SECTION 3.4

HYDROLOGY AND WATER QUALITY

3.4 Hydrology and Water Quality

This section describes potential impacts to hydrology and water quality resulting from the proposed project and is based on information contained in the *Storm Water Management Plan* (*SWMP*) (Fuscoe, May 2007, included as Appendix O to the Merriam Mountains Specific Plan Draft EIR, dated August 2007) and the *Hydrology/Hydraulics Study for Merriam Mountain* (Fuscoe, March 2007, included as Appendix P to the Merriam Mountains Specific Plan Draft EIR, dated August 2007) prepared for the project site. The following section also includes potential impacts to hydrology and water quality resulting from required offsite improvements along Deer Springs Road based on the *Preliminary SWMP* (Fuscoe, February 2009a) and the *Preliminary Drainage Study* (Fuscoe, February 2009b). A complete copy of the Preliminary *SWMP and Drainage Study* for Deer Springs Road (Fuscoe, February 2009) can be found in Appendices O and P, respectively.

3.4.1 Discussion of Existing Conditions Relating to Hydrology and Water Quality

Surface Water

The San Diego region has 13 principal stream systems originating in the western highlands that flow to the Pacific Ocean. Most of the streams of the San Diego region are intermittent in character, having both perennial and ephemeral components due to the rainfall pattern and the development of surface water impoundments. According to the RWQCB Hydrologic Basin Planning Area Map, the eastern portion of the project is located in the Moosa Hydrologic Subarea. The northwest portion of the project is located in the Bonsall Hydrologic Subarea, while the southeast portion is situated in the Twin Oaks Hydrological Subarea.

The South Fork Moosa Canyon, South Fork Gopher Canyon, and San Marcos Creek receive runoff from the site. South Fork Moosa Canyon and South Fork Gopher Canyon are beneficial waters for agriculture, industrial service supply, contact and non-contact water recreation, warm freshwater habitat, and wildlife habitat. San Marcos Creek is beneficial for agriculture, contact and non-contact water recreation, warm freshwater habitat, and wildlife habitat.

Water Quality

Water quality is affected by sedimentation caused by erosion, runoff carrying contaminants, and direct discharge of pollutants (point-source pollution). As land is developed, new impervious surfaces send an increased volume of runoff containing oils, heavy metals, pesticides, fertilizers, and other contaminants (non-point source pollution) into adjacent watersheds. Stormwater that accumulates on impervious surfaces, such as parking lots, roof tops, and streets, drains directly and indirectly to waters of the United States.

Under Section 303(d) of the Clean Water Act (CWA), the State Water Resource Control Board (SWRCB) is required to develop a list of water quality limited segments for jurisdictional waters of the United States. The waters on the list do not meet water quality standards; therefore, the RWQCB was required to establish priority rankings, called total maximum daily loads (TMDL), and develop action plans to improve water quality. The impaired water body nearest to the project is the San Luis Rey River, located approximately 5 miles to the north. Runoff from the project area flows to the San Luis Rey River via the South Fork Gopher Canyon Creek. According to the 2002 CWA Section 303(d) List of Water Quality Limited Segments for the San Diego region, the San Luis Rey River is impaired for chloride and total dissolved solids. Guajome Lake, which is considered eutrophic, is located approximately 6 miles northwest; however, this water body is not hydrologically connected to the project area.

Drainage

The project site consists of natural hills and valleys encompassing a total of 2,327 acres that currently drain via the watersheds described above. The drainage study determined the existing drainage patterns on the site and at off-site improvement locations and estimated the quantity of stormwater runoff from the proposed development. The study divided the site into hydrologic basins based on final design surface conditions and anticipated runoff. Details of each basin are provided later in this section.

Regulatory Setting

Several local, state, and federal regulations govern discharges associated with construction and post-construction stormwater runoff to protect the water quality of receiving waters. The following is a summary of the regulatory framework that has been established to protect water resources.

<u>Federal</u>

Federal Clean Water Act (*CWA*). Increasing public awareness and concern for controlling water pollution led to enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the CWA. The CWA established basic guidelines for regulating discharges of pollutants into the waters of the United States. The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA.

National Pollution Discharge Elimination System (*NPDES*). The NPDES permit program, as authorized by Section 402 of the CWA, was established to control water pollution by regulating point sources that discharge pollutants into waters of the United States. In the State of California,

the Environmental Protection Agency (EPA) has authorized the SWRCB permitting authority to implement the NPDES program. In general, the SWRCB issues two baseline general permits: one for industrial discharges and one for construction activities. The Phase II Rule that became final on December 8, 1999, expanded the existing NPDES program to address stormwater discharges from construction sites that disturb land equal to or greater than 1 acre.

Section 401 of the CWA. Section 401 of the CWA requires an applicant for a federal permit for activities such as the construction or operation of a facility that may result in the discharge of a pollutant to obtain certification of those activities from the state in which the discharge originates. This process is known as the Water Quality Certification for the project. For projects in San Diego, the San Diego RWQCB issues Section 401 permits.

Section 404 of the CWA. Section 404 of the CWA established a permitting program to regulate the discharge of dredged or filled material into waters of the United States. The definition of waters of the United States includes wetlands adjacent to national waters. This permitting program is administered by the ACOE and enforced by the EPA.

State

Porter-Cologne Water Quality Control Act. The Porter-Cologne Act, also known as Division 7 of the California Water Code, is the basic water quality control law for California. The goal of the Porter-Cologne Act was to create a regulatory program to protect water quality and beneficial uses of the state's waters. As such, the state and regional boards were established to implement and enforce the CWA and state-adopted water quality control plans.

State Water Resource Control Board (*SWRCB*). The SWRCB is responsible for issuing stormwater permits in accordance with the NPDES program. For projects disturbing 1 or more acres of land, the applicant must file a Notice of Intent (NOI) for coverage under the General Permit for Stormwater Discharges Associated with Construction Activity (General Permit) and prepare a stormwater pollution prevention plan (SWPPP) that specifies best management practices (BMPs) to prevent pollutants from contacting stormwater and procedures to control erosion and sedimentation.

Regional Water Quality Control Board (RWQCB). San Diego County falls within the jurisdiction of the Region 9 RWQCB. Each RWQCB is responsible for water quality control planning within their region, often in the form of a basin plan. The RWQCB is also responsible for implementing the provisions of the General Permit, including reviewing SWPPPs and monitoring reports, conducting compliance inspections, and taking enforcement actions.

Local

Municipal Stormwater Permit. The County of San Diego and 19 other cities or jurisdictions in the region were issued an NPDES Municipal Stormwater Permit on February 21, 2001, by the San Diego RWQCB. The permit requires the development and implementation of BMPs in development planning and construction of private and public development projects. Development projects are also required to include BMPs to reduce pollutant discharges from the project site in the permanent design. BMPs associated with the final design are described in the Model Standard Urban Stormwater Mitigation Plan (SUSMP). In addition, the County of San Diego requires a stormwater management plan (SWMP) to describe potential construction and post-construction pollutants and identify BMPs to protect water resources.

Hydrologic Conditions/Hydromodificiation. The County of San Diego SUSMP requirements state that a change to a project site's hydrologic regime would be considered a condition of concern if the change would impact downstream channels and habitat integrity. In addition, development projects disturbing over 50 acres in area are subject to Interim Hydromodification Criteria. This criterion requires that post-project runoff rates and durations not exceed pre-project runoff rates and durations, where the increased flow rates will result in increased potential for erosion or other significantly adverse impacts to beneficial uses, attributable to changes in flow rates and durations.

3.4.2 Guidelines for the Determination of Significance

The following guidelines of significance will be considered substantial evidence that a significant impact to hydrology and/or water quality would occur if:

1) Violations of any water quality standards or waste discharge requirements or conflict(s) with the goals and requirements of applicable federal, state and local regulations including the Clean Water Act, Porter-Cologne Water Quality Act, County of San Diego Revised Grading Ordinance, County of San Diego Watershed Protection, and Stormwater Management and Discharge Control Ordinance

2) Substantial alteration of the existing drainage pattern of the site or vicinity in a manner that would result in substantial erosion or siltation onsite or off site or that would substantially increase the rate or manner of surface runoff, resulting in flooding on site or off site

3) Generation of runoff water that would exceed the capacity of the existing or planned stormwater drainage systems or result in substantial additional sources of polluted runoff

4) Development in a floodway or mapped 100-year floodplain

5) The degradation of the water quality of any water course or water body, as listed on the CWA Section 303(d) list, and the project will contribute additional pollutants for which the receiving water body is already impaired

6) An exceedance of applicable federal or state drinking water standards for maximum contaminant levels in waters designated in the Basin Plan with a municipal and domestic supply (MUN) beneficial use.

Guideline Sources

The identified significance thresholds are based on criteria provided in Appendix G of the state CEQA Guidelines, as well as the County, federal, and state standards described above. These thresholds are intended to ensure conformance with existing regulatory standards as well as to protect public health and safety and private property from hydrology- and water-quality-related hazards.

3.4.3 Analysis of Project Effects and Determination of Significance

Guideline 1: Violate any Water Quality Standard

The project incorporates erosion- and sediment-control design considerations, including construction and post-construction BMPs pursuant to the County Storm WPO, and other measures required as part of the County Grading Permit. The proposed project will be required to conform to the applicable guidelines in effect at the time of filing the grading permit application. The SWMP (Appendix O) provides details regarding the filtration, treatment, and/or detention of stormwater from the project area.

Figure 3.4-1 depicts the location of proposed on-site water quality basins for treatment and detention prior to discharge at the natural drainage channels. In addition, a SWPPP is required as part of the General Permit for Stormwater Discharges Associated with Construction Activity (General Permit No. CAS000002) administered by the SWRCB. The SWPPP will include construction and post-construction BMPs similar to those included in the SWMP. These environmental design considerations are listed in Section 1.0 and detailed under the List of Mitigation Measures and Environmental Design Considerations provided at the end of this EIR.

Roadway runoff from off-site improvements will be directed to vegetated bio-filtration swales to treat stormwater and allow for pollution filtration, in accordance with the County of San Diego's Watershed Protection Ordinance (WPO), Stormwater Standards Manual, and Standard Urban Stormwater Mitigation Plan (SUSMP).

Construction activities could result in wind and water erosion leading to sediment-laden discharges to nearby water resources. Sediment transport to drainages, creeks, and streams adjacent to the project area could result in degradation to water quality. Similarly, fuels, oils, lubricants, and other hazardous substances used during construction could be released and impact surface and groundwater. Following the completion of construction, runoff from impervious surfaces could carry pollutants, such as, oils, grease, pesticides, fertilizers, and trash, to surface waters via a stormwater conveyance system. However, based on the BMPs incorporated into the project design for construction and post-construction protection of water resources and requirements of local, state, and federal jurisdictions, impacts to water quality would be less than significant.

Guideline 2: Alteration of Existing Drainage

The proposed project will increase the total area of impervious surfaces, which would result in an increase in peak runoff for some internal subbasins. The project proposes extended detention basins designed to reduce internal increases in flows to pre-development conditions prior to flows leaving the site. Due to the undeveloped nature of the project area, no existing stormwater drainage systems are located on site. A stormwater drainage system will be constructed as part of the development and has been designed to safely convey a 100-year storm event (Fuscoe, May 2007). Details regarding the stormwater drainage system are provided in Appendices O and P. This storm drain system would consist of underground concrete pipes, inlets, outlets, detention basins, and swales. The system would collect surface waters originating within the development and carry it through the site to water quality basins for treatment and detention prior to discharge at the natural drainage channels. The proposed extended detention basins are also depicted on Figure 3.4-1. Along the project frontage adjacent to Deer Springs Road, the storm drain system will outlet to the existing drainage course which runs to the west and then south. Impacts resulting from the alteration of existing drainages will be less than significant because the on-site detention basins proposed will reduce peak outlet flows to pre-development conditions. Table 3.4-1 provides a summary of the basins within the project limits, including pre- and post-development runoff rates, which demonstrates that there would be no increase in runoff to off-site properties.

The drainage system for Deer Springs Road has been designed to safely convey the 100-year storm event, which will eliminate the potential of flooding along the roadway (Fuscoe, February 2009b). Due to the roadway widening and, in some areas, re-alignment, all of the existing storm drain crossings beneath the roadway will need to be upsized as part of the roadway improvements (see Guideline 3 below). Additionally, an underground storm drain system will be installed to collect the roadway drainage. The proposed drainage conditions will preserve existing drainage patterns to ensure that flows are conveyed toward natural drainage courses in

the post-project condition. Channeling these flows through vegetated swale systems allows for biological contact of pollutants resulting in improved water quality through both natural and mechanical filtration means while minimizing the directly connected impervious areas to natural drainages.

In summary, the proposed project and off-site improvements completed along Deer Springs Road will not alter the existing drainage pattern in a manner that would result in substantial erosion or siltation on site or off site or that would substantially increase the rate or manner of surface runoff. Impacts would be less than significant. Guideline 3: Exceed Existing or Planned Stormwater Drainage System CapacityThe drainage study prepared for the proposed project (Fuscoe, March 2007, included as Appendix P to the Merriam Mountains Specific Plan Draft EIR, dated August 2007) analyzed the subbasins located within each watershed (i.e., South Fork Moosa Canyon, San Marcos Creek Watershed, and South Fork Gopher Canyon Watershed) to determine if existing stormwater conveyance systems are adequate to carry increased runoff resulting from post-development conditions (refer to Table 3.4-1). The analysis determined that 11 subbasins (1, 10, 13, 16, 19, 20, 21, 24.1, 24, 26, and 27) would result in significant increases in runoff (Impact WQ-1).

Four subbasins within the project site (3, 5, 28, and 35) and three off-site subbasins (0, 1, and 2) would result in less than a 5% increase in runoff (Impact WQ-2). Mitigation measures have been provided to reduce minor increases in flows, reducing project flows to pre-development conditions.

In addition to the above-mentioned subbasins, the flow to each culvert under Deer Springs Road was analyzed to determine if the ponding depth could be accommodated without overtopping the road. A substantial increase in runoff that exceeds the capacity of existing or planned stormwater conveyance systems would be considered a significant impact. The culverts for subbasins 21-24.2 appear to be undersized to convey flows; therefore, impacts are significant (Impact WQ-3). Replacement or upgrades to all drainage structures for Deer Springs Road, consisting of the replacement of existing culverts, will be required to meet the satisfaction of the County of San Diego Department of Public Works.

No increase in runoff would result to the remaining subbasins, as the anticipated peak flow values for these subbasins would remain the same (or would be reduced due to reductions in drainage areas). Therefore, no impacts would result to the remaining subbasins.

An interim hydromodification evaluation has been completed in the SWMP (Appendix O to this EIR). As seen in the SWMP the peak flow attenuation facilities currently proposed can comply with interim hydromodification criteria. Detention basin capacity and placement are currently

adequate for all ranges of storm runoff and will not be significantly altered with application of interim hydromodification criteria.

Maintenance of the detention basins and any other treatment control BMPs would be the responsibility of the Merriam Mountains HOA, CFD, and/or other approved entity. The design of the drainage systems would conform to local, state, and federal standards as described in the *SWMP*, Hydrology/Hydraulics Study Fuscoe, May 2007 (included as Appendices O and P to the Merriam Mountains Specific Plan Draft EIR, dated August 2007) and *Preliminary SWMP and Drainage Study for Deer Springs Road* (Fuscoe, February 2009).

Guideline 4: Flooding

The proposed project is located within the Merriam Mountains just east of the San Marcos Mountains. Natural topography of the site is comprised of hills and valleys dominated by significant rock outcroppings with moderate to steeply sloping terrain. On-site elevation ranges from approximately 850 feet AMSL near the intersection of Deer Springs Road and I-15 to about 1,765 feet AMSL in the north central portion of the property. The proposed project site is not located within a 100-year or 500-year floodplain (San GIS 1997). The project site is not located within a floodway or mapped 100-year floodplain therefore, impacts resulting from flooding would be less than significant.

The proposed project includes offsite improvements along Deer Springs Road between the I-15 interchange to Twin Oaks Valley Road as seen in Figures 1.1-15A and 1.1-15B. Deer Springs Road is an existing two lane roadway that would be widened to four lanes as part of the required offsite improvements. A portion of the Deer Springs widening between the Twin Oaks Valley Road/Deer Springs Road intersection to approximately 1,300 feet north would be located within the FEMA 100-year floodplain (SanGIS 1997). The proposed design for Deer Springs Road includes the upsizing of existing culverts located within the mapped floodplain to ensure 100 year flows would be conveyed beneath the roadway consistent with the natural drainage patterns. Therefore through the upsizing of existing culverts included as part of the roadway design would ensure that flood water displacement would be within acceptable limits of FEMA standards, and the project would not substantially impede or redirect flood flows. In accordance with FEMA procedures, a Conditional Letter of Map Revision (CLOMR) will be processed with FEMA to ensure that the proposed improvements will not increase the flooding hazard. The final Letter of Map Revision (LOMR) requires certification of the as-built conditions, and as a result the LOMR will be processed with FEMA at the completion of the roadway improvements.

Guideline 5: Impaired Waters

Temporary construction activities could result in sediment transport and deposition to nearby water resources. Post-construction urban runoff from the proposed project would pick up a variety of water contaminants and without proper management could degrade water quality. As discussed above, the San Luis Rey River is impaired for chloride and total dissolved solids. Both of these constituents can result from urban runoff.

Further degradation of impaired water bodies, as listed on the state's 303(d) list, would be considered a significant impact. The San Luis Rey River, which is considered a 303(d)-listed water body, would receive runoff from the project via the South Fork Gopher Canyon Creek. San Marcos Creek would also receive flows from the project site and is not listed as an impaired water. To ensure that water quality impacts are less than significant, runoff from the project site that flows to these basins will be reduced to a level below significance through BMPs included in the SWMP. The SWMP required by the County of San Diego is intended to reduce pollutant load from runoff prior to the runoff leaving the project area. The SWMP includes measures such as extended detention basins, vegetated swales, and directing flows to permeable surfaces.

The proposed project will include the following BMPs to employ during construction (these features shall appear as notes on final design plans):

- Silt fences installed along limits of work and/or the project construction site
- Stockpile management (e.g., Visqueen, fiber rolls, gravel bags)
- Storm drain inlet protection
- Street sweeping and vacuuming
- Spill prevention and control
- Solid waste management
- Contaminated soil management.

Implementation of these measures through the SWMP would reduce impacts to a level below significance.

Guideline 6: Exceedance of Applicable Drinking Water Standards

The groundwater associated with the Lower San Luis Rey Hydrologic Area and the Twin Oaks Hydrologic Subarea has beneficial uses, including MUN. It should be noted that none of the watersheds that would receive flows from the proposed project convey flows to a drinking water supply reservoir. Potentially hazardous materials used during construction, such as oils, grease,

lubricants, coolant, paints, and solvents, pose a risk to groundwater supply if they are released to the ground. Similarly, chemicals and fertilizers used during the post-development operation phase of the project could infiltrate and contaminate groundwater.

BMPs included in the SWMP are required to reduce contaminants in both surface water and groundwater. Measures such as education, good housekeeping, and inspection of outdoor material storage areas for leaks or potential pollution also reduce generation of contaminants.

In summary, the project will comply with all applicable water quality ordinances, including the adopted SUSMP for San Diego County which outlines procedures for approval of extended detention and infiltration BMPs. This evaluation occurs prior to development permits and includes measures such as pre-treatment basins and diversion of non-storm water discharges, and 10 foot vertical separation between the bottom of a detention basin and ground water. It is typical that any contaminants present in the runoff are intercepted in the first 4 to 6 inches of the basin bottom soils. Therefore, applicable drinking water standards are mandated to reduce impacts to groundwater supplies to less than significant.

3.4.4 Cumulative Impact Analysis

The proposed project is located in two separate watersheds: the San Luis Rey and Carlsbad watersheds. The northeastern portion of the site is located in the San Luis Rey Watershed and the southwestern portion of the site is located in the Carlsbad Watershed. Water runoff from the project site travels to three water bodies: the South Fork Moosa Canyon, South Fork Gopher Canyon, and San Marcos Creek. The proposed project has been designed to reduce flows from the project site to pre-developed conditions. The cumulative study area for hydrology and water quality includes all projects located within the two watersheds, which would amount to all the projects on the cumulative project list (refer to Tables 1.1-4 and 1.1-5).

Urbanization and the associated increase in impervious surfaces typically result in an increase in stormwater runoff, decreased infiltration, and an increase in certain pollutants. Without proper controls, these changes can in turn erode stream banks, degrade aquatic habitat, and adversely affect water quality. Factors such as traffic, runoff, and pollution increase incrementally with the addition of multiple projects within a watershed and can adversely impact water resources.

Individual projects are required to address the construction and post-construction runoff that they generate in order to comply with the federal Clean Water Act, the state's Porter-Cologne Water Quality Control Act, and the County of San Diego's Watershed Protection, Stormwater Management, and Discharge Control Ordinance. Adherence to the regulations governed by jurisdictional agencies substantially reduces the cumulative impacts of multiple projects on water quality.

Increased impervious surfaces would also result in the loss of water being recharged into the groundwater basin. However, each cumulative project would individually be required to implement BMPs and SWPPPs in accordance with the Municipal Storm Water National Pollutant Discharge Elimination System (NPDES) Permit, to reduce potential water quality impacts. Adherence with regional standards requires that runoff not exceed that of the existing conditions. In addition, each project is subject to the requirements of their jurisdiction to provide drainage systems to capture project-generated runoff. These drainage systems are required to be approved by a city or county engineer, prior to project approval.

All projects are inspected and are required to be constructed and managed in accordance with regional BMPs and discharge requirements, in compliance with the County's Watershed Protection, Storm Water Management, and Discharge Control Ordinance. Adherence with regional standards would eliminate unlawful discharge quantities or water quality management practices from occurring on a cumulatively considerable scale. In summary, given current regulations, each project would be constructed and managed in accordance with regional requirements, which typically require acquisition of discharge permits and the use of BMPs to limit erosion and control sedimentation. Therefore, there would not be significant cumulative impacts to hydrology and water quality.

3.4.5 Growth-Inducing Impact

The detention basins and culverts that are proposed as mitigation measures M-WQ-1 through M-WQ-3 below will be designed to adhere to the County of San Diego's Hydrologic Method and Design Criteria to avoid flooding and damage to existing and planned structures or improvements. The proposed project does not propose flood-control structures that would potentially result in growth in previously flood-prone areas. Any growth induced by the project beyond the project limits would be required to comply with local, state, and federal regulations. In addition, detention basins would be sized only to accommodate runoff from the Merriam Project and would not result in downstream hydrological impacts. Therefore, growth-inducing hydrology impacts would not result.

Summary of Impacts

The following hydrology and water quality impact have been identified with runoff associated from the proposed project.

WQ–1 Significant increases in runoff to Subbasins 1, 10, 13, 16, 19, 20, 21, 24.1, 24, 26, and 27.

WQ–2 Minor increases in runoff to Subbasins 3, 5, 28, and 35, as well as off-site subbasins 0, 1, and 2.

WQ–3 Significant increases in runoff to existing culverts under Deer Springs Road that result in runoff impacts to subbasins 21-24.2.

3.4.6 Mitigation Measures

To reduce impacts from significant increases in runoff, the following measure shall be implemented as specified for each basin:

M–WQ–1a Subbasin 1–A 42-inch restrictor shall be installed on the existing culvert to utilize existing depression storage for peak flow.

M–WQ–1b Subbasin 10–A 36-inch restrictor shall be installed on the existing culvert to utilize existing depression storage for peak flow.

M–WQ–1c Subbasin 13–A 33-inch restrictor shall be installed on the existing culvert to utilize existing depression storage for peak flow.

M–WQ–1d Subbasin 16–A 36-inch restrictor shall be installed on the existing culvert to utilize existing depression storage for peak flow.

M–WQ–1e Subbasin 19–A 30-inch restrictor shall be installed on the existing culvert to utilize existing depression storage for peak flow. Runoff diverted from subbasin 20 shall be managed in the same location.

M–WQ–1f Subbasin 20–A grass swale shall be constructed to divert excess flow to storage area in subbasin 19.

M–WQ–1g Subbasin 21–A detention basin shall be constructed at the outlet of this subbasin as part of the grading for this area.

M–WQ–1h Subbasin 24.1–An underground storm drain system shall be implemented to route the flow to the existing channel where it would normally be conveyed through surface systems.

M–WQ–1i Subbasin 25–Two detention basins shall be constructed (Detention 25a and 25b) as part of grading for this area.

M–WQ–1j Subbasin 26–A detention basin (Detention 26) shall be constructed as part of grading for this area.

M–WQ–1k Subbasin 27–A detention basin (Detention 27) shall be constructed as part of grading for this area.

The following mitigation measure shall ensure that potential impacts from minor runoff increases to existing subbasins are reduced to a level below significance:

M-WQ-2 BMPs shall be implemented to reduce to pre-development levels any necessary minor increases in subbasins 3, 5, 28 and 35 and off-site subbasins 0, 1, and 2.

Impacts to undersized culverts along Deer Springs Road shall be mitigated through replacement or upgrades to all existing drainage structures to meet the satisfaction of the County of San Diego Department of Public Works, which include but not limited to the following mitigation measures:

M–WQ–3a Existing culverts located beneath Deer Springs Road shall be replaced with culverts per the recommendations included in the *Preliminary Drainage Study* for Deer Springs Road (Fuscoe, February 2009b). As seen in the *Preliminary Drainage Study* for Deer Springs Road, culverts will be upsized to accommodate runoff within subbasins 21 to 24.2. Preliminary sizing of the culverts vary from 18 to 42 inches, which will likely be constructed of reinforced concrete pipe. Prior to issuance of grading permits for Deer Springs Road, DPW shall approve the final engineering of culvert sizes, location, and alignment**.**

M–WQ–3b Construction of a diversion, flow restrictor, and berm shall occur at Highway I-15, Subbasins 19 and 20.

3.4.7 Conclusion

Construction and long-term operation of the project would avoid potentially significant impacts to hydrology and water quality through implementation of standard and site-specific BMPs as required by the County of San Diego, review and approval of the project's drainage study, and a stormwater management plan.

Off-site roadway improvements will be to the satisfaction of the Director of Public Works and will comply with the requirements of the County of San Diego Public Road Standards, Hydrology Manual, and Drainage Design Manual. Accordingly, the project will be required to comply with all applicable water quality standards in effect at the time of construction permit issuance. Roadway runoff will be directed to vegetated bio-filtration swales to treat stormwater and allow for pollution filtration, in accordance with the County of San Diego's Watershed Protection Ordinance (WPO), Stormwater Standards Manual, and Standard Urban Stormwater Mitigation Plan (SUSMP). Channeling these flows through vegetated swales systems allows for

biological contact of pollutants resulting in improved water quality through both natural and mechanical filtration means while minimizing the directly connected impervious areas to natural drainages.

Analysis of the existing stormwater conveyance system indicated that several culverts would require improvement or re-sizing to reduce impacts to a less than significant level. The *Preliminary Drainage Study* (Fuscoe, March 2007) proposes mitigation measures that consist of improvements to culverts and construction of detention basins. Without implementation of these recommended mitigation measures, significant impacts could occur to water quality and damage from flooding could occur. However, mitigation measures WQ-1a through WQ-1k have been included to ensure that significant runoff impacts to Subbasins 1, 10, 13, 16, 19, 20, 21, 24.1, 24, 26, and 27 would be reduced to less than significant by reducing runoff in these subbasins to pre-development conditions. Therefore, the quantity and duration patterns of post-construction runoff will be mitigated to below a level of significance.

Minor impacts are anticipated for Subbasins 3, 5, 28, and 35 and off-site subbasins 0, 1, and 2 due to the minor increase in runoff (less than 5% increase) (Impact WQ-2); however, if it is determined during the final engineering stage that impacts would result, implementation of BMPs consistent with the measures proposed by this project at other basins will be applied at these subbasins to reduce these minor impacts to less than significant by ensuring flows in the subbasins are reduced to pre-development conditions (mitigation measure M-WQ-2). In addition to the above-mentioned impacts, the project would result in off-site impacts due to increases in runoff to the existing culverts under Deer Springs Road, which would result in impacts to subbasins 21-24.2 (Impact WQ-3). Implementation of mitigation measures M-WQ-3a and M-WQ-3b, which include the replacement of culverts or construction of a storm drain system, diversion, and other adequately sized mechanisms, would reduce these impacts to pre-development levels because the facilities would be constructed to adequately handle the increased runoff and reduce flows to pre-development conditions. As seen in Table 3.4-1, implementation of the mitigation measures included above would reduce project flows and post-development runoff to a level below significance. Therefore, implementation of the proposed mitigation measures would result in less than significant impacts to hydrology and water quality.

In summary, the project proposes to mitigate increased runoff by means of detention basins within the project boundary. Therefore, off-site detention capacity is not needed. Post-development runoff rates and velocities will be maintained at or below pre-development levels. Culverts beneath Deer Springs Road will be required to convey flows in accordance with the County of San Diego Public Road Standards. On-site detention will be designed such that no downstream impacts will occur.

TABLE 3.4-1
Major Watershed Pre-Development and Post-Development Areas and Runoff Rates

Watershed	Basin	Pre-Development		Post-Development (with mitigation)	
		Area (ac)	Quantity (cfs)	Area (ac)	Quantity (cfs)
South Fork Moosa Canyon	A	1,266	980	1,267	956
San Marcos Creek	B	762	1,109	762	1,070
	C	411	422	411	346
South Fork Gopher Canyon	D	397	623	397	624
	E	316	565	316	568

Source: Fuscoe, May 2007.

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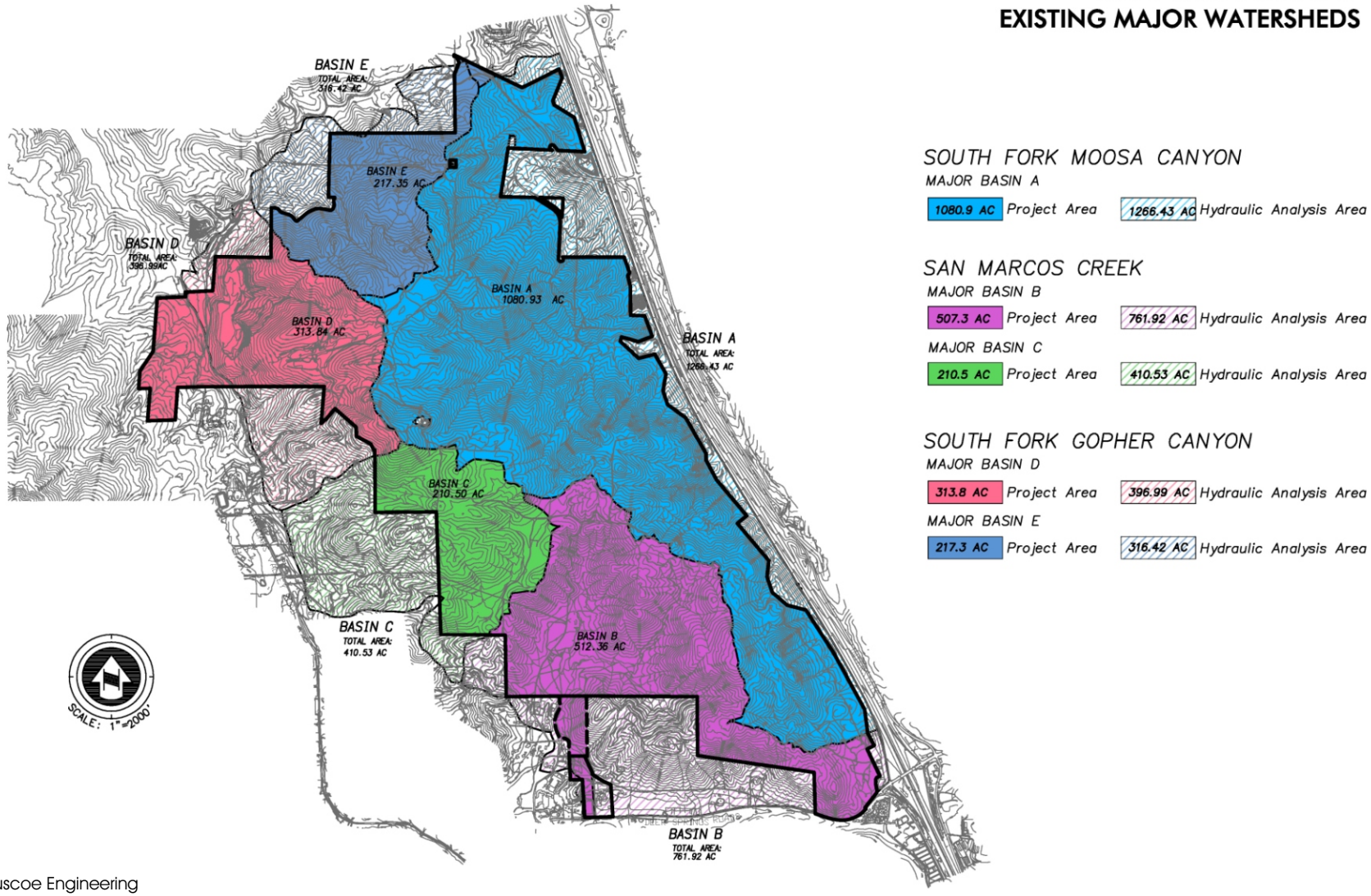


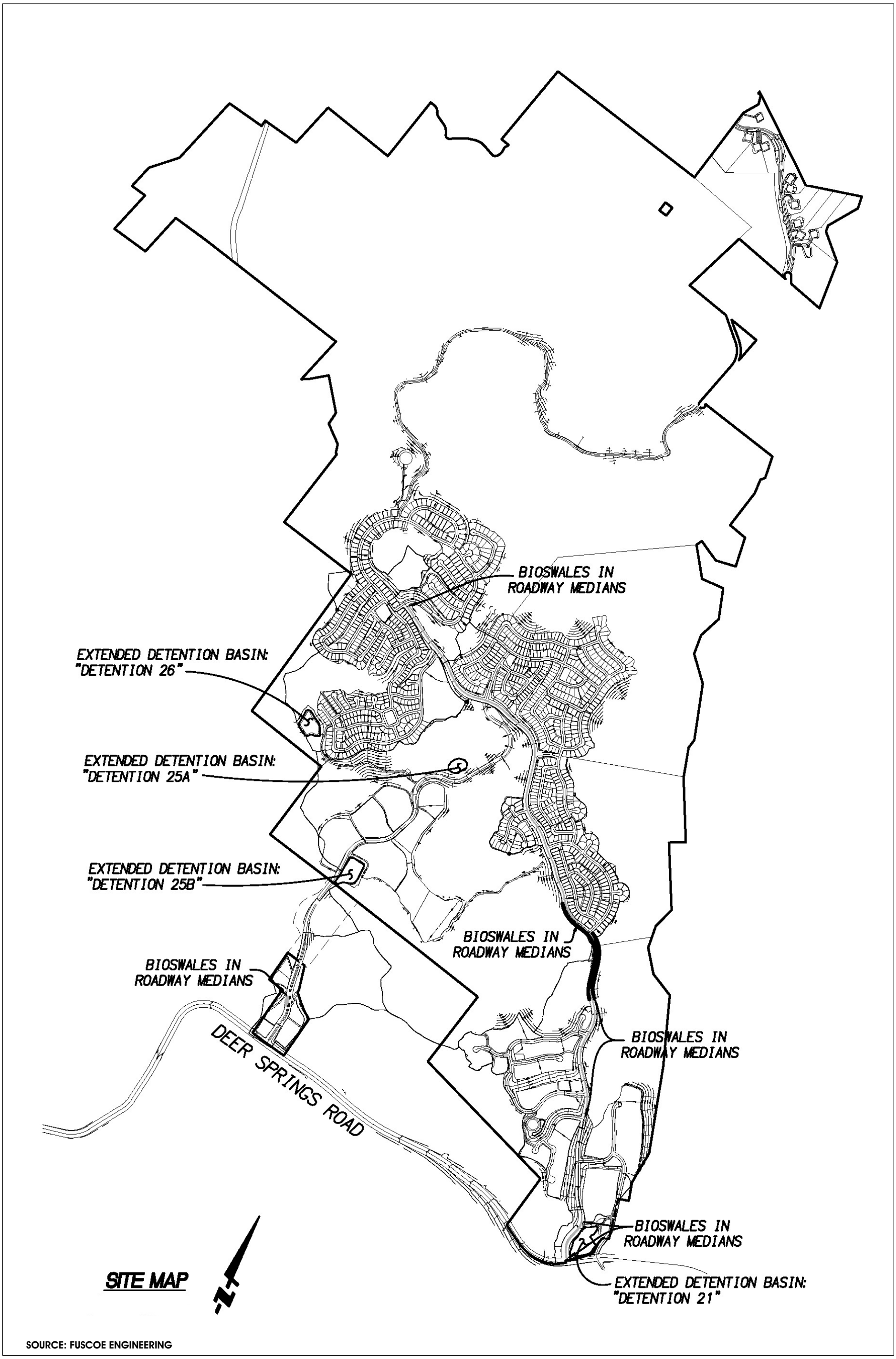
Source: Fuscoe Engineering

Existing Major Watersheds

FIGURE 3.4-1

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

N



SOURCE: FUSCOE ENGINEERING

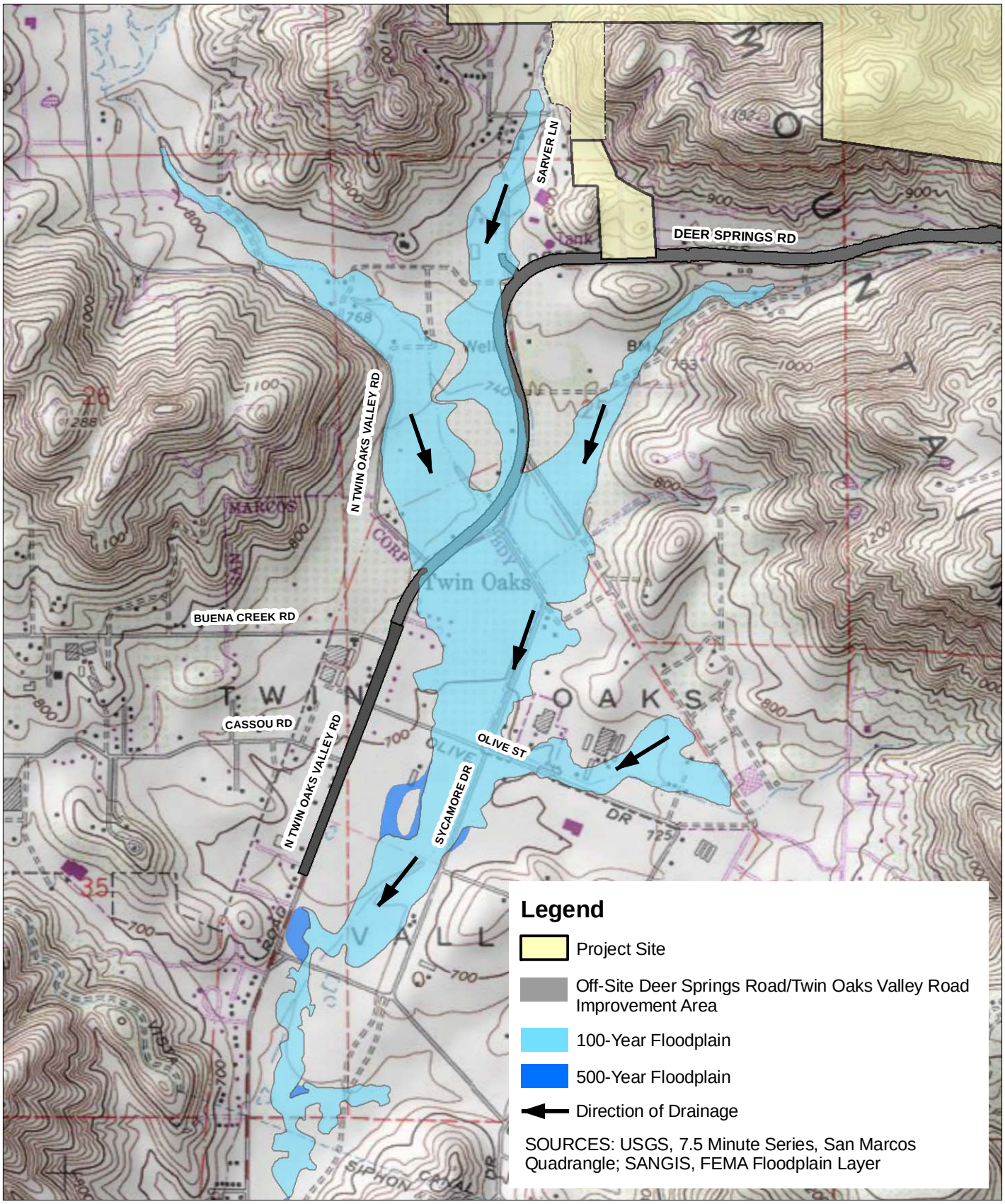
Treatment Control BMPs

FIGURE 3.4-2

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

0 750 1500 3000
FEET

N



FEMA Floodplains

FIGURE 3.4-3

MERRIAM MOUNTAINS SPECIFIC PLAN EIR

0 750 1,500 3,000
Feet

N