
3.8 - Hydrology and Water Quality

3.8.1 - Introduction

This section describes the potential effects of Project implementation on the site and its surrounding relative to hydrology and water quality. Section 15125 of the State CEQA Guidelines requires EIRs to include a description of the physical environmental conditions in the area of a project that exist at the time that the Notice of Preparation (NOP) is circulated. These environmental conditions normally constitute the baseline physical conditions relative to which the CEQA lead agency evaluates the change in conditions that would result from project implementation. The NOP for this Draft EIR was issued on February 27, 2009. Therefore, environmental conditions as of February 2009 represent the baseline for CEQA purposes. To evaluate the footprint impacts of the Proposed Action (e.g., effects on Hydrology and Water Quality), the conditions in 2009 are considered to be the baseline. Buildout of the Project is then added to existing conditions in order to determine whether Project implementation would substantially remove or impact the resources, thereby resulting in a significant impact on the environment. Data used to determine the baseline for Hydrology and Water Quality were derived from the Drainage Report prepared in June 2008 by Adams Engineering and the Preliminary Water Quality Management Plan (WQMP) prepared on February 14, 2007 by Adams Engineering, included in this Draft Environmental Impact Report (DEIR) as Appendix G. Therefore, data used to derive baseline conditions is based on existing conditions at the time of NOP issuance (February 27, 2009 through March 31, 2009) and are appropriate to use within the following analysis.

3.8.2 - Environmental Setting

Regional Hydrology

The Project site is located within the Redlands Hydrologic Sub-Area (H.U. No. 801.53), which lies within the Upper Santa Ana River Hydrologic Area (H.U. No. 801.50), and the Santa Ana River Hydrologic Unit (H.U. No. 801.00) and the Santa Ana Regional Water Quality Control Board (SARWQCB), Region 8 (AE 2008). The Santa Ana River watershed encompasses more than 2,800 square miles in northwestern Riverside County, Orange County, southwestern portion of San Bernardino County, and a small portion of Los Angeles County. The watershed originates in the San Gorgonio Peak in San Bernardino County, drains southwesterly towards northwestern Riverside County and Orange County into the coastal plain and finally into the Pacific Ocean at Newport Beach.

Some of the major tributaries to the Santa Ana River include Little San Gorgonio Creek, Yucaipa Creek and Oak Glen Creek, confluencing with the Santa Ana River upstream of the Project location and San Timoto Canyon, Lytle Creek, and Cajon Creek, Temescal Wash, Chino Creek, and Santiago Creek confluencing with the Santa Ana River downstream of the Project location. Exhibit 3.8-1 depicts the Santa Ana Region Watershed Management Areas in relation to the Project site.

The Project area drains into Reach 5 of the Upper Santa Ana River through existing pipes. All of the Project area and off-site areas drains to the Tennessee Channel through a series of inlets in the corner of Tennessee Street and San Bernardino Avenue. Runoff continues down through Reaches 4, 3, 2, and 1 of the Santa Ana River with ultimate discharge into the Pacific Ocean at the Anaheim Forebay Recharge Area (AE 2008). See Appendix 2 of the Drainage Report – Volume I for a depiction of drainage areas, post development conditions.

Local Hydrology & Drainages

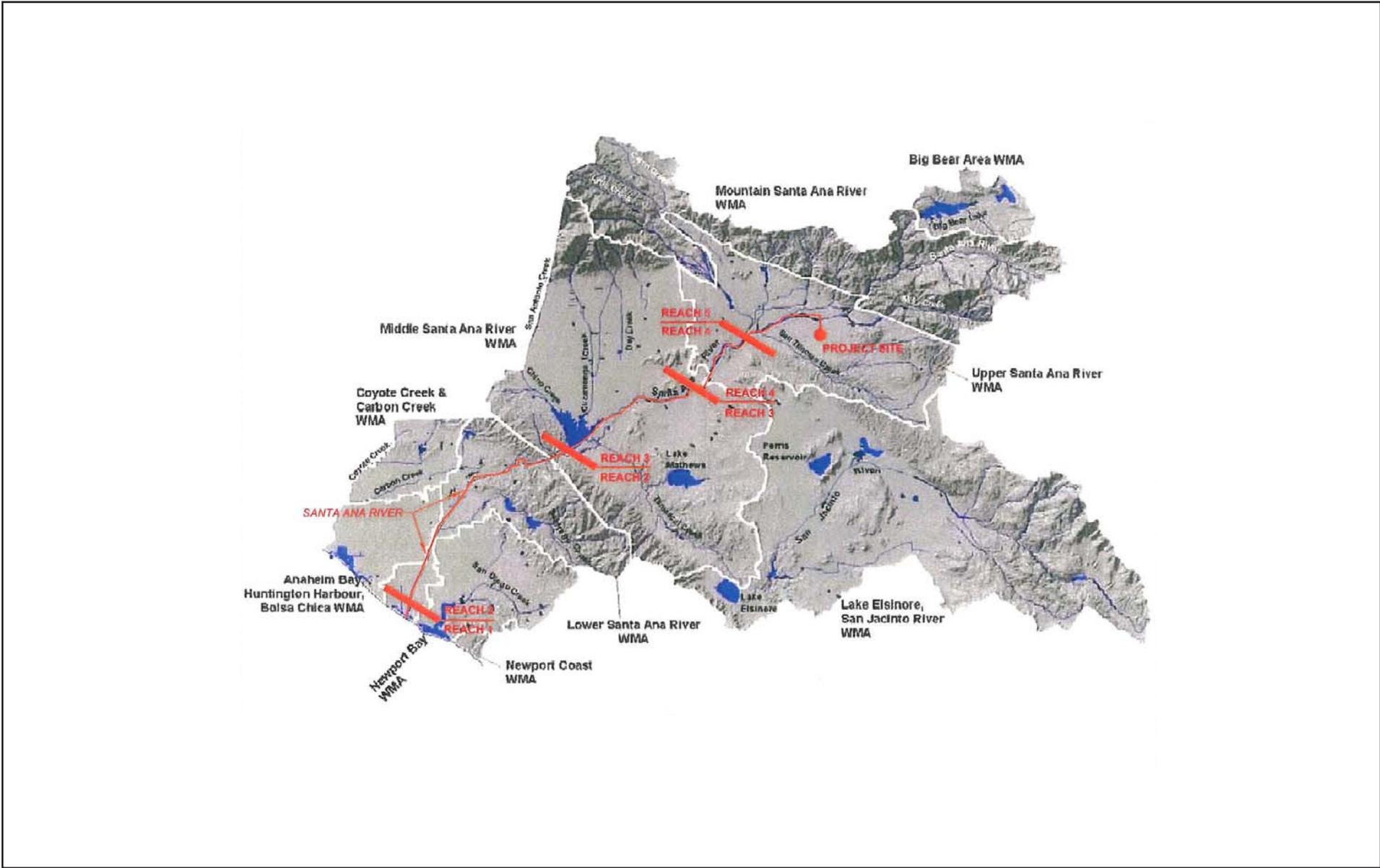
Currently, there are three major drainage areas that are located on various portions of the Project site. The first area (Area 1), drains through the central portion of the Project site and discharges approximately 800 feet upstream, at the confluence of the Tennessee Street/Channel at San Bernardino Avenue. The second area (Area 2), also drains into the Tennessee Channel, approximately 670 feet upstream of the discharge of Area 1, and only includes 0.5 acre of the Project site. Finally, the third area (Area 3), the largest area, includes approximately 11.24 acres of the Project site and drains to the beginning of the concrete channel crossing the Project site. The drainage then enters the Tennessee Channel through a large curb opening in the southeastern corner of Tennessee St. at San Bernardino Ave.

Water Supply

The City of Redlands will provide the water service to the Project. The City of Redlands has provided water service to the City of Redlands and the unincorporated Mentone area for more than 90 years. The City's average daily water consumption is 27 million gallons per day (mgd) with a maximum daily of 50 mgd in the summer. The average consumption per capita is approximately 320 gallons per day (CRMUED 2009).

The City of Redlands receives its water from the following four sources.

- **Mill Creek Watershed.** Water from the Mill Creek watershed is treated at the Henry Tate (Tate) Water Treatment Plant (WTP) located on Highway 38 east of Mentone.
- **Santa Ana River Watershed.** Water from the Santa Ana River watershed is treated at the Hinckley WTP located north of Mentone.
- **Local Groundwater.** Local groundwater is pumped from local wells in Redlands, Mentone, and Yucaipa.
- **California State Water Project (SWP) Water:** When required, SWP water is treated at the Hinckley WTP and Tate WTP.



Source: DEM CA Dept of Fish and Game, 7.5 minute - 30 meter.
 Streams & water bodies subset of a hydrography layer based on USGS DLG-3 format on a 1:100,000 scale.



Not To Scale

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Exhibit 3.8-1 Santa Ana Region Watershed Management Areas

Surface Water Quality

Numerous studies have been conducted by the U.S. Environmental Protection Agency (EPA) to characterize the nature of urban stormwater runoff, including the National Urban Runoff Program (NURP), the USGS Urban Stormwater Database, and the Federal Highway Administration study of stormwater runoff loadings from highways. More recently, the University of Alabama and the Center for Watershed Protection were awarded an EPA Office of Water 104(b)3 grant in 2001 to collect and evaluate stormwater data from a representative number of NPDES municipal separate storm sewer system (MS4) stormwater permit holders. This dataset is referred to as the National Stormwater Quality Database (NSQD), which provides median event concentration values for associated land use classes and typical water quality parameters. Table 3.8-1 provides a summary of the values contained in NSQD for selected land uses (UACWP 2001).

Table 3.8-1: Typical Surface Water Pollutants Contributions

Parameter	Overall	Industrial	Commercial
Area (acres)	56.0	39.0	38.8
Percent Impervious	54.3	75.0	83.0
Precipitation Depth (inches)	0.47	0.49	0.39
Total Suspended Solid (mg/L)	58.0	78.0	43.0
Biological Oxygen Demand (mg/L)	8.6	9.0	11.9
Chemical Oxygen Demand (mg/L)	53	60	63
Fecal Coliform MPN/100mL)	5,081	2,500	4,500
Ammonia (NH ₃) (mg/L)	0.44	0.50	0.50
(Nitrite + Nitrate) (NO ₂ + NO ₃) (mg/L)	0.6	0.73	0.6
Nitrogen, Total Kjeldahl (mg/L)	1.4	1.4	1.6
Phosphorous, total (mg/L)	0.27	0.26	0.22
Cadmium, total (µg/L)	1.0	2.0	0.9
Copper, total (µg /L)	16.0	22	17.0
Lead, total (µg /L)	16	25.0	18
Nickel, total (µg /L)	8.0	16.0	7.0
Zinc, total (µg /L)	116	210	150

Source: National Stormwater Quality Database, 2004
<http://rpitt.eng.ua.edu/Research/ms4/Paper/MS4%20Feb%2016%202004%20paper.pdf>

Pollutants of Concern

The potential and expected pollutants of concern for the proposed development were identified based on the Project categories and land uses utilizing Table 2-1 of the San Bernardino County Model WQMP Guidance. Table 3.8-2 summarizes the pollutants of concern that are expected to be present at the proposed development site (AE 2007).

Table 3.8-2: Pollutants of Concern

Pollutant Type	Expected	Potential	Legacy	Listed for Receiving Water
Bacteria/Virus	•		•	•
Heavy Metals	•			
Nutrients	•		•	
Pesticides		•	•	
Organic Compounds	•		•	
Sediments	•			
Trash & Debris	•			
Oxygen Demanding Substances	•			
Oil & Grease	•			
Other – specify pollutant(s):				

Source: Pollutants of Concern Summary Table, Preliminary Water Quality Management Plan (AE 2007)

As indicated in Table 3.8-2, several pollutants are expected to, or have the potential to contaminate storm water runoff from the Project area. As illustrated in Table 3.8-2, of all of aforementioned expected and potential storm water contaminants, only one pollutant type (bacteria/viruses) is in the Clean Water Act Section 303(d) listing of impaired water bodies (AE 2007).

Groundwater

The majority of water, over 40 percent delivered to the City in 2007, was from groundwater sources pumping from the Bunker Hill groundwater basin (CRCCR 2008). The City of Redlands owns 21 domestic wells that pump directly into the system or into reservoirs. All of these wells are adequately separated from sewage facilities. All wells are free from serious flooding hazard. The City also can receive water from one well that are owned by the South Mountain Water Company (CRMUED 2009).

The Project Geotechnical Report indicated that 65 borings were conducted at depths ranging from approximately 10 to 50 feet below existing site grade and groundwater was not encountered in any of the borings. The Geotechnical Report based on findings and historical records concluded that groundwater would not rise within the zone of structural influence or affect the construction of foundations and pavements for the Project (AE 2007).

Flood Hazard Area

According to Exhibit 3.8-2, the Project site is located within Zone X, which are areas outside the 500-year flood plain with less than 0.2 percent annual probability of flooding (Federal Emergency Management Agency Flood Zone Map, 2009).



Source: San Bernardino County NAIP (2009), FEMA NFHL Data (June 16, 2011).

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1,000 500 0 1,000 Feet

Exhibit 3.8-2 Flood Zone Map

Dams

The nearest dam from the Project site is Seven Oaks Dam, located approximately 8.2 miles northeast of the Project site.

3.8.3 - Regulatory Framework

Federal Clean Water Act (CWA)

The CWA, as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Important applicable sections of the CWA are as follows:

- Section 301 prohibits the discharge of any pollutant by any person, except as in compliance with Sections 302, 306, 307, 318, 402, and 404 of the CWA. Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal permit that proposes an activity, which may result in a discharge to “waters of the United States” (U.S.) to obtain certification from the State that the discharge will comply with other provisions of the Act. The Regional Water Quality Control Board (RWQCB) provides certification.
- Section 402 establishes the National Pollution Discharge Elimination System (NPDES) a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the U.S. This permit program is administered by the RWQCB, and discussed in detail below.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by U.S. Army Corps of Engineers (USACE).

Potential Project-related impacts on jurisdictional waters and wetlands are evaluated in Section 3.4, Biological Resources.

National Flood Insurance Program (NFIP)

The Federal Emergency Management Agency (FEMA) administers the NFIP to provide subsidized flood insurance to communities complying with FEMA regulations that limit development in floodplains. FEMA issues flood insurance rate maps for communities participating in the NFIP. These maps delineate flood hazard zones in the community. Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. It requires:

- Avoidance of incompatible floodplain development;
- Consistency with the standards and criteria of the NFIP; and

- Restoration and preservation of the natural and beneficial floodplain values.

California Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 established the principal state program for water quality control. The Porter-Cologne Water Quality Act also authorized the State Water Resources Control Board (SWRCB) to implement the provisions of the federal CWA; the Act divided the state into nine RWQCB areas. Each RWQCB implements and enforces provisions of the Porter-Cologne Act and the CWA subject to policy guidance and review by the SWRCB. The SWRCB has adopted a statewide General NPDES Permit that applies to all storm water discharges associated with construction activity, except those on Tribal Lands and those performed by the California Department of Transportation (Caltrans). This General Permit requires all discharges where construction activity disturbs one acre or more to:

- a) Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) that specifies Best Management Practices (BMPs) that would prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off the Project site into receiving waters.
- b) Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation.

A SWPPP must include: (1) a site description, (2) BMPs for erosion and sediment controls, (3) BMPs for construction waste handling and disposal, (4) implementation of approved local plans, (5) proposed post-construction controls, and (6) provisions for non-storm water management. A full description of the required contents of an SWPPP is provided in "State Water Resources Control Board, 1999, NPDES General Permit for Storm Water Discharges Associated with Construction Activity," available from the RWQCB.

Water Supply Assessment

California State Water Code requires a lead agency to identify the public water system supplying water for a development project that is subject to the California Environmental Quality Act (CEQA) and to request a Water Supply Assessment (WSA), per the requirements of SB 221 and SB 610. Generally, a WSA is required if the project falls within one of the following categories (See California Water Code section 10912):

- 1) A proposed residential development of more than 500 dwelling units.
- 2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
- 3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.

- 4) A proposed hotel or motel, or both, having more than 500 rooms.
- 5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
- 6) A mixed-use project that includes one or more of the projects specified in this subdivision.
- 7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

If applicable, the WSA from the public water system must indicate whether water demand associated with the Project was included in the last Urban WMP and assess whether its total projected supplies available during normal, single dry, and multiple dry water years will meet projected demand in the service area with the Project. If it does not, the WSA must describe the means to be used to obtain the necessary supplies along with the identification of any needed improvements.

As per SB 221 and SB 610, a WSA is required for the commercial center or business with more than 500,000 square feet of space or 1,000 employees. The Project proposes to develop 215,000 square feet for the proposed Walmart, 60,500 square feet for Parcel's 1-9, totaling 275,500 square feet. . Thus, the Project does not meet the criteria on virtue of its size and number of employees and is not required to prepare a WSA.

Water Quality Management Plan (WQMP)

The Project falls under four (4) of the Permit-Specified Project Categories; No. 3 (Industrial/commercial developments of 100,000 square feet or more), No. 4 (Automotive repair shops), No. 5 (Restaurants where the land area of developed is 5,000 square feet or more), and No. 8 (Parking lots of 5,000 square feet or more exposed to storm water) according to Table 1-1 in the San Bernardino County Stormwater Program Model WQMP Guidance (Revised June, 2005). As such, a preliminary WQMP was prepared for the Project in compliance with SARWQMP Order Number R8-2010-036, or subsequent succession permits.

City of Redlands - General Plan

The following policies within the Redlands General Plan are applicable for the Project in regards to water quality, drainage, and flooding.

Guiding Policies: Water Quality

- 8.20b** Oppose approval of development projects within the Planning Area that would rely on package wastewater treatment plants.

- 8.20c** Where feasible given flood control requirements, maintain the natural conditions of waterways and flood plains to ensure adequate groundwater recharge and water quality.

Implementing Policies: Water Quality

- 8.20m** Require that applicants take soil samples prior to grading or construction in existing or past orchard or other agricultural areas, which were treated historically with toxic chemicals such as DBCP. If contamination is discovered, prior to development consult with the appropriate agencies for proper clean-up measures.

- 8.20o** Design projects to minimize the possibility of wind or water erosion and, where necessary, require preparation and implementation of a soil erosion plan, including soil erosion mitigation during construction.

Guiding Policies: Drainage and Flooding

- 8.40c** Support a multi-use concept of flood plains, flood-related facilities, and waterways, where appropriate.

- 8.40f** Support the intent of the County of San Bernardino's flood control policies as specified in the County General Plan.

Implementing Policy: Drainage and Flooding

- 8.40o** Reduce the effects of surface runoff in developing areas by the use of extensive landscaping with an emphasis on native and drought-resistant species, minimizing impervious surfaces, and providing for recharge.

- 8.20o** Design projects to minimize the possibility of wind or water erosion and, where necessary, require preparation and implementation of a soil erosion plan, including soil erosion mitigation during construction.

NOP Comment Letters

A Notice of Preparation (NOP) comment letter was provided by the County of San Bernardino Department of Public Works on September 17, 2007. The Department of Public Works stated that the Project will require the preparation and submittal of a WQMP to address post-construction water quality impacts as per Section XII.B of the municipal MS4 permit. In addition, the Department of Public Works stated that the San Bernardino County municipal MS4 permit (CAS618036), Section XII.A.6 requires that specific stormwater related issues are properly addressed within CEQA documents.

A NOP comment letter was provided by the California Department of Transportation (Caltrans) on September 7, 2007. Caltrans requested to forward drainage studies and grading plans to their office for review to determine if there will be any impacts to State Route 210 (SR-210). If there are impacts

anticipated, identify mitigation measures. Apply for an Encroachment Permit for any off-site mitigation work on the State Highway.

3.8.4 - Thresholds of Significance

According to the CEQA Guidelines' Appendix G Environmental Checklist, to determine whether implementation of the Project may generate significant hydrology and water quality impacts, the following questions are analyzed and evaluated. Would the Project:

- a) Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality?
- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?
- c) Substantially alter the existing drainage pattern of area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?
- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?
- e) 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?
- f) Otherwise substantially degrade water quality?
- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?
- i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
- j) Inundation by seiche, tsunami, or mudflow?
- k) Will the Project be affected by climate change through a reduction in the quality and supply of water available within the state?

3.8.5 - Project Impacts and Mitigation Measures

This section discusses potential impacts associated with the development of the Project and provides mitigation measures where appropriate.

Water Quality Standards and Requirements

Impact HWQ-1	Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality?
	[CEQA Hydrology / Water Quality Threshold 9(a), 9(h)]

Impact Analysis

Short-term Construction Impacts

Project implementation would require extensive construction and grading. Implementation of the Project will result in construction activities that may have the potential to contribute pollutants to three off-site drainage courses (Area 1, 2 and 3 of the Drainage Report, 2008), including the confluence of Tennessee Street/Channel at San Bernardino Avenue. Construction may generate increased amounts of pollutants, mainly silt, debris, chemicals, and dissolved solids, from the following sources:

- Grading - Disruption of surface soils and increased susceptibility to erosion;
- Building construction - Use of sealants, glues, wood preservatives, oils, concrete, and the generation of debris related to construction activities;
- Painting - Paint fragments and stucco flakes; and
- Construction equipment and vehicle maintenance - Washing, chemical degreasing.

These construction activities may result in short-term degradation of surface water quality due to the increased pollutant burden. However, the Project must be consistent with the SWRCB NPDES General Permit for Storm Water Discharges Associated with Construction Activity. The permit requires the property owner/developer to prepare and implement a Project-specific SWPPP, which includes BMPs intended to reduce erosion, sedimentation, and non-permitted discharges of materials during construction. The BMPs to be used during construction typically include gravel bags, silt fencing, and general housekeeping measures to prevent erosion and stormwater contact with construction materials.

The Project will be required to develop and implement a SWPPP which will demonstrate compliance with the State NPDES permit, and provide protection of water quality during construction and operation of the Project and will submit the SWPPP to the RWQCB along with the required Notice of Intent prior to commencement of grading activities. The imposition of BMPs ensure that federal and State water quality standards will not be violated and are considered less than significant without mitigation.

Typically, the following would occur during construction of the Project:

- **Erosion control.** Employ measures to prevent the movement of soil by wind or water during construction and may include watering, and physical barriers to the movement of soil particles.
- **Tracking of Soil.** Employ measures to effectively minimize the tracking of soil by vehicles and may include gravel driveways, wheel washes and street sweeping.
- **Wastes and Cleanup.** The SWPPP must also address washout, cleanup, and disposal related to debris, trash, concrete, asphalt, paint, coatings, solvents, and other materials applicable to preparation and construction at the Project site.
- **Other Reasonable BMPs.** The SWPPP must also implement other applicable BMPs as needed to keep pollutants away from stormwater. The SWPPP must also identify additional applicable measures taken during the storm season and when storms are anticipated.

Compliance with the requirements and the provisions of the SWPPP during construction activities would mitigate any potential construction period impacts on water quality to a less than significant level.

Long-Term Operational Impacts

This Project falls under five (5) of the Project Categories/Land Uses including Industrial/Commercial Development (>100,000 ft.), Automotive Repair Shops, Restaurants (>5,000 ft.) , Parking Lots (>5,000 ft.), and Streets/Highways/Freeways as indicated in Table 2-1 of the San Bernardino County Stormwater Program Model Water Quality Management Plan Guidance (revised June, 2005). The potential and expected pollutants of concern for the Redlands Crossings development were identified in the Project's Water Quality Management Plan (see Appendix G of this DEIR) and are based on the Project categories and land uses utilizing Table 2-1 the San Bernardino County Stormwater Program Model Water Quality Management Plan Guidance (revised June, 2005). According to the Project's Water Quality Management Plan (WQMP), the long-term operations, and development of the Project would potentially increase the pollutant burden of the stormwater flows. The Project will increase the amount of impervious surfaces on-site, resulting in an increase in stormwater flows. Furthermore, the Project's potential commercial and retail activities may result in runoff containing the following contaminants: oil, grease surfactants, heavy metals, solvents, pesticides or nutrients.

To minimize potential pollutant burden, by virtue of the size of the Project, the applicant has prepared and will be consistent with the Preliminary WQMP through the Municipal Separate Storm Sewer System (MS4), NPDES. The Project's Preliminary WQMP may include, but is not limited to, guidance, operation and maintenance for all source control, site design, and treatment control BMPs; that requires operation and maintenance, which include maximizing canopy interception and water conservation, landscape planning, roof runoff controls, efficient irrigation, storm drain system signage, trash storage areas and litter control, employee training/education program, protect slopes

and channels, common area catch basin inspection, energy dissipaters, pervious concrete/alternative materials, and stormwater filtration systems. The Project will also be required to provide a thorough description of operation and maintenance activities, and provide a schedule of the frequency of operation and maintenance for each BMP.

Implementation of Mitigation Measures HWQ-1a and HWQ-1b will require the Project to follow the recommendations of the Preliminary WQMP concerning water supplies, demands, and BMPs for the Project relating to water quality. Consistency with Mitigation Measures HWQ-1a and HWQ-1b will reduce impacts to any violation of water quality standards or waste discharge requirements, or otherwise substantially degrade water quality (as outlined within the Preliminary WQMP), to a level of less than significant.

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

Construction Mitigation Measure

MM HWQ-1a Prior to the issuance of grading permits for any portion or phase of the Project, the Project applicant shall submit an NOI to the State Water Board and shall also prepare a SWPPP, which shall be submitted to the Regional Water Board for approval and to the City for review. The SWPPP shall contain a site map(s), which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the Project. The SWPPP shall list BMPs the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP shall contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs. Once approved by the City, the applicant's contractor shall be responsible, throughout the duration of the Project for installing, constructing, inspecting, and maintaining the control measures included in the SWPPP and Grading Plan.

Operation Mitigation Measure

MM HWQ-1b Prior to building permit issuance for any portion or phase of the Project, the applicant shall receive City approval for the Final WQMP. Prior to final building inspection, the applicant shall be responsible for installing, constructing, inspecting all provisions of the final WQMP, and maintaining the control measures included in the Final WQMP. Operation and maintenance (O&M) requirements for all Source Control, Site Design, and Treatment Control BMPs shall be identified within the WQMP. The WQMP shall include the following:

O&M Description and Schedule That Must:

- List and identify each BMP that requires O&M.
- Provide a thorough description of O&M activities (include the O&M process, and the handling and placement of any wastes).
- Include BMP start-up dates.
- Provide a schedule of the frequency of O&M for each BMP.

Inspection & Monitoring Requirements That Must:

- Provide thorough descriptions of water quality monitoring (if locally required).
- Provide self-inspections and record keeping requirements for BMPs (review local specific requirements regarding self-inspections and/or annual reporting), including identification of responsible parties for inspection and record keeping.

Identification of Responsible Parties That Must:

- Provide the party or parties that will be responsible for each BMP O&M. For each responsible party, include the party's name, address, contact name and telephone number.

Level of Significance After Mitigation

Less than significant.

Groundwater Supplies and Recharge

Impact HWQ-2 Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?)
[CEQA Hydrology / Water Quality Threshold 9(b)]

Impact Analysis

Potential Project impacts to groundwater include the increased consumption/use of groundwater supplies and creation of impermeable surface cover restricting groundwater recharge. The Project consists of a Walmart, totaling approximately 215,000 square feet and Parcel's 1-9 totaling approximately 60,500 square feet for a grand total of approximately 275,500 square feet of

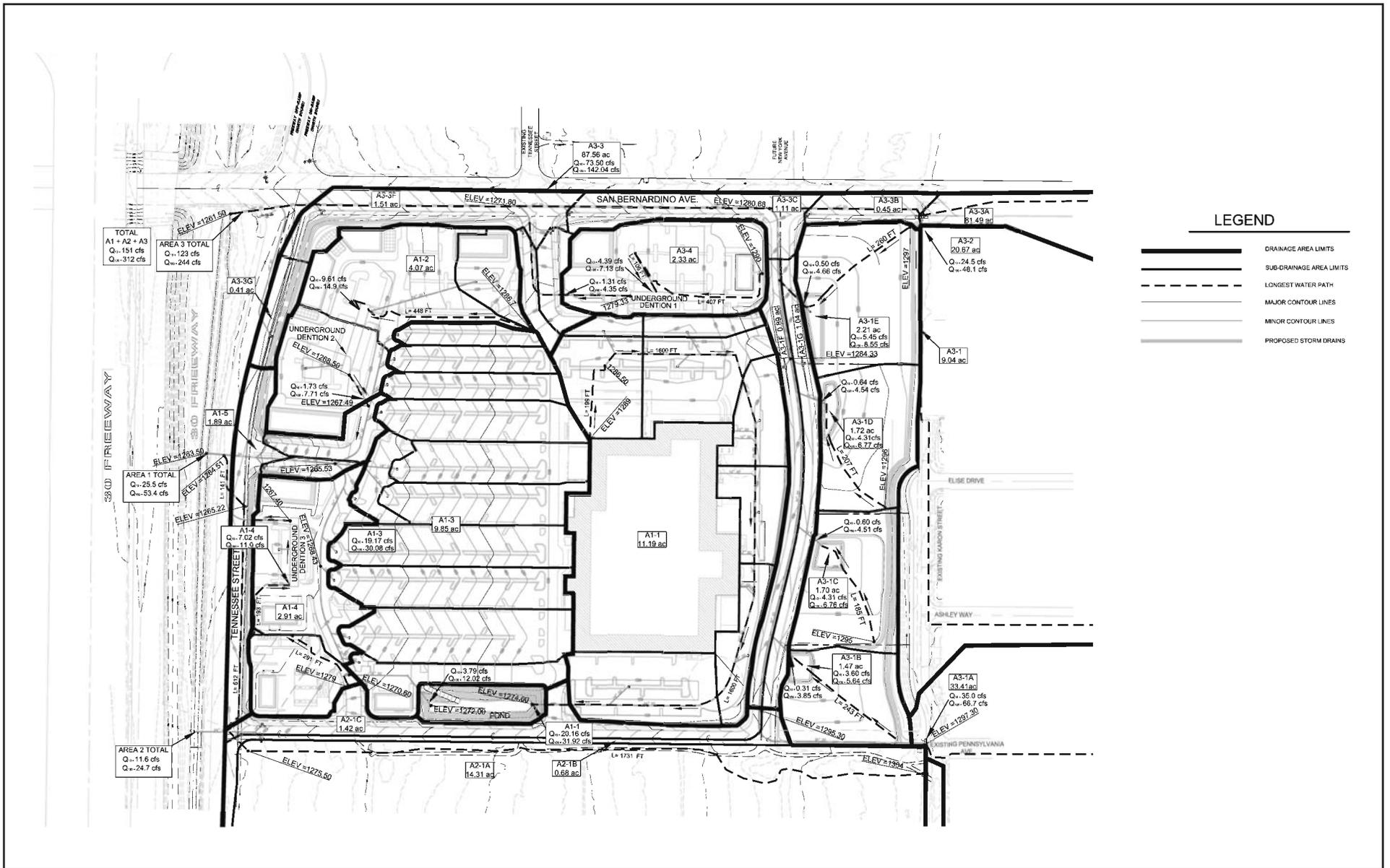
commercial retail uses with an overall total of approximately 436 employees. As per SB 221 and SB 610, a WSA is required for the commercial center or business with more than 500,000 square feet of space or 1,000 employees. Additionally, as defined under State CEQA Guidelines Section 15155, the Project would not contribute an equivalent volume of water as a 500 dwelling unit project. Thus, the Project does not meet the criteria on virtue of its size and number of employees.

Implementation of the Project will increase the amount of impervious surfaces on-site, which could conceptually affect groundwater recharge due to the loss of soil infiltration. To facilitate groundwater recharge, the permeable areas on-site have been maximized through site design considerations, including vegetated swales, a nutrient separating baffle box and inlet inserts before discharging into one of five infiltration basins. The design feature allows the majority of drainage from impervious surface to permeable areas for on-site infiltration. One surface level infiltration basin and four (4) underground infiltration basins have been incorporated into the site plan (Exhibit 3.8-3, Proposed Drainage Plan) to maximize on-site infiltration. In addition, various BMPs have been incorporated in the Project design (AE 2007). Maximizing permeable areas on-site will improve the groundwater recharge in the local aquifer. Since the Project will not deplete groundwater in the local area and is not expected to lower the groundwater recharge rate to any measurable degree, impacts will be less than significant.

Currently, the City of Redlands provides water services within the Project area and it is anticipated to provide water to the Project site. According to water usage rates for Walmart stores with similar square footage, the Project is anticipated to demand approximately 11,571 gallons of water per day (0.042 gallons per square foot multiplied by 275,500 equals 11,571). Redlands' average daily water consumption is 27 million gallons per day (mgd) with a maximum daily of 50 mgd in the summer. The maximum storage capacity for the City is 54.5 million gallons. Therefore, the estimated amount of water usage by the Project (11,571 gallons of water per day) will be well below the City's average water consumption rate (50 mgd).

Further, the Project will be consistent with the City of Redlands Municipal Code Chapter 15.54, Water Efficient Landscape Requirements, through installation, maintenance, and management of water efficient landscaping; and through implementation of water management practices and water waste prevention for landscaping. Consistency with the City of Redlands Municipal Code Chapter 15.54 will further reduce impacts to groundwater supplies.

Nonetheless, long-term water supply is a significant concern in California, and the Project can reduce its demand on water supply through the implementation of water conservation measures. Mitigation is proposed that would require the Project applicant to implement outdoor irrigation and indoor domestic water conservation measures and practices. These measures would reduce overall Project demand for potable water and ensure that long-term water supply impacts are less than significant.



Source: Adams Engineering (June 26, 2008).



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Exhibit 3.8-3 Proposed Drainage System

REDLANDS CROSSING CENTER
ENVIRONMENTAL IMPACT REPORT

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

- MM HWQ-2a** Prior to issuance of building permits, the Project applicant shall submit landscaping plans to the City of Redlands for review and approval that identify and require the use of the following outdoor irrigation water conservation measures:
- Drought resistant vegetation.
 - Irrigation systems employing the following features:
 - Drip irrigation;
 - Low-precipitation-rate sprinklers;
 - Bubbler/soaker systems;
 - Programmable irrigation controllers with automatic rain shutoff sensors;
 - Matched precipitation rate nozzles that maximize the uniformity of the water distribution characteristics of the irrigation system;
 - Conservative sprinkler spacings that minimize overspray onto paved surfaces; and
 - Hydrozones that keep plants with similar water needs in the same irrigation zone.
 - Minimally or gently sloped landscaped areas to minimize runoff and maximize infiltration.
 - Organic topdressing mulch in non-turf areas to decrease evaporation and increase water retention.
- MM HWQ-2b** Prior to issuance of building permits, the Project applicant shall submit building plans to the City of Redlands for review and approval that identify and require the use of the following indoor water conservation measures:
- Low-flow or ultra-low-flow toilets and urinals;
 - Faucet aerators or low-flow faucets in bathrooms; and
 - Sensor-activated, low-flow faucets.
- MM HWQ-2c** Prior to issuance of the certificate of occupancy, the Project applicant shall install the “purple pipe” system (used to distinguish recycled water from potable water) within the landscaped areas, as approved by the City Engineer, for future use of recycled irrigation water from the Redlands Municipal Utilities and Engineering Department.

Level of Significance After Mitigation

Less than significant.

Drainage Pattern: Erosion or Siltation / Flooding

Impact HWQ-3	<p>Substantially alter the existing drainage pattern of area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?</p> <p>[CEQA Hydrology / Water Quality Threshold 9(c)]</p> <p>or which would result in flooding on- or off-site?</p> <p>[CEQA Hydrology / Water Quality Threshold 9(d)]</p>
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Impact Analysis**Proposed Drainage System**

The development of the Project will result in an increase in surface runoff, due to increasing the amount of impervious surfaces and decreasing the amount of permeable surfaces. This lowers the infiltration rate through the Project site, resulting in the necessity for an on-site drainage system (See Exhibit 3.8-3 Proposed Drainage Plan).

Currently, the site drains northerly and westerly towards the Santa Ana River. The proposed drainage system will alter the current drainage pattern. In post -development conditions the 45.71 acre of the property area will be re-parceled and some of the area will be dedicated to the Tennessee Street to the West, some area to the San Bernardino Avenue to the North, a small portion to the existing Karon Street to the east, but the major changes will be the construction and dedication of a new portion of Pennsylvania Avenue to the south and a new portion of New York Avenue, now crossing the Project site and dividing it with 11 parcels to the west and limited off-site improvements to the east. However, the drainage report prepared by Adams Engineering indicated that the total area draining to the corner of San Bernardino Avenue and Tennessee Street will remain the same and the proposed drainage system (pond, sediment pond and underground systems) would control the peak flow and reduce the total volume of runoff to levels similar to the pre-development runoff levels (AE 2008).

Additionally, the drainage report concluded that the proposed drainage system will improve the drainage conditions of Tennessee Street, Tennessee Channel and San Bernardino Avenue. The drainage system will not only reduce the peak flows, but will also provide more inlets along San Bernardino Ave and Tennessee Street. This will relieve existing flooding conditions experienced by Tennessee and San Bernardino Avenue during significant storm events. Thus, the proposed drainage system will improve the overall flooding situation in the drainage conditions of the existing channels (AE 2008). Therefore, as discussed above, the Project will not substantially alter the existing drainage pattern of the area or result in flooding on- or off-site.

Implementation of Mitigation Measures HWQ-1a and HWQ-1b (see Impact HWQ-1 for mitigation measures) will require erosion and siltation reduction measures to be implemented during construction of the Project by developing and implementing a SWPPP, which will demonstrate compliance with the State NPDES permit and will submit the SWPPP to the RWQCB along with the required Notice of Intent (NOI) prior to commencement of grading activities, which is consistent with federal and State standards. Consistency with Mitigation Measures MM HWQ-1a and MM HWQ-1b will reduce impacts to substantial erosion or siltation on- or off-site to a level of less than significant.

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

Mitigation Measures HWQ-1a and HWQ-1b (See Impact HWQ-1 for mitigation measures).

Level of Significance After Mitigation

Less than significant.

Runoff Water and Drainage Systems

Impact HWQ-4	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? [CEQA Hydrology / Water Quality Threshold 9(e)]
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Impact Analysis

Implementation of the Project will increase the runoff flow due to the creation of additional impervious surfaces on the Project site. In order to mitigate the potential impact associated with such increased flows, the Project will be required to prepare and comply with various documents pertaining to stormwater runoff. Specifically, the Project will be required to complete a NPDES permit, which will require the preparation of a SWPPP for construction related activities. SWPPPs identify BMPs to mitigate construction related pollutants from reaching stormwater and products of erosion from moving off-site. Furthermore, the Project specific WQMP provide guidance for wastewater conservation after construction.

The Project drainage plan allows the majority of drainage from impervious surface to permeable areas for on-site infiltration. One surface-level infiltration basin and four (4) underground infiltration basins have been incorporated into the site plan to reduce the runoff water (AE 2007). In addition, the drainage report indicates that the proposed drainage system (pond, sediment pond, and underground systems) will control the total peak flow volume of runoff to level similar to the pre-development runoff levels.

Therefore, with the consideration of the Project design features and implementation of BMPs as discussed in Preliminary WQMP, the Project's runoff water would not exceed the capacity of existing or planned stormwater drainages systems.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

No mitigation required.

Level of Significance After Mitigation

Less than significant.

Housing Placement: Flood Hazard Area

Impact HWQ-5	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
	[CEQA Hydrology / Water Quality Threshold 9(g)]

Impact Analysis

According to the FEMA, the Project site is not within a 100-year flood hazard area (AE 2008). In addition, the Project does not propose to develop residential housing within the Project site. Therefore, implementation of the Project would not result in the construction of housing improvements within the ascribed flood hazard area that would impede or redirect flood flows, and the impact will be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

No mitigation required.

Level of Significance After Mitigation

Less than significant.

Structures: Flood Hazard Area

Impact HWQ-6	Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?
	[CEQA Hydrology / Water Quality Threshold 9(h)]

Impact Analysis

According to the FEMA, the Project site is not within a 100-year flood hazard area (AE 2008). Therefore, implementation of the Project would not result in the construction of improvements within the ascribed flood hazard area that would impede or redirect flood flows, and the impact will be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

No mitigation required.

Level of Significance After Mitigation

Less than significant.

Flooding

Impact HWQ-7	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? [CEQA Hydrology / Water Quality Threshold 9(i)]
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Impact Analysis

The Project site is not within a dam inundation zone as there are no dams near the site. The nearest dam to the Project site is the Seven Oaks Dam, located approximately 8.2 miles northeast to the Project site. Therefore, due to the distance to the nearest dam, there is no risk of significant loss, injury, or death as a result of flooding or inundation due to dam failure and there would be no impact in this regard.

Level of Significance Before Mitigation

No impact.

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

No impact.

Seiche, Tsunami, or Mudflow

Impact HWQ-8	Inundation by seiche, tsunami, or mudflow? [CEQA Hydrology / Water Quality Threshold 9(j)]
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Impact Analysis

The Project site is located approximately 50 miles from the Pacific Ocean. Therefore, tsunamis (seismic sea waves) are not a significant hazard to the site. Additionally, the site is not located close to any large bodies of water that could adversely affect the site in the event of seiche (seismic wave oscillations in an enclosed or semi-enclosed body of water). Further, the Project site and surrounding area are generally level and the potential impacts from mudflow are nil. Therefore, the Project would result in no impacts related to seiches, tsunamis, or mudflows.

Level of Significance Before Mitigation

Less than significant

Mitigation Measures

No mitigation is required

Level of Significance After Mitigation

Less than significant

