4.8 Hydrology and Water Quality

This section of the EIR describes the existing hydrology and water quality on the project site and analyzes the potential physical environmental effects related to drainage and hydrology, water quality, and flood hazards that may occur due to implementation of the proposed project. The hydrologic setting and analysis provided in this section is based on the Hydrologic Assessment Report for the Brasada Project prepared by Fuscoe Engineering (July 2010) and the Groundwater Impact Assessment for the Proposed Brasada Development Project prepared by Brezack & Associates Planning (July 2010). Both of these reports are provided in Appendix G of this EIR. The water quality setting and analysis is based on the Preliminary Standard Urban Stormwater Management Plan (SUSMP) prepared by Fuscoe Engineering (June 2010), and provided as Appendix H of this EIR. Impacts of the proposed project on existing and future water supply sources and wastewater treatment are described and analyzed in Section 4.12, Utilities, Service Systems and Energy.

4.8.1 Environmental Setting

4.8.1.1 Surface Water Drainage

Regional Drainage

The proposed project site is located within the Los Angeles-San Gabriel Hydrologic Unit (405.00). Within the Los Angeles-San Gabriel Hydrologic Unit there are six hydrologic areas (watersheds), including the San Gabriel River Watershed (405.40) within which the project site is located (Figure 4.8-1). The San Gabriel River Watershed covers approximately 640 square miles across 35 cities within eastern Los Angeles County. It is bounded by the San Gabriel Mountains to the north, most of San Bernardino/ Orange County to the east, the division of the Los Angeles River from the San Gabriel River to the west, and the Pacific Ocean to the south. The watershed drains into the San Gabriel River from the San Gabriel Mountains flowing 58 miles south until its confluence with the Pacific Ocean. Major tributaries to the San Gabriel River include Walnut Creek, San Jose Creek, Coyote Creek, and numerous storm drains entering from the 19 cities that the San Gabriel River passes through.

Approximately one-half (50 percent) of the San Gabriel River Watershed is covered by dense development consisting mostly of high-density commercial and residential uses. The majority of the creeks and drainages within the watershed have been modified for flood control purposes. Channel flows pass through different sections in the San Gabriel River, diverting from the riverbed into four different spreading grounds, held behind several rubber dams for controlled flow and ground water recharge, and controlled through 10 miles of concrete channel bottom from below Whittier Narrows Dam to past Coyote Creek (Los Angeles County Department of Public Works 2010).

Project Site Drainage

The existing project site consists mostly of undeveloped open space, with only one percent of the site covered with impervious surfaces, consisting of two residences and ancillary facilities and some equestrian uses. No on site or upstream drainage facilities currently exist. Runoff is conveyed via sheet flow and stream flow through the project site and ultimately discharges into the San Dimas Wash and

then to reach 4 of the San Gabriel River in the Lower San Gabriel Valley between Santa Fe Dam and Whittier Narrows Dam.

The project site contains three streams which carry the names of the canyons in which they flow. Each of these canyons is a sub watershed that drains from the project site. Shay Canyon and Shuler Canyon drain in a southerly direction and Wildwood Canyon drains in a westerly direction. The southwesterly portion of the site drains through Shuler Canyon to two catch basins within the city of San Dimas located on Cataract Avenue. The catch basins drain to the city of Glendora through a storm drain system to the golf course west of the city line. The combined capacity of the two catch basins is 93 cubic feet per second (cfs). These existing catch basin facilities on Cataract Avenue are not sufficient to meet typical storm drainage demands, and localized flooding occurs regularly at the northern terminus of Cataract Avenue during storm events.

The northerly portion of the site drains overland toward the City of Glendora open-space through Wildwood Canyon. The southeasterly portion of the site drains southerly through Shay Canyon into a drainage easement in favor of the City of San Dimas where the runoff flows southerly until it is captured by catch basins on San Dimas Avenue near its intersection with Prairie Drive, thus entering the San Dimas municipal separate storm sewer system (MS4).

The existing project site generally drains from east to west and northeast to southwest at a slope of seven percent to 26 percent. Hydrologic calculations to evaluate surface water runoff associated with the 50-year high confidence storm frequency were performed for the drainage areas both on and off site. Under existing conditions, there are seven points of entry into the site for off site, upstream waters. The off-site drainage area comprises approximately 127 acres with a 50-year peak flow rate of 286 cfs which must be accepted and conveyed through the site. Currently, there are three points of exit from the site, which correspond with the Shay, Shuler and Wildwood Canyon watersheds (Figure 4.8-2). The complete drainage comprised of the proposed project site and upstream tributary area is approximately 401 acres with a 50-year peak flow rate of 898 cfs.

4.8.1.2 Groundwater

Regional Groundwater

The City of San Dimas overlies three groundwater basins: San Dimas, Wayhill and Foothill. Groundwater within San Dimas Wash lies within the Foothill Groundwater Basin and represents the major source of groundwater within the area. Two wells are currently active in this basin, while another four wells either have been destroyed or are inactive. Well data obtained from Los Angeles Department of Water and Power (LADWP) identified that the two active wells have average depths to groundwater in the range of 95 to 147 feet below the ground surface and that the average groundwater elevations have been steadily increasing. Neither of the active wells is used for community water supply.

Retail water service is supplied to the City of San Dimas by the Golden State Water Company, an investor-owned utility regulated by the Public Utilities Commission (PUC). Golden State's water supplies are derived as a blend of water from the Metropolitan Water District of Southern California (MWD), the Three Valleys Municipal Water District (TVMWD), the Covina Irrigating Company (CIC), and groundwater pumped from the Main San Gabriel groundwater basin.

The TVMWD provides wholesale and retail water service throughout the region. Historically, groundwater production by TVMWD has been relatively stable, with average total production ranging from 37,000 to 66,000 acre-feet (AF) per year. The Main San Gabriel Basin underlies the San Gabriel Valley from Alhambra to La Verne. It encompasses a surface area of more than 73,000 acres. The total amount of water in storage in the Main San Gabriel Basin is approximately 8.6 million acre-feet (AF).

The Water Replenishment District of Southern California (WRD) was formed in 1959 to manage groundwater replenishment and water quality activities for the Central and West Coast Basins in southern Los Angeles County. WRD has been actively involved in groundwater replenishment, water quality monitoring, contamination prevention, data management, and data publication. Groundwater replenishment occurs as a result of percolating rainfall, stream runoff and the management of local runoff in flood control reservoirs, from where it is subsequently released into streambeds and spreading grounds. Replenishment also occurs from percolation of water used for irrigating lawns and gardens.

Project Site Groundwater

The proposed project area is characterized by steep, rugged terrain. Groundwater in the project area is contained primarily within fractures in volcanic rocks and within the quaternary alluvium and recent alluvial deposits beneath San Dimas Wash (RBF 1999). There is no indication that underlying metamorphic rock contains appreciable amounts of groundwater.

The proposed project site is located within the San Gabriel River watershed that drains to the San Dimas Wash and then to the San Gabriel River. The LADWP operates 20 spreading facilities in the San Gabriel Valley that receive direct runoff and flows from the San Gabriel Mountains. LADPW reports that a total of 71,172 AF of water was spread into the San Gabriel Valley Basin for water year 2008-2009. Of that total, the Wayside, Foothill and San Dimas Basins contributed 843 AF (1.1 percent), 1,282 AF (1.8 percent), and 48 AF (0.1 percent), respectively.

Recharge to the San Gabriel Valley Basin is mainly from direct percolation of precipitation and percolation of stream flow. Stream flow is a combination of runoff from the surrounding mountains, imported water conveyed in the San Gabriel River channel to spreading grounds in the Central sub-basin of the Coastal Plain of Los Angeles Groundwater Basin, and treated sewage effluent.

4.8.1.3 Surface Water Quality

This section discusses the existing water quality of the runoff from the project site. Runoff is a term used to describe any water that drains or runs off of a defined land area into a waterway. Runoff can be the result of rain, in which case it is also sometimes referred to as storm water. Runoff can also result from various other sources or activities such as irrigation, hosing down of areas, errant wash water from cleaning, leaks in pipes, and air conditioner condensation. When runoff is not the result of natural precipitation, it is sometimes referred to as non-storm water. Sheet flow and stream flow are the means of storm water runoff conveyance for the project area.

Primary Pollutants

General hydrologic characteristics, land uses, and activities that involve pollutants have the greatest influence on the water quality runoff from a given area. Under existing conditions, the project site consists mostly of undeveloped open space, as well as two residences with ancillary structures and

equestrian uses. Adjacent land uses include open space to the east and west, the Angeles National Forest to the north and single family residential to the south. Table 4.8-1 summarizes the activities and sources of pollutants occurring on the project site and their associated pollutants. When exposed to precipitation or non-storm water runoff can be washed downstream to the drainage system and receiving waters. Due to the limited amount of existing development on the project site, the volume of pollutants in storm water runoff from the site is currently very low.

Table 4.8-1 Potential Pollutant Activity or Sources List

Activity/Source	Pollutants of Concern
Erosion of Steep Hillsides	Sediment, organic matter
Impervious areas	Increased flows and pollutant loading
Irrigation runoff	Chloramines, fertilizers, pesticides, sediment
Litter and debris	Litter and debris
Trash storage areas	Organic materials, hazardous materials
Equestrian Use	Coliform bacteria

Source: Fuscoe 2009

Receiving Waters

Receiving waters is a general term typically used to describe any water body such as a creek, river, lake, bay, or ocean that receives runoff. Storm water from the proposed project site ultimately discharges into San Dimas Wash, Big Dalton Wash, Walnut Channel, and then to reach 4 of the San Gabriel River in the lower San Gabriel Valley between Santa Fe Dam and Whittier Narrows Dam. From the Dam, the River flows to the San Gabriel River estuary, and eventually discharges to the Pacific Ocean. Each of the receiving waters potentially affected by implementation of the proposed project is described below. The beneficial uses designated for each receiving water by the RWQCB are provided in Table 4.8-2 and the definitions for the beneficial uses are provided in Table 4.8-3. In general, beneficial uses are those uses, users, or activities that benefit from the presence of water and could be adversely impacted if water quality were degraded.

San Dimas Wash

Existing, potential or intermittent beneficial uses for San Dimas Wash include municipal and domestic supply, groundwater recharge, contact water recreation, non-contact water recreation, warm freshwater habitat and wildlife habitat. San Dimas Wash is not identified as an impaired water body on the 2008 Clean Water Act (CWA) Section 303(d) list.

Table 4.8-2 Beneficial Uses of Project Site Receiving Waters

Inland Surface Streams	Hydrologic Unit	Beneficial Use[(1)]																	
		MUN	IND	WET	AGR	GWR	REC1	REC2	COMM	WARM	COLD	EST	MAR	WILD	RARE	MIGR	SPWN	SHELL	NAV
San Gabriel River Estuary c, w	405.15		E				E	E	E			E	E	E	Ee	Ef	Ef	P	E
San Gabriel River	401.41	P*				I	Im	I		I				E					
Whittier Narrows Flood Control Basin	405.41	P*				E		E		E				E	P				
Legg Lake	405.41	P*		E		E		E		E	E			E					
Walnut Creek Wash	405.41	P*		E		I	Im	I		I				E					
Big Dalton Wash	405.41	P*				I	Pm	I		P				P					
San Dimas Wash (lower)	405.41	P*				I	Im	I		I				E	E				
San Dimas Wash (upper)	405.41	P*				E	Im	I		I				E					

E Existing beneficial use
P Potential beneficial use
I Intermittent beneficial use
e One or more rare species utilize all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting
f Aquatic organisms utilize all bays, estuaries, lagoons and coastal wetlands, to a certain extent, for spawning and early development
m Access prohibited by Los Angeles County DPW in concrete channelized areas
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03.
(1) See Table 4.8-3 for definitions of the applicable beneficial uses.
Source: RWQCB, Los Angeles Region 1994.

Table 4.8-3 Applicable Beneficial Use Designations

Designation	Abbrev.	Definition
Municipal and Domestic Supply	MUN	Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Industrial Service Supply	IND	Includes uses of water for industrial activities that do not depend primarily on water quality. These uses may include but are not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.
Wetland Habitat	WET	Uses of water that support wetland ecosystems, including, but not limited to, preservation or enhancement of wetland habitats, vegetation, fish, shellfish, or wildlife, and other unique wetland functions which enhance water quality, such as providing flood and erosion control, stream bank stabilization, and filtration and purification of naturally occurring contaminants.
Agricultural Supply	AGR	Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Table 4.8-3. Continued

Designation	Abbrev.	Definition
Groundwater Recharge	GWR	Includes uses of water for natural or artificial recharge for groundwater for purposes that may include, but are not limited to future extraction, maintaining water quality or halting saltwater intrusion into freshwater aquifers.
Contact Water Recreation	REC1	Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.
Non-contact Water Recreation	REC2	Includes the uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Commercial and Sport Fishing	COMM	Includes the uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.
Warm Freshwater Habitat	WARM	Includes uses of water that supports warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Cold Freshwater Habitat	COLD	Includes uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Estuarine Habitat	EST	Includes uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).
Marine Habitat	MAR	Includes uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).
Wildlife Habitat	WILD	Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife, or wildlife water and food sources.
Rare, Threatened, or Endangered Species	RARE	Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.
Migration of Aquatic Organisms	MIGR	Includes uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.
Spawning, Reproduction, and/or Early Development	SPWN	Includes uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. This use is applicable only for the protection of anadromous fish.
Shellfish Harvesting	SHELL	Includes uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sport purposes.
Navigation	NAV	Includes uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

Source: RWCQB, Los Angeles Region, 1994.

San Gabriel River

Existing, potential or intermittent beneficial uses for the San Gabriel River include municipal and domestic supply, groundwater recharge, contact water recreation, non-contact water recreation, warm freshwater habitat and wildlife habitat. The San Gabriel River reach 1 (San Gabriel Estuary to Firestone) is identified as an impaired water body on the 2008 CWA 303(d) list due to coliform bacteria and pH. Reach 2 (Firestone to Whittier Narrows Dam) of the San Gabriel River is listed as impaired for coliform bacteria, cyanide and lead.

San Gabriel Estuary

Existing, potential or intermittent beneficial uses for the San Gabriel Estuary include industrial service supply, contact water recreation, non-contact water recreation, commercial and sport fishing, estuarine habitat, marine habitat, wildlife habitat, rare, threatened and endangered species, migration of aquatic organisms, spawning, reproduction and/or early development, shellfish harvesting, and navigation. The San Gabriel Estuary is identified as an impaired water body on the 2008 CWA 303(d) list due to copper, dioxin, nickel, and dissolved oxygen.

4.8.1.4 Flood Hazards

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program. Special Flood Hazard Areas are defined as areas that have a one percent chance of flooding within a given year. Figure 4.8-3 shows the flood zones designated for the proposed project site based on Flood Insurance Rate Map No. 0601540001C (revised September 26, 2008). The project site is located within Zone C, which is an area of minimal flooding (100-year). This area may also be subject to flooding from severe storm activity or local drainage problems. As shown in the figure, there are no floodways recognized by the FEMA within the vicinity of the project site.

4.8.2 Regulatory Framework

4.8.2.1 Federal

Clean Water Act

The Clean Water Act (CWA) was designed to restore and maintain the chemical, physical, and biological integrity of the waters in the United States. The CWA also directs states to establish water quality standards for all waters of the United States and to review and update such standards on a triennial basis. Other provisions of the CWA related to basin planning include Section 208, which authorizes the preparation of waste treatment management plans, and Section 319, which mandates specific actions for the control of pollution from nonpoint sources. The EPA has delegated responsibility for implementation of portions of the CWA to the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs), including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) program. The NPDES program is a set of permits designed to implement the CWA that apply to various activities that generate pollutants with potential to impact water quality.

Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. Section 304(a) requires the EPA to publish water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Section 303(c)(2)(b) of the CWA requires states to adopt numerical water quality standards for toxic pollutants for which EPA has published water quality criteria and which reasonably could be expected to interfere with designated uses of a water body.

NPDES Permit Program – Phase I

In November 1990, under Phase I of the urban runoff management strategy, the EPA published National Pollutant Discharge Elimination System (NPDES) permit application requirements for municipal, industrial, and construction storm water discharges. The application requirements for municipalities were directed at municipalities which own and operate separate storm drain systems serving populations of 100,000 or more, or which contribute significant pollutants to waters of the United States, and required such agencies to obtain coverage under municipal storm water NPDES permits.

Municipalities were required to develop and implement an urban runoff management program to address activities to reduce pollutants in urban runoff and storm water discharges that were contributing a substantial pollutant load to their systems. Rather than establishing numeric effluent limits, the EPA established narrative effluent limits for urban runoff, including the requirement to implement appropriate best management practices (BMPs).

The NPDES permit system was established in the CWA to regulate both point source discharges (a municipal or industrial discharge at a specific location or pipe) and nonpoint source discharges (diffuse runoff of water from adjacent land uses) to surface waters of the United States. For point source discharges, each NPDES permit contains limits on allowable concentrations and mass emission of pollutants contained in the discharge. For nonpoint source discharges, the NPDES program establishes a comprehensive storm water quality program to manage urban storm water and minimize pollution of the environment to the maximum extent practicable. The NPDES program consists of characterizing receiving water quality, identifying harmful constituents, targeting potential sources of pollutants, and implementing a comprehensive storm water management program.

4.8.2.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the State (including both surface and groundwaters) and directs the RWQCB to develop regional Basin Plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative. The Water Quality Control Plan for the Los Angeles Region (Region 8) is designed to preserve and enhance the quality of water resources from Rincon Point in western Ventura County to the eastern Los Angeles County line for the benefit of present and future generations. The purpose of the plan is to designate beneficial uses of the Region's

surface and ground waters, designate water quality objectives for the reasonable protection of those uses, and establish an implementation plan to achieve the objectives.

All projects resulting in discharges, whether to land or water, are subject to Section 13263 of the California Water Code and are required to obtain approval of Waste Discharge Requirements (WDRs) from the applicable RWQCB. Land and groundwater related WDRs (i.e., non-NPDES WDRs) regulate discharges of process and wash-down wastewater and privately or publicly treated domestic wastewater. WDRs for discharges to surface waters also serve as NPDES permits.

Construction Storm Water Permits

In California, storm water runoff from construction activities that result in soil disturbances of one or more acres (and projects that meet other specific criteria) is governed by the SWRCB under NPDES No. CAS000002 and Order No. 2009-0009-DWQ. The Los Angeles RWQCB enforces the Construction General Permit for projects located in the City of San Dimas, including the project area. The project applicant is required to obtain coverage under the Construction General Permit prior to commencement of construction activities on the proposed project site. The Construction General Permit outlines the requirements for preparation of a Storm Water Pollution Prevention Plan (SWPPP) that specifies BMPs and monitoring programs if there is a failure of BMPs or if the site discharges directly to a water body on the 303(d) list for sediment. The approved SWPPP shall address erosion-control BMPs for both construction and long-term operations on each development site, as required by the Construction General Permit. Such BMPs include, but are not limited to, the following actions:

- Minimize disturbance to existing vegetation and slopes.
- Provide temporary hydroseeding of cleared vegetation and graded slopes as soon as possible following grading activities for areas that will remain in disturbed condition (but will not be subject to further construction activities) for a period greater than two weeks during the construction phase.
- Construct drainage control devices (e.g., storm drains, brow ditches, subdrains) to direct surface water runoff away from slopes and other graded areas.
- Remove sediment from surface runoff before it leaves the construction site through the use of silt fences or other similar devices around the site perimeter.
- Protect storm drain inlets downstream of the construction site to eliminate entry of sediment.
- Prevent off-site tracking of soil through the use of gravel strips or wash facilities at exit areas.
- Protect or stabilize stockpiled soils.
- Implement proper storage, use, and disposal of construction materials.
- Continually inspect and maintain BMPs through the duration of construction.

Cobey-Alquist Floodplain Management Act of 1965

Under the Cobey-Alquist Floodplain Management Act, local governments are encouraged to plan, adopt, and enforce land use regulations for floodplain management to protect people and property from flooding hazards. This Act also identifies requirements that jurisdictions must meet in order to receive state financial assistance for flood control. The Act supports restrictive general plan policies and zoning

provisions with respect to floodplain management. This Act recommends incorporation of policies and programs for prevention of community flood hazards into General Plan Safety Elements, and incorporation of consistent land use designations for areas affected by floodways and floodplains into General Plan Land Use Elements.

4.8.2.3 Regional

Los Angeles Region Basin Plan

The Water Quality Control Plan for the Los Angeles Region (Basin Plan) sets forth water quality objectives for constituents that could potentially cause an adverse effect or impact on the beneficial uses of water. The beneficial uses of the receiving waters relevant to the proposed project are listed in Table 4.8-2. Specifically, the Los Angeles Basin Plan is designed to accomplish the following:

1. Designate beneficial uses for surface and ground waters;
2. Set the narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy;
3. Describe implementation programs to protect the beneficial uses of all waters within the region; and
4. Describe surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan.

The Basin Plan incorporates by reference all applicable SWRCB and RWQCB plans and policies.

City of San Dimas Stormwater Management and Discharge Regulations

Chapter 14.7 of the San Dimas Municipal Code provides the city's Stormwater Management and Discharge Regulations. As stated in Municipal Code Section 14.11.050, an urban stormwater mitigation plan must be prepared for all new development projects. The plan shall be designed to reduce projected runoff for a project through the incorporation of design elements or principles that address the following goals in connection with both construction and long-term operation of the site:

1. Implement to the maximum extent practicable, requirements established by appropriate government agencies under CEQA, Section 404 of the Clean Water Act, local ordinances and other legal authorities intended to minimize impacts from stormwater runoff on the biological integrity of natural drainage systems and water bodies.
2. Maximize, to the maximum extent practicable, the percentage of permeable surfaces to allow more percolation of stormwater into the ground.
3. Minimize, to the maximum extent practicable, the amount of stormwater directed to impermeable areas and to the MS4.
4. Minimize, to the maximum extent practicable, parking lot pollution through the use of appropriate BMPs such as retention, infiltration and good housekeeping.
5. Establish reasonable limits on the clearing of vegetation from the project site including, but not limited to, regulation of the length of time during which soil may be exposed and, in certain sensitive cases, the prohibition of bare soil.

6. Provide for appropriate permanent controls to reduce stormwater pollutant load produced by the development site to the maximum extent practicable.

Compliance with an approved urban stormwater mitigation plan shall be a condition of any required planning approval.

4.8.3 Project Impacts and Mitigation

4.8.3.1 Issue 1 – Drainage Alteration, Erosion and Siltation

Hydrology and Water Quality Issue 1 Summary

Would implementation of the proposed project substantially alter existing drainage patterns, including the alteration of a water course, or substantially increase the rate of surface runoff in a manner which would result in erosion or siltation on or off site?

Impact: The proposed project would not substantially alter existing drainage patterns which would result in erosion or siltation on or off site.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the proposed project would have a significant adverse impact if it would substantially alter the existing drainage pattern of the site or area, including the alteration of a watercourse, in a manner which would result in substantial erosion or siltation on or off site.

Impact Analysis

Impacts from Construction Activities

The proposed project would involve the following ground disturbance activities that would alter existing drainage patterns within the project area and result in exposed soils being susceptible to erosion by wind or water: grading, clearing, trenching, excavation, stockpiling and balancing of soils and materials. The project would involve landform alteration resulting in the balancing of approximately 1.3 million cubic yards of cut/fill soils on site. These activities would have the potential to alter drainage patterns during project construction which could result in on-site erosion and off-site downstream siltation.

As described above, the project applicant would be required to implement a SWPPP in accordance with the NPDES Construction General Permit because the project would result in more than one acre of land disturbance. In addition, the San Dimas Stormwater Management and Discharge Regulations require the preparation and implementation of an urban stormwater mitigation plan for all new development projects. These state and local requirements identify BMPs to reduce impacts related to polluted storm water runoff associated with ground disturbance and construction activities. Typical BMPs include

minimizing and stabilizing disturbed areas, protecting slopes and channels, and installing construction site perimeter sediment controls. Therefore, with mandatory compliance of the NPDES Construction General Permit and applicable requirements of the San Dimas Municipal Code, the construction-related erosion impacts associated with implementation of the proposed project would be less than significant.

Impacts Following Construction

Following construction, no major changes to the existing drainage patterns of the project site would occur, despite the fact that the proposed project would result in the permanent alteration of the project site through paving and construction of residences, roadways, and the water tank, which would result in a substantial increase in the amount of impervious surfaces as compared to existing conditions. However, some minor adjustments to the sub watershed boundaries would be required to facilitate the project design. This is because the project proposes an on-site storm drain system and other drainage features that would be designed to neutralize adverse effects induced by proposed project development. The proposed drainage facilities for each sub watershed are described below.

Development of a portion of Shuler Canyon would occur as a result of the proposed project and a system of streets, catch basins, culverts and existing canyon channels would convey flow to a proposed detention basin at the southerly end of the canyon (see Section 3.3.2.6 (Site Drainage) for a discussion of the proposed detention and debris basin). The outlet of this basin would connect to the existing storm drain system in Cataract Avenue. Development of a portion of Wildwood Canyon would also occur as a result of the proposed project and existing canyon channels would convey flow to a proposed detention basin on the westerly edge of the project site. The outlet of this basin would flow into the existing Wildwood Canyon creek channel and continue westerly. No development or drainage facilities are proposed for the Shay Canyon watershed.

The proposed detention and debris basins described above and in Section 3.3.2.6 (Site Drainage) of this EIR would convey the flows from surface runoff in a manner that would reduce the potential for downstream siltation. Three debris basins are proposed in the northern portion of the project site near Lots 50/51, 28 and 30/31, respectively. In addition, a joint water quality/debris basin would be located in the southern portion of the site near the project entrance and would serve a 92-acre tributary area. With incorporation of these drainage improvements, in compliance with the NPDES Construction General Permit and applicable requirements of the San Dimas Municipal Code's Stormwater Management and Discharge Regulations and, where applicable, Los Angeles Flood Control District and California Division of Dam Safety review of drainage and any debris, water quality, retention and/or detention facility of basin designs, downstream siltation effects due to implementation of the proposed project would be less than significant.

Summary

Construction and operation of the proposed project would have the potential to alter existing drainage patterns of the site; however, with mandatory compliance of the NPDES Construction General Permit and applicable requirements of the San Dimas Municipal Code, the construction-related erosion impacts associated with implementation of the proposed project would be less than significant. Operational impacts would also be less than significant due to the project's proposed storm drain system and other drainage features, including drainage/detention basins that would be designed to reduce erosion and siltation impacts resulting from proposed project development.

Mitigation Measures

The proposed project would have a less than significant impact on drainage alteration, erosion and siltation; therefore, no mitigation measures are required.

4.8.3.2 Issue 2 – Groundwater Supply and Recharge

Hydrology and Water Quality Issue 2 Summary

Would the proposed project substantially deplete supplies of groundwater resources or interfere substantially with groundwater recharge?

Impact: The proposed project would not substantially deplete supplies of groundwater resources or interfere substantially with groundwater recharge.	**Mitigation:** No mitigation is required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Less than significant.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact if it would substantially degrade the quality of groundwater resources, 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.

Impact Analysis

The following discussion addresses the topics of groundwater supply and groundwater recharge.

Groundwater Supply

The proposed project does not propose the use of local groundwater supplies or the construction of groundwater wells. Water would be provided to the proposed project by the Golden State Water Company (GSWC). However, GSWC uses groundwater, and the proposed project would receive water from GSWC; therefore, the potential for GSWC to deplete ground water supplies is discussed below.

GSWC groundwater is extracted from the adjudicated Main San Gabriel Basin under the direction of the Main San Gabriel Basin Watermaster, who regulates groundwater production within the basin. Each year, the Watermaster determines the operating safe yield (OSY) for the basin, which may be larger or smaller than the total prescriptive right of 197,634 acre-feet per year(GSWC 2005). The Watermaster performs hydrologic balance calculations to assess the groundwater conditions in the Main San Gabriel Basin. The hydrologic assessments are based on an evaluation of groundwater levels in the Basin, determination of the previous year's recharge and extraction activities, estimates of the current year's recharges and extractions, water quality, historic and current rainfall data, and the availability of imported water. The OSY has historically fluctuated to account for wet or dry conditions in the basin,

accommodating the availability of imported water that may be needed to supplement local water supplies and recharge of the basin. The OSY is the amount of water that can be pumped from the basin before the Watermaster imposes a "Replacement Water Assessment" to replenish the basin with imported water. Each water right holder is assigned a set percentage of the OSY annually. Because the OSY fluctuates yearly, the actual amount of water GSWC can pump free of the replenishment assessment can fluctuate annually (GSWC 2005). Through this process, the OSY regulates the safe yield of the Main San Gabriel Basin to avoid the depletion of groundwater supplies by GSWC and other water users. The proposed project would receive water from GSWC, but because the OSY must be observed based on allocation from the Watermaster, therefore the project would not contribute to the depletion of ground water supplies in the Main San Gabriel Basin. Impacts would be less than significant.

Groundwater Recharge

The proposed project would result in the disturbance of approximately 90 acres within the 409,600-acre San Gabriel River Watershed (of which 10 acres will be in temporary disturbance during construction). This equates to a disturbance area of less than 0.02 percent of the total watershed. Available records of groundwater elevations indicate a trend of increasing elevations, therefore, the local basin is not considered to be in a state of decline. The groundwater elevations exist at a depth of 900 to 1,200 feet below the surface of the ground. The steep terrain of the project area results in sheet flow with an apparent smaller volume of precipitation able to provide recharge through deep percolation. The Program Environmental Impact Report (NF-PEIR) for the Northern Foothill Implementation Plan (RBF 1999) conducted a more extensive analysis of the potential impacts to local groundwater resources. The NF-PEIR concluded that the Northern Foothill Implementation Plan would not result in adverse impacts to the amount of available groundwater. Since the proposed project site is located within the Northern Foothills Implementation Plan area, this conclusion is also applicable to the proposed project.

As discussed above, the existing drainage flow patterns of the project site will be maintained. Therefore, the runoff and contribution of groundwater flow from the Foothill Basin to the Main San Gabriel Basin would continue with little change as a result of the proposed project. Further, the Main San Gabriel and Central Basins are both extensively managed for recharge and use for potable supplies. These groundwater resources would be unchanged as a result of the proposed project.

Based on the information provided above, implementation of the proposed project is anticipated to have a less than significant change to the overall volume of the local groundwater basin. Runoff from the proposed project site would remain in the current watershed, and the management and replenishment activities of both the LADPW and the WRD would continue to return runoff to the Main and Central basins for recharge and potable uses. Therefore, impacts would be less than significant.

Summary

The proposed project does not propose the use of groundwater; therefore, no impact to groundwater supply would occur. With regard to groundwater recharge, the proposed project would result in a disturbance area of less than 0.02 percent of the total watershed and the existing drainage patterns of the project site would be maintained after project development. Therefore, impacts to groundwater recharge would be less than significant.

Mitigation Measures

The proposed project would have a less than significant impact on groundwater supply and recharge; therefore, no mitigation measures are required.

4.8.3.3 Issue 3 – Surface Water Quality

Hydrology and Water Quality Issue 3 Summary

Would implementation of the proposed project violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality?

Impact: The proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality.	**Mitigation:** No mitigation is required.
Significance Before Mitigation: Less than significant.	**Significance After Mitigation:** Less than significant.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact if it would violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality. Applicable water quality standards developed by the SWRCB or RWQCB for storm water discharges are set forth in applicable storm water permits, which also serve as waste discharge requirements. SWRCB and RWQCB permits serve to control pollutants in runoff.

Impact Analysis

The following analyses are grouped by construction and post-construction activities.

Impacts from Construction Activities

Construction activities associated with the proposed project, such as demolition, clearing and grading, trenching, excavation, stockpiling of soils and materials, concrete pouring, painting, and asphalt surfacing, would introduce sources of pollutants that could be captured in site runoff and result in the degradation of downstream surface and groundwater quality. Construction activities would involve various types of equipment such as dozers, scrapers, graders, loaders, compactors, dump trucks, cranes, water trucks, and concrete mixers which could contribute to hydrocarbon pollution. Stockpiled soils and other construction materials would likely be stored outdoors during the construction phase, which could contribute to hazardous materials, sediment, trash, and debris pollution. These pollutants could degrade water quality if they are washed off site by stormwater or non-stormwater discharges, or are blown or tracked off site to areas susceptible to wash off by stormwater or non-stormwater. Runoff pollutants washed off site could discharge into the Shuler, Shay and Wildwood Canyons and San Dimas Wash within the project area.

Sediment is the most common pollutant associated with construction sites due to earth-moving activities and areas of exposed soil. Sediment that is washed off a construction site can result in

turbidity in the receiving waters and impact aquatic species by smothering them, altering their substrate and habitats, and altering drainage courses. Hydrocarbons, hazardous materials, debris, and trash carried in runoff from a construction site could also impact aquatic species.

As described in Section 4.8.2.2 above, construction activities for the proposed project would be required to comply with the NPDES Construction General Permit and the San Dimas Stormwater Management and Discharge Regulations. In compliance with the Construction General Permit, a SWPPP would be prepared for the project site that addresses water quality BMPs for both construction and long-term operations. Therefore, the potential construction-related water quality impacts due to runoff pollution would be less than significant and construction activities associated with the proposed project would not violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.

Impacts Following Construction

The proposed project would include the following uses that could contribute water quality pollutants to the environment: rooftops and hardscape, general use and trash storage areas, roads and driveways, landscaped areas, and equestrian uses. The anticipated pollutants for the proposed project include bacteria, nutrients, trash, debris, oil and grease, metals and sediment.

The proposed project is subject to the SUSMP requirements because it meets the criteria for two project categories: single family hillside residences and housing developments of 10 or more units. The SUSMP requires projects to implement applicable site design, source control and treatment control BMPs. The site design BMPs that would be incorporated into the proposed project include:

- Maximize impermeable area
- Conserve natural areas
- Construct streets to minimum widths necessary
- Reduce widths of street where off-street parking is available
- Maximize canopy interception and water conservation by preserving and planting native vegetation
- Use natural drainage systems
- Construct on-site retention facilities to increase opportunities for infiltration
- Design driveways to drain into landscaping

Consistent with the SUSMP provisions and requirements, the project is required to incorporate the following source control BMPs:

- Peak stormwater runoff discharge rates
- Conserve natural areas
- Minimize stormwater pollutants of concern
- Protect slopes and channels

- Provide storm drain system stenciling and signage
- Provide proof of ongoing BMP maintenance
- Design standards for treatment control BMPs

Because operation of the proposed project could potentially involve equestrian activities, additional source control BMPs would be implemented to minimize the generation of bacteria, sediment and nutrients in storm water runoff from these activities. Potential impacts from equestrian activities would be controlled through facility design, collection and storage of manure, and grooming (i.e. washwater management). The BMPS for equestrian activities would include the following:

- Use of designated trails for horse riding.
- Sweeping and cleaning of paved and unpaved roads regularly to assure regular manure removal and disposal.
- Daily manure disposal or storage of manure in a covered area located away from drainage courses.
- Provide stable bedding to capture horse urine and dispose of it in a covered trash area.
- Ensure that chemical and other contaminates handled on site are not disposed of in any manure, litter or storm water storage or treatment system.

In addition, the project is also required to implement treatment control BMPs to treat polluted runoff prior to leaving the project site. The proposed project would construct three water quality detention basins and three off-site debris basins to treat runoff from the project site. Water quality and detention basins are areas where excess storm water is stored or held temporarily and then slowly drained via infiltration, evaporation, and a controlled outlet. In addition, one large water quality/debris basin is proposed at the downstream portion of the project site to detain peak flows and provide additional water quality treatment. Consistent with SUSMP requirements for treatment control BMPs, each of the basins has been sized to treat the volume produced from 0.75 inches of rainfall. All treatment control BMPs proposed for the project would meet the required minimum treatment flow rate for each of their respective drainage areas.

Operation of the proposed project would incorporate site design, source control and treatment control BMPs to reduce potential water quality impacts from runoff pollution to a less than significant level. Therefore, project operation would not violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.

Summary

Project construction activities would be required to comply with the NPDES Construction General Permit and the San Dimas Stormwater Management and Discharge Regulations, which would reduce water quality impacts due to runoff pollution to a less than significant level. Operation of the proposed project would incorporate site design, source control and treatment control BMPs to reduce potential water quality impacts from runoff pollution to a less than significant level. Therefore, the project would not violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.

Mitigation Measures

The proposed project would have a less than significant impact on surface water quality; therefore, no mitigation measures are required.

4.8.3.4 Issue 4 – Flood Hazard

Hydrology and Water Quality Issue 4 Summary

Would implementation of the proposed project substantially alter existing drainage patterns, including the alteration of a water course, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; or would it place housing or structures within a 100-year flood hazard area?

Impact: Implementation of the proposed project would not substantially alter the existing drainage patterns of the site in a manner which would result in flooding on or off site or place housing or structures within a 100-year flood hazard area.

Mitigation: No mitigation is required.

Significance Before Mitigation: Less than significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the proposed project would have a significant impact if it would substantially alter existing drainage patterns in the project area, including the alteration of a water course, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site.

In addition, the proposed project would have a significant impact if it would place housing or structures within a 100-year flood hazard area (as mapped on a federal Flood Hazard Boundary, FIRM, or other flood hazard delineation map) which would impede or redirect flood flows.

Impact Analysis

Flooding

During project construction, typical construction practices would be employed to minimize potential flooding impacts, including installation of erosion and sediment control BMPs in compliance with the NPDES Construction General Permit and the preparation and implementation of an urban stormwater mitigation plan in compliance with the San Dimas Stormwater Management and Discharge Regulations. These measures would serve to slow down any temporary increases in runoff flows across graded areas and within creek channels during grading and construction. Therefore, potential flooding due to grading and construction activities associated with the proposed project would be less than significant.

As discussed in Section 4.8.3.1 above, development of the proposed project would not result in major changes to the existing drainage patterns of the project site. This is because the project proposes an on-

site storm drain system and other drainage features that would be designed to neutralize adverse effects induced by proposed project development. Thus, the project would not exceed the capacity of the Shay, Shuler and Wildwood Canyon creeks and would not cause on-site or off-site flooding at downstream facilities. Post-construction impacts would be less than significant.

As noted in Section 4.8.1.1, a deficient stormdrain condition currently exists at the northern terminus of Cataract Avenue, downstream from the mouth of Schuler Canyon. This condition is due to the inadequately sized capacity of the two catch basins in place near the terminus of Cataract Avenue. As a result of this lack of adequate drainage capacity, localized pooling occurs at this location during large storm events, often on an annual basis. Construction of a detention basin at the mouth of Schuler Canyon is proposed as part of the project in compliance with the NPDES Construction General Permit and applicable requirements of the San Dimas Municipal Code's Stormwater Management and Discharge Regulations and, where applicable, Los Angeles Flood Control District and California Division of Dam Safety review of drainage and any debris, water quality, retention and/or detention facility of basin designs. The installation of the detention basin would substantially improve this deficient condition by detaining storm flows and not allowing them to drain unimpeded onto Cataract Avenue, as is currently the case. Therefore, the proposed project would improve this off-site flooding condition on Cataract Avenue.

Development within Flood Hazard Areas

As shown on Figure 4.8-3, no floodways recognized by the FEMA are located within the vicinity of the project site. As identified on Flood Insurance Rate Map No. 0601540001C (revised June 2, 1978), the proposed project site is located within Zone C, which is an area of minimal flooding (100-year). The project area has the potential to experience flooding from severe storm activity or local drainage problems; however, implementation of construction and post-construction BMPs, including water quality and debris detention basins, would reduce this potential impact to a less than significant level. Therefore, the proposed project would not

Summary

Implementation of the proposed project would not substantially alter the existing drainage patterns of the site or substantially increase the rate or amount of surface runoff in a manner which could result in flooding on or off site. In addition, the project would not place housing or structures within a 100-year flood hazard area. Therefore, impacts associated with flood hazards would be less than significant.

Mitigation Measures

The proposed project would have a less than significant impact on flood hazards; therefore, no mitigation measures are required.

4.8.4 Cumulative Impacts and Mitigation

Hydrology and Water Quality Cumulative Issue Summary

Would implementation of the proposed project have a cumulatively considerable contribution to a cumulative hydrology and water quality impact considering past, present, and probable future projects?

Cumulative Impact	*Cumulative Significance*	*Proposed Project Contribution*
Drainage Alteration, Erosion and Siltation, and Surface Water Quality: Localized soil erosion and water quality degradation in the San Gabriel River watershed and downstream receiving waters due to alteration of drainage patterns, increases in storm water runoff, and urban runoff pollution.	Significant.	Not cumulatively considerable.
Flood Hazards: Regional exposure of people or structures to flood hazards.	Significant.	Not cumulatively considerable.

Groundwater basins typically serve localized areas and, therefore, any project impacts would generally be localized. Because groundwater supply and recharge is generally specific to the groundwater basin below individual project sites, these issues are not subject to a cumulative impact analysis, and are not addressed in this section.

4.8.4.1 Drainage Alteration, Erosion and Siltation and Surface Water Quality

As indicated in Table 4.0-1 of this EIR, the geographic context for the analysis of cumulative impacts relative to drainage alteration, erosion and siltation, and surface water quality is the San Gabriel River watershed. Land disturbance activities associated with cumulative projects may result in drainage alterations to the individual project site and its surroundings. However, such land disturbance activities are required to comply with the NPDES Construction General Permit and/or other applicable agency regulations to reduce construction-related runoff pollution. In addition, cumulative projects meeting the project criteria for the SUSMP would implement site design, source control, and treatment control BMPs to reduce post-construction urban runoff pollution. Nevertheless, due to the sheer magnitude of development in the San Gabriel River watershed, such land disturbance activities would continue to contribute, however incrementally, to erosion, siltation and water quality impacts within the watershed. Therefore, the baseline cumulative impact to the San Gabriel River watershed due to drainage alterations, erosion and siltation effects, and surface water quality degradation associated with land disturbance activities is significant.

As discussed in Sections 4.8.3.1 and 4.8.3.3 above, the proposed project would implement standard erosion-control measures in accordance with the NPDES Construction General Permit and San Dimas Stormwater Management and Discharge Regulations. As required by the SUSMP, the proposed project would implement site design, source control, and treatment control BMPs to reduce potential erosion and siltation and water quality impacts within the watershed. In addition, implementation of the proposed project would not substantially alter the existing drainage patterns of the project site. Therefore, the proposed project would not result in a cumulatively considerable contribution to

drainage alteration, erosion and siltation effects and surface water quality degradation within the San Gabriel River watershed.

4.8.4.2 Flood Hazards

As indicated in Table 4.0-1 of this EIR, the geographic context for the analysis of cumulative impacts relative to flooding hazards is the San Gabriel River watershed. Cumulative development activities within the watershed are required to comply with the NPDES Construction General Permit and/or other applicable agency regulations to reduce construction-related runoff flows. In addition, other cumulative projects would be required to implement drainage improvements to reduce post-construction runoff flows. Nevertheless, the sheer magnitude of development in the region would continue to contribute, however incrementally, to potential flooding impacts within the local watershed. Therefore, the baseline cumulative impact within the San Gabriel River watershed due to regional flooding associated with construction and development activities is significant.

As discussed in Section 4.8.3.4 above, development of the proposed project would not substantially alter the existing drainage patterns of the project site nor would it exceed the existing capacity of the Shay, Shuler or Wildwood Canyon Creek drainages. The project would comply with the NPDES Construction General Permit requirements and San Dimas Stormwater Management and Discharge Regulations. As required by the SUSMP, the proposed project would implement site design, source control, and treatment control BMPs, including water quality and debris detention basins, which would be adequately sized to meet the minimum required treatment flow rate for each of their respective drainage areas. Therefore, the proposed project would not result in a cumulatively considerable contribution to flooding impacts within the local watershed.

4.8.5 Issues With No Potential to Have a Significant Effect on the Environment

Would the proposed project expose people or structures to significant risk or loss, injury, or death involving flooding as a result of the failure of a levee or dam?

There are no levees or dams upstream from the project site. In addition, the San Dimas area is flood protected by an extensive storm drain system designed to convey a 100-year storm event. The system is substantially improved and provides an integrated approach for regional and local drainage flows. This existing system includes several debris dams and levees north of the city, spreading grounds, concrete-lined channels, and underground storm drains. As discussed in Section 4.8.3.4 above, the project site is not located within a 100-year flood hazard area. No adverse impacts would occur.

Would the proposed project be inundated by seiche, tsunami, or mudflow?

There are no oceans, lakes or reservoirs near the project site; therefore impacts from seiche and tsunami are not anticipated. The San Dimas area sits at the base of the steep eastern San Gabriel Mountains whose deep canyons were cut by mountain streams. Numerous man-made controls have been constructed to reduce the mudflow impacts to the level of non-significance within the city. This

existing system includes several debris dams, and spreading grounds along San Dimas Canyon. Therefore, no adverse impacts would occur.

4.8.6 References

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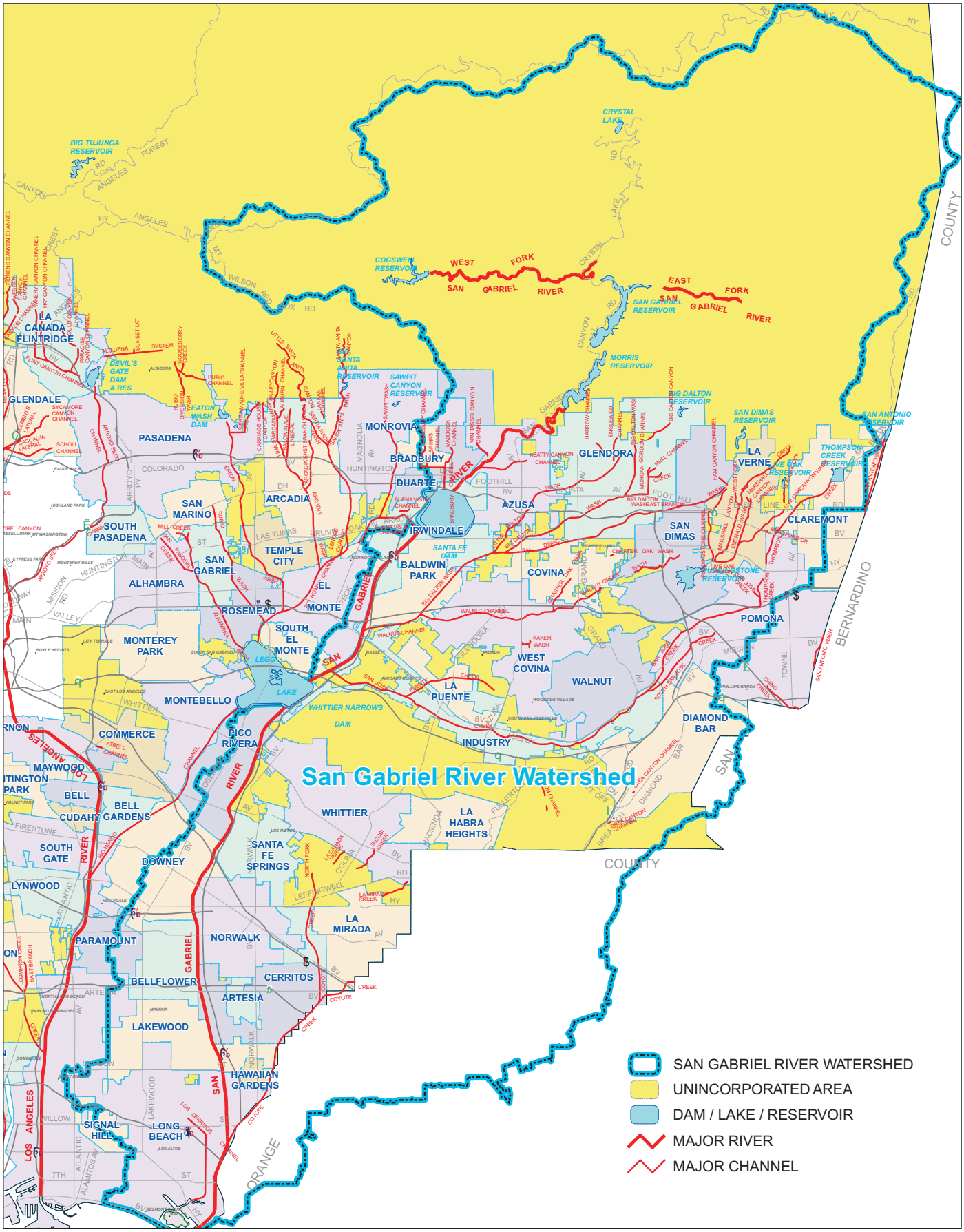
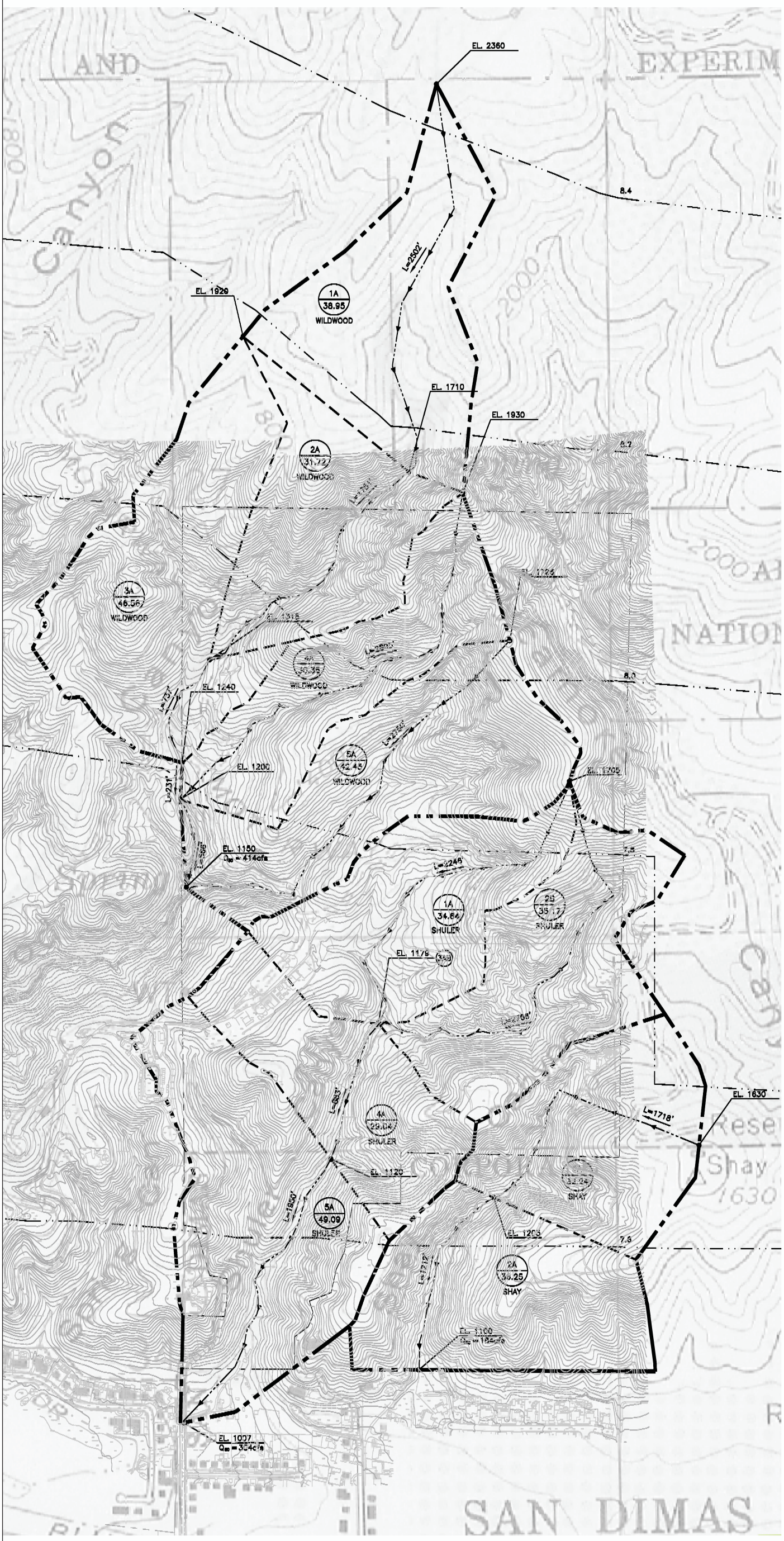
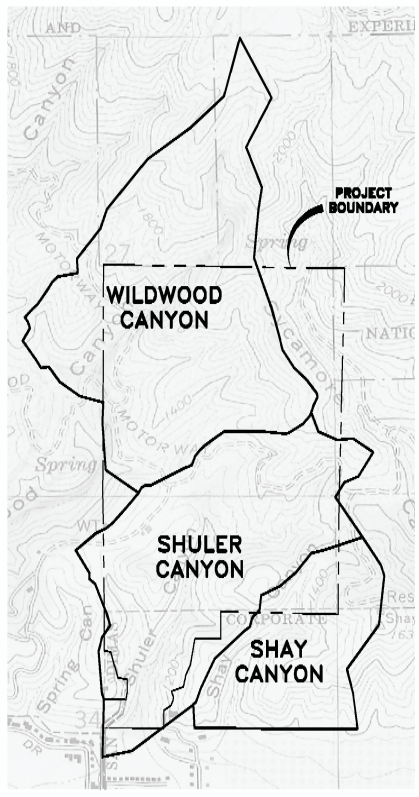

San Gabriel River Watershed
SAN GABRIEL RIVER WATERSHED
UNINCORPORATED AREA
DAM / LAKE / RESERVOIR
MAJOR RIVER
MAJOR CHANNEL
LA CANADA FLINTRIDGE
GLENDALE
PASADENA
SAN MARINO
SOUTH PASADENA
ALHAMBRA
SAN GABRIEL
TEMPLE CITY
ARCADIA
MONROVIA
DUARTE
BRADBURY
AZUSA
IRWINDALE
BALDWIN PARK
COVINA
GLENDORA
LA VERNE
SAN DIMAS
CLAREMONT
POMONA
ROSEMEAD
SOUTH EL MONTE
EL MONTE
MONTEREY PARK
MONTEBELLO
COMMERCE
PICO RIVERA
WEST COVINA
WALNUT
LA PUENTE
DIAMOND BAR
INDUSTRY
WHITTIER
LA HABRA HEIGHTS
MAYWOOD
BELL
BELL GARDENS
CUDAHY
SOUTH GATE
DOWNEY
SANTA FE SPRINGS
LYNWOOD
PARAMOUNT
NORWALK
LA MIRADA
BELLFLOWER
CERRITOS
ARTESIA
LAKEWOOD
HAWAIIAN GARDENS
SIGNAL HILL
LONG BEACH
CRYSTAL LAKE
BIG TUJUNGA RESERVOIR
COGSWELL RESERVOIR
WEST FORK SAN GABRIEL RIVER
EAST FORK SAN GABRIEL RIVER
SAN GABRIEL RESERVOIR
MORRIS RESERVOIR
SAWPIT CANYON RESERVOIR
SANTA ANITA RESERVOIR
BIG DALTON RESERVOIR
SAN DIMAS RESERVOIR
SAN ANTONIO RESERVOIR
THOMPSON CREEK RESERVOIR
LIVE OAK RESERVOIR
LIVESTONE RESERVOIR
EATON WASH DAM
SANTA FE DAM
WHITTIER NARROWS DAM
LEGG LAKE
DEVIL'S GATE DAM & RES
LOS ANGELES COUNTY
ORANGE COUNTY
SAN BERNARDINO COUNTY
Source: County of Los Angeles 2007
0 2.25 4.5
Miles
N
SAN GABRIEL RIVER WATERSHED
FIGURE 4.8-1
Brasada Residential Project EIR





EXISTING WATERSHEDS

N.T.S.

LEGEND

- EXISTING MAJOR WATERSHED BOUNDARY
- EXISTING SUB DRAINAGE AREA BOUNDARY
- EXISTING FLOW PATH
- SHAY — WATERSHED
- DIRECTION OF FLOW
- C17 / 70.21 — DRAINAGE AREA DESIGNATION / ACRES
- 340 — NODE DESIGNATION
- L=300' — LENGTH OF EXISTING FLOW PATH
- Q_{50} — CALCULATED 50-YEAR STORM RUNOFF

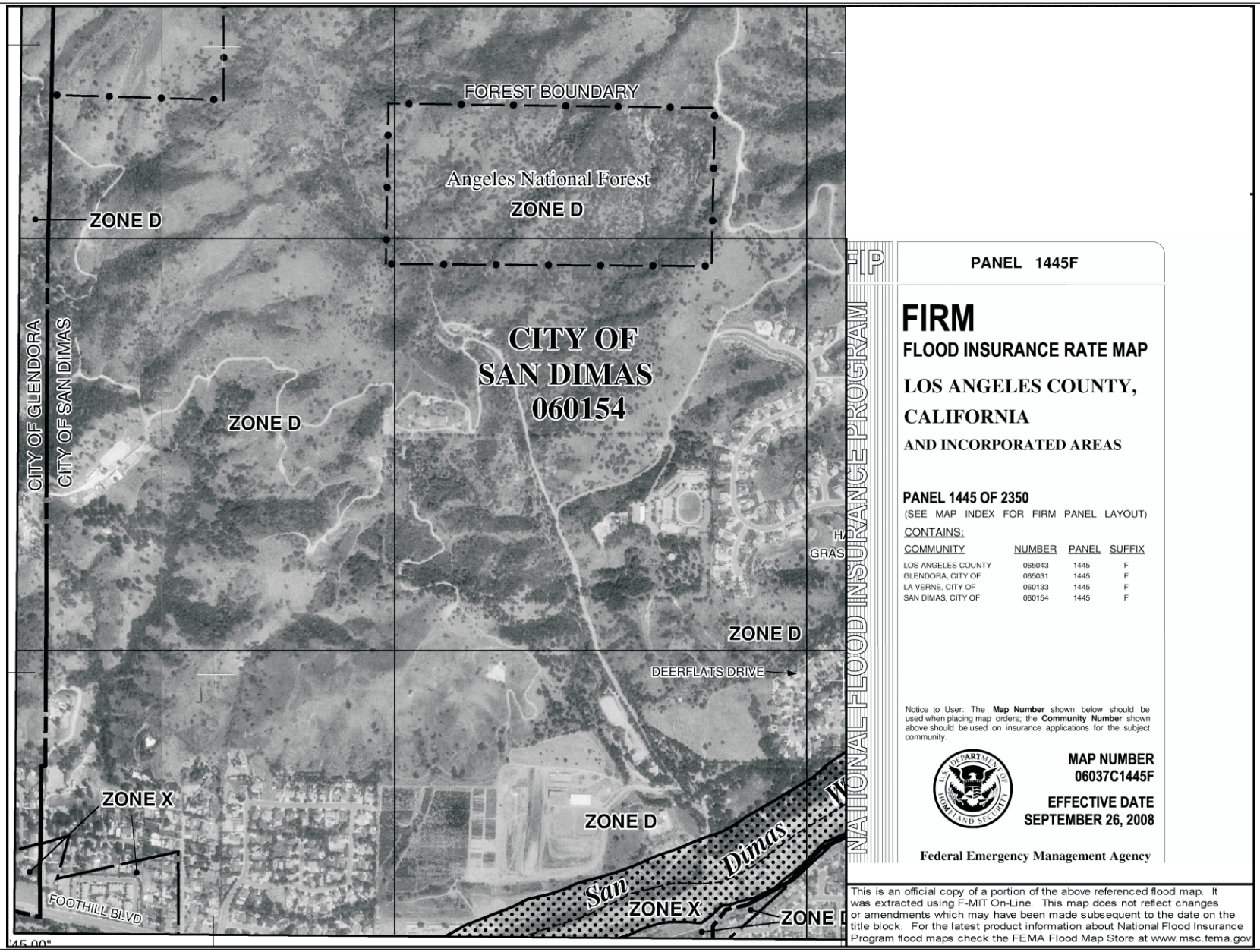
NOTE: ALL SOIL TYPE B0

Source: FUSCOE Engineering 2010

Not to Scale

N

ON-SITE WATERSHEDS
FIGURE 4.8-2



Source: FEMA 2008

No Scale

N

FLOOD INSURANCE RATE MAP FOR PROJECT AREA
FIGURE 4.8-3