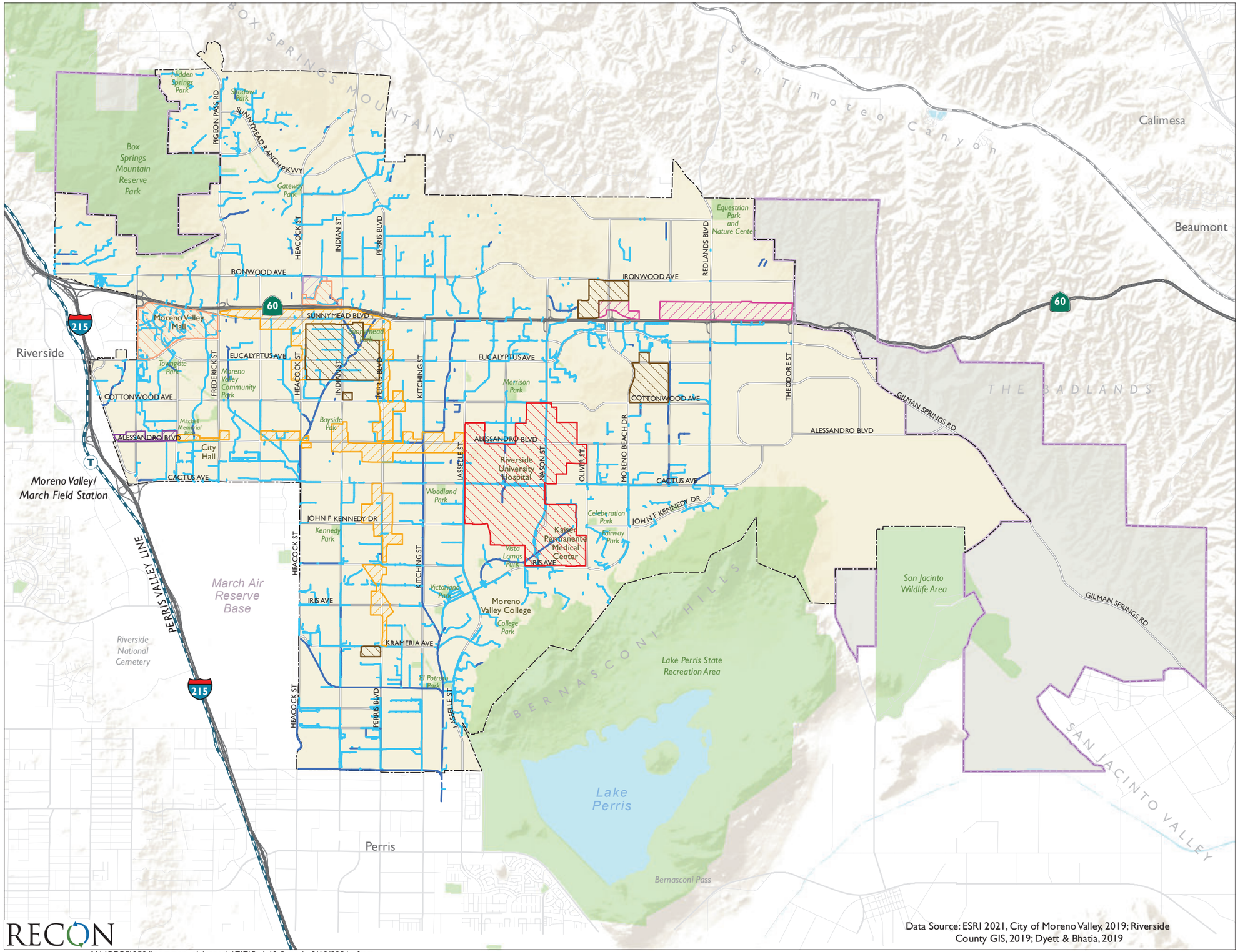
4.10.1.3 Flooding and Dam Inundation

There are four types of flooding conditions that exist within the Planning Area: flooding in defined watercourses; ponding; sheet flow; and dam inundation. Flooding within defined watercourses occurs within drainage channels and immediately adjacent floodplains. Ponding occurs when water flow is obstructed due to manmade obstacles such as the embankments of State Route 60 (SR-60) and other roadways. Sheet flow occurs when capacities of defined watercourses are exceeded and water flows over broad areas (Moreno Valley 2017).

Several portions of the Planning Area are subject to a 100-year flood, meaning a flood with a one percent chance of occurring in any given year. Based on Federal Emergency Management Agency (FEMA) mapping (Riverside County Geographic Information Systems [GIS] 2019), Figure 4.10-3 shows the FEMA floodplains/floodways throughout the Planning Area. Additionally, Table 4-10-1 accounts for the acreage within the Planning Area within each FEMA flood designation.

Table 4.10-1
FEMA Floodplains/Floodways within the Planning Area

Floodplain/Floodway	Acres
500-year Floodplain	4,804.94
100-year Floodplain	873.93
Floodway	2,124.92
TOTAL	**7,803.79**
SOURCE: Riverside County GIS 2019.	



- City of Moreno Valley
- Sphere of Influence
- Storm Water Main
- Open Channel

General Plan Concept Areas

Mixed Use

- Downtown Center
- Center Mixed Use
- Corridor Mixed Use

Commercial/Office/Industrial

- Highway Office/Commercial
- Business Park/Light Industrial
- Business Flex

Residential

- Residential Density Changes

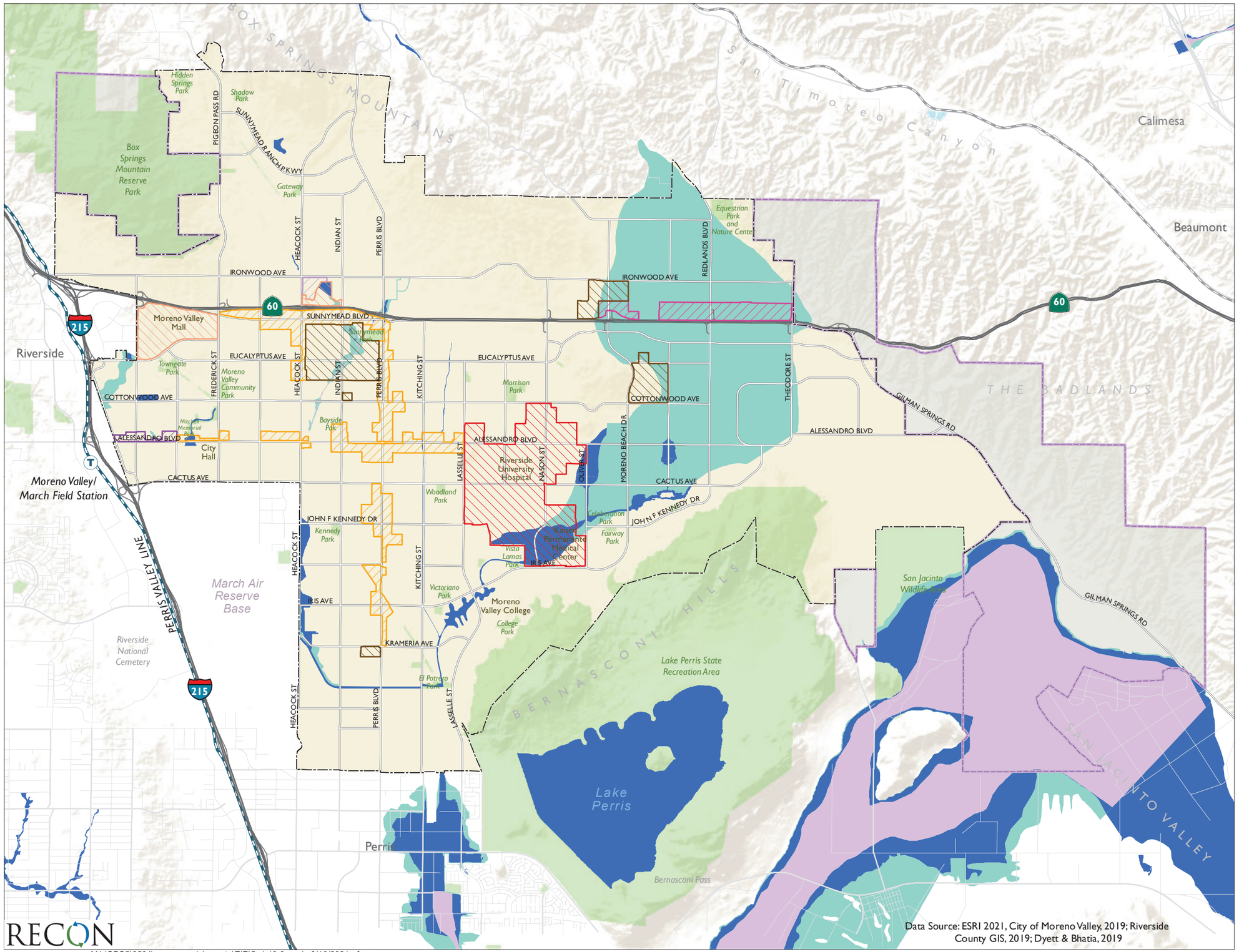
0 Miles 1

Data Source: ESRI 2021, City of Moreno Valley, 2019; Riverside County GIS, 2019; Dyett & Bhatia, 2019

RECON

M:\JOBS5\9504\common_gis\reports\EIR\fig4.10-2.mxd 3/10/2021 fmm

FIGURE 4.10-2
Existing Storm Water Facilities



- City of Moreno Valley
- Sphere of Influence

General Plan Concept Areas

Mixed Use

- Downtown Center
- Center Mixed Use
- Corridor Mixed Use

Commercial/Office/Industrial

- Highway Office/Commercial
- Business Park/Light Industrial
- Business Flex

Residential

- Residential Density Changes

FEMA Floodplains and Floodways

- 500-year Floodplain
- 100-year Floodplain
- Floodway

0 Miles 1

Data Source: ESRI 2021, City of Moreno Valley, 2019; Riverside County GIS, 2019; Dyett & Bhatia, 2019

RECON

M:\JOBS5\9504\common_gis\reports\EIR\fig4.10-3.mxd 3/10/2021 fmm

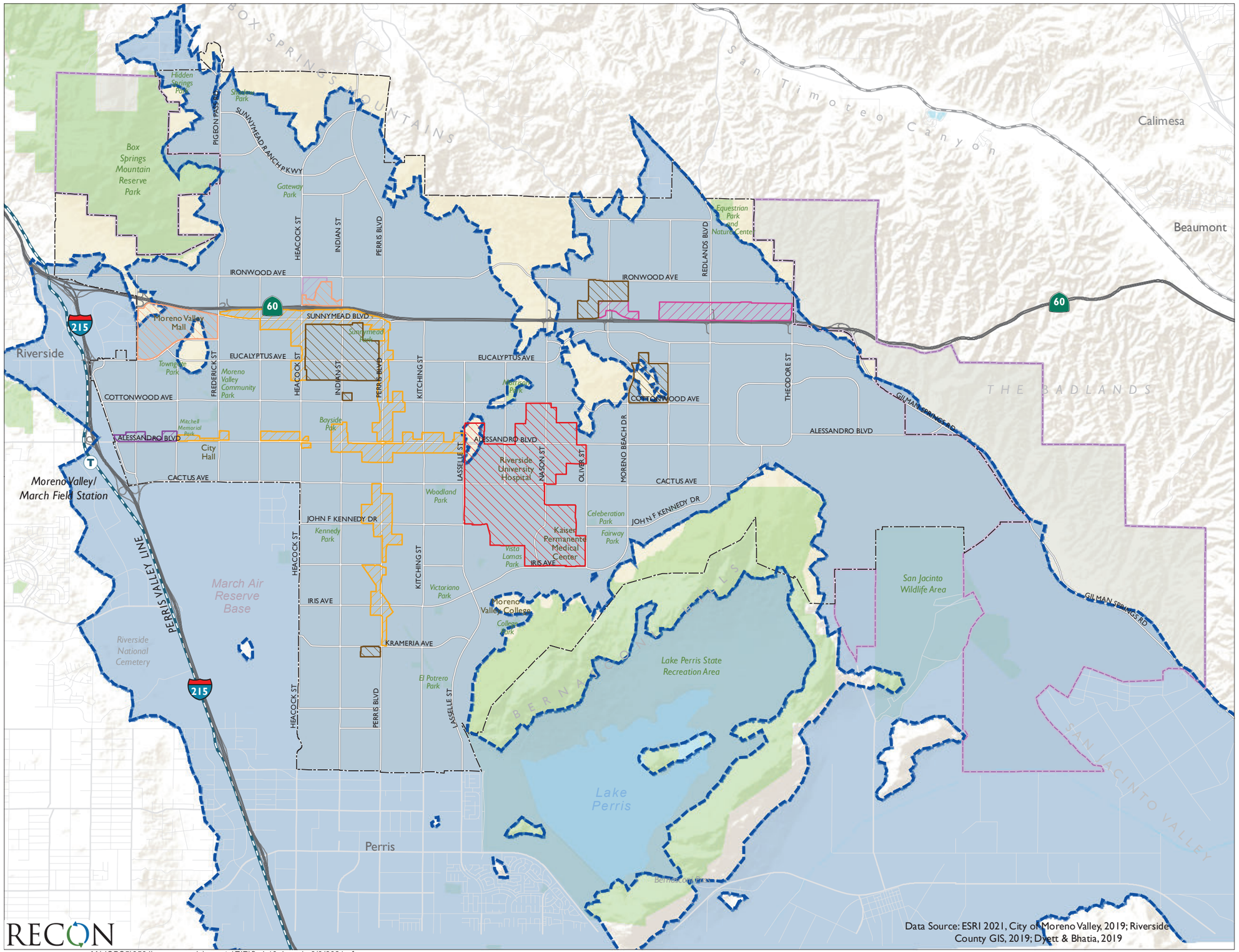
FIGURE 4.10-3
FEMA Floodplains and Floodway

The Planning Area has been susceptible to flooding in the past. Flooding could occur from severe rainfall or from dam failure, seiches, or tsunamis. Dam inundation is flooding caused by the release of impounded water from structural failure or overtopping of a dam. Seiches or tsunamis can result from abrupt movements of large volumes of water due to earthquakes, landslides, volcanic eruptions, meteoric impacts, or onshore slope failure. Portions of the Planning Area are subject to dam inundation from two dams: Pigeon Pass Dam (Poorman's Reservoir) and Perris Dam. Specifically, failure of the Pigeon Pass Dam could result in extensive flooding along the downstream watercourse. The risk of flooding due to dam failure is limited to the period during and immediately after major storms. The reservoir does not retain water throughout the year. Failure of the Perris Dam would only affect a very small area south of Nandina Avenue along the Perris Valley storm drain and the Mystic Lake area in the southeast corner of Moreno Valley (Moreno Valley 2017). Dam remediation has been ongoing to protect against failure during a seismic event (Moreno Valley 2017).

4.10.1.4 Groundwater

According to the California Natural Resources Agency, the Planning Area lies within the San Jacinto groundwater basin. Figure 4.10-4 depicts the location of the San Jacinto groundwater basin in relation to the Planning Area. 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 of water.

Water resources in the Planning Area are supported by potable groundwater wells, treated water from two desalination plants, imported water from Municipal Water District of Southern California (MWD) and water imported from other agencies. While potable ground water well account for similar acre-feet per of gross water use, this amount has reduced as a percentage of gross water use as use has increased and other available water supplies have been available including desalters and water filtration plants, and reliance on imported water from MWD and other agencies (Eastern Municipal Water District [EMWD] 2016)



City of Moreno Valley
Sphere of Influence
San Jacinto Groundwater Basin

General Plan Concept Areas

Mixed Use

Downtown Center
Center Mixed Use
Corridor Mixed Use

Commercial/Office/Industrial

Highway Office/Commercial
Business Park/Light Industrial
Business Flex

Residential

Residential Density Changes

0 Miles 1

Data Source: ESRI 2021, City of Moreno Valley, 2019; Riverside County GIS, 2019; Dyett & Bhatia, 2019

RECON

M:\JOBS5\9504\common_gis\reports\EIR\fig4.10-4.mxd 3/9/2021 fmm

FIGURE 4.10-4
Groundwater

4.10.2 Applicable Regulatory Requirements

4.10.2.1 Federal Regulations

a. Federal Water Pollution Control Act (also known as Clean Water Act)

The CWA, enacted in 1972, is intended to restore and maintain the integrity of the nation's water through a system of water quality standards, discharge limitations, and permits. The fundamental purpose of the CWA is the protection of designated beneficial uses of water resources. Section 303(d) of the 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. Development in the Planning Area would be subject to 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 RWQCB-SAR. Moreno Valley, Riverside County and 23 other cities and agencies obtained a joint NPDES permit from the RWQCB-SAR. As a co-permittee, the City has a number of obligations and responsibilities including maintaining storm drain systems, pursue enforcement for failure to comply with the permit, and respond to emergency situations related to pollution discharge.

The NPDES program also requires operators of construction sites one acre or larger to prepare a Storm Water Pollution Prevention Plan (SWPPP) for construction activities and obtain authorization to discharge storm water under an NPDES construction storm water permit (Moreno Valley 2019). The NDPES program also requires certain land uses (e.g., industrial uses) to prepare a SWPPP for operational activities and to implement a long-term water quality sampling and monitoring program, unless an exemption has been granted.

b. Federal Emergency Management Agency

FEMA is the primary agency in charge of administering programs and coordinating with communities to establish effective floodplain management standards. FEMA is responsible for delineating areas of flood hazards. It is then the responsibility of state and local agencies to implement the means of carrying out FEMA requirements. As discussed above, portions of the Planning Area are located within a mapped flood hazard area (see Figure 4.10-3).

4.10.2.2 State Regulations

a. Porter-Cologne Water Quality Control Act

This act, which is a portion of the State Water Code, establishes responsibilities and authorities of the state's RWQCB. Each RWQCB is directed to adopt water quality control plans for the waters of an area to include identification of beneficial uses, objectives to protect

those uses, and an implementation plan to accomplish the objectives. The Planning Area is under the jurisdiction of the RWQCB-SAR.

b. Sustainable Groundwater Management Act

In 2014, California lawmakers passed the Sustainable Groundwater Management Act (SGMA), which mandates that all groundwater basins within the state be managed to ensure long-term water supply reliability. Under SGMA, each high and medium priority basin, as identified by the California DWR, must have a groundwater sustainability agency that will be responsible for groundwater monitoring and the development of a groundwater sustainability plan to ensure long-term groundwater sustainability and prevent overdraft.

4.10.2.3 Regional Regulations

a. West San Jacinto Groundwater Sustainability Agency

Under SGMA, each high and medium priority basin, as identified by the California DWR, is required to have a groundwater sustainability agency that will be responsible for groundwater management and development of a groundwater sustainability plan. The EMWD Board of Directors is the groundwater sustainability agency for the West San Jacinto Groundwater Basin and is responsible for development and implementation of a groundwater sustainability plan (EMWD 2020).

b. Regional Water Quality Control Board Requirements for Septic Systems

All proposed septic systems (subsurface sewage disposal systems) must comply with RWQCB regulations designed to prevent groundwater contamination from septic system effluent.

c. Municipal Storm Water Permit

The current Municipal Separate Storm Sewer System (MS4) Permit (MS4 Permit) (R8-2010-0033) became effective for listed co-permittees, including the County, on June 27, 2013. The MS4 Permit implements a regional strategy for water quality and related concerns, and mandates a watershed-based approach that often encompasses multiple jurisdictions. MS4 co-permittees; and (2) allowing the co-permittees to focus their efforts and resources on achieving identified goals and improving water quality, rather than just completing individual actions (which may not adequately reflect identified goals). Under this approach, the co-permittees are tasked with prioritizing their individual water quality concerns, as well as providing implementation strategies and schedules to address those priorities.

d. Santa Ana Region of Riverside County Water Quality Management Plan

The RWQCB-SAR WQMP is a guidance document that helps to design projects in compliance with water quality mitigation requirements for priority development projects. These

requirements are specified in the MS4 Permit issued to the RCFCWCD, County of Riverside, and other cities within the Santa Ana River watershed. The WQMP outlines those categories of projects, called priority development permits, that require project level WQMPs. Examples of projects that require a WQMP include:

- New development that creates 10,000 square feet or more of impervious surface (collectively over the entire project site), including commercial and industrial projects and residential housing subdivisions requiring a Final Map (i.e., detached single-family home subdivisions, multi-family attached subdivisions, condominiums, apartments, etc.); mixed use and public projects (excluding road projects).

- Hillside developments disturbing 5,000 square feet or more which are located on areas with known erosive soil conditions or where the natural slope is 25 percent or more.

- Developments of 2,500 square feet of impervious surface or more adjacent to (within 200 feet) or discharging directly into environmentally sensitive areas.

- The addition or replacement of 5,000 square feet of impervious surface on an already developed site.

Project-specific WQMPs are required to include storm water best management practices (BMPs) addressing post-construction activities. WQMPs could include the requirement for low impact development (LID) BMPs and hydromodification BMPs, as necessary, to address water quality concerns. LID comprises a set of technologically feasible and cost-effective approaches to stormwater management and land development that combine a hydrologically functional site design with pollution prevention measures to compensate for land development impacts on hydrology and water quality. LID techniques mimic the site's predevelopment hydrology by using site design techniques that store, infiltrate, evapotranspire, bio-treat, bio-filter, bio-retain, or detain runoff close to its source.

e. Santa Ana River Basin Water Quality Control Plan

As mentioned above, the State Water Resources Control Board adopts statewide water quality control plans and its nine RWQCBs are required to develop and adopt regional water quality control plans that conform to state water quality policy. The city is subject to the RWQCB-SAR's Santa Ana River Basin Water Quality Control Plan, which designates beneficial uses of water bodies to be protected and establishes water quality objectives.

f. Riverside County Flood Control and Water Conservation District

The RCFCWCD is the regional flood management authority for the western part of Riverside County, including the city. The purpose of the RCFCWCD is to identify flood hazards and problems, regulate floodplains and development, regulate drainage and development, construct and maintain flood control structures and facilities, and complete County watercourse and drainage planning. The RCFCWCD is funded through a share of property taxes in addition to other funding sources. As a special district, the RCFCWCD's jurisdiction extends over the western 40 percent of Riverside County.

g. Eastern Municipal Water District 2015 Urban Water Management Plan

The EMWD 2015 Urban Water Management Plan (UWMP) provides an overview of the EMWD's long-term water supplies and demands and reports on the District's progress towards meeting the water use efficiency targets. The plan includes demand management measures that the EMWD has agreed to implement to achieve water supply savings.

4.10.2.4 Local Regulations

a. Master Drainage Plans

Master Drainage Plans (MDPs), as administered by the RCFCWCD, identifies a conceptual network of drainage facilities needed to properly convey water at a regional level throughout portions of the city. There are four MDPs, managed by the RCFCWCD, that cover the majority of the Planning Area, namely they are the Moreno MDP, the West End MDP, the Sunnymead MDP, and the Perris Valley MDP. The MDPs address regional level facilities in Moreno Valley and provide a network of drainage facilities which, when implemented, will provide proper water conveyance to the community as development continues. The fully implemented MDPs should, in conjunction with ultimate street improvements for the area within the plan boundaries, contain the 100-year frequency flows. The MDPs identify preferred facility alignments, sizing, and right-of-way required for the future construction of MDP facilities to protect existing and future development. The MDPs are intended to be used as a guide for future developments and that such developments be required to conform to the MDPs.

b. Local Hazard Mitigation Plan

The Local Hazard Mitigation Plan (LHMP) is designed to identify the city's hazards, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term natural or made-made hazard risks to life and property. The LHMP identifies specific hazards related to flooding and erosion that could result in damage to life and/or property. The LHMP also establishes hazard priority and identifies mitigation strategies for reducing losses associated with these hazards.

c. City of Moreno Valley Municipal Code

Title 8 of the City of Moreno Valley Municipal Code (Municipal Code) contains a number of regulations that address hydrology and water quality.

Chapter 8.10 Stormwater/Urban Runoff Management and Discharge Controls contains requirements that address reducing pollutants in storm water discharges to protect and enhance the water quality of local watercourses. In addition to requiring a NPDES permit, Municipal Code Section 8.10.050 specifies that new development and significant redevelopment control stormwater runoff so as to prevent any deterioration of water quality

through the identification of BMPs. The BMPs may include, but are not limited to, the following:

1. Increase permeable areas by leaving highly porous soil and low-lying areas undisturbed; by incorporating landscaping, green roofs and open space into the project design; by using porous materials for or near driveways, drive aisles, parking stalls and low volume roads and walkways; and by incorporating detention ponds and infiltration pits into the project design.

2. Direct runoff to permeable areas by orienting it away from impermeable areas to swales, berms, green strip filters, gravel beds, rain gardens, pervious pavement or other approved green infrastructure and French drains; by installing rain gutters oriented towards permeable areas; by modifying the grade of the property to divert flow to permeable areas and minimize the amount of stormwater runoff leaving the property; and by designing curbs, berms or other structures such that they do not isolate permeable or landscaped areas.

3. Maximize stormwater storage for reuse by using retention structures, subsurface areas, cisterns, or other structures to store stormwater runoff for reuse or slow release.

4. Rain gardens may be proposed in-lieu of a water quality basin when applicable and approved by the city engineer.

Chapter 8.12 Floodplain Ordinance provides regulations to minimize public and private losses due to flood conditions. Projects located within special flood hazard areas as identified by FEMA are required to obtain development permits. Construction within the special flood hazards areas is required to use standards of constructions set forth in Municipal Code Section 8.12.170, including:

1. Anchoring measures.
2. Flood resistant construction materials.
3. Adequate elevation and flood proofing.

Chapter 8.21 Grading Regulations includes the requirement for all project's that require a grading plan to also submit an erosion control plan. Pursuant to Municipal Code Section 8.21.160(B) erosion control plans are required to include details of protective measures, including desiltation basins or other temporary drainage or control measures or both, as may be necessary to protect adjoining public or private property from damage by erosion, flooding, or mud and/or debris deposits which may originate from the site or result from the grading operations. Additionally, Municipal Code Section 8.21.160(E) requires the containment of all sediment stating that runoff from disturbed areas is required to be detained or filtered by berms, swales, ditches, filter strips or other means as necessary to prevent the escape of sediment from the site.

d. Moreno Valley Capital Improvement Plan

The City's Capital Improvement Plan (CIP) (2020c) is an important planning and managing tool for the city's growth and development as well as a strategy for the maintenance of existing infrastructure. The CIP identifies projects required through the ultimate General Plan build-out of the city, which includes approximately $1.53 billion for 317 projects to improve and maintain the city's infrastructure.

4.10.3 Methodologies for Determining Impacts

The potential for significant impacts associated with the project has been determined based upon review of existing secondary source information and data relative to the hydrology and water quality resources available for the Planning Area.

4.10.4 Basis for Determining Significance

Thresholds used to evaluate impacts to hydrology and water quality are based on applicable criteria in the California Environmental Quality Act (CEQA) Guidelines (California Code of Regulations Sections 15000-15387), Appendix G. A significant impact would occur if the project would:

1) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;

2) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;

3) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

    i) result in a substantial erosion or siltation on- or off-site;

    ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

    iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

    iv) impede or redirect flood flows;

4) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or

5) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

4.10.5 Impact Analysis

4.10.5.1 Topic 1: Violate Water Quality Standards/Degrade Water Quality

Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

The project would result in development of new uses throughout the Planning Area, as shown in Figure 3-1. Additionally, currently developed but under-developed parcels could also be redeveloped with more intensive uses, especially to meet the City's Housing Element Regional Housing Needs Assessment, and land uses outside the proposed Concept Areas would be developed consistent with the existing 2006 General Plan. Both construction and operational activities associated with new development (and redevelopment) could contribute to a degradation of water quality.

a. Construction-Related Water Quality Impacts

Future construction would involve grading, paving, utility installation, building construction, and landscaping installation, which could result in the generation of potential water quality pollutants such as silt, debris, chemicals, paints, and other pollutants with the potential to affect water quality.

Pursuant to the requirements of the RWQCB-SAR and Municipal Code Chapter 8.10, future development would be required to obtain a Construction General Permit (CGP) Permit for construction activities. The CGP permit is required for all projects that include construction activities, such as clearing, soil stockpiling, grading, and/or excavation that disturb at least one acre of total land area. Additionally, all future development would be required to comply with the SAR Basin Water Quality Control Program. Compliance with the CGP Permit and the SAR Basin Water Quality Control Plan requires completion and submittal of a SWPPP for construction-related activities. The SWPPP would identify potential runoff that could result from the proposed construction and specify the BMPs that would be required to implement during construction activities to ensure that all potential pollutants of concern are prevented, minimized, and/or otherwise appropriately treated prior to being discharged. Therefore, adherence to relevant plans and programs, as well as Municipal Code requirements would ensure that future development would not violate any water quality standards or degrade surface or ground water quality, and construction-related impacts would be less than significant.

b. Post-Development Water Quality Impacts

Storm water pollutants commonly associated with the land uses proposed by the project include bacterial indicators, metals, nutrients, pesticides, toxic organic compounds,

sediments, trash and debris, and oil and grease. Pursuant to the Municipal Code Chapter 8.10, future development would be required to implement a WQMP to demonstrate compliance with the City's MS4 Permit and to minimize the release of potential waterborne pollutants. Each site-specific WQMP would include post-construction BMPs that would be permanent design features to address the reduction of storm water runoff. In addition to the WQMP, future industrial development would be governed by the Industrial General Permit (IGP), which requires the preparation of a SWPPP for operational activities. Moreover, future development would be required to adhere to the GPU Open Space and Resource Conservation (OSRC) Element, which includes the goal to minimize water pollution, and policies that require storm water pollution prevention. Therefore, adherence to relevant plans and programs, including the IGP, as well as Municipal Code requirements for preparation of a WQMP and applicable GPU policies, would ensure that future development would not violate any water quality standards or degrade surface or ground water quality, and long-term operational impacts would be less than significant.

4.10.5.2 Topic 2: Deplete Groundwater Supplies

Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Future development would increase in the amount of impervious surfaces within the Planning Area, which would reduce the amount of rainwater that would infiltrate the soil and incrementally reduce groundwater recharge rates over time. However, as described in Section 4.10.1.4 above, domestic water supplies throughout the Planning Area are not primarily reliant on groundwater. Additionally, the framework of the SGMA requires that groundwater basins within the state are managed to ensure long-term water supply reliability. Furthermore, the project has been designed to minimize the increase in impervious surfaces by primarily focusing on future development and redevelopment within the proposed Concept Areas that consist of clusters of vacant and underutilized land within the city limit that would allow for continued groundwater recharge in substantial portions of the Planning Area. Additionally, the OSRC Element includes goals to preserve and protect natural resources, and identifies policies to ensure groundwater protection and improve groundwater infiltration measures. Therefore, adherence to applicable GPU policies would ensure that future development would neither substantially deplete groundwater supplies nor interfere substantially with groundwater recharge, and impacts would be less than significant.

4.10.5.3 Topic 3: Drainage Patterns

Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in a substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; (iii) create or contribute runoff water which would exceed the

capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows?

a. Erosion or Siltation

Future development and redevelopment could alter drainage patterns by increasing the amount of impervious surfaces (e.g., streets, sidewalks and parking lots), which have a lower absorption rate for rainfall than that of vacant natural lands. However, future development would be required to construct storm drain infrastructure as necessitated in the City's MDPs, and on-site drainage facilities to ensure adequate water quality/detention basins to capture and convey storm water run-off consistent with or less than existing patterns. Individual WQMPs would include project-specific BMPs aimed at minimizing erosion and removing sedimentation from surface runoff. Future development would adhere to Municipal Code Chapters 9.17.110 and 8.10.050 requiring erosion control landscape plans, and erosion and sediment control in construction activity, respectively. Specifically, erosion control measures would ensure that surface water runoff flows leaving future development sites would not carry substantial amounts of sediment. Moreover, the GPU includes goals and policies intended to minimize water pollution through storm water pollution protection. Therefore, adherence to Municipal Code requirements and applicable GPU goals and policies would ensure that future development would not result in a substantial erosion or siltation on- or off-site, and impacts would be less than significant.

b. Increase Surface Runoff

The construction of new development and redevelopment throughout the Planning Area could result in a change of drainage patterns or increase velocity of run-off which could lead of off-site flooding. Pursuant to the SAR WQMP, some future development may be required to include BMPs to reduce flow velocity of storm water runoff. Such BMPs could include on-site drainage swales, bioretention features, use of permeable pavers in parking areas and streets, or infiltration basins which also serve as a means for pollutant removal. Additionally, applicable Priority Development Projects would be required to include LID BMPS to treat potentially polluted runoff prior to entering the public storm drain system. Project-specific studies would be required to ensure that volume-based treatment LID BMPs are properly sized to infiltrate, filter, or treat the remaining portion of the runoff volume that was not retained or treated by other BMPs. Future development would also be required to adhere to Municipal Code Chapter 9.14.110, which requires flood control measures to be included in development plans. Therefore, adherence to Municipal Code requirements and applicable GPU goals and policies would ensure that future development would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite, and impacts would be less than significant.

c. Exceed Capacity of Stormwater System

Future development could result in increased volumes of storm water runoff affecting the existing storm water drainage system. As discussed above, future development would be required to ensure surface water runoff rates and volumes closely resemble those that occur

under existing conditions. Additionally, the City's MDPs identifies facility upgrades that could apply future development. While some infrastructure improvements are included in the City's CIP, some could be carried by developers to ensure that new runoff volumes, added to existing conditions, would not exceed the capacity of the City's system. As described in Section 4.10.5.1 above, future development would be required to comply with future SWPPPs and the project-specific WQMP, which would identify BMPs to be incorporated into development plans to ensure that near-term construction activities and long-term post-development activities would not result in substantial amounts of polluted runoff. Therefore, adherence to regional and local plans and regulations would ensure that future development would not create or contribute substantial additional sources of polluted runoff that would exceed the capacity of existing or planned stormwater drainage systems, and impacts would be less than significant.

d. Flood Flows

Future development could increase volumes of stormwater runoff resulting in the impediment or redirection of flood flows. As described in Sections 4.10.5.1 and 5.10.5.3(a-c) above, future development would be required to adhere to regional and local plans, programs and regulations relating to storm water runoff and volume flow. All future development would include BMPs to manage polluted runoff and minimize flow volume and velocity. Therefore, adherence to Municipal Code requirements and applicable GPU goals and policies would ensure that future development would not substantially impede or redirect flood flows, and impacts would be less than significant.

4.10.5.4 Topic 4: Flood hazard, Tsunami, or Seiche

In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

The Pacific Ocean is located more than 40 miles from the city. Therefore, there is no potential for tsunamis to impact the Planning Area. As shown in Figure 4-10.3, a portion of the Planning Area is located within a 500-year floodplain, and a small portion within a 100-year floodplain. Specifically, the Highway Office/Commercial Concept Area, both Residential Density Change Concept Areas along Moreno Beach Drive, and a small portion of the Downtown Center within areas designated as 500-year and 100-year floodplains. Future development within these areas, as well as the rest of the Planning Area would be required to comply with Municipal Code Chapter 8.12, Floodplain Ordinance, which requires flood safe measures be included in development plans. Specifically, future development may require elevated building pads, and/or other compliance measures as specified by FEMA. For example, future development within the 100-year floodplain would be required to secure a Conditional Letter of Map Revision and Permanent Letter of Map Revision from FEMA to demonstrate that proposed structures would be located outside of a 100-year flood hazard area. Moreover, future development would be required to adhere to the GPU Safety Element goal to protect life and property from natural and manmade hazards, as well as policies requiring flood protection. Therefore, adherence to FEMA processes and Municipal Code requirements for flood safe measures, and GPU policies would ensure that future

development would not result in risks associated with flooding and would be less than significant.

Portions of the Planning Area are subject to inundation from two dams: Pigeon Pass Dam (Poorman's Reservoir) and Perris Dam. As described in Section 4.10.1.3 above, risk associated with flooding due to dam failure at Pigeon Pass Dam (Poorman's Reservoir) is limited to the period during and immediately after major storms. The reservoir does not retain water throughout the year. As described above, future development surrounding Pigeon Pass Dam (Poorman's Reservoir) would be required to comply with Municipal Code Chapter 8.12, Floodplain Ordinance, which requires flood safe measures be included in development plans. Furthermore, future development would be required to adhere to the GPU Safety Element goal to protect life and property from natural and manmade hazards, as well as policies requiring flood protection. Perris Dam was identified as a high priority state-owned dam due to its proximity to nearby faults and large downstream communities. In 2018, a major retrofit to Perris Dam was completed as a statewide effort to reduce seismic risks to dams (DWR 2019). Upgrades to the dam include a reinforced foundation, construction on the Outlet Tower Bridge (planned to be complete in 2020), and improvements to the Emergency Release Facility that would direct the flow of water in an emergency requiring the dewatering of the reservoir (planned for completion 2023). Implementation of these remediation measures at Perris Dam would ensure that impacts related to flooding due to dam failure would be less than significant. Lake Perris, located approximately one mile south of the Planning Area, is the only large water body that could cause a seiche. The remediation measures for Perris Dam described above would also serve to protect against a seiche. Mystic Lake is a season water body that is dry for substantial periods of time located in the southeastern portion of the SOI. Land surrounding Mystic Lake is currently undeveloped and is designated as Floodplain in the 2021 GPU. Therefore, impacts associated with flooding due to dam failure and seiche would be less than significant.

4.10.5.5 Topic 5: Water Quality Plans

Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

As described in Section 4.10.5.1 above, future development would be required to comply with the SAR Basin Water Quality Control Program, which includes the requirement to complete and submit of a SWPPP for construction-related activities. Future development would also be required to implement a WQMP to demonstrate compliance with the City's MS4 permit and to minimize the release of potential waterborne pollutants. Therefore, the project would not conflict with or obstruct implementation of a water quality control plan, and impacts would be less than significant.

As described in Section 4.10.1.4 above, domestic water supplies throughout the Planning Area are not reliant on groundwater as a primary source. Additionally, the framework of the SGMA ensures that groundwater basins within the state are managed to ensure long-term water supply reliability. Furthermore, the OSRC Element includes the goals to preserve and protect natural resources, and policies are identified to ensure groundwater protection and

improve groundwater infiltration measures. Therefore, the project would not conflict with or obstruct implementation of a groundwater management plan, and impacts would be less than significant.

4.10.6 Cumulative Analysis

Future development could increase the total amount of pollutants entering downstream rivers and water bodies, and could increase rates and volumes of storm water runoff due to new impermeable surfaces. However, future development would be required to adhere to all relevant regional and local plans, Municipal Code regulations, and proposed policies contained in the updated elements of the GPU. Specifically, future development would be required to submit WQMPs to identify BMPs directed at pollution reduction and the maintenance of on-site drainage patterns. Additionally, the project's incremental contribution to the drainage system and water quality impacts would not be cumulatively considerable due to compliance with the requirements of the joint NPDES permit from the RWQCB, which includes specific requirements to substantially reduce the potential for impacts. The project would achieve flood control and infrastructure maintenance needs through implementation of the City's MDPs and/or CIP. Moreover, the project would not result in flood hazards related to tsunami or seiche. Therefore, the project would not contribute to cumulative impact related to hydrology and water quality.

4.10.7 Significance of Impacts before Mitigation

With respect to all issues discussed under Section 4.10.5, future development would be required to comply with GPU OSCR Element policies supporting the protection of water quality, thereby minimizing potential adverse impacts. Additionally, future development would also be required to comply with regional and local plans, the City's Municipal Code requiring project-specific BMPs to reduce polluted runoff, maintain drainage patterns, and minimize runoff flows and volumes. Consistent with General Plan OSCR Element policies, future development would submit a SWPPP, if necessary, and adhere to Municipal Code requirements for WQMPs. Therefore, impacts related to hydrology and water quality would be less than significant.

4.10.8 Mitigation

Impacts associated with hydrology and water quality would be less than significant. No mitigation is required.

4.10.9 Significance of Impacts after Mitigation

Impacts associated with hydrology and water quality would be less than significant. No mitigation is required.